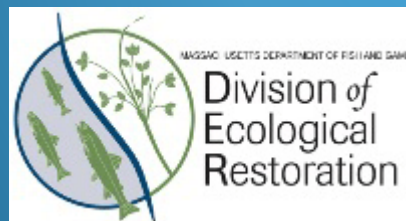




# Update and Status of the USGS/MA Cooperative Hydrologic Monitoring Network

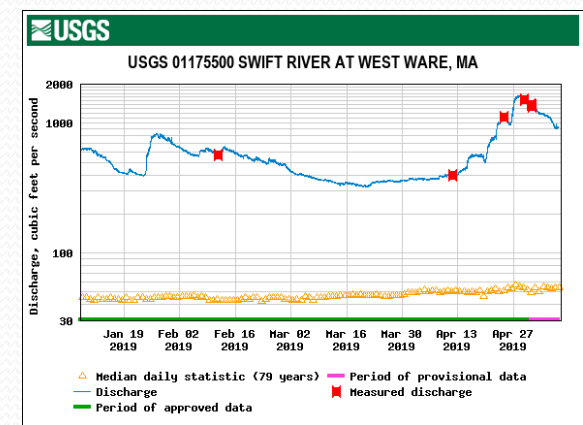
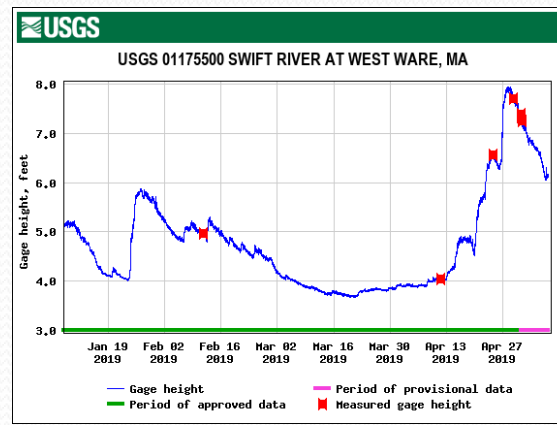
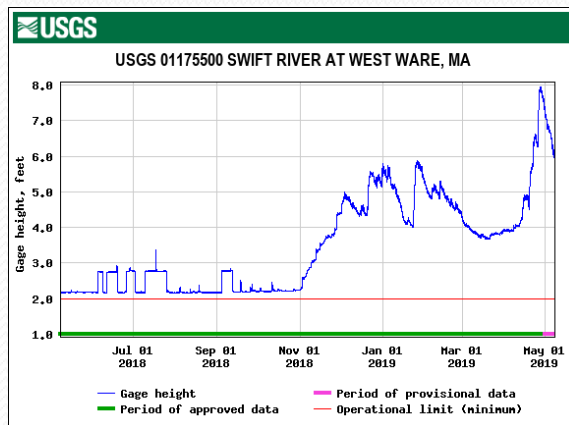
Christopher Bruet (USGS)  
Viki Zoltay (DCR-OWR)

September 10, 2020



# Data Uses

- Emergency management/flood forecasting
- Engineering– bridge design, flood zone mapping, septic system design
- Landslide forecasting
- Environmental monitoring



# USGS Stream Gage Network

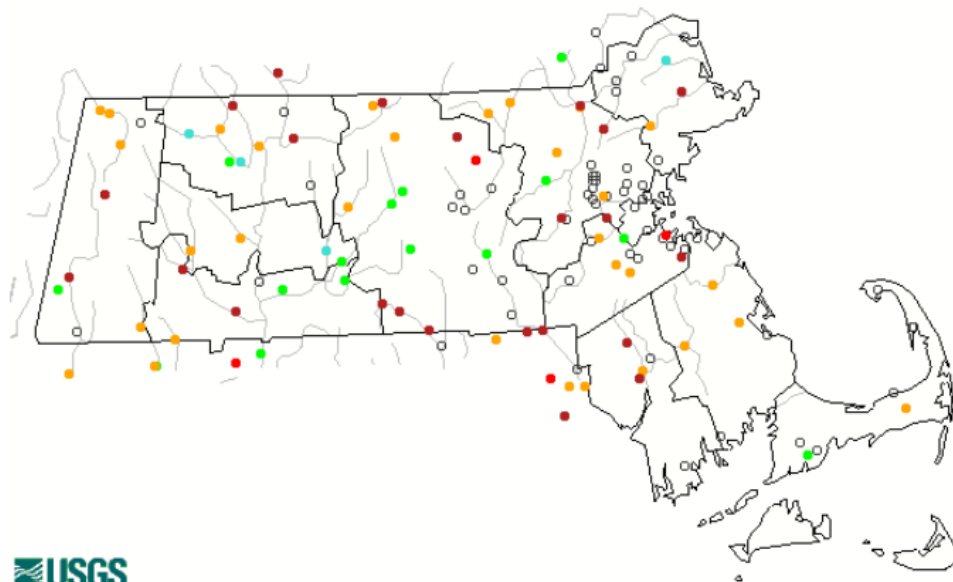
58 Real-time gages

No Changes Planned in FY21

Annual O&M ~\$900,000

\$15,800 per streamflow gage

Wednesday, September 09, 2020 18:30ET



Search USGS streamgage

Choose a data retrieval option and select a location on the map

- List of all stations
  Single station
  Nearest stations
  Peak flow

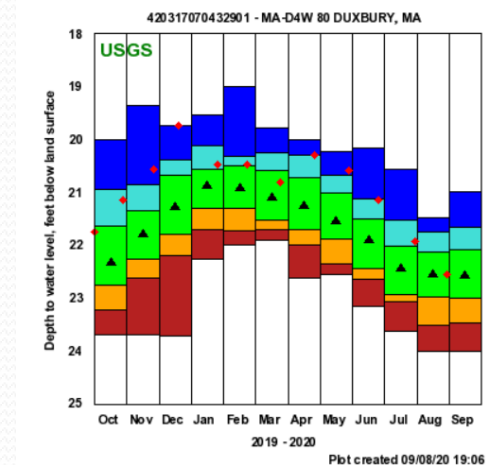
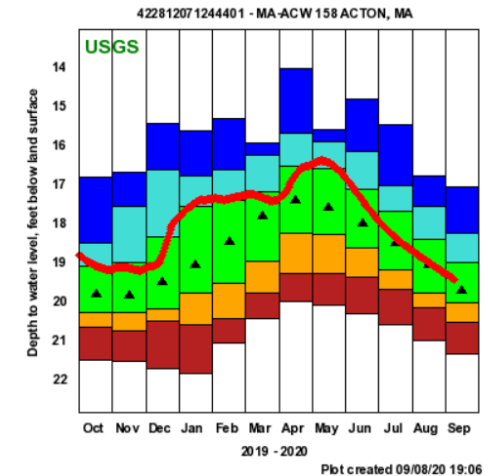
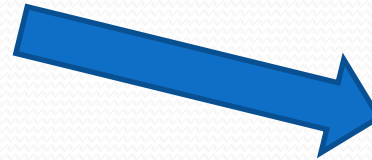
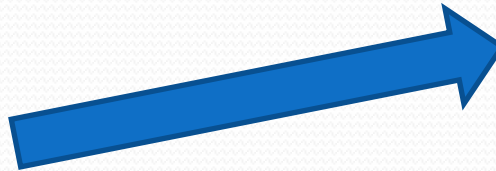
Explanation - Percentile classes

Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		



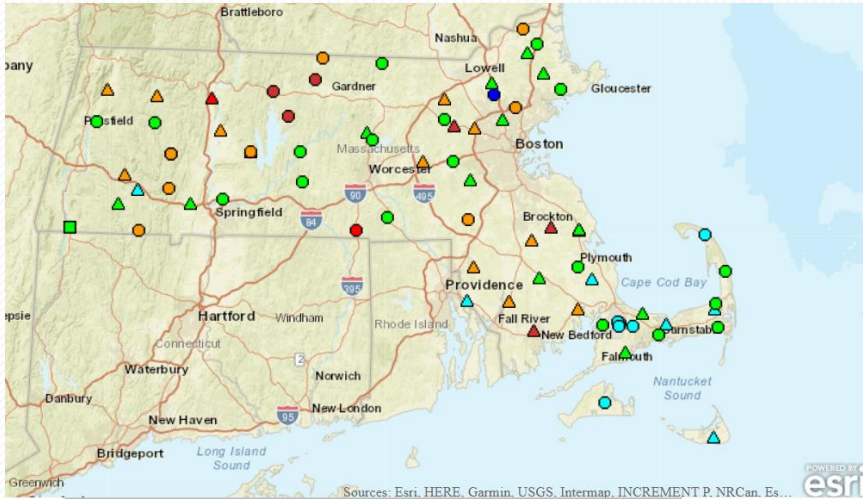
# Climate Response Network

- 92 wells total (including 7 bedrock wells)
- 39 real-time wells
- 53 wells measured monthly by State staff





# Climate Response Network

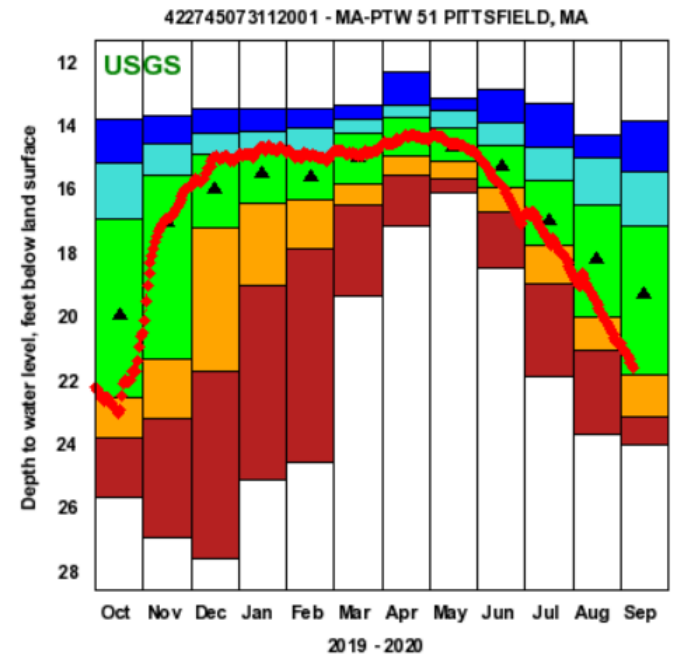


92 Observation Wells  
 Annual O&M ~\$230,000  
 \$5,600/\$950 per well

Explanation - Percentile classes (symbol color based on most recent measurement)							
●	●	●	●	●	●	●	●
Low	<10 Much Below Normal	10-24 Below Normal	25-75 Normal	76-90 Above Normal	>90 Much Above Normal	High	Not Ranked

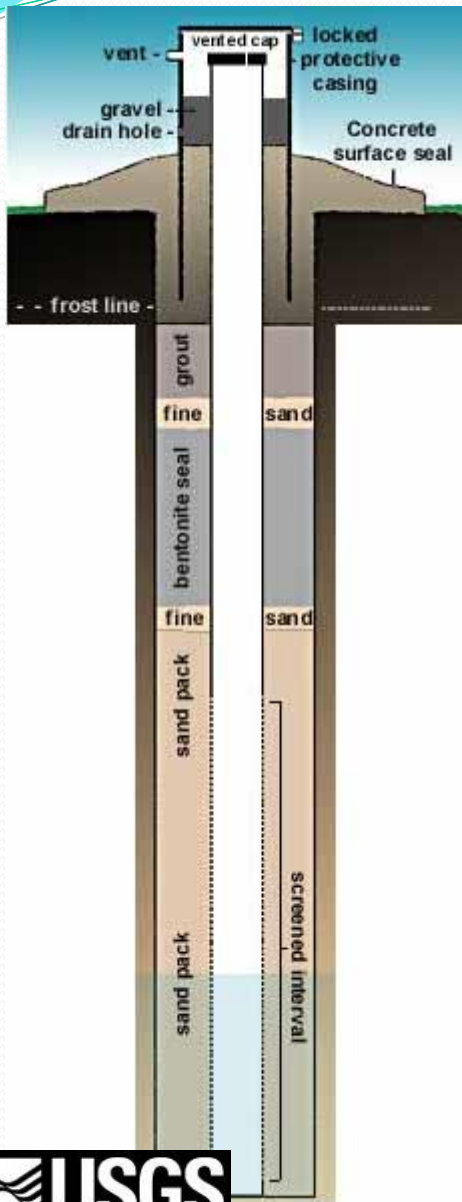
  

Wells		Springs	
○	Real-Time	□	Continuous
△	Periodic Measurements	□	Periodic Measurements



# USGS Groundwater Network

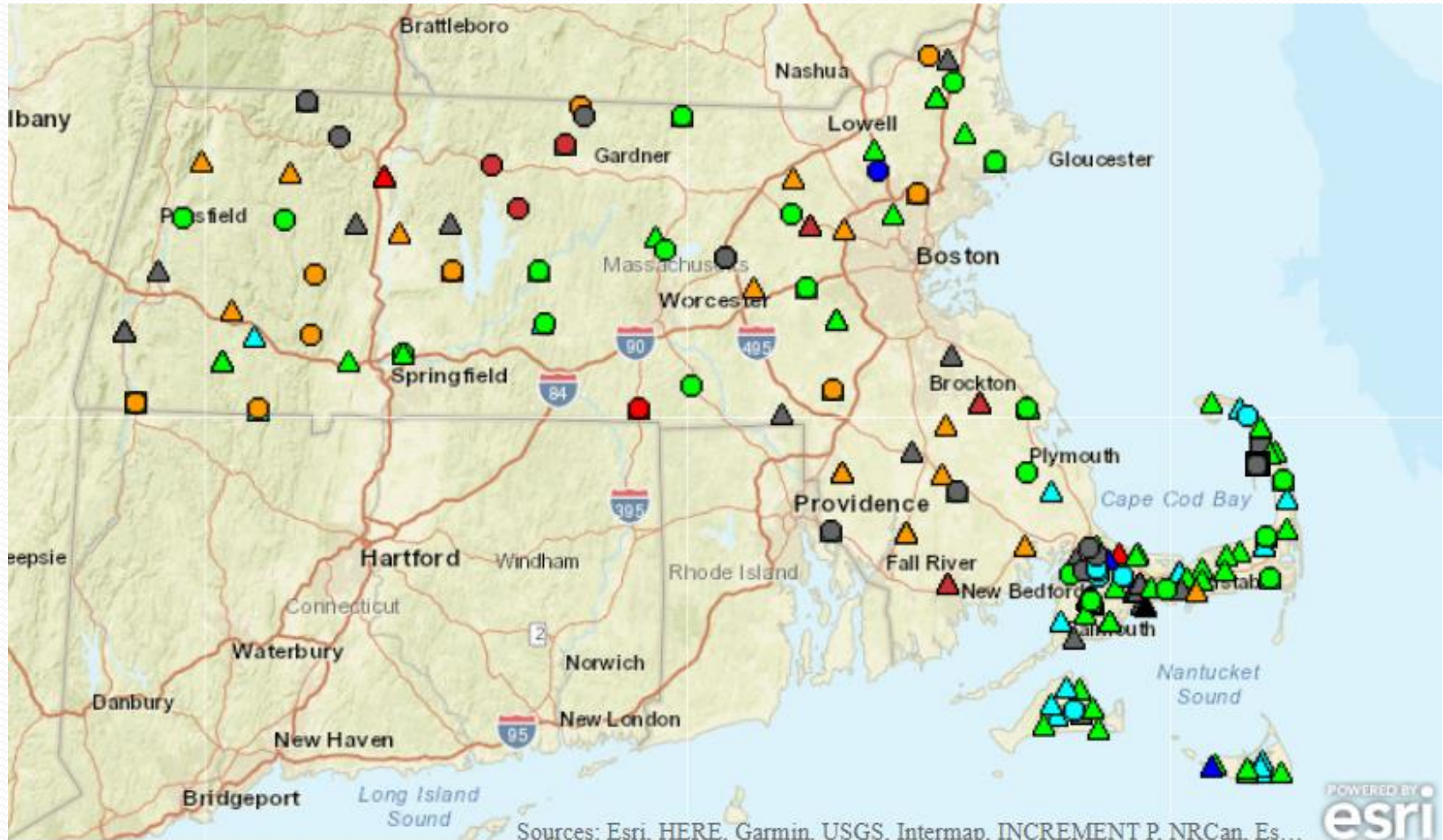
- A number of steel wells older than 50 years (1965 and before) in acidic ground water have been replaced!



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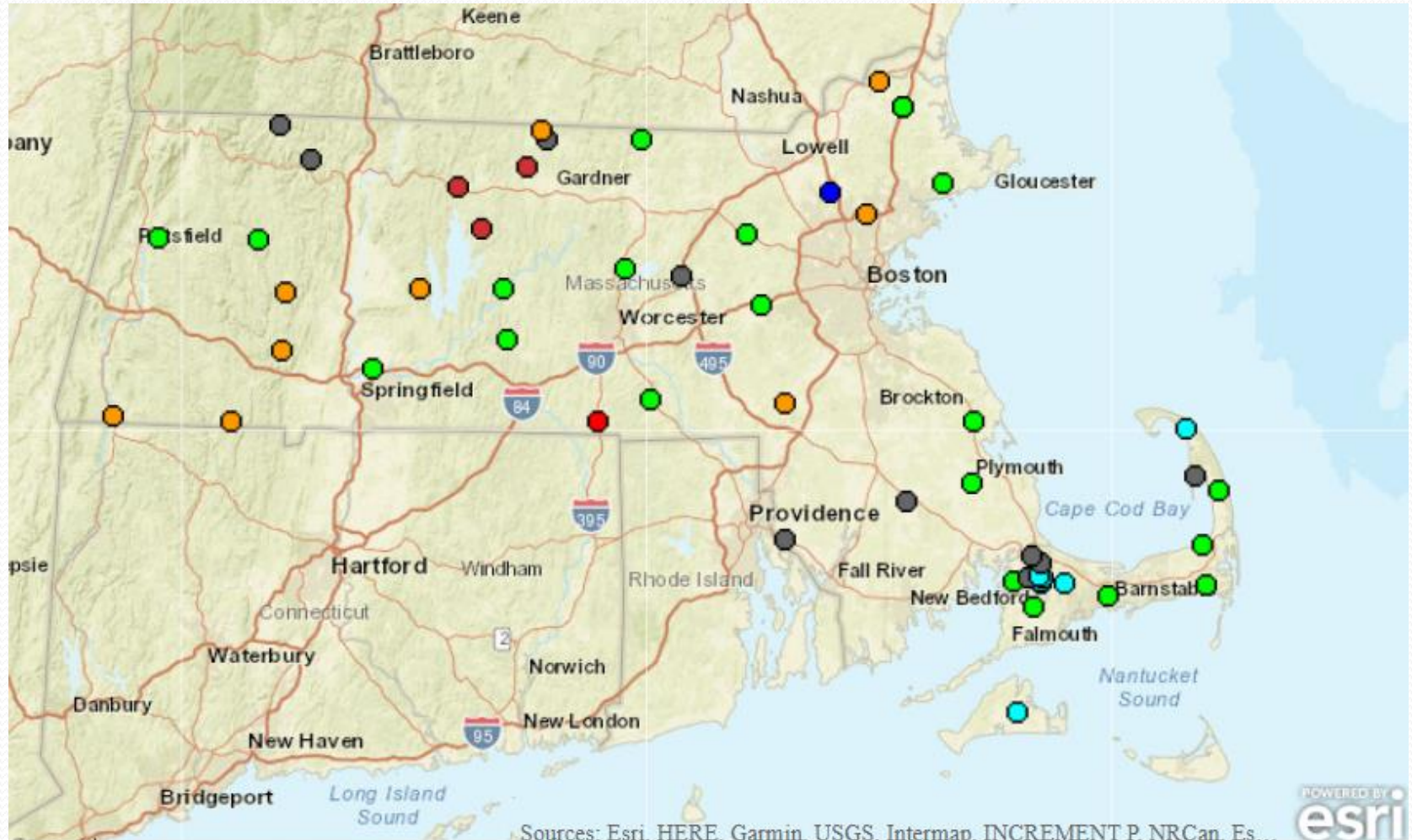


# Active Water Level Network



Explanation - Percentile classes (symbol color based on most recent measurement)								Wells		Springs	
●	●	●	●	●	●	●	●	○	□	△	■
Low	<10	10-24	25-75	76-90	>90	High	Not Ranked	Real-Time	Continuous	Periodic Measurements	
	Much Below Normal	Below Normal	Normal	Above Normal	Much Above Normal						

# Real-Time Groundwater Network



Explanation - Percentile classes (symbol color based on most recent measurement)								Wells		Springs	
● (Red)	● (Dark Red)	● (Orange)	● (Green)	● (Cyan)	● (Blue)	● (Black)	● (Grey)	○ (Open Circle)	■ (Solid Square)	□ (Open Square)	■ (Solid Square)
Low	<10	10-24	25-75	76-90	>90	High	Not Ranked	○ (Open Circle)	■ (Solid Square)	□ (Open Square)	■ (Solid Square)
	Much Below Normal	Below Normal	Normal	Above Normal	Much Above Normal			△ (Open Triangle)	■ (Solid Square)	□ (Open Square)	■ (Solid Square)
								△ (Open Triangle)			■ (Solid Square)
								△ (Open Triangle)			■ (Solid Square)



# Precipitation/Weather Stations

- Flash Flood Warnings
- Spring Flood Modeling



# Precipitation/Weather Stations

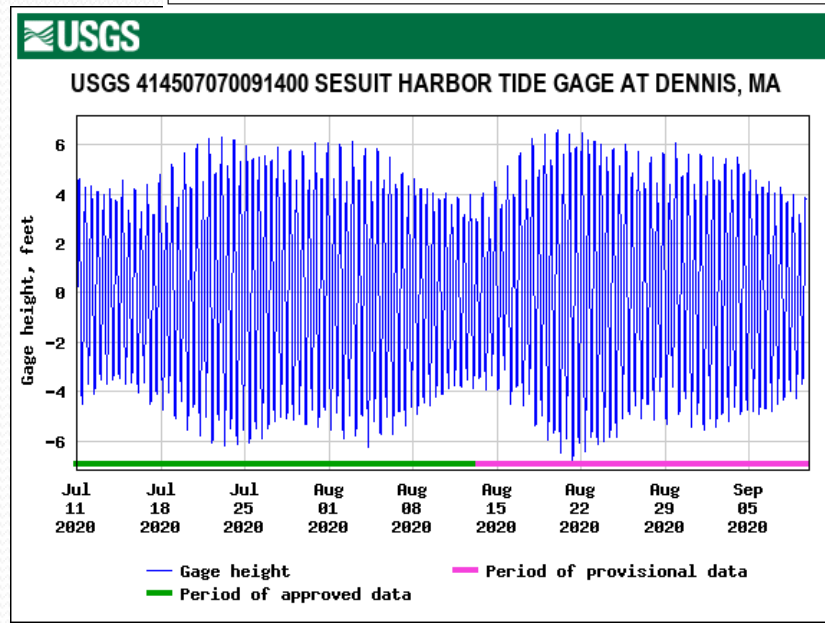
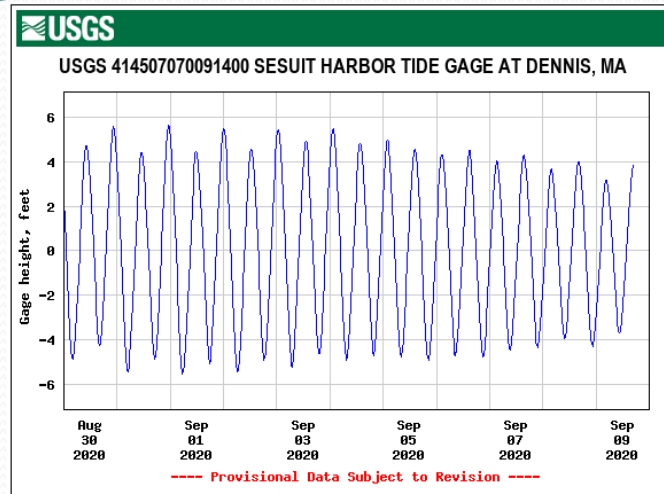
- Peabody
- Fall River
- Groton
- Florida
- Sheffield
- \$5,000/\$5,100



# Tide Gages

(\$6,800)

- Provincetown
- Dennis
- Merrimack





# FY21 Hydrologic Monitoring Network Budget

- State
  - \$847,686
- USGS
  - \$290,124
- NSIP
  - \$68,900
- Total Budget
  - \$1,206,710

# Program Budget FY21

- Streamgages
  - \$886,875
- Ground Water
  - \$273,250
- Precipitation/Weather
  - \$25,200
- Tide Gages
  - \$20,400



Questions?

