Outline for Today

9:00 am Welcome & Introductions

PART I: SELLING THE SEACOAST

9:20 Our Coastal Landscape

9:25 Shoreland and Wetlands Rules

10:00 Break

10:15 *SITE VISIT: FLOOD MITIGATION at STRAWBERY BANKE*

PART II: FLOOD RISK & RESILIENCY

10:45 Tides and Water Levels

11:05 Determining Flood Risk

11:25 Flood Resiliency

12:00 pm Adjourn

Part 2. Flood Risk and Resiliency

- Tides and Water Levels
- Determining Flood Risk
- Flood Resiliency



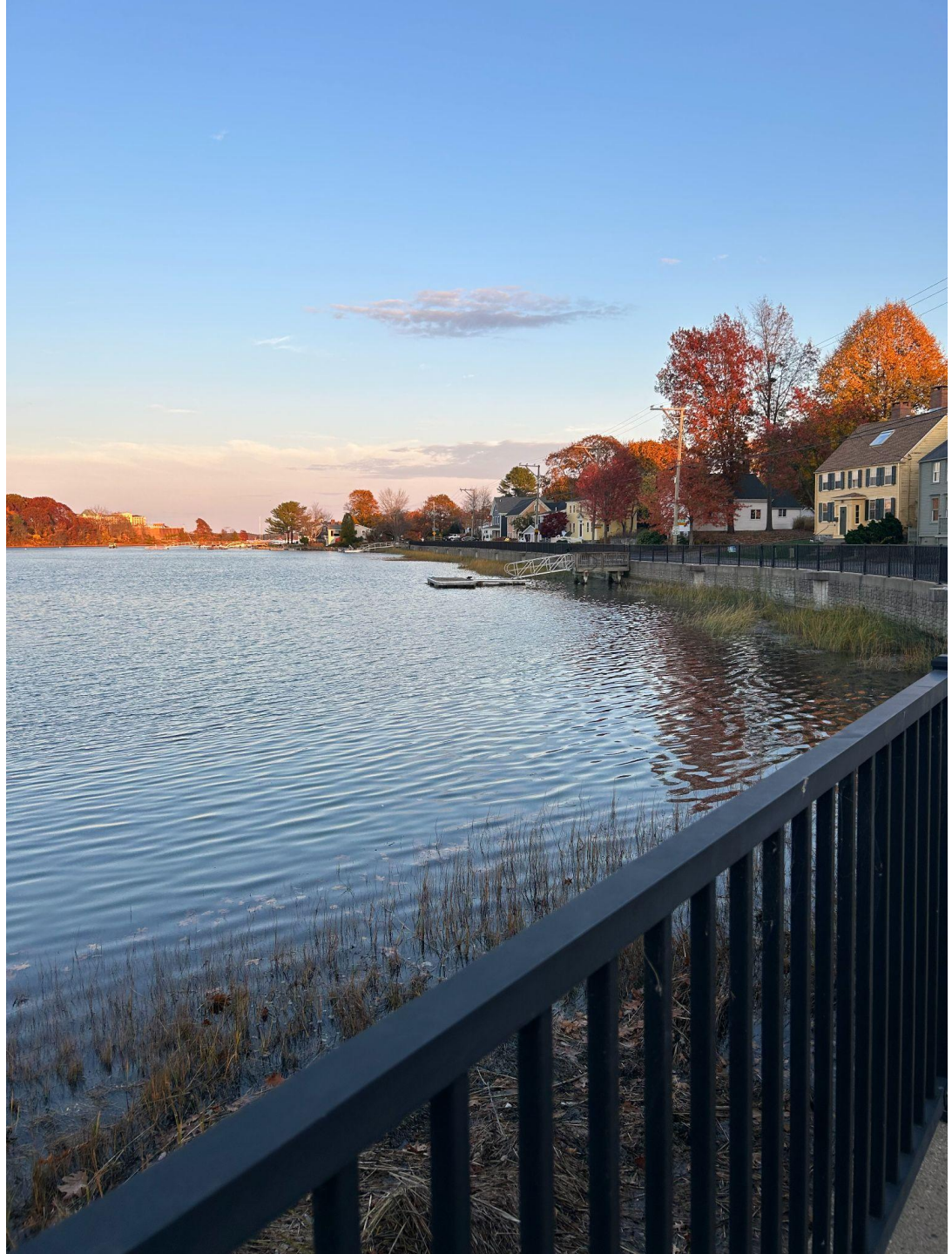
Part 2A. Tides and Water Levels

Part 2A. Tides and Water Levels

- Background on local tides
- Where to get local information about tide predictions and water levels
- How water levels are expected to change in the future



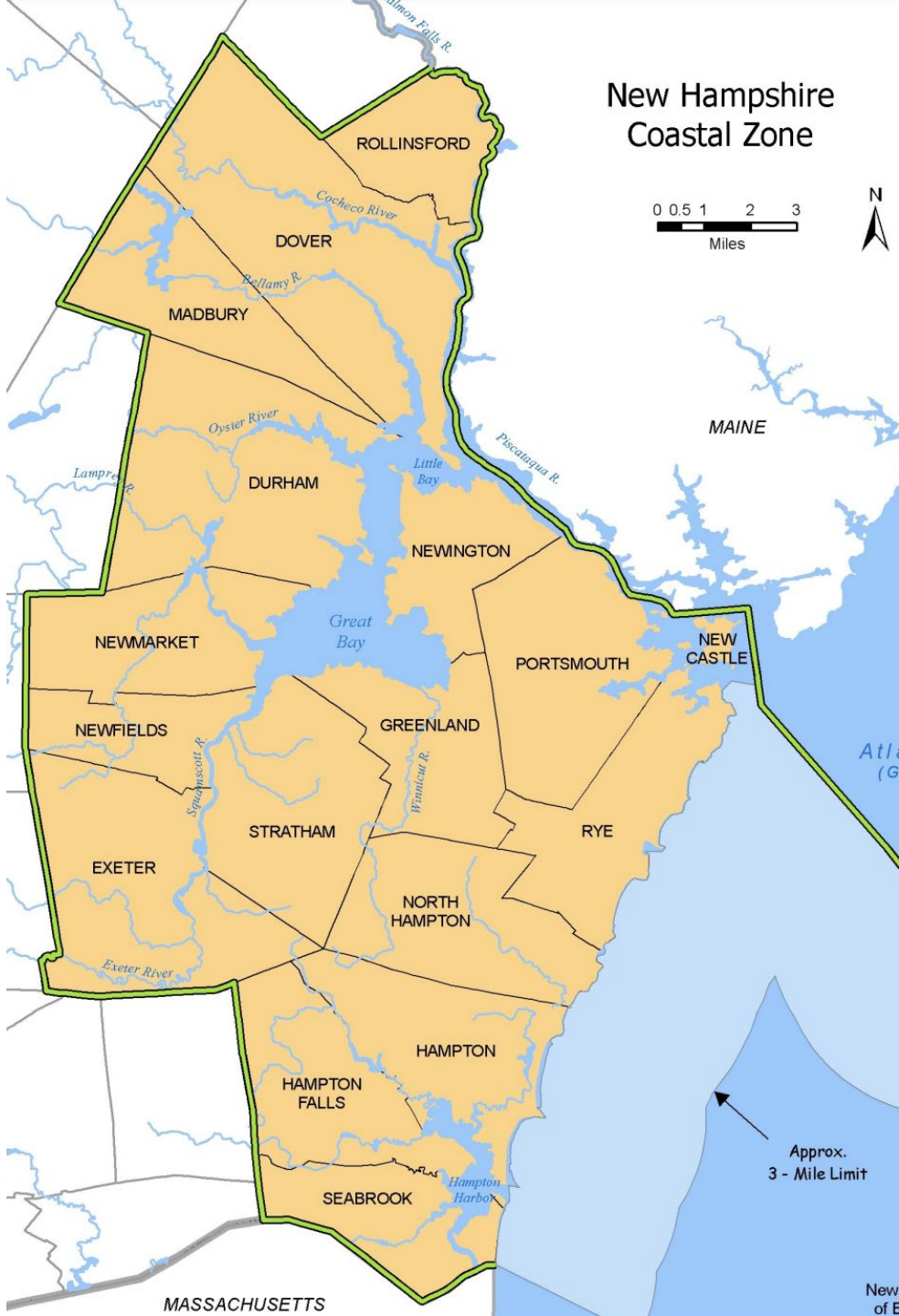




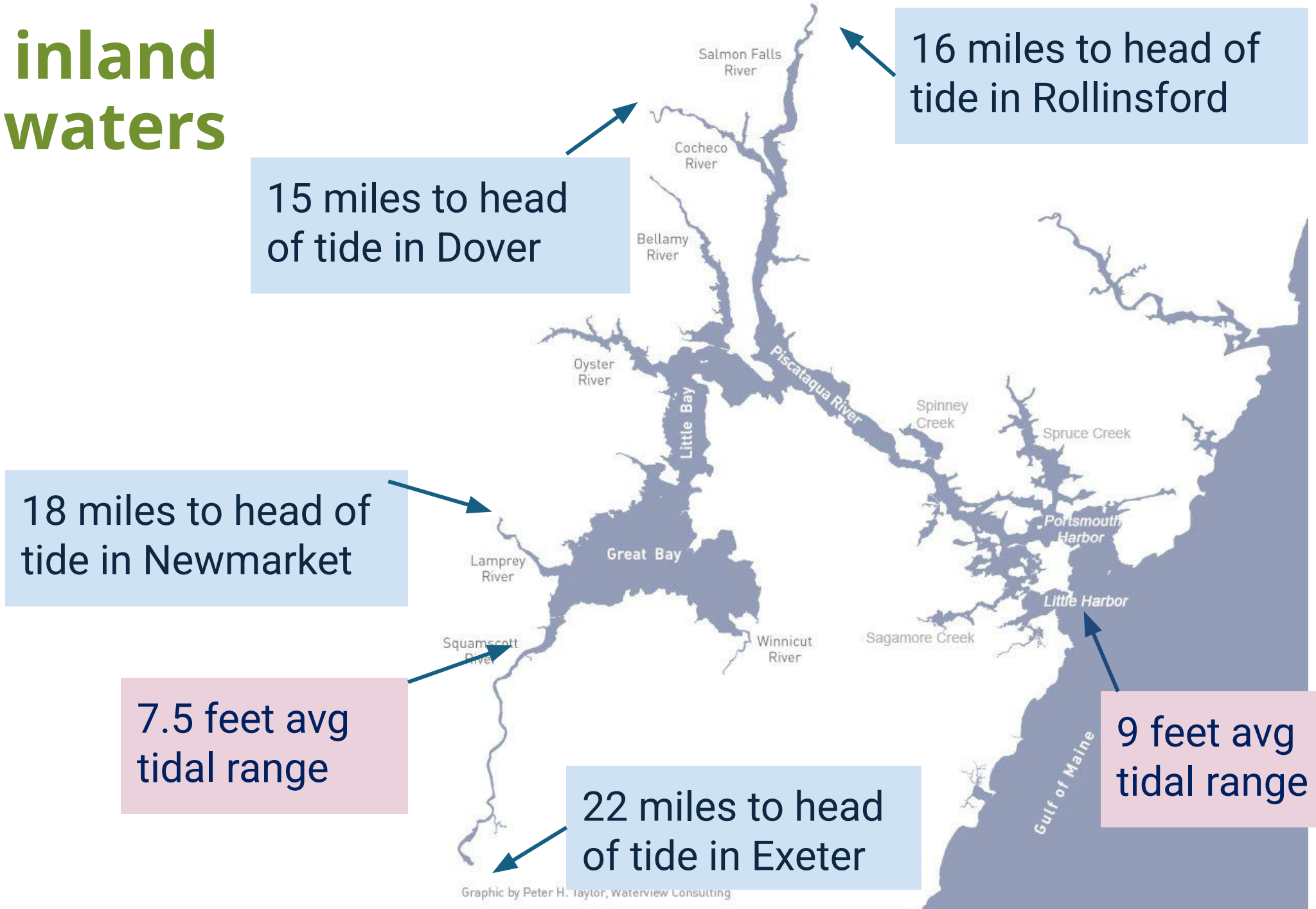
Local tidal patterns

Two high tides and two low tides per day

Average tidal range is around 9 feet



How far inland do tidal waters extend?




Great Bay Estuary
Salmon Falls River
Cocheco River
Bellamy River
Oyster River
Little Bay
Piscataqua River
Spinney Creek
Spruce Creek
Portsmouth Harbor
Great Bay
Lamprey River
Little Harbor
Squamscott River
Winnicut River
Sagamore Creek
Gulf of Maine
Graphic by Peter H. Taylor, Waterview Consulting


Fall 2021


January 2022

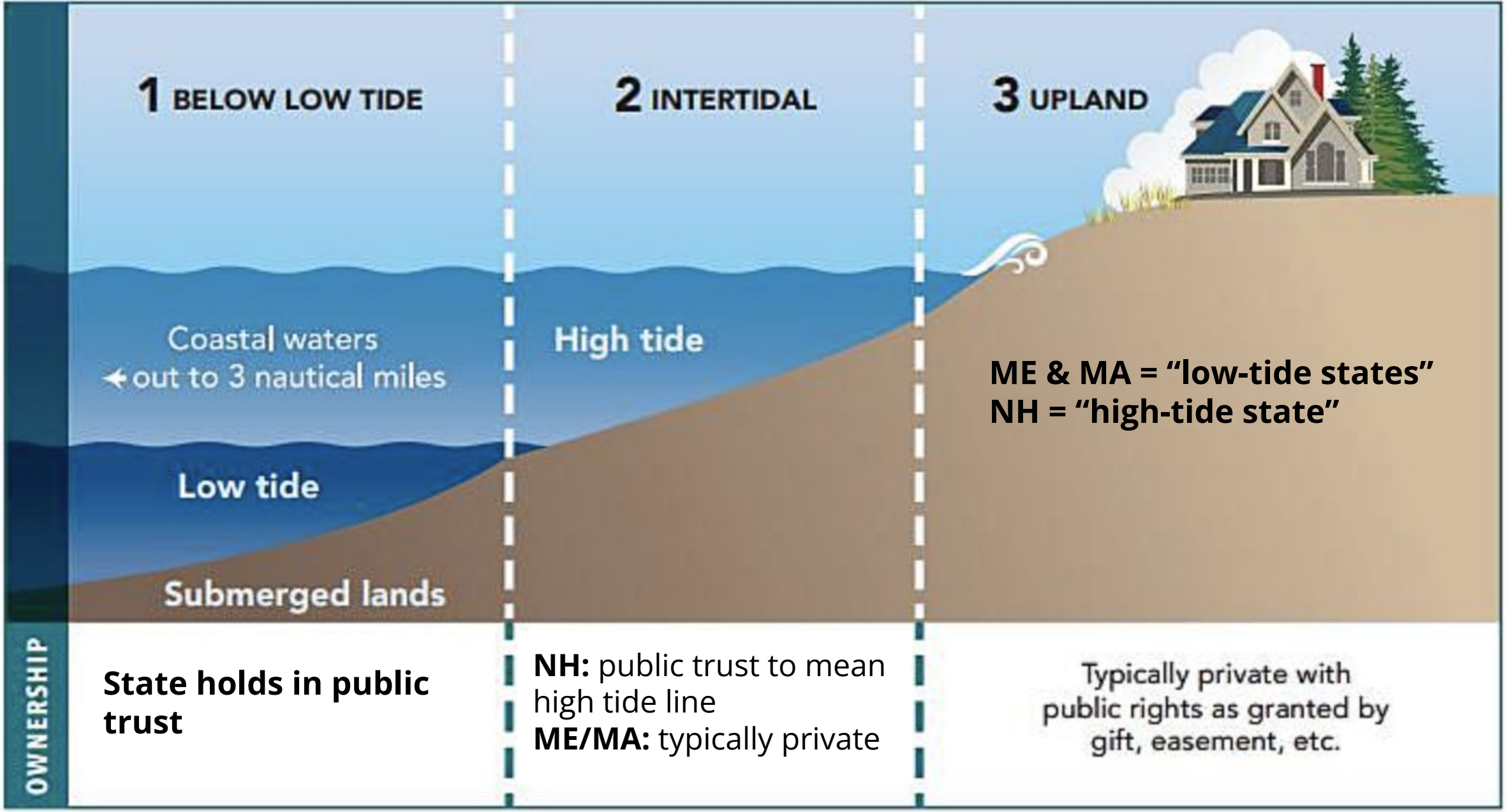


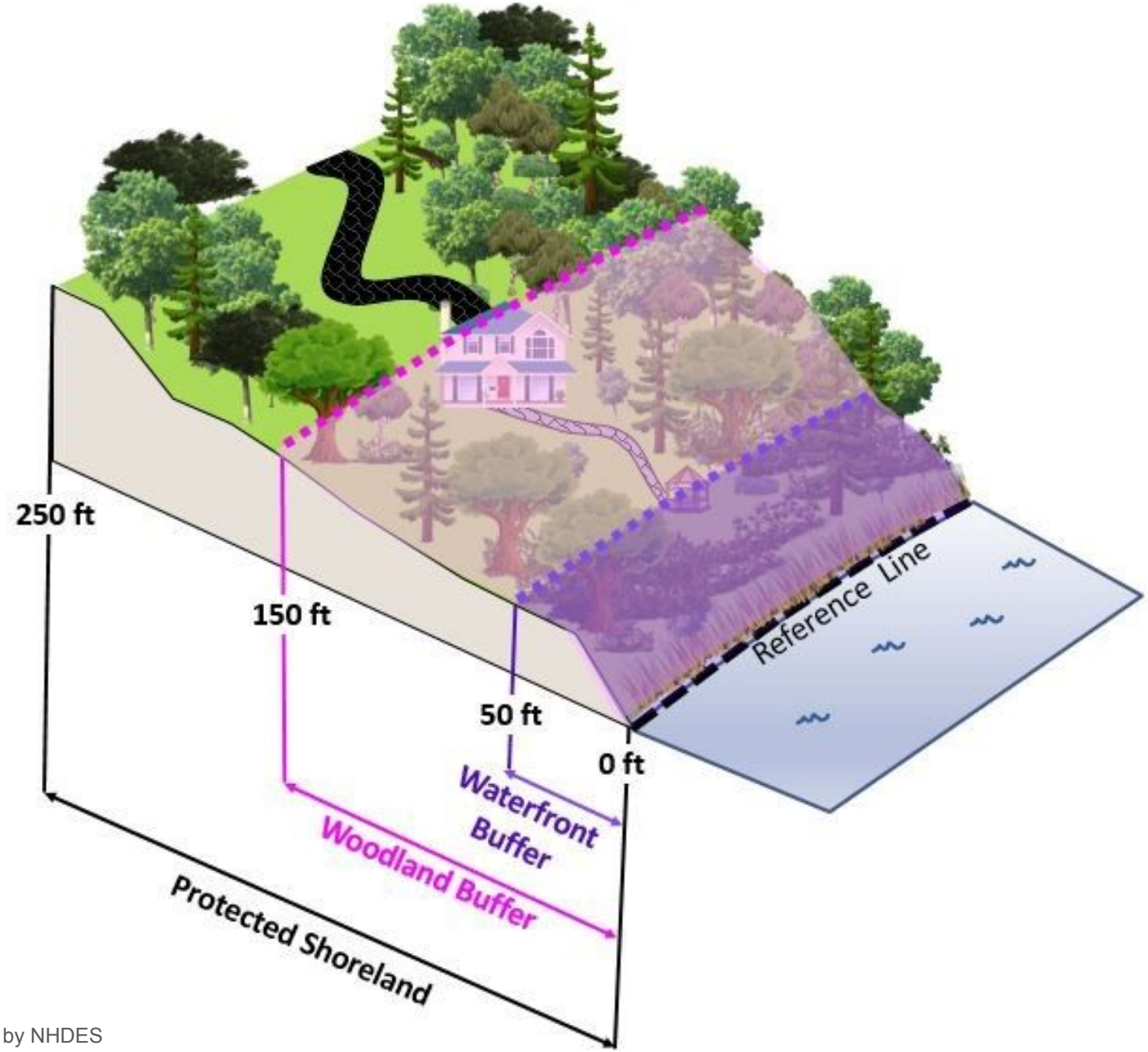
Great Bay
Discovery Center



Why is it helpful to know about tides?




1 BELOW LOW TIDE
2 INTERTIDAL
3 UPLAND
Coastal waters
out to 3 nautical miles
High tide
Low tide
Submerged lands
ME & MA = "low-tide states"
NH = "high-tide state"
OWNERSHIP
State holds in public trust
NH: public trust to mean high tide line
ME/MA: typically private
Typically private with public rights as granted by gift, easement, etc.



Graphic by NHDES

Where to get local information about tides

ANNUAL TIDE TABLE:

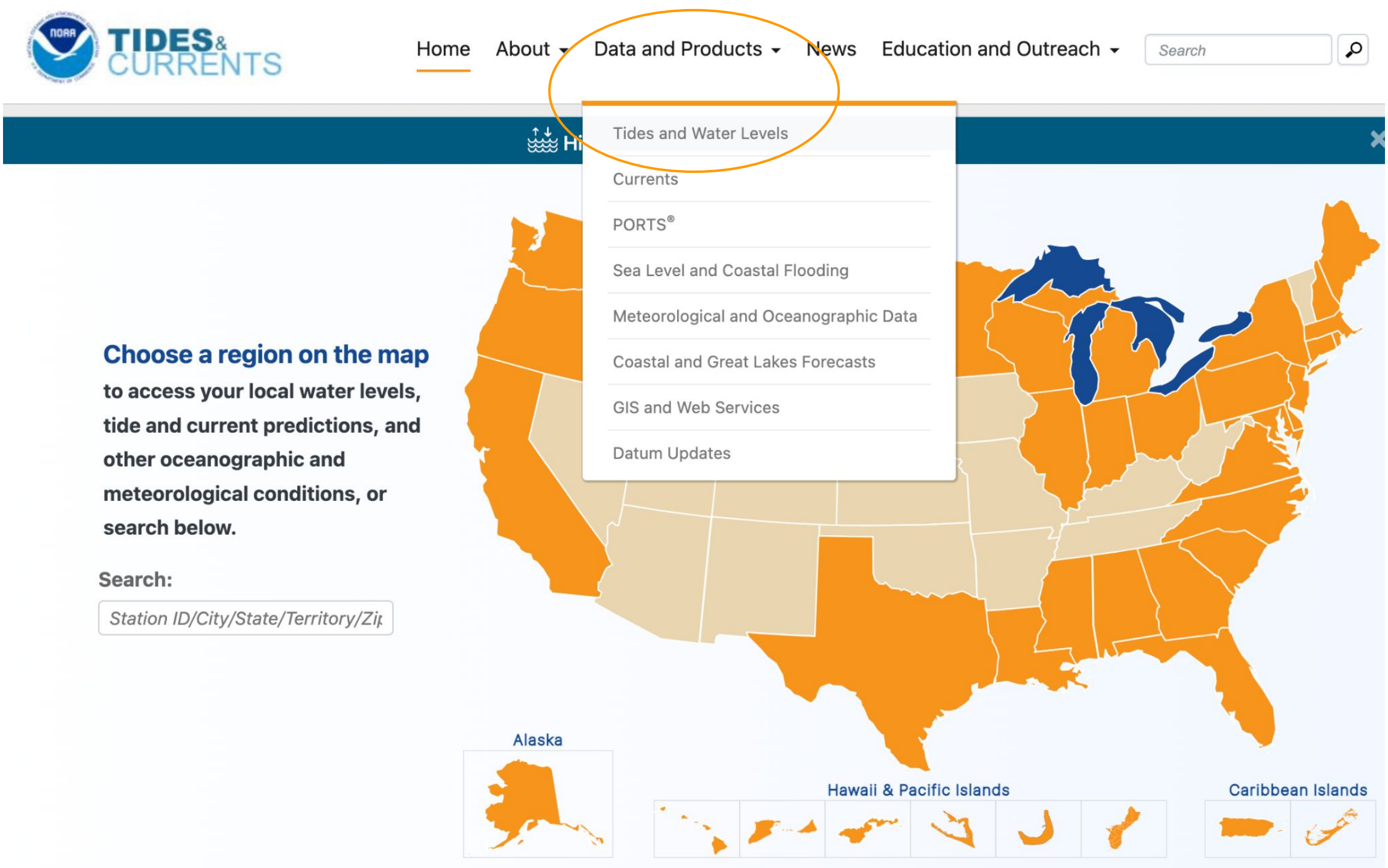
For planning up to 12 months ahead

www.tidesandcurrents.noaa.gov

HYDROGRAPH:

For most accurate 3-day forecasts and real-time tide levels

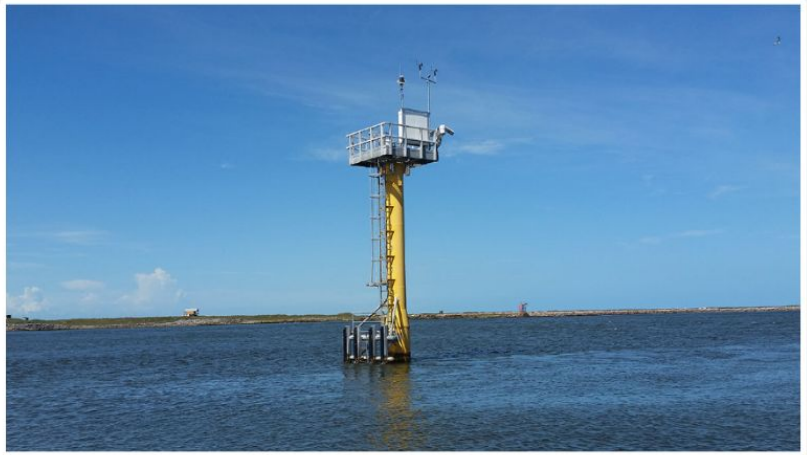
www.water.noaa.gov


TIDES & CURRENTS
Home
About
Data and Products
News
Education and Outreach
Search
Tides and Water Levels
Currents
PORTS®
Sea Level and Coastal Flooding
Meteorological and Oceanographic Data
Coastal and Great Lakes Forecasts
GIS and Web Services
Datum Updates
Choose a region on the map
to access your local water levels, tide and current predictions, and other oceanographic and meteorological conditions, or search below.
Search:
Station ID/City/State/Territory/Zip
Alaska
Hawaii & Pacific Islands
Caribbean Islands

Tides & Great Lakes Water Levels

The rising and falling of the sea, “the tides,” are a phenomenon upon which we can always depend. Caused by the gravitational pull of the moon and the sun, tides are very long-period waves that move through the ocean and progress toward the coastlines where they appear as the regular rise and fall of the sea surface. The same happens in the Great Lakes, although the largest tides in the Great Lakes are only about 5 cm and are mostly impacted by precipitation, evaporation and runoff.

CO-OPS maintains the National Water Level Observation Network (NWLON), an observation network with more than 200 permanent water level stations on the coasts and Great Lakes. This system allows NOAA to provide the **official tidal predictions for the nation.** Accurate water level data is critical for safe and efficient marine navigation and for the protection of infrastructure along the coast. The NWLON also provides the national standards for tide and water level reference datums used for nautical charting, coastal engineering, international treaty regulation, and boundary determination. The NWLON is also widely recognized as the key federal component of the Integrated Ocean Observing System (IOOS).



This NWLON station is specially reinforced to withstand hurricanes and other major storm events. The reinforced stations are better able to keep functioning during these events, providing critical information on water levels and winds that aids emergency response organizations.

NOAA Tide Predictions

NOAA's official tide predictions.

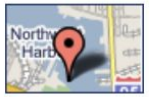
Water Levels

Real-time water level information updated every 6 minutes.

NOAA Tide Predictions

About NOAA Tide Predictions

Choose a station using our Tides and Currents Map, click on a state below, or search by station name, ID, or latitude/longitude.



Or search: Go search help

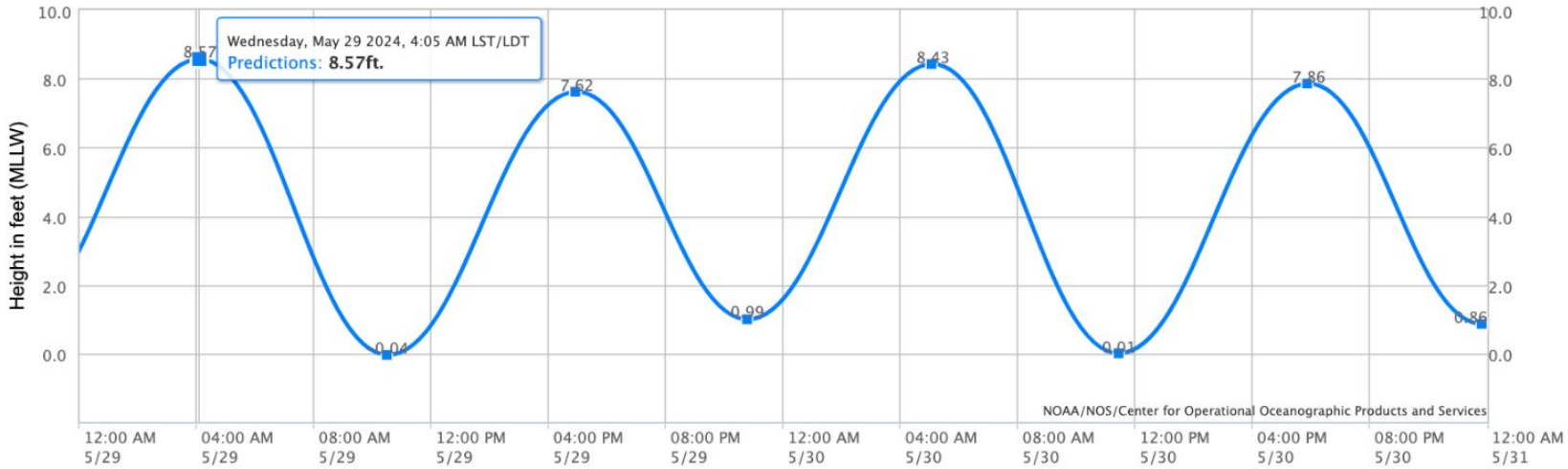
New Hampshire

Name	Id	Lat	Lon	Predictions
MAINE and NEW HAMPSHIRE				
Portsmouth Harbor				
Jaffrey Point	8424601	+43.0567	-70.7133	Subordinate
Gerrish Island	8419688	+43.0667	-70.6967	Subordinate
Fort Point	8423898	+43.0714	-70.7106	**Harmonic**
Kittery Point	8419807	+43.0817	-70.7033	Subordinate
Seavey Island	8419870	+43.0797	-70.7411	**Harmonic**
Portsmouth	8423745	+43.0783	-70.7517	Subordinate
Piscataqua River				
Atlantic Heights	8423635	+43.0900	-70.7633	Subordinate
Dover Point	8421897	+43.1217	-70.8333	Subordinate
Dover, Cocheco River	8420411	+43.1983	-70.8683	**Harmonic**
Salmon Falls River	8419997	+43.1917	-70.8250	Subordinate
Squamscott River RR. Bridge	8422687	+43.0533	-70.9133	Subordinate
Gosport Harbor, Isles of Shoals	8427031	+42.9783	-70.6150	Subordinate
Hampton Harbor	8429489	+42.8950	-70.8167	Subordinate

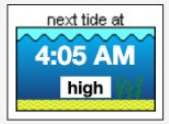
Back to Station Listing | Help

Printer View | Click Here for Annual Published Tide Tables

NOAA/NOS/CO-OPS
Tide Predictions at 8423745, Portsmouth NH
From 2024/05/29 12:00 AM LST/LDT to 2024/05/30 11:59 PM LST/LDT
Subordinate Station | Ref. Station (Portland 8418150) | Time offsets (high: 22 min. low: 17 min.) | Height offsets (high: *0.86 ft. low: *0.86 ft.)



Today's Tides (LST/LDT)



3:11 AM	high	8.69 ft.
9:38 AM	low	-0.08 ft.
4:02 PM	high	7.47 ft.
9:48 PM	low	1.05 ft.

Options for
8423745 Portsmouth

From:
May 29 2024

To:
May 30 2024

Note: The maximum range is 31 days.

Units
Feet

Timezone
LST/LDT

Datum
MLLW

12 Hour/24 Hour Clock
12 Hour

Data Interval
High/Low

Shift Dates
◀ Back 1 Day | Forward 1 Day ▶

Threshold Direction
>=

Threshold Value

Update
Plot Daily
Plot Calendar
Data Only

StationId: 8423745
Source: NOAA/NOS/CO-OPS
Station Type: Subordinate
Time Zone: LST_LDT
Datum: MLLW

NOAA Tide Predictions

Portsmouth, NH,2024

(43 04.7N / 70 45.1W)

Times and Heights of High and Low Waters

October

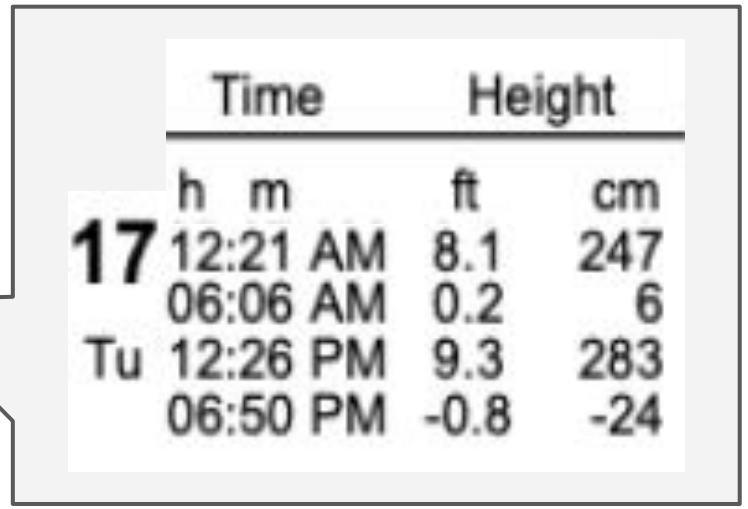
	Time	Height		Time	Height
	h m	ft	cm	h m	ft	cm
1	05:16 AM	0.4	12	**16** 04:28 AM	-0.6	-18
	11:31 AM	8.0	244	10:47 AM	9.3	283
Tu	05:31 PM	0.6	18	W 04:54 PM	-0.9	-27
	11:47 PM	8.1	247	11:14 PM	9.3	283
2	05:50 AM	0.5	15	**17** 05:16 AM	-0.8	-24
	12:05 PM	8.1	247	11:35 AM	9.8	299
W	06:08 PM	0.4	12	Th 05:46 PM	-1.4	-43
●				○		
3	12:24 AM	8.0	244	**18** 12:06 AM	9.4	287
	06:22 AM	0.6	18	06:04 AM	-0.8	-24
Th	12:38 PM	8.2	250	F 12:23 PM	10.0	305
	06:43 PM	0.4	12	06:38 PM	-1.6	-49
4	01:00 AM	7.9	241	**19** 12:59 AM	9.2	280
	06:53 AM	0.7	21	06:53 AM	-0.7	-21
F	01:09 PM	8.2	250	Sa 01:12 PM	10.0	305
	07:16 PM	0.4	12	07:30 PM	-1.5	-46
5	01:34 AM	7.7	235	**20** 01:51 AM	8.9	271
	07:24 AM	0.9	27	07:42 AM	-0.3	-9
Sa	01:39 PM	8.2	250	Su 02:02 PM	9.8	299
	07:50 PM	0.4	12	08:22 PM	-1.2	-37
6	02:09 AM	7.5	229	**21** 02:45 AM	8.5	259
	07:57 AM	1.1	34	08:34 AM	0.1	3
Su	02:11 PM	8.1	247	M 02:54 PM	9.4	287
	08:27 PM	0.5	15	09:18 PM	-0.7	-21
7	02:45 AM	7.2	219	**22** 03:42 AM	8.0	244
	08:33 AM	1.3	40	09:30 AM	0.6	18
M	02:47 PM	8.0	244	Tu 03:52 PM	8.9	271
	09:07 PM	0.7	21	10:18 PM	-0.2	-6
8	03:26 AM	7.0	213	**23** 04:44 AM	7.6	232
	09:13 AM	1.5	46	10:31 AM	1.1	34
Tu	03:29 PM	7.8	238	W 04:55 PM	8.4	256
	09:52 PM	0.8	24	11:22 PM	0.3	9
9	04:13 AM	6.8	207	**24** 05:48 AM	7.3	223
	10:00 AM	1.7	52	11:37 AM	1.4	43
W	04:18 PM	7.7	235	Th 06:01 PM	8.0	244
	10:45 PM	1.0	30	◑		
10	05:07 AM	6.6	201	**25** 12:27 AM	0.6	18
	10:54 AM	1.7	52	06:52 AM	7.2	219
Th	05:14 PM	7.7	235	F 12:44 PM	1.5	46
◐	11:43 PM	1.0	30	07:06 PM	7.8	238
11	06:06 AM	6.7	204	**26** 01:31 AM	0.8	24
	11:53 AM	1.7	52	07:53 AM	7.2	219
F	06:16 PM	7.8	238	Sa 01:50 PM	1.5	46
				08:09 PM	7.7	235
12	12:44 AM	0.9	27	**27** 02:29 AM	0.8	24
	07:09 AM	6.9	210	08:49 AM	7.4	226
Sa	12:57 PM	1.4	43	Su 02:50 PM	1.2	37
	07:22 PM	8.0	244	09:06 PM	7.7	235
13	01:46 AM	0.6	18	**28** 03:19 AM	0.8	24
	08:10 AM	7.3	223	09:36 AM	7.6	232
Su	02:03 PM	1.0	30	M 03:41 PM	1.0	30
	08:26 PM	8.4	256	09:55 PM	7.7	235
14	02:45 AM	0.2	6	**29** 04:02 AM	0.8	24
	09:07 AM	8.0	244	10:18 AM	7.9	241
M	03:05 PM	0.4	12	Tu 04:25 PM	0.7	21
	09:26 PM	8.8	268	10:38 PM	7.7	235
15	03:38 AM	-0.3	-9	**30** 04:39 AM	0.8	24
	09:58 AM	8.6	262	10:55 AM	8.1	247
Tu	04:01 PM	-0.3	-9	W 05:05 PM	0.5	15
	10:21 PM	9.1	277	11:19 PM	7.7	235
				31 05:13 AM	0.8	24
				11:29 AM	8.2	250
				Th 05:41 PM	0.3	9
				11:57 PM	7.7	235

November

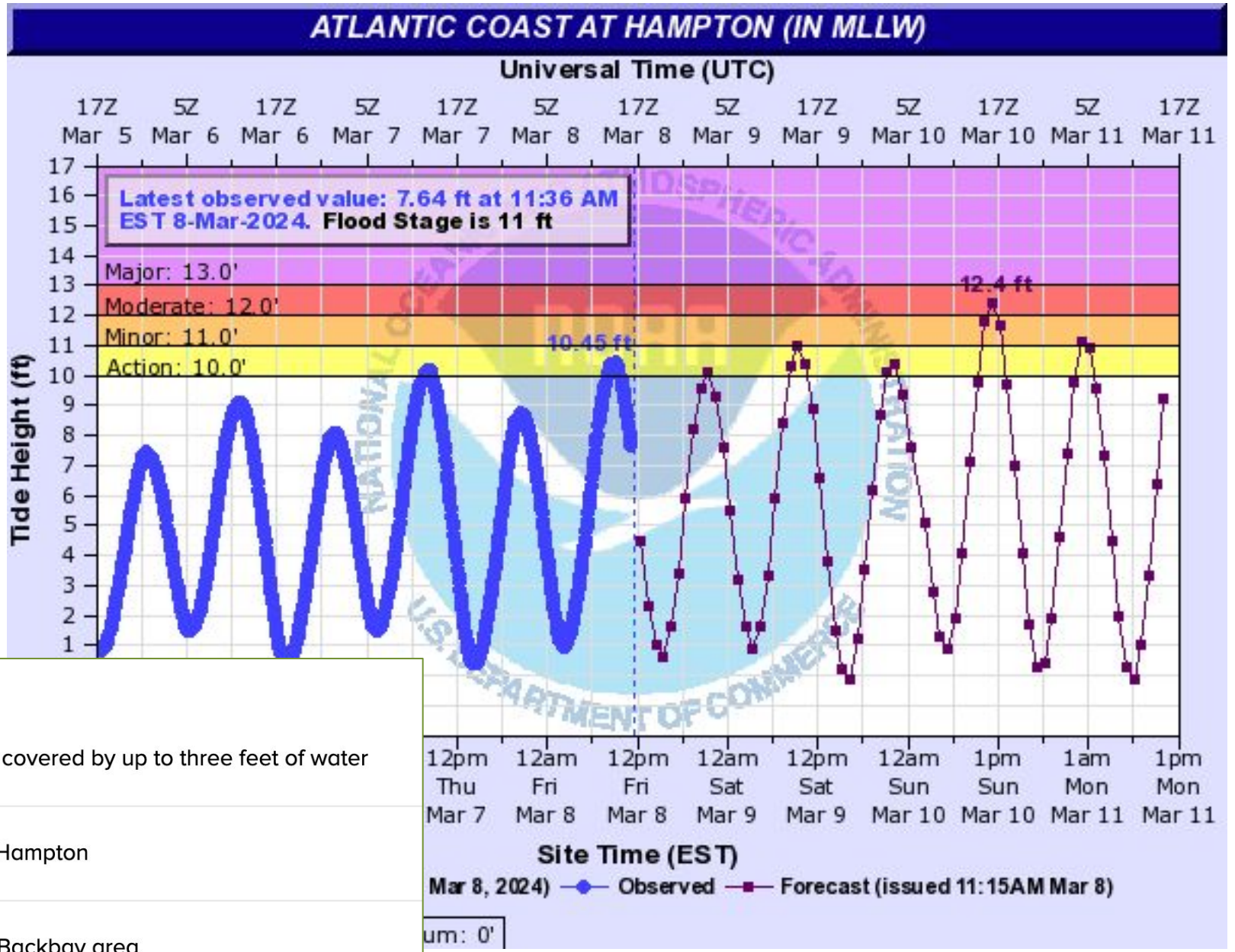
	Time	Height		Time	Height
	h m	ft	cm	h m	ft	cm
1	05:46 AM	0.9	27	**16** 04:41 AM	-0.4	-12
	12:02 PM	8.3	253	11:01 AM	10.0	305
F	06:16 PM	0.2	6	Sa 05:22 PM	-1.5	-46
●				11:43 PM	8.7	265
2	12:34 AM	7.6	232	**17** 05:31 AM	-0.3	-9
	06:19 AM	1.0	30	11:51 AM	9.9	302
Sa	12:35 PM	8.3	253	Su 06:13 PM	-1.4	-43
	06:50 PM	0.2	6			
3	01:10 AM	7.5	229	**18** 12:35 AM	8.5	259
	05:52 AM	1.1	34	06:22 AM	0.0	0
Su	12:08 PM	8.3	253	M 12:41 PM	9.6	293
	06:25 PM	0.2	6	07:05 PM	-1.0	-30
4	12:46 AM	7.3	223	**19** 01:27 AM	8.2	250
	06:28 AM	1.2	37	07:13 AM	0.4	12
M	12:42 PM	8.2	250	Tu 01:33 PM	9.2	280
	07:03 PM	0.3	9	07:58 PM	-0.6	-18
5	01:23 AM	7.2	219	**20** 02:22 AM	7.8	238
	07:06 AM	1.3	40	08:07 AM	0.8	24
Tu	01:20 PM	8.2	250	W 02:28 PM	8.7	265
	07:44 PM	0.4	12	08:55 PM	-0.1	-3
6	02:04 AM	7.0	213	**21** 03:19 AM	7.5	229
	07:48 AM	1.4	43	09:06 AM	1.1	34
W	02:04 PM	8.1	247	Th 03:27 PM	8.2	250
	08:30 PM	0.5	15	09:53 PM	0.3	9
7	02:51 AM	6.9	210	**22** 04:18 AM	7.3	223
	08:37 AM	1.5	46	10:07 AM	1.4	43
Th	02:54 PM	8.0	244	F 04:28 PM	7.8	238
	09:22 PM	0.6	18	10:51 PM	0.7	21
8	03:46 AM	6.9	210	**23** 05:16 AM	7.2	219
	09:32 AM	1.5	46	11:10 AM	1.5	46
F	03:51 PM	7.9	241	Sa 05:29 PM	7.5	229
	10:18 PM	0.6	18	◑ 11:47 PM	0.9	27
9	04:44 AM	7.0	213	**24** 06:12 AM	7.2	219
	10:33 AM	1.4	43	12:13 PM	1.5	46
Sa	04:53 PM	7.9	241	Su 06:28 PM	7.3	223
◐	11:16 PM	0.5	15			
10	05:43 AM	7.3	223	**25** 12:41 AM	1.0	30
	11:37 AM	1.1	34	07:05 AM	7.4	226
Su	05:58 PM	8.0	244	M 01:13 PM	1.3	40
				07:26 PM	7.2	219
11	12:15 AM	0.3	9	**26** 01:32 AM	1.1	34
	06:42 AM	7.8	238	07:53 AM	7.6	232
M	12:43 PM	0.7	21	Tu 02:06 PM	1.1	34
	07:03 PM	8.2	250	08:18 PM	7.2	219
12	01:14 AM	0.1	3	**27** 02:17 AM	1.1	34
	07:39 AM	8.4	256	08:37 AM	7.8	238
Tu	01:46 PM	0.1	3	W 02:53 PM	0.8	24
	08:05 PM	8.4	256	09:05 PM	7.2	219
13	02:09 AM	-0.2	-6	**28** 02:58 AM	1.1	34
	08:32 AM	9.0	274	09:16 AM	8.0	244
W	02:44 PM	-0.5	-15	Th 03:34 PM	0.5	15
	09:02 PM	8.7	265	09:49 PM	7.2	219
14	03:01 AM	-0.4	-12	**29** 03:36 AM	1.1	34
	09:22 AM	9.5	290	09:53 AM	8.2	250
Th	03:38 PM	-1.1	-34	F 04:13 PM	0.3	9
	09:57 PM	8.8	268	10:30 PM	7.3	223
15	03:51 AM	-0.5	-15	**30** 04:12 AM	1.1	34
	10:11 AM	9.9	302	10:30 AM	8.3	253
F	04:30 PM	-1.4	-43	Sa 04:50 PM	0.2	6
○	10:50 PM	8.8	268	11:09 PM	7.3	223

December

	Time	Height		Time	Height
	h m	ft	cm	h m	ft	cm
1	04:48 AM	1.1	34	**16** 05:15 AM	0.1	3
	11:06 AM	8.4	256	11:36 AM	9.6	293
Su	05:27 PM	0.1	3	M 06:00 PM	-1.1	-34
●	11:48 PM	7.3	223			
2	05:25 AM	1.1	34	**17** 12:21 AM	8.1	247
	11:43 AM	8.4	256	06:06 AM	0.2	6
M	06:05 PM	0.0	0	Tu 12:26 PM	9.3	283
				06:50 PM	-0.8	-24
3	12:26 AM	7.2	219	**18** 01:10 AM	7.9	241
	06:04 AM	1.1	34	06:55 AM	0.4	12
Tu	12:21 PM	8.5	259	W 01:15 PM	9.0	274
	06:44 PM	0.0	0	07:38 PM	-0.5	-15
4	01:05 AM	7.2	219	**19** 01:59 AM	7.7	235
	06:45 AM	1.1	34	07:45 AM	0.7	21
W	01:02 PM	8.5	259	Th 02:04 PM	8.6	262
	07:26 PM	0.0	0	08:26 PM	-0.1	-3
5	01:47 AM	7.2	219	**20** 02:49 AM	7.5	229
	07:30 AM	1.1	34	08:37 AM	1.0	30
Th	01:47 PM	8.4	256	F 02:55 PM	8.1	247
	08:12 PM	0.1	3	09:15 PM	0.3	9
6	02:33 AM	7.2	219	**21** 03:39 AM	7.4	226
	08:19 AM	1.1	34	09:31 AM	1.2	37
F	02:37 PM	8.3	253	Sa 03:49 PM	7.7	235
	09:01 PM	0.1	3	10:04 PM	0.6	18
7	03:25 AM	7.3	223	**22** 04:30 AM	7.3	223
	09:15 AM	1.0	30	10:27 AM	1.4	43
Sa	03:32 PM	8.2	250	Su 04:43 PM	7.2	219
	09:54 PM	0.1	3	◑ 10:53 PM	1.0	30
8	04:20 AM	7.6	232	**23** 05:20 AM	7.3	223
	10:15 AM	0.9	27	11:25 AM	1.4	43
Su	04:33 PM	8.0	244	M 05:39 PM	6.9	210
◐	10:49 PM	0.2	6	11:42 PM	1.2	37
9	05:17 AM	7.9	241	**24** 06:10 AM	7.3	223
	11:18 AM	0.7	21	12:23 PM	1.4	43
M	05:36 PM	7.9	241	Tu 06:37 PM	6.7	204
	11:45 PM	0.2	6			
10	06:14 AM	8.2	250	**25** 12:33 AM	1.4	43
	12:23 PM	0.4	12	07:00 AM	7.4	226
Tu	06:41 PM	7.9	241	W 01:21 PM	1.2	37
				07:34 PM	6.6	201
11	12:44 AM	0.2	6	**26** 01:25 AM	1.5	46
	07:12 AM	8.6	262	07:49 AM	7.5	229
W	01:28 PM	-0.1	-3	Th 02:14 PM	1.0	30
	07:46 PM	7.9	241	08:28 PM	6.7	204
12	01:43 AM	0.1	3	**27** 02:13 AM	1.5	46
	08:08 AM	9.0	274	08:35 AM	7.7	235
Th	02:29 PM	-0.5	-15	F 03:01 PM	0.7	21
	08:47 PM	8.1	247	09:16 PM	6.8	207
13	02:39 AM	0.1	3	**28** 02:58 AM	1.4	43
	09:02 AM	9.4	287	09:18 AM	8.0	244
F	03:25 PM	-0.9	-27	Sa 03:43 PM	0.4	12
	09:44 PM	8.2	250	10:01 PM	6.9	210
14	03:32 AM	0.0	0	**29** 03:40 AM	1.3	40
	09:54 AM	9.6	293	10:00 AM	8.2	250
Sa	04:18 PM	-1.2	-37	Su 04:24 PM	0.2	6
	10:38 PM	8.2	250	10:43 PM	7.1	216
15	04:24 AM	0.0	0	**30** 04:21 AM	1.1	34
	10:45 AM	9.6	293	10:41 AM	8.4	256
Su	05:10 PM	-1.2	-37	M 05:04 PM	0.0	0
○	11:30 PM	8.2	250	● 11:25 PM	7.2	219
				31 05:02 AM	0.9	27
				11:22 AM	8.6	262
				Tu 05:45 PM	-0.2	-6



Hampton hydrograph



Flood Impacts

13.3 - Cars flooded with low lying Backbay roads in Hampton covered by up to three feet of water

12 - Roads flooded up to a foot deep in the Backbay area of Hampton

11 - Onset of flooding along low lying streets in the Hampton Backbay area

Seavey Island hydrograph

Flood Impacts

13.5 - Record flooding. Expect inundation of roads and buildings along the waterfront and back bays that has never occurred in previous events. Several vulnerable coastal roads inundated with several feet of water. Route 1 in Portsmouth inundated near Sagamore Creek. Route 1B inundated in multiple locations on all access points to New Castle.

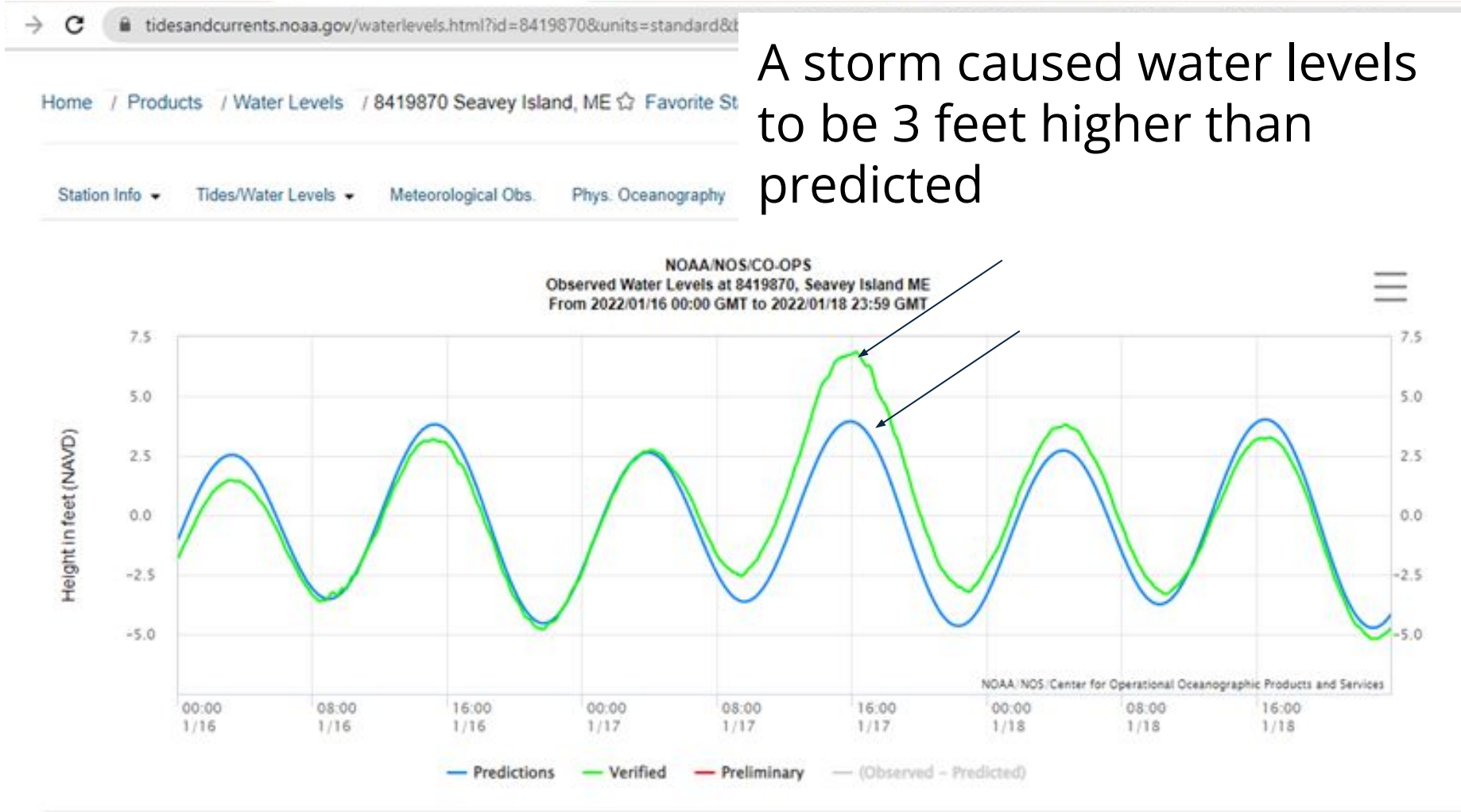
13 - Near flood of record with major widespread coastal flooding expected. Numerous buildings inundated along Portsmouth waterfront and the North Mill Pond area. Residential roads in Kittery flooded, isolating neighborhoods. Route 1B on the causeway and Wentworth Road leading to New Castle are most imapcted.

12.5 - Flooding impacts roads in New Castle with water approaching the 1B causeway and Wentworth Road.

12 - Moderate flooding of low lying coastal areas in Kittery, Portsmouth, New Castle, and Newington. Flooding expands in Portsmouth with numerous streets inundated along the waterfront. Some commercial and residential buildings in Portsmouth and Kittery impacted.

11.5 - Flooding impacts Ceres and Mechanic Street in Portsmouth.

11 - Minor flooding of low lying coastal locations in Kittery, Portsmouth, New Castle, and Newington. Vulnerable waterfront pier locations, low lying causeways, and roads could see up to 1 foot of inundation.

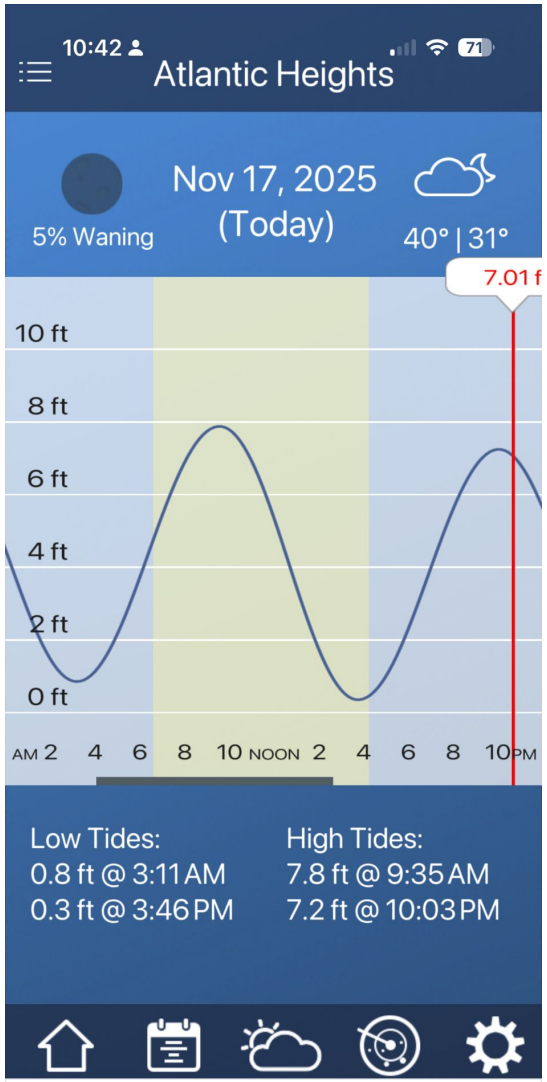


A storm caused water levels to be 3 feet higher than predicted

Tide info on the go







Rising sea levels

Local sea level rose about **8.5 inches** over the last century

Future projections:

- 0.8’ by 2040
- 1.4’ by 2060
- 3.4’ by 2100
  (compared to 2000 levels)



Hampton Tide Gauge Study

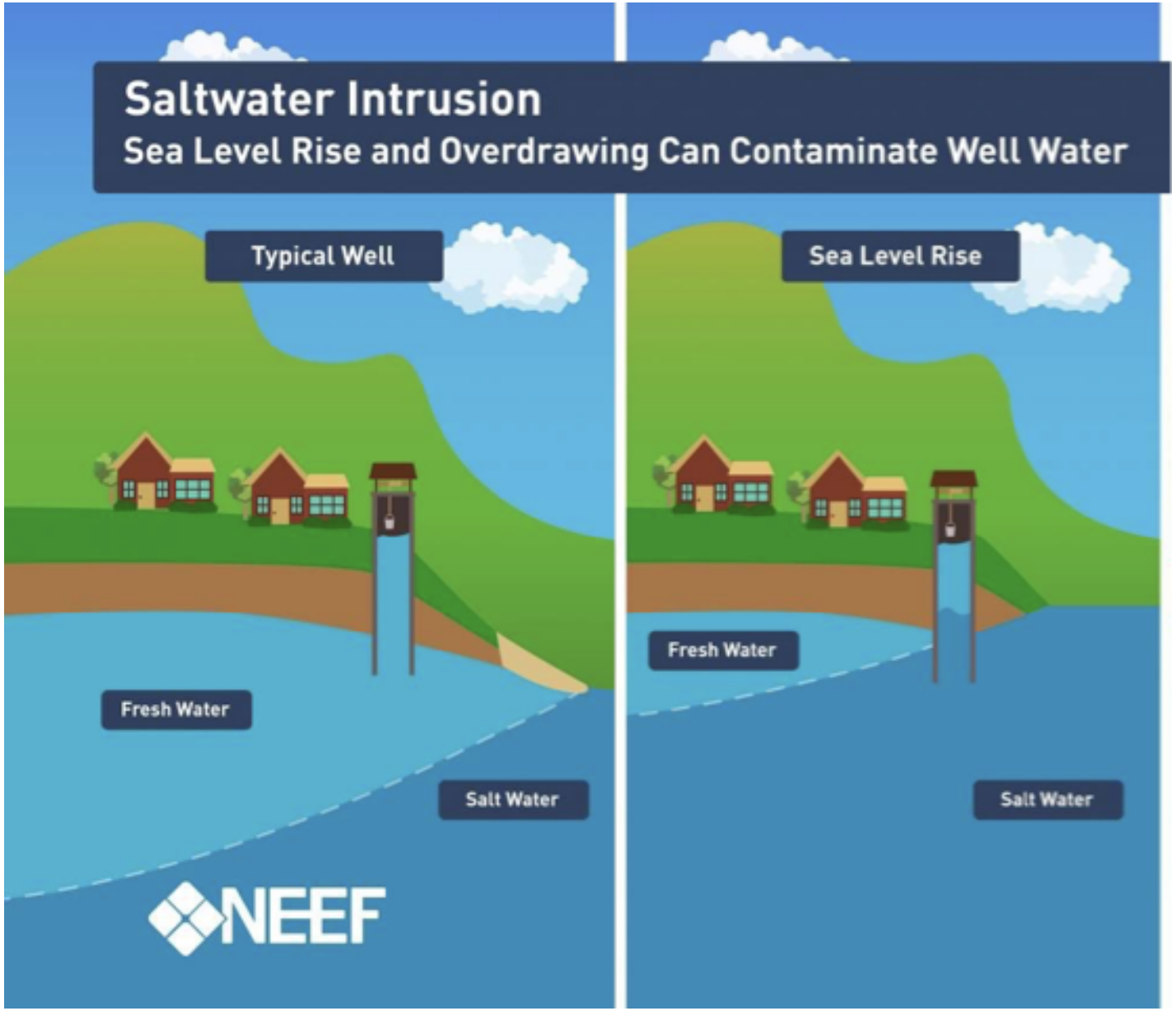
- At least 1 high tide over 10 feet was recorded on **30-40% of days each year**
- High tide flooding occurs approximately **3x more frequently than NOAA tide charts predict**

(Chin and Howard, 2021)



Groundwater rise

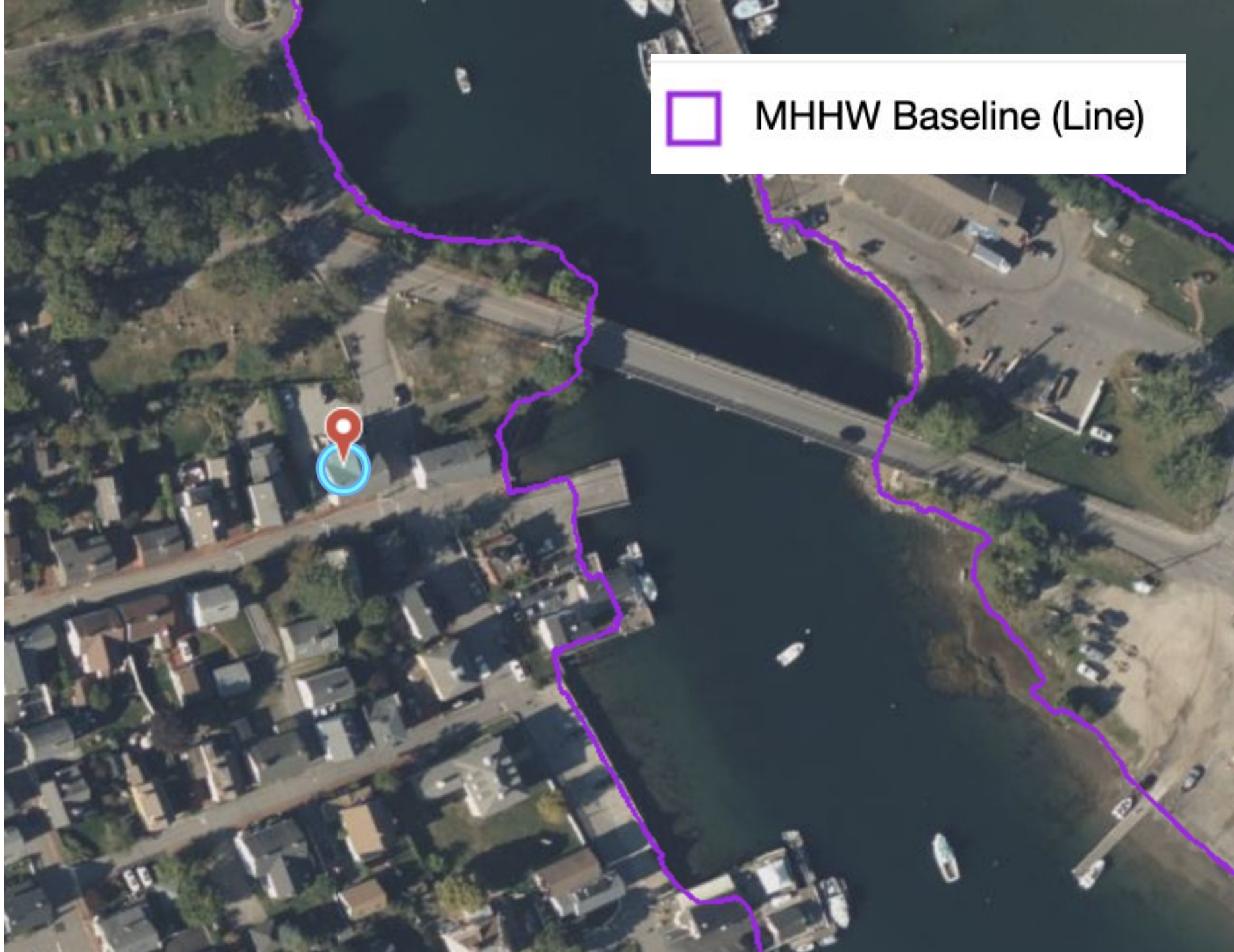




RESOURCE: NH Coastal Viewer

Oceans and Coasts > Sea Level Rise Scenarios

Purple line = MHHW - Mean Higher High Water (average of the higher high tide)



RESOURCE: NH Coastal Viewer

Oceans and Coasts > Sea Level Rise Scenarios

+2’ sea-level rise



RESOURCE: NH Coastal Viewer

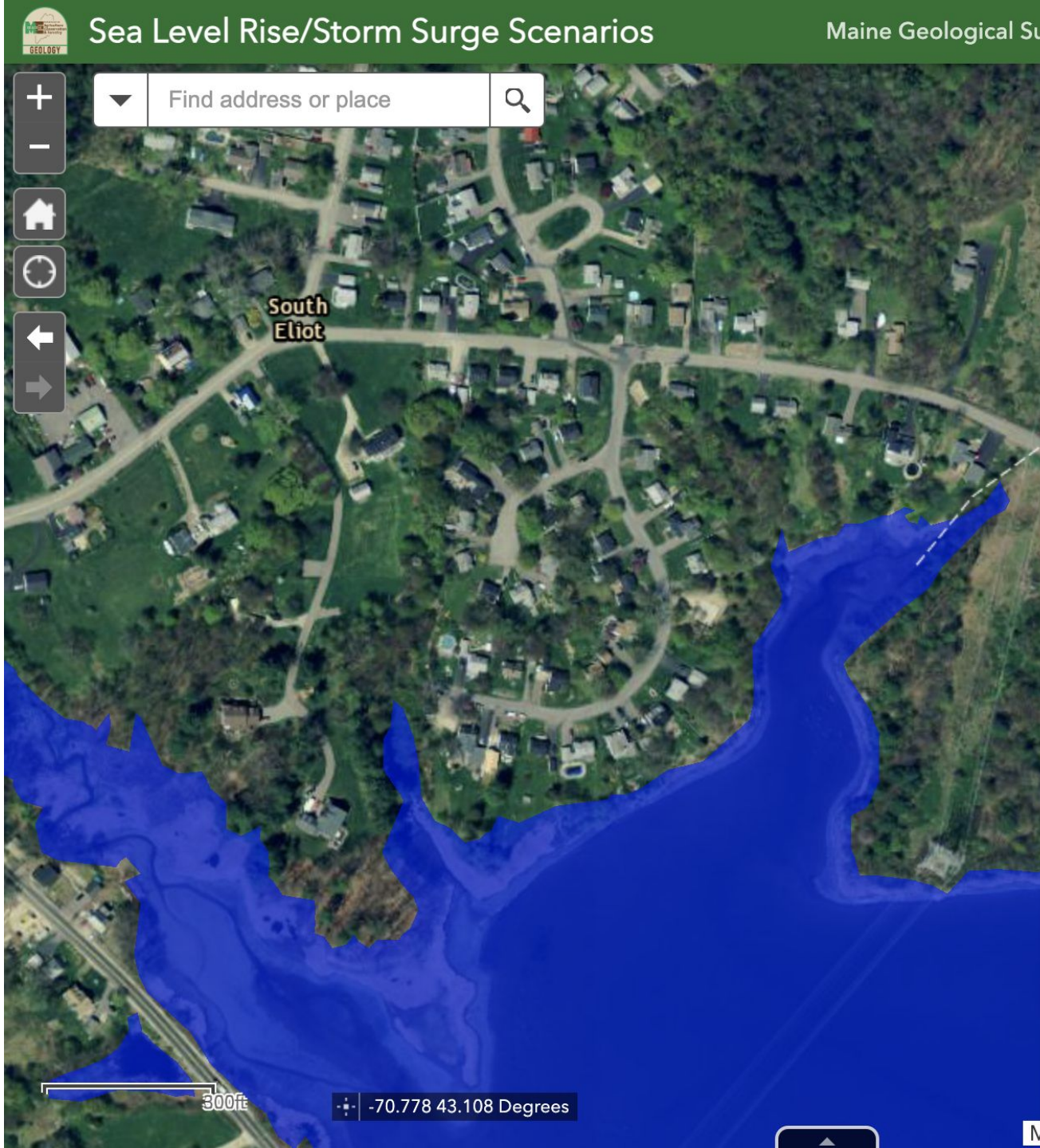
Oceans and Coasts > Sea Level Rise Scenarios

+2’ sea-level rise + storm



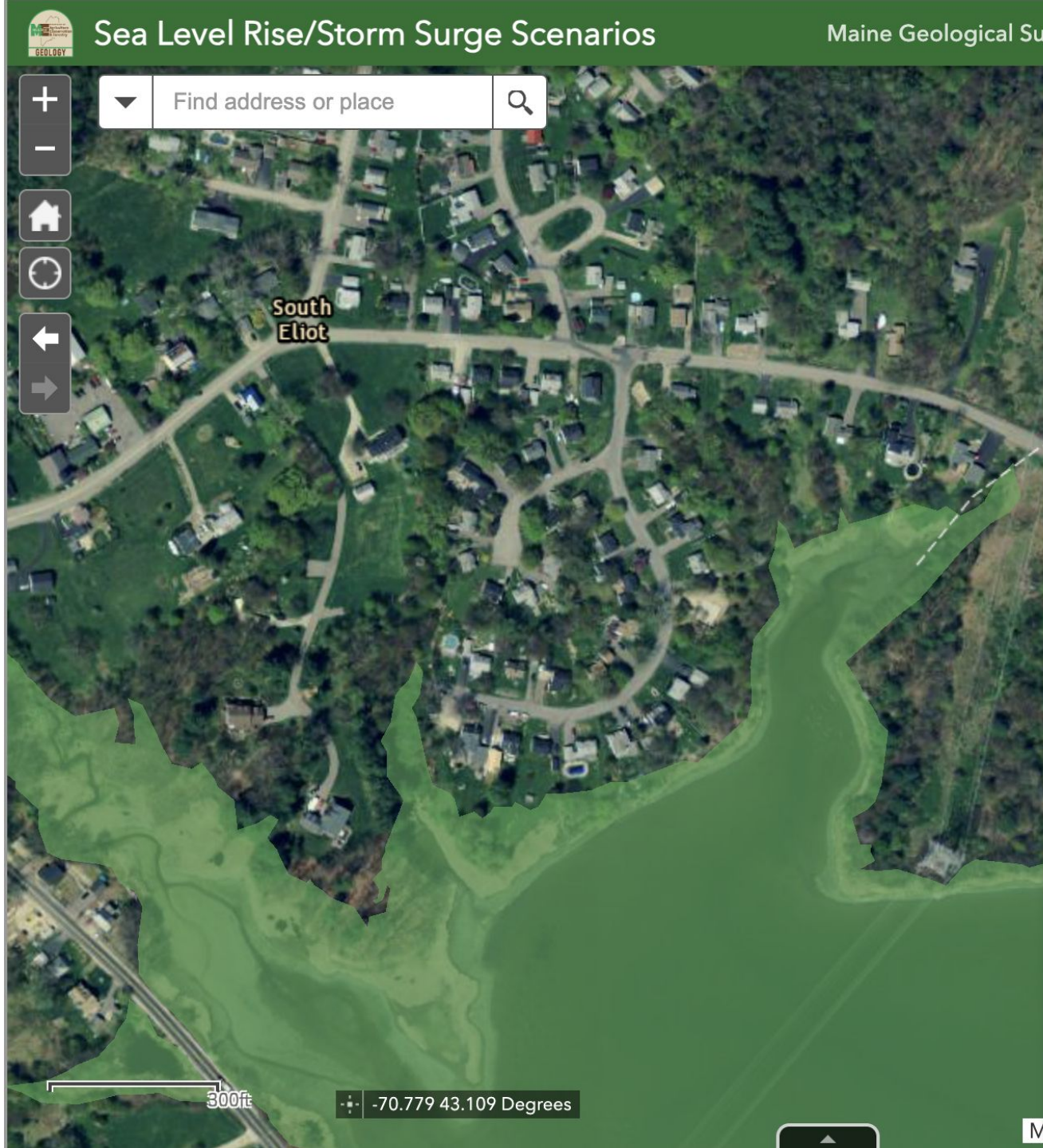
RESOURCE:
ME Sea Level Rise Mapper

Highest Astronomical Tide (HAT)



RESOURCE:
ME Sea Level Rise Mapper

Highest Astronomical Tide (HAT)
+1.6’ of sea-level rise



RECAP: Tides and Water Levels

Knowing local tide information is helpful for a variety of reasons

High tide extent is increasing with sea level rise, and frequency of flooding is increasing

A variety of resources and tools are available



QUESTIONS?



Part 2B. Determining Flood Risk



Poll Question

What percent of National Flood Insurance Program claims are from damaged buildings located outside of a high-risk flood zone?

a. 10%
b. 20%
c. 30%
d. 40%
e. 50%

Poll Question

What percent of National Flood Insurance Program claims are from damaged buildings located outside of a high-risk flood zone?

a. 10%
b. 20%
c. 30%
d. 40%
e. 50%



Flood Risk

- Anywhere it can rain, it can flood.
- Everyone lives in a flood zone with some level of flood risk.
- A property does not have to be near water to flood.
- Floods can be caused by many sources
- Changes over time



FEMA Flood Insurance Rate Map

- Developed since 1970s
- Shows the 1% annual chance flood areas
- May include base flood elevations
- Map updates occur in developed/high-risk area
- Do not include future conditions



The 1% Annual Chance Flood

- National standard used by the NFIP for regulating development and flood insurance requirements.
- Sometimes called the base flood or the “100-year” flood.
- 1% annual chance flood on the FIRM is called the Special Flood Hazard Area.



Base Flood Elevation (BFE)

- Height (in feet) of flood water during 1% annual chance flood event
- BFE is height (in feet) above a vertical datum (NAVD88)
- Vertical datum is a starting reference point for elevations; consistent with each other



Low Flood Risk

- Flooding is possible
- Zone X on map
- Floodplain regulations don’t apply
- Flood insurance not mandatory
- NFIP flood insurance is available



Moderate Flood Risk

- 0.2% chance flood (500-year)
- Shaded Zone X on map
- Floodplain regulations may not apply
- Flood insurance not mandatory
- NFIP flood insurance is available



High Flood Risk

- 1% annual chance flood (100-year)
- Zone A, AE, or ZO on map
- Floodplain regulations apply
- Flood insurance is mandatory
- NFIP flood insurance is available



High Flood Risk (with wave action)

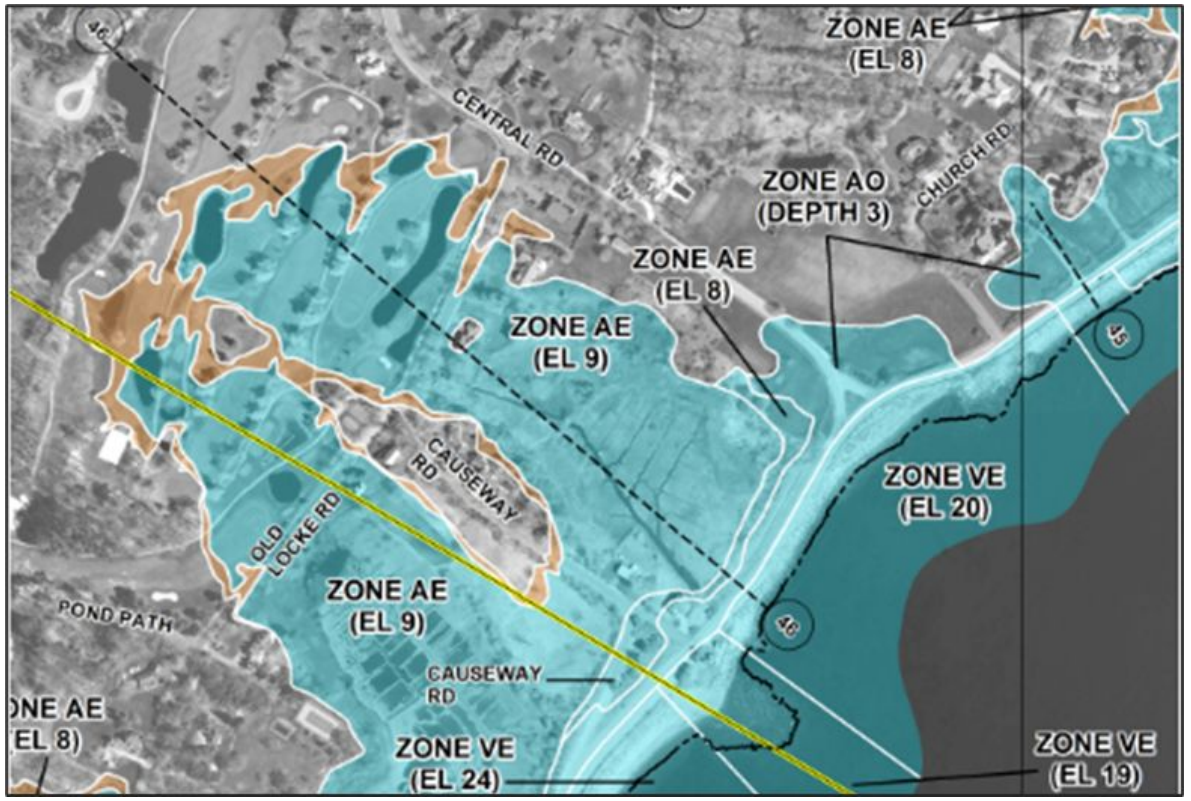
- 1% annual chance flood (100-year)
- Zone VE on map
- Floodplain regulations apply
- Flood insurance is mandatory
- NFIP flood insurance is available



Determining Flood Risk

FEMA Flood Insurance Rate Maps are the source for:

- Federal lender requirements
- NH and ME flood disclosure
- Development requirements within floodplain areas



Lender Requirements and Notification of Flood Risk

- Flood Disaster Protection Act of 1973
- Lender regulations
- Lender flood determination and insurance responsibilities



NH Flood Disclosure Notification

Effective 7/19/24: RSA 477:4-d Notification Required

- For a 1 to 4 family dwelling, the seller shall disclose, in writing:
  - Information relative to the property's location within a flood zone and whether or not the seller has flood insurance.

- The buyer shall acknowledge receipt of the disclosure by signing a copy of the disclosure

NH Flood Disclosure Notification

Effective 1/1/25: RSA 477:4-a:

Flood: The buyer is encouraged to:

- determine whether separate flood insurance is required, and
- consult the FEMA flood maps to determine if the property is in a designated flood zone.

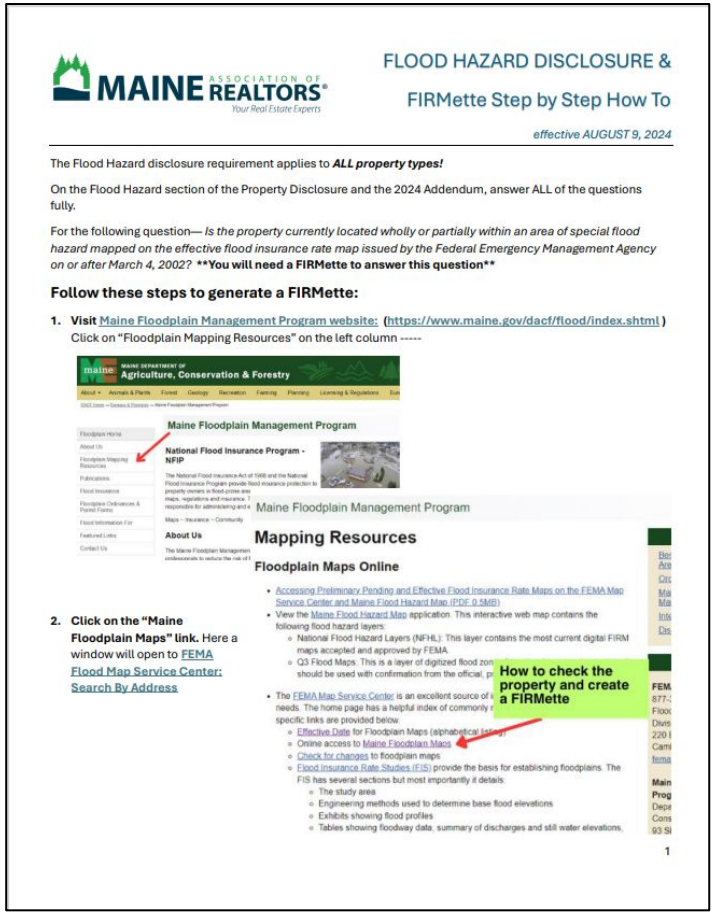


Maine Flood Disclosure Notification

Effective 2025: Flood hazard. Information regarding potential flood risks, including:

- Seller provides the information to the purchaser about whether the property is within a FEMA floodplain area, the flood zone, and a copy of the map.

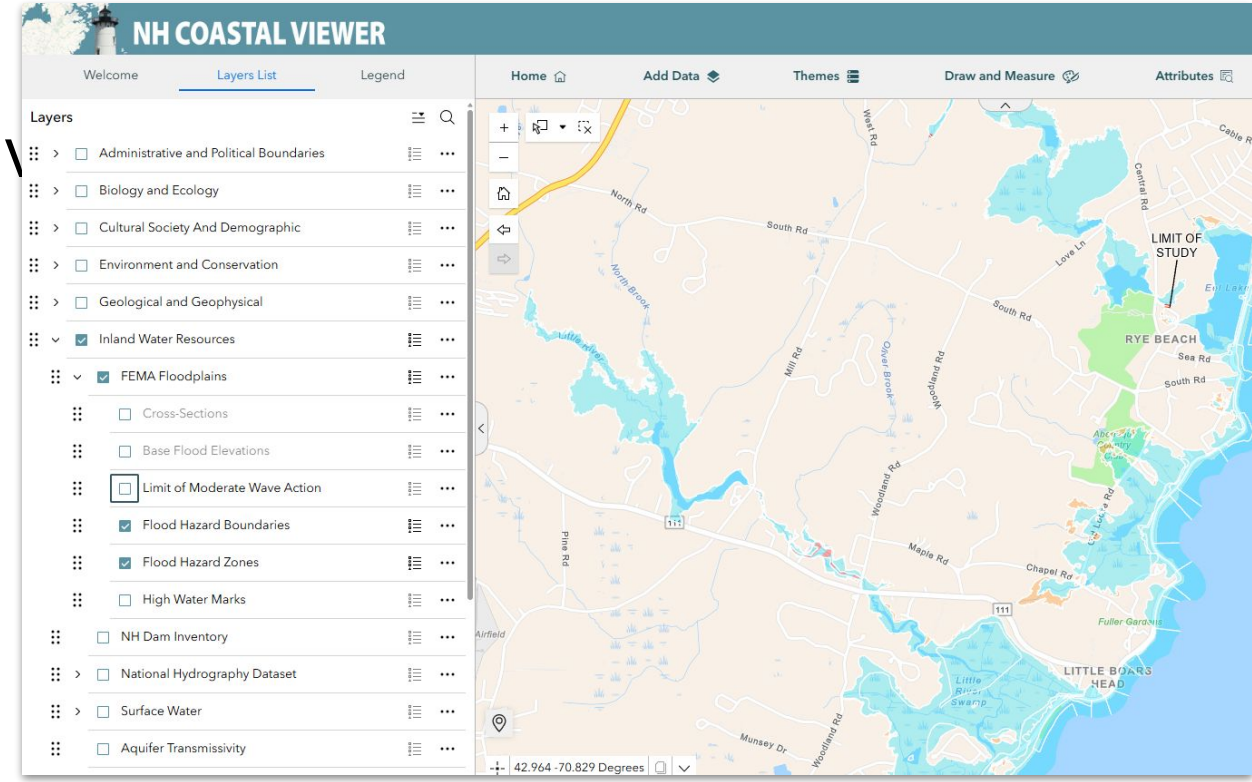
- During the time that the prospective seller has owned the property:
  - Any flood events
  - Any flood-related damage
  - Any flood insurance claims and date of each claim; and
  - Any past disaster-related aid and date of each payment.



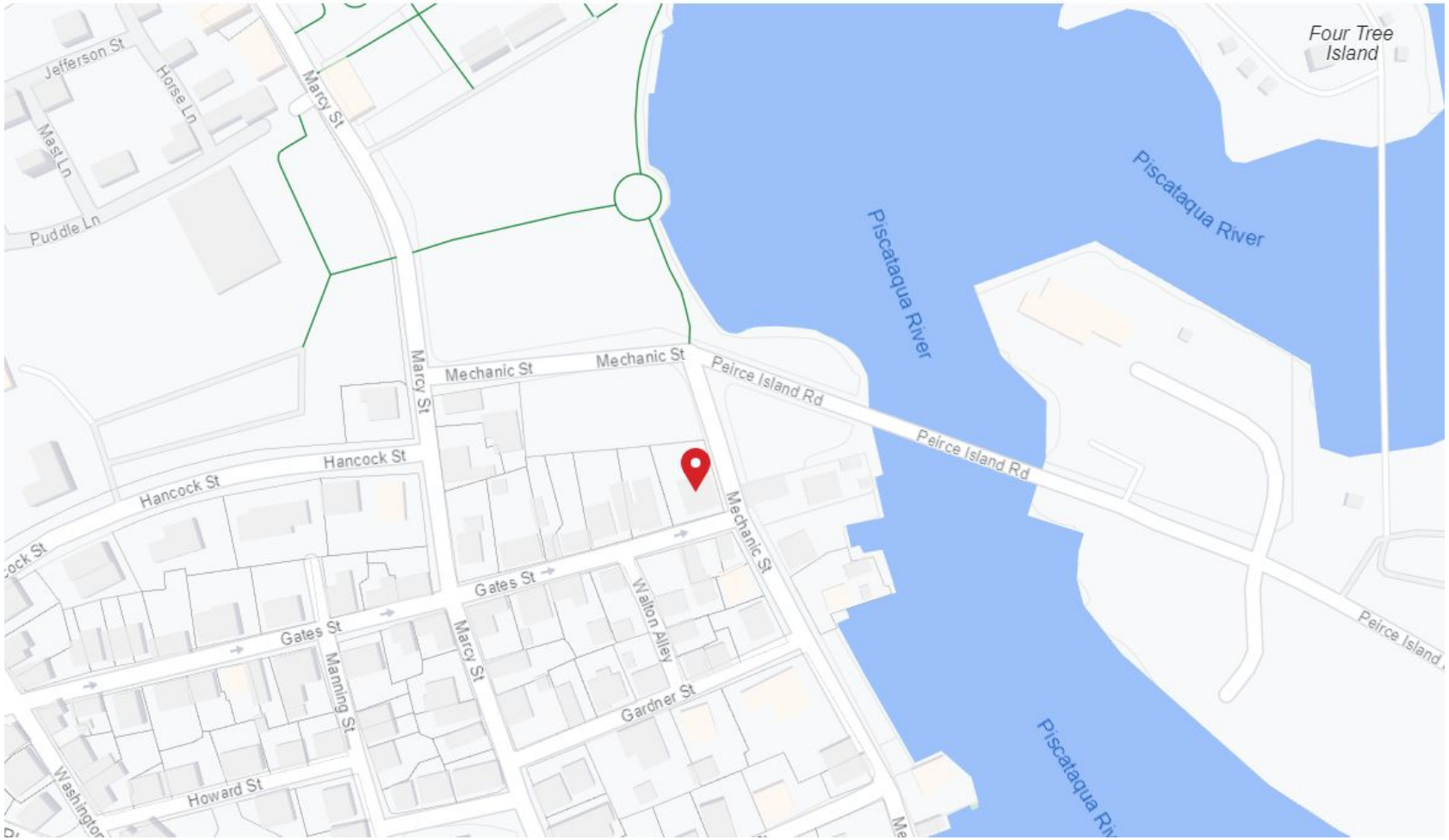
https://www.mainerealtors.com/wp-content/uploads/2024/08/FLOOD-Requirement-FIRMette-How-To-2024.pdf

Where to View FEMA Maps

- FEMA Map Service Center
  - Historic, Preliminary, and Effectiv FIRMs and FIS
  - GIS Data
- FEMA National Flood Hazard Viewer
- NH Coastal Viewer
- ME Flood Hazard Map Viewer



Mapping Demonstration: 213 Gates St. Portsmouth, NH





FEMA Map Service Center

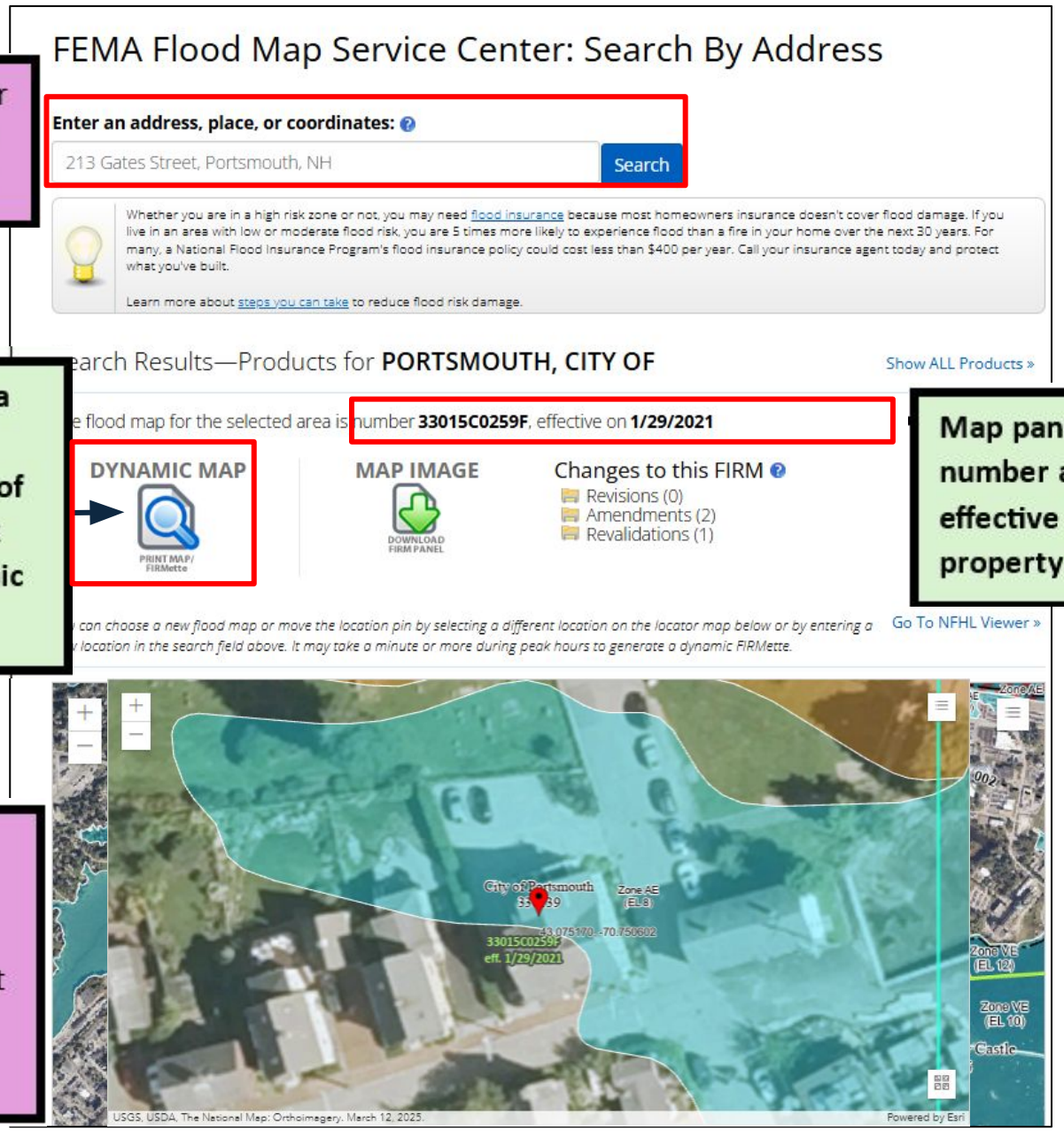
Step 1. Go to the FEMA Map Service Center at: https://msc.fema.gov/portal/home

Step 2. Enter address and click Search

To create a printable PDF copy of map, click on Dynamic Map

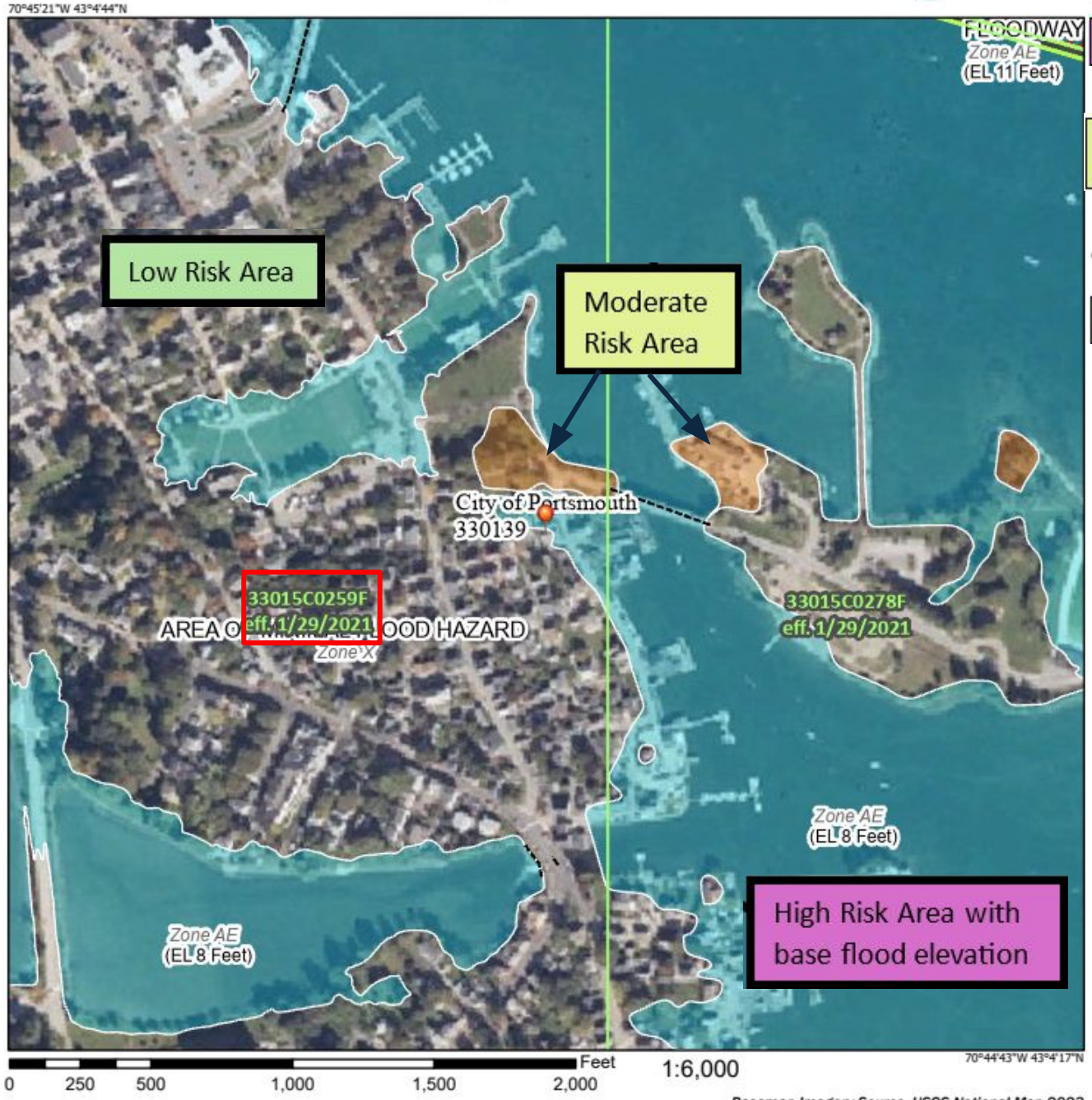
Step 3. Verify location is correct (zoom in/out)

Map panel number and map effective date for property



National Flood Hazard Layer FIRMette

FEMA



Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

High Risk

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

Moderate Risk

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X

OTHER AREAS OF FLOOD HAZARD
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

Low Risk

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

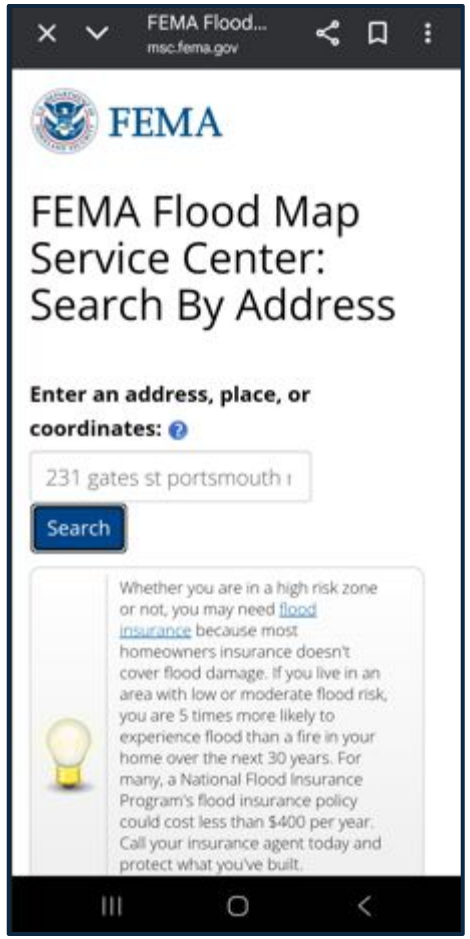
N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/21/2024 at 10:31 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.


FEMA Flood...
msc.fema.gov
FEMA
FEMA Flood Map Service Center: Search By Address
Enter an address, place, or coordinates:
231 gates st portsmouth
Search
Whether you are in a high risk zone or not, you may need flood insurance because most homeowners insurance doesn't cover flood damage. If you live in an area with low or moderate flood risk, you are 5 times more likely to experience flood than a fire in your home over the next 30 years. For many, a National Flood Insurance Program's flood insurance policy could cost less than $400 per year. Call your insurance agent today and protect what you've built.


Search Results—Products for
PORTSMOUTH, CITY OF
Show ALL Products »
The flood map for the selected area is number 33015C0259F, effective on 1/29/2021
DYNAMIC MAP
PRINT MAP/ FIRMette
MAP IMAGE
DOWNLOAD FIRM PANEL
Changes to this FIRM
Revisions (0)
Amendments (2)
Revalidations (1)
You can choose a new flood map or move the location pin by selecting a different location on the locator map below or by entering a new location in the search field above. It may take a minute or more during peak hours to generate a dynamic FIRMette.


Zone AE (EL 10)
Zone AE (EL 14)
Zone AE (EL 8)
23031C0709G eff. 7/17/2024
23031C0728G eff. 7/17/2024
City of Portsmouth 330139
33015C0259F eff. 1/29/2021
33015C0278F eff. 1/29/2021
USDA, USGS The National Map: Or... Powered by Esri
PIN
Approximate location based on user input and does not represent an authoritative property location
Selected FloodMap Boundary
Digital Data Available
No Digital Data Available


Zone AE (EL 8)
City of Portsmouth 330139
33015C0259F
eff. 1/29/2021
43.075041, -70.750688
USGS, USDA, The National Map: O... Powered by Esri
PIN
Approximate location based on user input and does not represent an authoritative property location
Selected FloodMap Boundary
Digital Data Available
No Digital Data Available

Key Questions for Buyers to Ask Sellers about Flooding

1. Has the home flooded before? If so, how often and which parts of the property did the flooding impact (e.g., basement, ground floor, etc.)?
2. Can the property withstand storm surge or flood waters?
3. If there has been previous flooding, where did the water enter the home?
4. If there has been previous flooding, roughly how much water impacted the interior of the house?
5. If there was previous flooding, what remediations did you put in place?
6. Has there been flooding on adjacent streets?
7. Does the property have a generator and sump pumps?
8. Do you have a mold inspection report available for review?
9. What flood risk mitigations have you put in place on the property?

https://www.forbes.com/advisor/mortgages/real-estate/flood-risk-disclosure-laws/

Future Flood Risk Tools

- Sea Level Rise Mapping Viewers
  - NH Coastal Viewer
  - ME Sea Level Rise Mapper

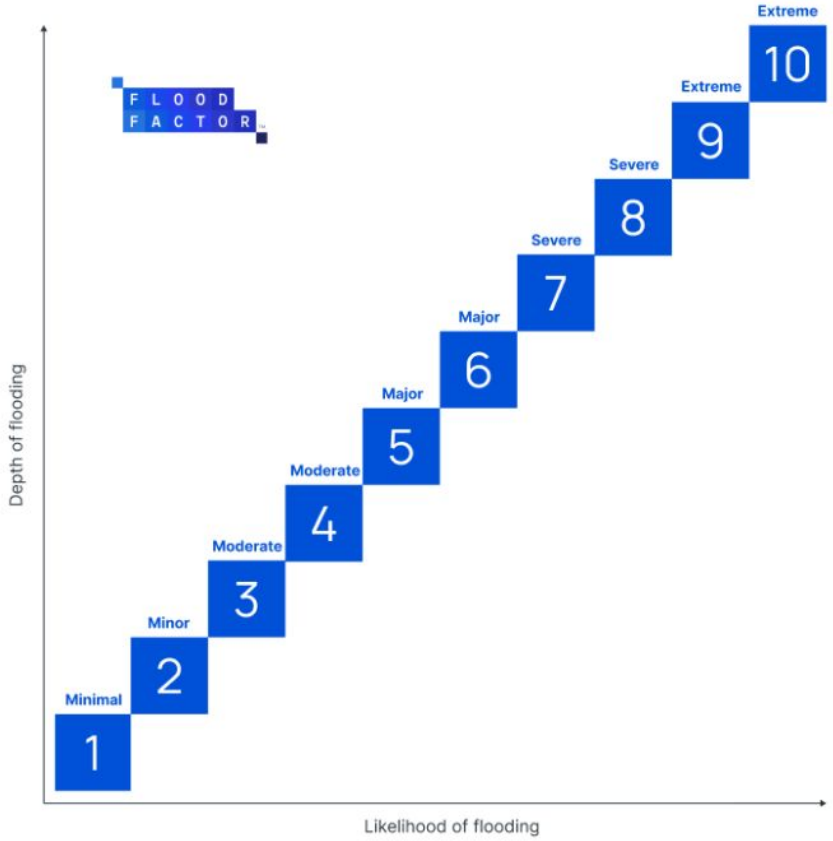
- Flood Factor® - First Street Foundation
  - Used by Realtor.com and Zillow





Flood Factor®

- Created by the First Street Foundation
- Publicly available flood risk (and other climate risk) assessments for individual properties.
- Shows the risk of flooding and forecasts how these risks will change over time
- A home's risk assessment can differ from its FEMA flood zone designation



https://firststreet.org/methodology/flood

Flood Factor®

The Data Behind Flood Factor®

First Street's physically-based flood model

The First Street Flood Model (FSF-FM) is a nationwide model that allows us to determine the potential flood risk from rain, streamflow, sea level rise, tide, and storm surge for any location. The FSF-FM is a complex system comprised of various water models and qualified input components. It is built on decades of peer-reviewed research and can forecast how flood risks will change over time due to environmental changes.

Watch the methodology explainer video

https://firststreet.org/methodology/flood

Get a mortgage Find an agent Zillow

Back to search

Overview Facts & features Market value Payment calculator

Climate risks

Explore flood, wildfire, and other predictive climate risk information for this property on First Street®.

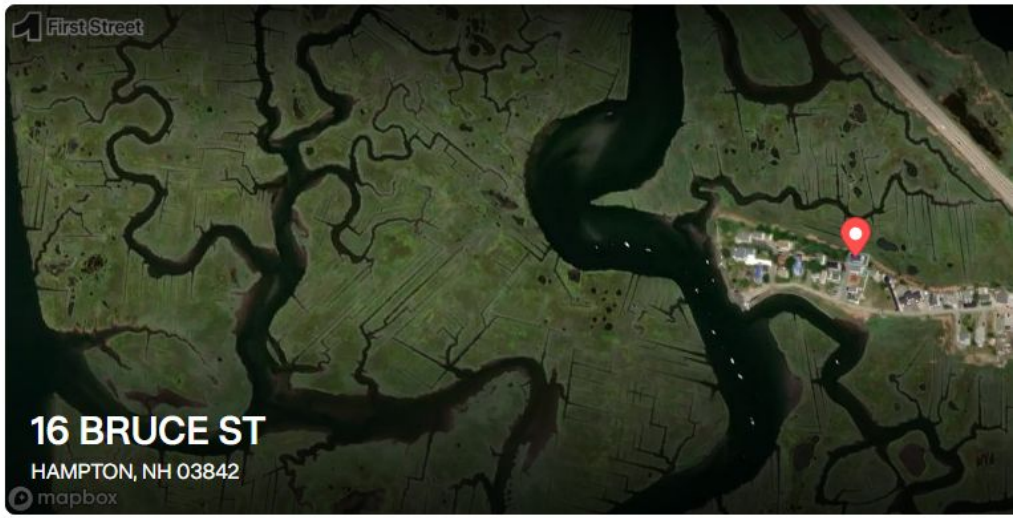
Flood zone

In FEMA Zone AE, a high-risk Special Flood Hazard Area

Neighborhood: 03842



First Street Part of MSCI Enter an address Solutions



10/10 Flood Factor 1/10 Fire Factor 8/10 Wind Factor 2/10 Air Factor 4/10 Heat Factor

Key Insights for This Property

- There are facilities near this property that **release toxic pollution** into the air.
- **Flood insurance** may be mandatory for this property.
- This county has experienced **hurricane or tornado winds**.

Transparent, unbiased, and peer-reviewed

First Street is a leading provider of climate risk data

https://www.zillow.com/

Search

realtor.com

Listed by **Lauren Stone**
Brokered by **Carey and Giampa, Realtors, LLC / Rye**



House for sale

https://www.realtor.com

Environmental risk

Flood factor Extreme

This property's flood risk is increasing.

Fire factor Minimal

This property's wildfire risk is not changing.

Heat factor Major

7 days above 92°F this year

Wind factor Severe

Severe risk of severe winds over next 30 years

Air factor Minor

Risk of poor air quality is not changing

Provided by First Street Foundation

Flood risk for 562 Winnacunnet Rd

10/10 Extreme FLOOD FACTOR

View Flood Factor™ report

Flood Factor™

This property's risk of flood is **increasing** as weather patterns change. Flooding in this area is caused by precipitation, sea level rise, and hurricane storm surge.

FEMA **FEMA rating:** This property is located in FEMA zone AE

Understand this data

Realtor.com® empowers you with flood data so you can understand your risk and your options. **Learn more**

Flood insurance may impact your budget

As this property is located in a FEMA Zone AE Special Flood Hazard Area, homeowners are **required** to purchase flood insurance to obtain a mortgage from federally-backed or regulated lenders. Explore quotes for flood insurance from **$435** to **$708** per year.

Click to compare quotes

Flood risk data including FEMA ratings is provided by **First Street®**, a product of First Street Foundation®. The Flood Factor® model is designed to approximate flood risk and not intended to include all possible flood risks. Flood insurance quotes are based on $250k in building and $100k in contents coverage.

RECAP: Determining flood risk

- Everyone lives in a flood zone with some level of flood risk (e.g. low, moderate, or high)
- Important to determine and understand the past, current and future flood risk for a property
- Understand level of tolerance to deal with flood risk and all that comes with it.
- Flood disclosure notifications in New Hampshire and Maine
- FEMA maps are good starting points; also review and consider future flood risk tools



Part 2C. Flood Resiliency

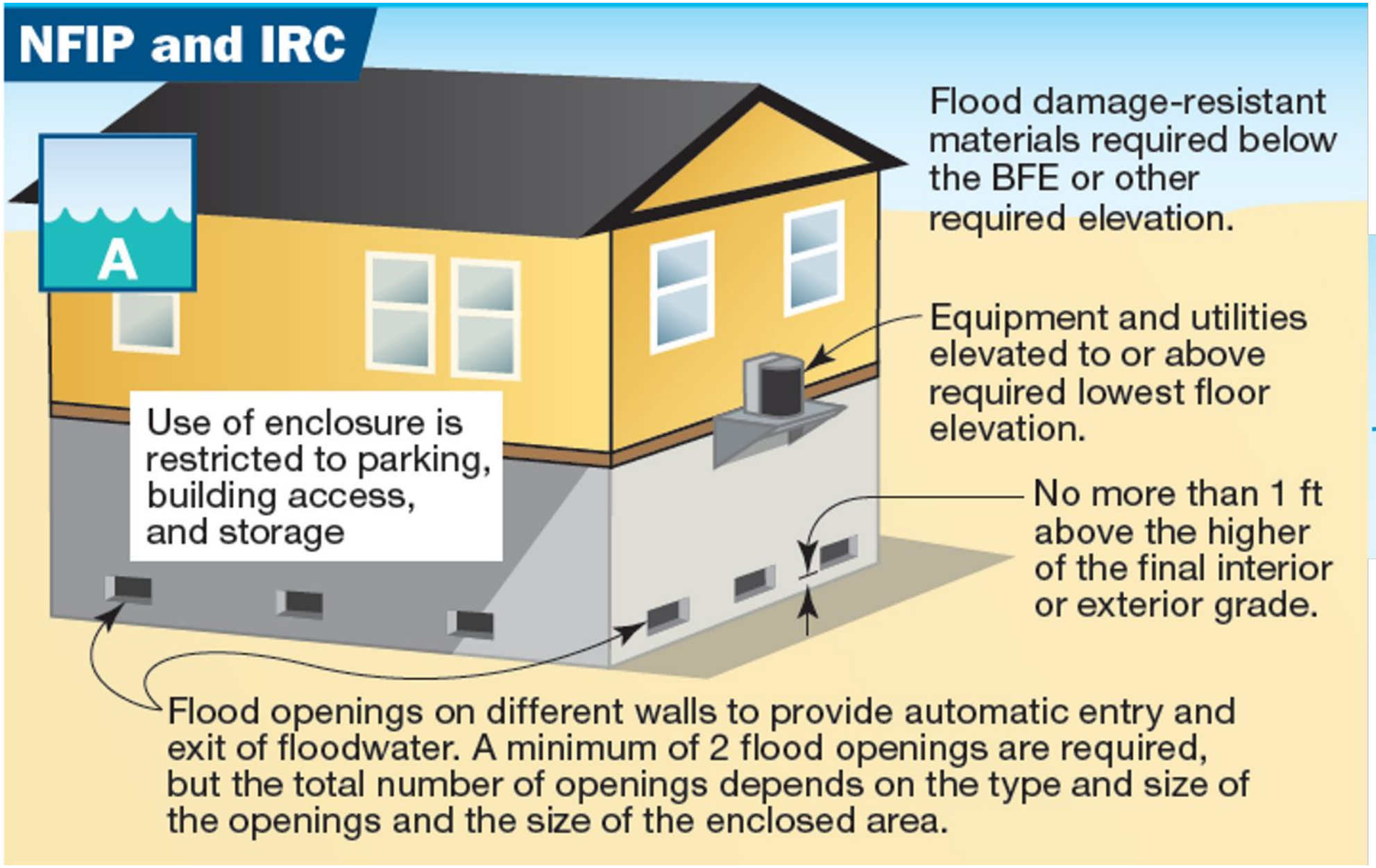
Local Floodplain Regulations

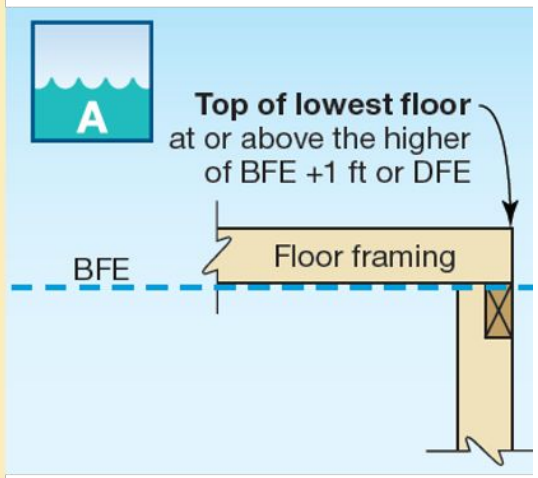
- Require a permit for all development in a floodplain area
- Determines how development in a floodplain are to be built
- Based on structure's flood zone and base flood elevation
- Includes requirements for utilities, water supply, and sewer/septics.



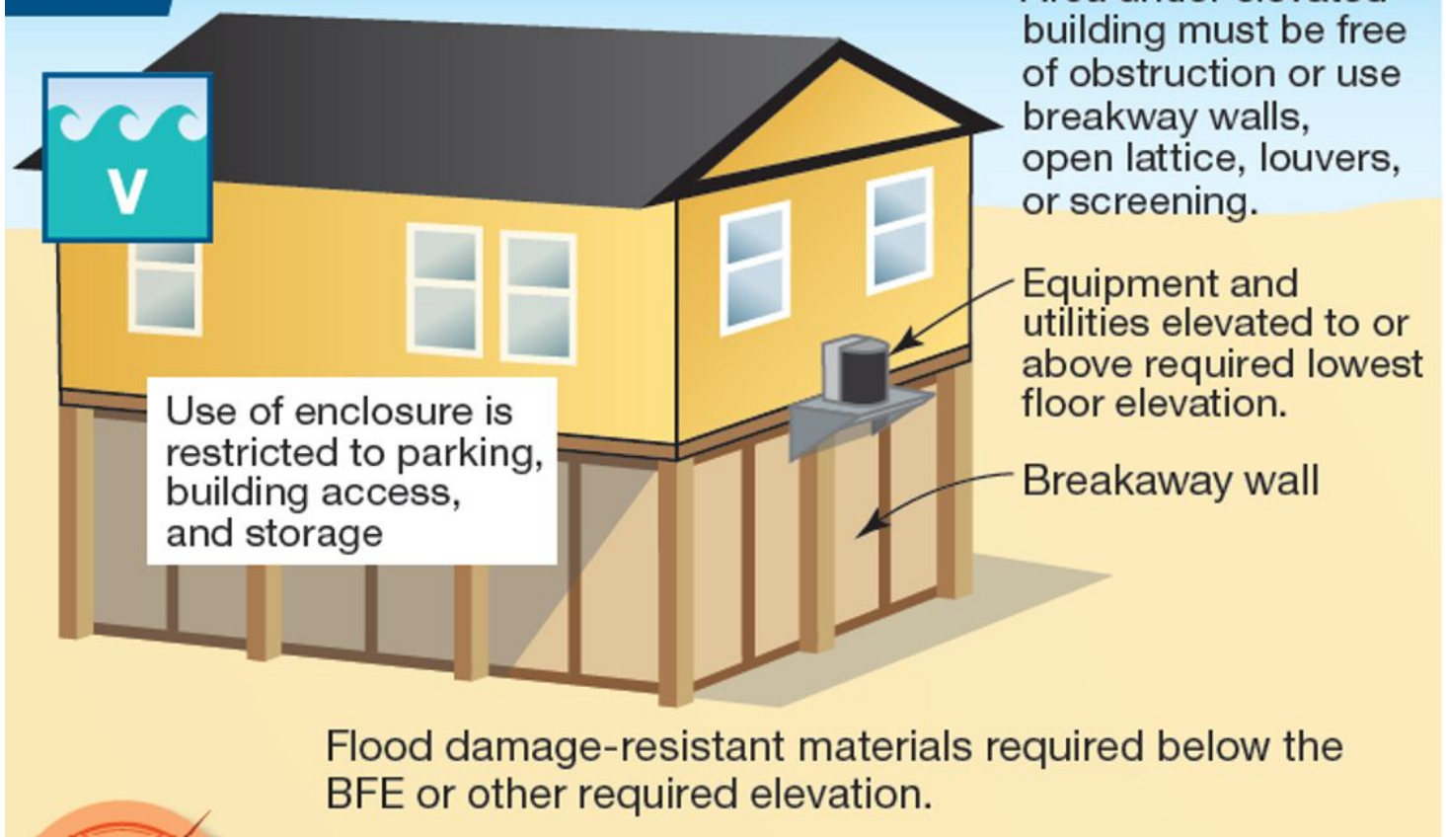


NFIP and IRC


A
Flood damage-resistant materials required below the BFE or other required elevation.
Equipment and utilities elevated to or above required lowest floor elevation.
Use of enclosure is restricted to parking, building access, and storage
No more than 1 ft above the higher of the final interior or exterior grade.
Flood openings on different walls to provide automatic entry and exit of floodwater. A minimum of 2 flood openings are required, but the total number of openings depends on the type and size of the openings and the size of the enclosed area.


A
Top of lowest floor at or above the higher of BFE +1 ft or DFE
BFE
Floor framing

NFIP



IRC

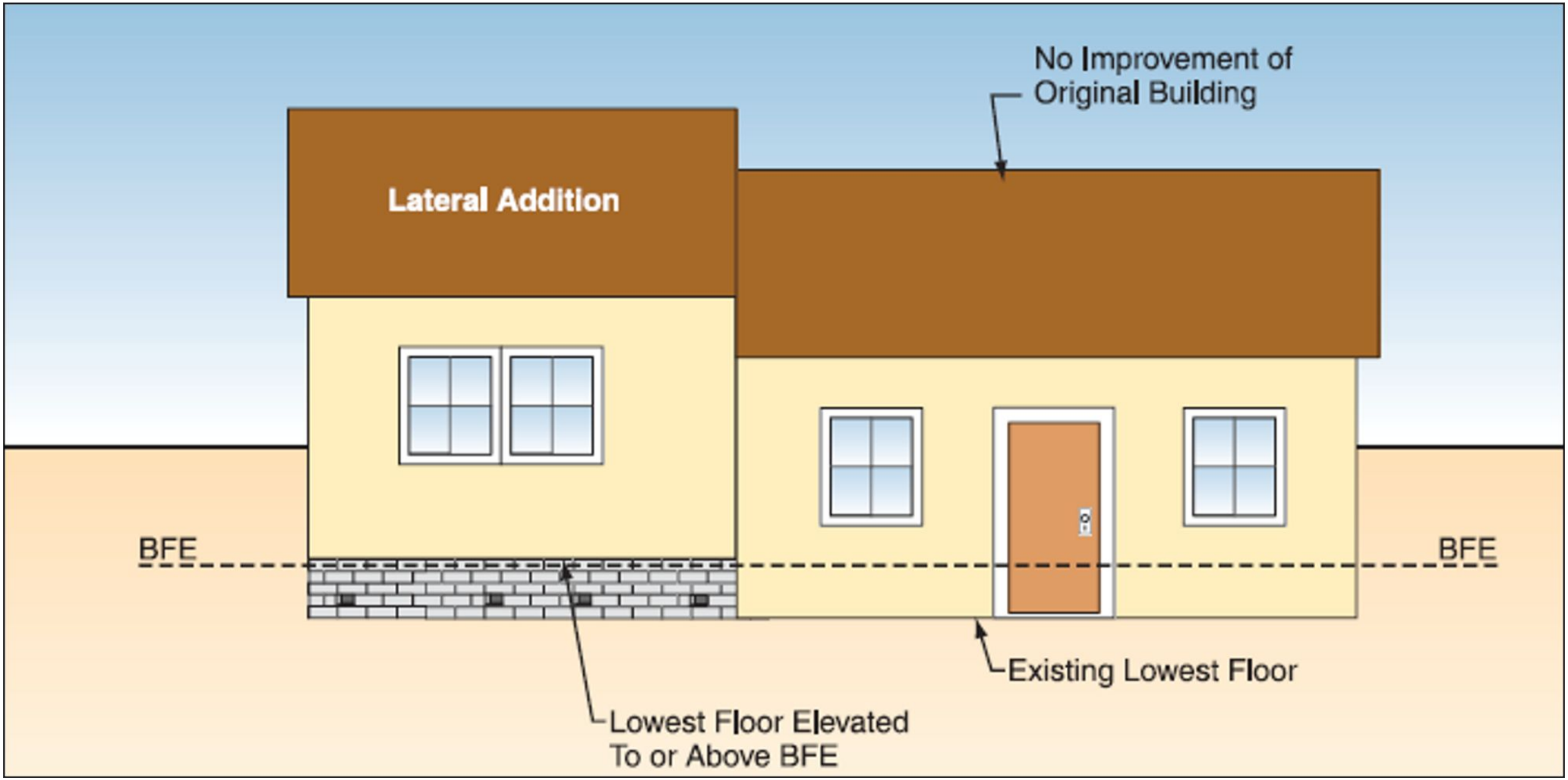


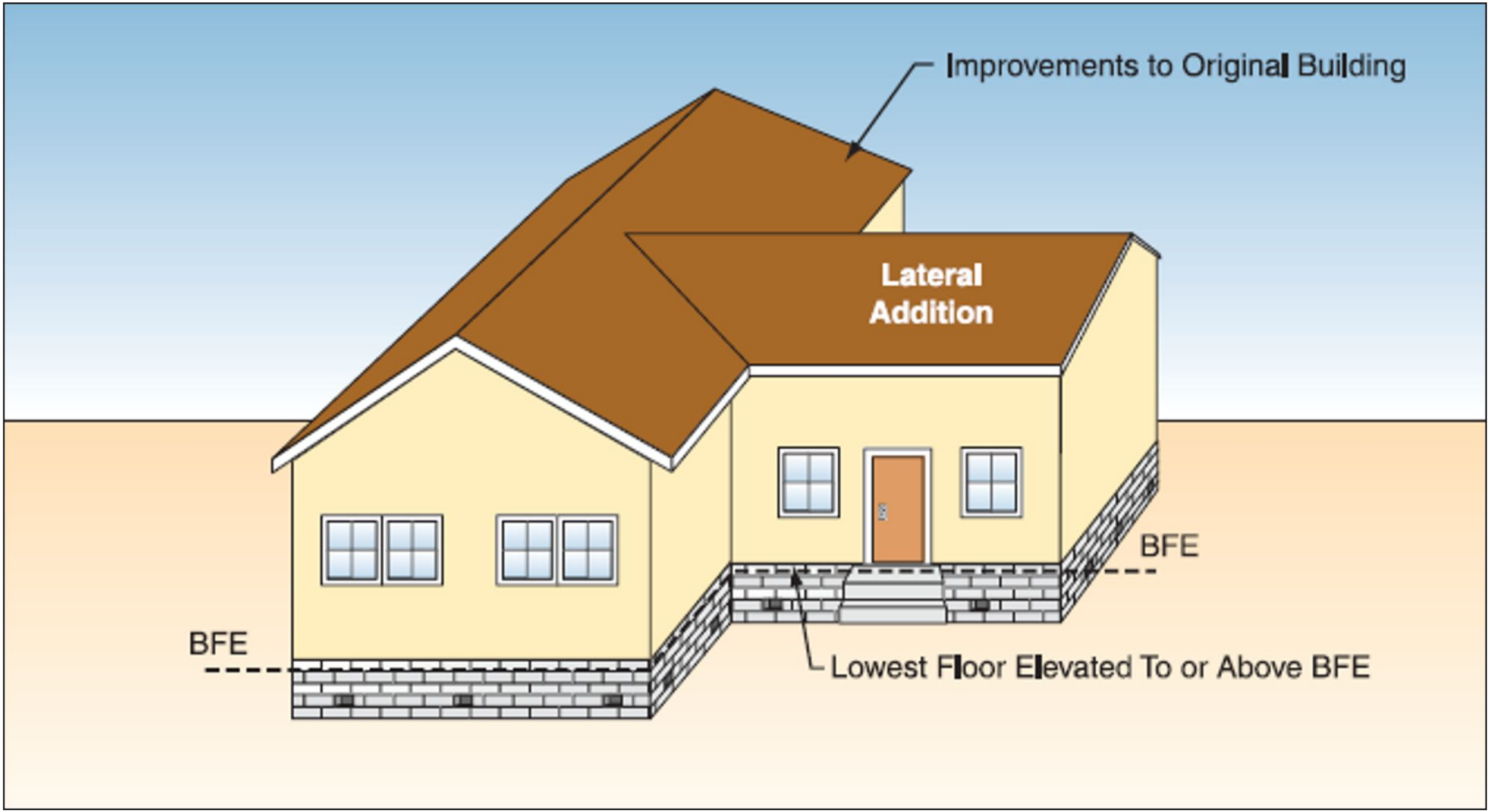
In Zone V, IRC requires flood openings in breakaway walls (see page 3), prohibits mounting equipment and utilities on or penetrating through breakaway walls, and requires exterior doors at the top of stairways enclosed by breakaway walls.

Substantial Improvement/Damage

- Total cost of improvement or cost to repair to pre-damage condition
- Market value of building
- 50% rule
- Community determination
- Meet new construction requirements




No Improvement of
Original Building
Lateral Addition
BFE
BFE
Existing Lowest Floor
Lowest Floor Elevated
To or Above BFE


Improvements to Original Building
Lateral Addition
BFE
BFE
Lowest Floor Elevated To or Above BFE

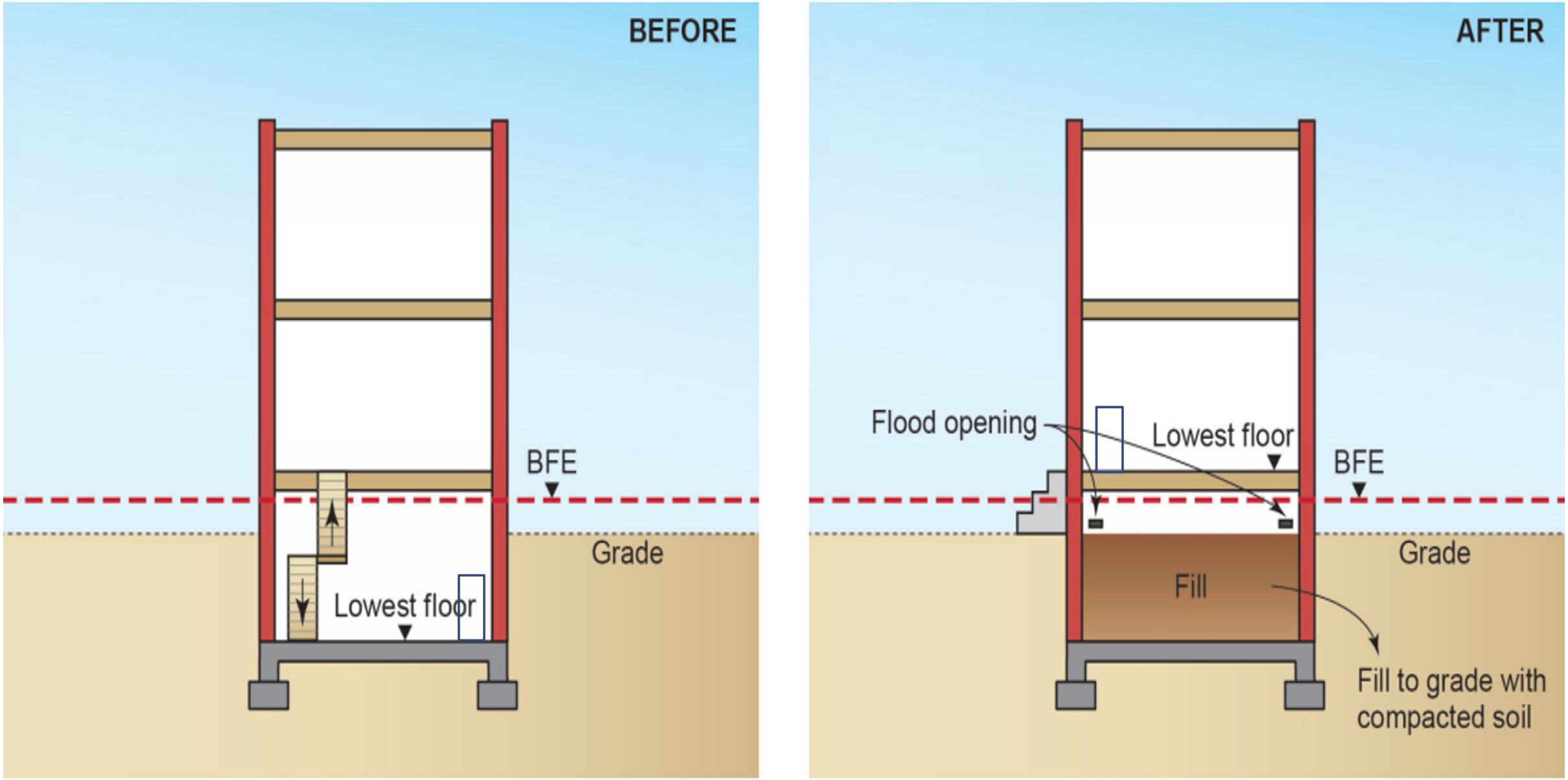


Figure 1: Basement infill before and after mitigation

NFIP Minimum Regulations are a Good Start but do not…

- Stop buildings from being damaged
- Include changes to floodplain areas since issuance of the FEMA map
- Address events greater than 1% annual chance flood
- Account for future flood conditions



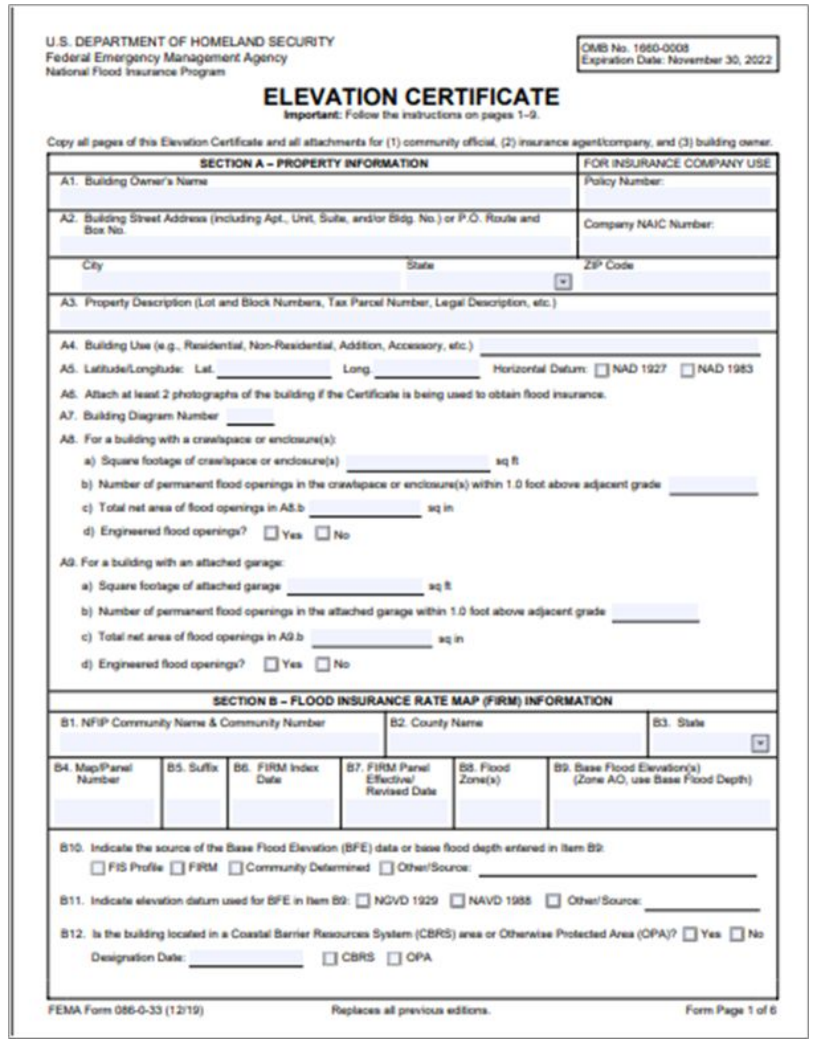
Higher Standard Floodplain Regulations

- Increases home's flood resiliency and decreases its chances of being damaged by flooding
- Flood provisions in the State Building Code include higher floodplain standards



FEMA Elevation Certificate

- Provides building-specific elevations
- Determines a building's flood risk
- No longer required to purchase flood insurance policy
- Can be used to possibly lower the policy premium
- Used by community officials to ensure compliance with community's floodplain regulations



U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

OMB No. 1660-0008
Expiration Date: November 30, 2022

ELEVATION CERTIFICATE

Important: Follow the instructions on pages 1–9.

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

SECTION A – PROPERTY INFORMATION | FOR INSURANCE COMPANY USE

A1. Building Owner's Name | Policy Number:

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. | Company NAIC Number:

City | State | ZIP Code

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.)

A5. Latitude/Longitude: Lat. Long. Horizontal Datum: ☐ NAD 1927 ☐ NAD 1983

A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.

A7. Building Diagram Number

A8. For a building with a crawlspace or enclosure(s):

a) Square footage of crawlspace or enclosure(s) sq ft

b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade

c) Total net area of flood openings in A8.b sq in

d) Engineered flood openings? ☐ Yes ☐ No

A9. For a building with an attached garage:

a) Square footage of attached garage sq ft

b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade

c) Total net area of flood openings in A9.b sq in

d) Engineered flood openings? ☐ Yes ☐ No

SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number	B2. County Name	B3. State

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/ Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use Base Flood Depth)

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9:
☐ FIS Profile ☐ FIRM ☐ Community Determined ☐ Other/Source:

B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☐ NAVD 1988 ☐ Other/Source:

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☐ No
Designation Date: ☐ CBRS ☐ OPA

FEMA Form 086-0-33 (12/19) Replaces all previous editions. Form Page 1 of 6

FEMA National Flood Insurance Program (NFIP)

- Any resident or business owner is eligible to purchase NFIP flood insurance in a participating community.
- Homeowners and renters insurance does not typically cover flood damage.
- Flood insurance can pay regardless of whether or not there is a Presidential Disaster Declaration for Individual Assistance.



https://www.floodsmart.gov/

Poll Question

How many day(s) is the waiting period between the submittal of a flood insurance policy application and premium and the policy effective date when a lender is not requiring flood insurance?

a. 1 day
b. 7 days
c. 15 days
d. 30 days

Obtaining a Flood Policy

- Generally policies become effective in 30 days unless a lender is involved
- Seller with an NFIP building policy can usually transfer it to the buyer upon sale
- Recommend talking to current insurance agent about obtaining a policy



FEMA NATIONAL FLOOD INSURANCE PROGRAM

Visit FloodSmart.gov

Cost of Flood Insurance

Factors considered in determining a premium:

- Flood risk
- The type of coverage being purchased (e.g., building and contents coverage)
- The deductible and amount of building and contents coverage
- The location of the structure
- The design and age of the structure
- The location of the structure's contents



https://www.floodsmart.gov/

Flood Insurance Coverage

- NFIP Building Coverage
  - Residential - up to $250k
- NFIP Contents Coverage
  - Residential - up to $100k
  - Renters: Content Only
- Private Flood Insurance and Excess Coverage



https://www.floodsmart.gov/

FEMA

www.floodsmart.gov

Exit

National Flood Insurance Program (NFIP)

Get a free quote in less than 10 minutes.

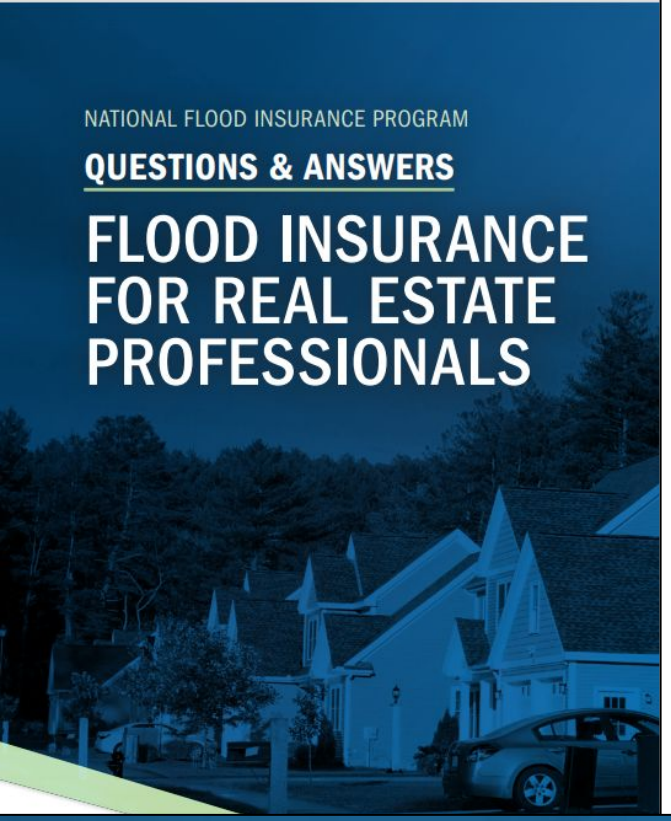
We will not collect personal information until you choose to purchase a policy via NFIP Direct. Basic building characteristics are needed to provide a quote.

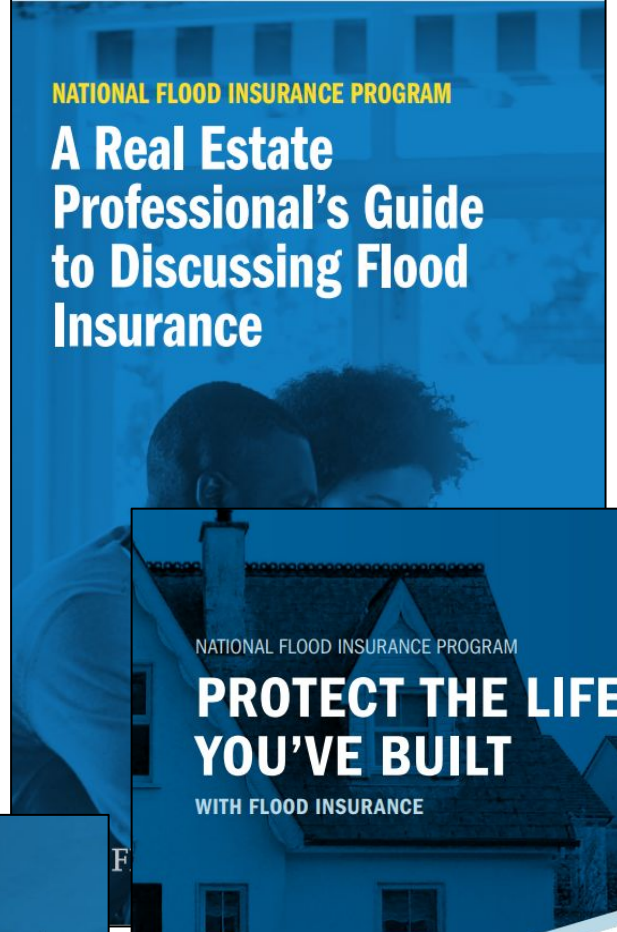


I agree and consent to the Terms, Conditions, and Disclaimers for use of the NFIP FAST: Flood Application and Sales Tool.

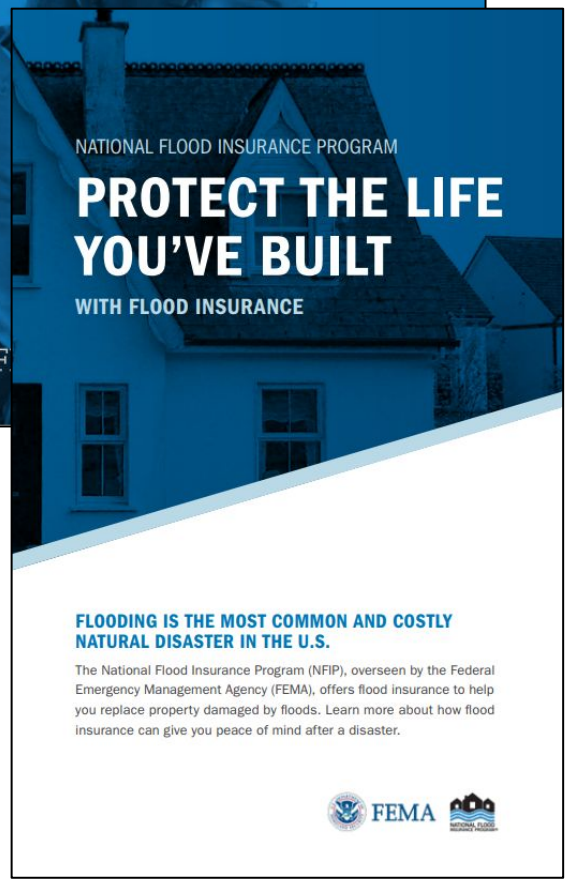
Look Up Previous Quote

Start New Quote









NATIONAL FLOOD INSURANCE PROGRAM

PUBLICATIONS ORDER FORM

The National Flood Insurance Program (NFIP) offers a variety of resources to help policyholders, agents and the public. Topics range from navigating flood insurance policies to guidance before, during and after a disaster. Printed copies of these publications can be ordered for free from FEMA's Publications Warehouse using this form, which is updated on a monthly basis. **Visit floodsmart.gov/puborderform to ensure you complete and submit the most recent version.**

Enter your requested quantity in the blank spaces below. Detailed descriptions of each publication are included after the order form, beginning on page 3.

POLICY DOCUMENTS	English	Quantity	Spanish	Quantity
NFIP Claims Handbook	F-687		F-687S	
NFIP Summary of Coverage	P-2144		P-2144S	
NFIP Summary of Coverage Commercial Property	F-778		F-778S	
NFIP Summary of Coverage Residential Condominium Buildings	P-2180		P-2180S	
QUICK-REFERENCE MATERIALS				
NFIP Flood Insurance for Condominium Associations Brochure	P-2223			
NFIP Flood Insurance for Renters Brochure	P-2108		P-2108S	
NFIP Map Changes and Flood Insurance: What Property Owners Need to Know Brochure	F-P2019		F-P2019S	
NFIP Questions & Answers: Flood Insurance for Real Estate Professionals Brochure	F-435		F-435S	
NFIP Why Do I Need Flood Insurance? Brochure	F-002		F-002S	
PROMOTIONAL RESOURCES				
Condo Owners Protect the Life You've Built with Flood Insurance Postcard	P-2081			
Most Homeowners Insurance Does Not Cover Flood Damage Postcard	F-061		F-061S	
NFIP Pocket Folder	F-010			
Protect the Life You've Built with Flood Insurance Door Hanger	P-2076			
Resources for Marketing & Selling Flood Insurance from the NFIP Postcard	F-2053			

This publication is available in the following additional languages: Traditional Chinese (TC), Simplified Chinese (SC), Korean (K) and Vietnamese (V). If you would like to order copies of these, please note the publication number with the aforementioned language code in the Notes field of the order form.

1

https://agents.floodsmart.gov/puborderform

Strategies to Reduce Flood Risk

Reduce Flood Risk

- Developed by the Association of State Floodplain Managers
- Assists property owners and buyers in floodprone areas identify strategies to reduce their property's risk of flooding
- 40 strategies
- Interactive tool to filter and search for strategies
- Available in English and Spanish
- https://www.reducefloodrisk.org

Soak Up the Rain New Hampshire

- Voluntary program managed by NH Dept. of Environmental Services
- Engages with homeowners to help protect and restore clean water and address stormwater runoff impacts
- 10 Do-It-Yourself Fact Sheets
- Interactive tool to filter and search for strategies
- Available in multiple languages
- https://www.soaknh.des.nh.gov

Reduce Flood Risk

Identify what actions you can take today to lower your risk of flooding tomorrow:

EXPLORE STRATEGIES FOR

Property Owners or Buyers

Learn More →

EXPLORE AND

Browse All Strategies

Learn More →

Not a property owner or buyer?

Explore strategies for:

Renters

→

Community Association Representatives

→

Government Officials

→

Everyone Else

→

Reduce Flood Risk

Filter & Search

Reset Filters

Annual Maintenance Required
- [ ] Low
- [ ] Medium

Action Required If Flood Is Imminent
- [ ] No, Passive
- [ ] Yes, Active

Relative Cost
- [ ] $
- [ ] $$
- [ ] $$$
- [ ] $$$$
- [ ] $$$$$

Level of Effort
- [ ] Professional
- [ ] DIY

Hide filters

Scale
- [ ] Single Property
- [ ] Neighborhood
- [ ] Community

Real Estate Type
- [ ] Single-family residence
- [ ] Multi-family residence
- [ ] Manufactured home
- [ ] Business
- [ ] Government building
- [ ] Agricultural building

Foundation Type
- [ ] Crawlspace
- [ ] Basement
- [ ] Slab-on-Grade
- [ ] Piers/Piles/Posts/Columns

Coastal Property
- [ ] Yes
- [ ] No

Past Flood Depth
- [ ] Shallow (less than 3 feet)
- [ ] Moderate (3 to 6 feet)
- [ ] Deep (more than 6 feet)
- [ ] Unsure

Debris Flow Potential
- [ ] Yes
- [ ] No
- [ ] Unsure

Structure Condition
- [ ] Fair-to-excellent condition
- [ ] Less than fair condition

Reduce Flood Risk

Sort by: Highest Effort | Lowest Cost

Single Property

Follow flood-free site selection

New structures should be located on a site that ensures that the structure will remain dry in the event of a flood

Professional

$

Compare

Single Property

Install a rain barrel

Rain barrels collect and store rainwater from a building's roof that would otherwise be lost to runoff and diverted to storm drains and streams

Professional

$

Compare

Single Property

Create an Emergency Operations Plan

An emergency operations plan identifies flood risks and prepares for them to help protect human lives and property in the event of a flood

Professional

$ - $$

Compare

Single Property

Install a rain garden

A rain garden is a low-lying area in the landscape that is planted with wetland or wet-tolerant plants to address drainage issues and reduce flooding

Professional

$ - $$

Compare

Single Property

Install flood vents

Flood vents are small permanent openings that allow floodwater to flow freely through a crawlspace or other enclosed area below the BFE.

Professional

$ - $$$

Compare

Single Property

Install a sump pump with secondary power source

Sump pumps are designed to remove water from below-grade (underground) areas.

Professional

$ - $$$

Compare

Soak up the Rain New Hampshire

- Dripline infiltration trench
- Driveway infiltration trench
- Dry well
- Infiltration steps
- Pervious walkways and patios
- Rain barrel
- Rain garden
- Vegetated buffer
- Vegetated swale
- Water bar



RECAP: Flood Resiliency

- Building to higher floodplain standards can increase the home's flood resiliency, reduce the flood insurance premium, and decrease it's chances of being damaged by flooding
- FEMA Elevation Certificate can help determine a building's flood risk and help reduce premium costs
- Flood insurance is one of the best ways to have a resilient home - it helps to rebuild and recover faster and more fully
- Reduce flood risk strategies tool - a great resource for property owners and buyers

QUESTIONS?



Thank You!

www.nhcaw.org/living-with-water-resources-for-realtors/