

Discussion of Outdoor Water Use Restrictions on Cape Cod, the Islands and the Plymouth- Carver Aquifer

**MassDEP Water Management Act
Advisory Committee
May 21, 2025**

What is a Groundwater Trigger?

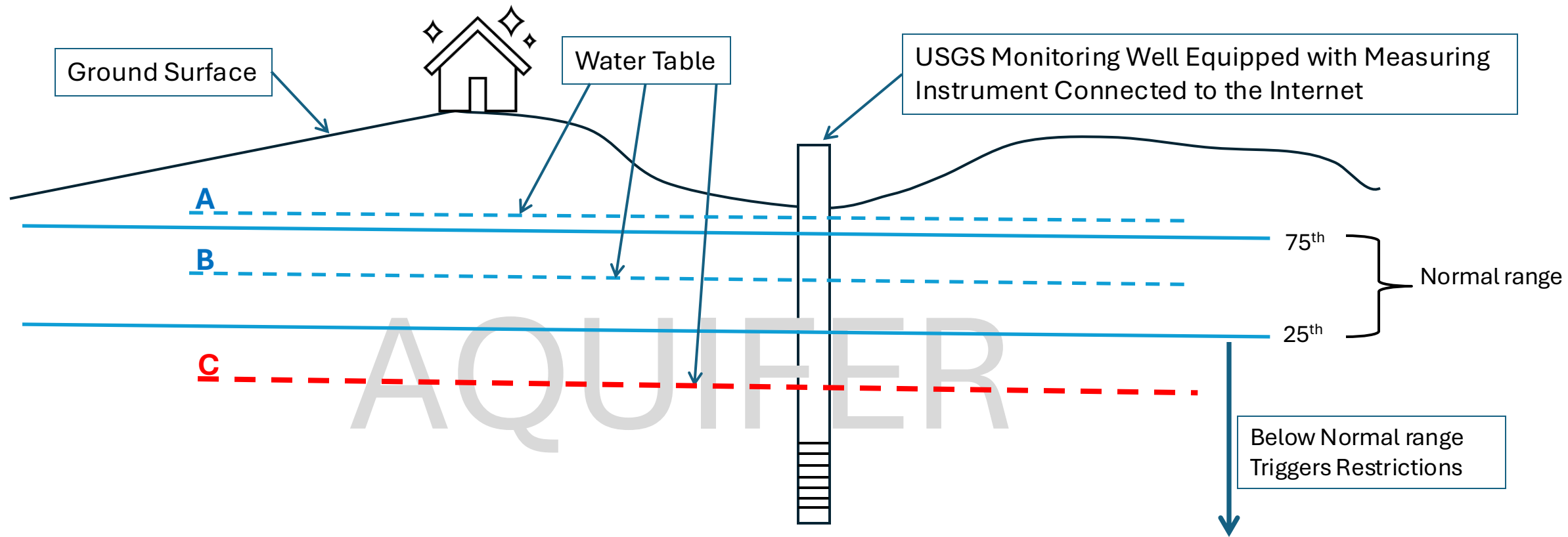
➤ Groundwater Level Measurements

- Groundwater level (depth from ground surface to water table) measured in USGS observation well
- Prior to 2012, only 1 trigger well was real-time (daily measurements); remaining 9 trigger wells measured manually once per month
- From 2012 to 2020 USGS upgraded remaining 9 trigger wells to real-time instrumentation.

➤ Groundwater Level Triggers for Restrictions

- USGS-published monthly water level statistic based on period (years) of record
- 25th monthly percentiles for each month March to September
- 25th percentile is the bottom of the normal range as defined by USGS
- Trigger occurs when water levels falls to or below 25th percentile

USGS Groundwater Levels



Water level **A** = above monthly normal range

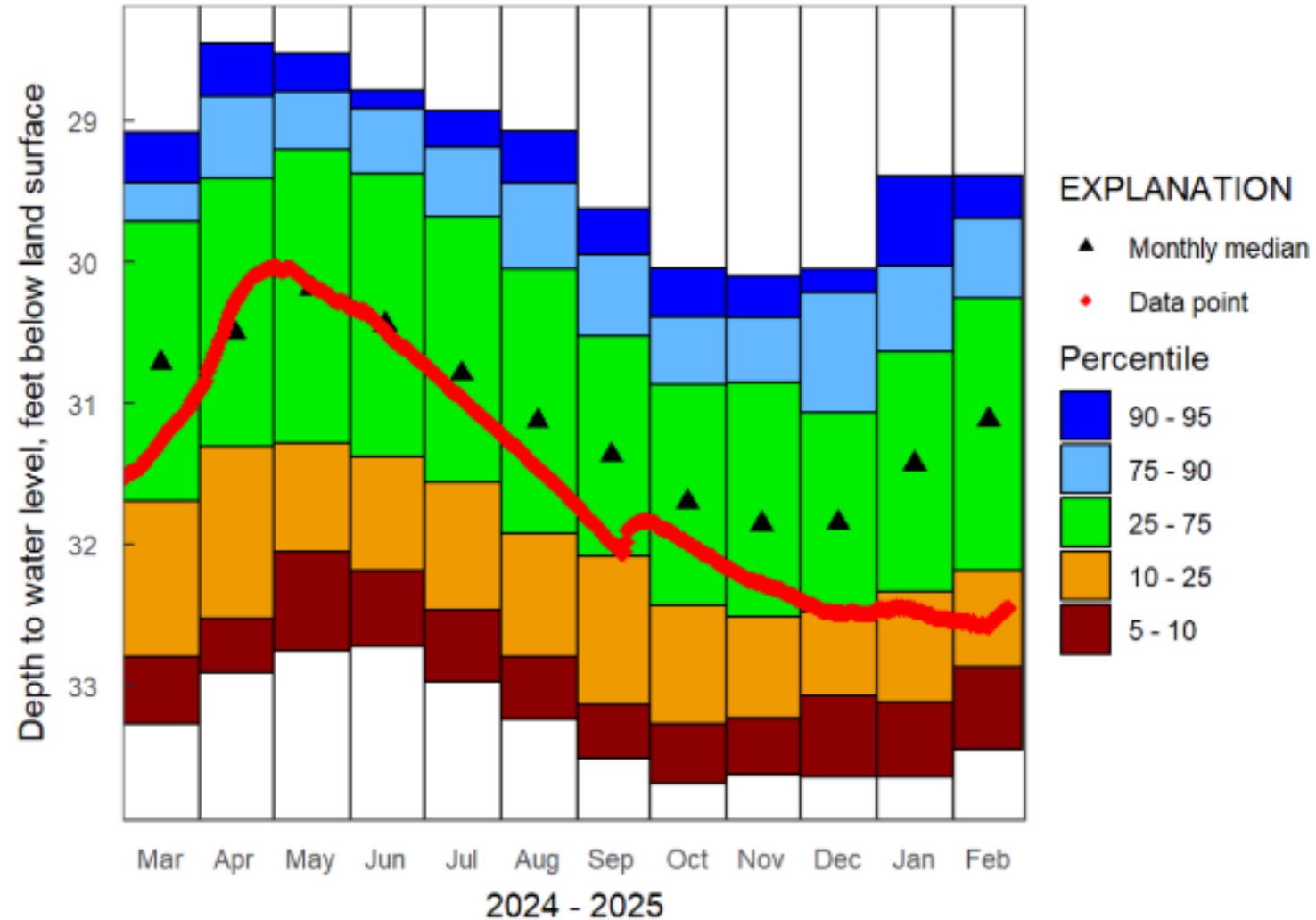
Water level **B** = within monthly normal range

Water level **C** = **below** monthly normal range (Triggers Restrictions)

USGS Well BMW 22R in Brewster

414632070014901 MA-BMW 22R BREWSTER, MA

U.S. Geological Survey



Plot created: 2025-02-24

Current Restrictions Requirement on Cape and Islands

Permittees must restrict nonessential outdoor water use to 2 days/week when two conditions are met:

- 1) GW Levels are below the 25th monthly percentile value for 60 consecutive days*
AND
- 2) The drought region is in a Level 1 or higher declared drought

*Prior to being converted to real-time gages, groundwater levels were measured once/month; 60 days was required to confirm that 2 consecutive water levels were at or below the trigger level

Permittees must track:

- 1) Daily groundwater levels of their assigned USGS monitoring well starting on March 1st in case water levels below trigger for 60 days on May 1st
- 2) Drought levels status published online by DCR [Drought Management in Massachusetts | Mass.gov](#)

➤ Restrictions are lifted when drought ends, or when water levels are above trigger for 30 days.

Pros and Cons of Existing System

(Drought AND 60 consecutive days below trigger)

Pros:

- Daily water level data is available on USGS web pages
- Permittees can set up water level alerts from USGS
- Distribution of wells account for geographic differences between PWSs

Cons:

- Inconsistent with current registration requirements
- Lag time between droughts being declared or lifted is 5 to 6 weeks
- 60-day lag time in triggering groundwater levels
- Duration, frequency and timing of restrictions varies among PWSs

Days of Restrictions 2020 to 2024, Well SDW 253R in Sandwich

SDW 253R Sandwich															Existing System	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Days below trigger	Days below trigger for 60+ days	Days below trigger for 60+ consecutive days AND Drought	Days in restrictions (3 days below, 7 days above trigger)
2020													None	None	None	None
2021													None	None	None	None
2022													14	None	None	9 days: Sep 22-30
2023													147	86	None	143 days: May 11 to Sep 30
2024													None	None	None	None
							Restrictions Period									
							Monitoring Period									
							12 = days below monthly 25th percentile trigger									
															Drought Level	
															Mild	
															Significant	
															Critical	

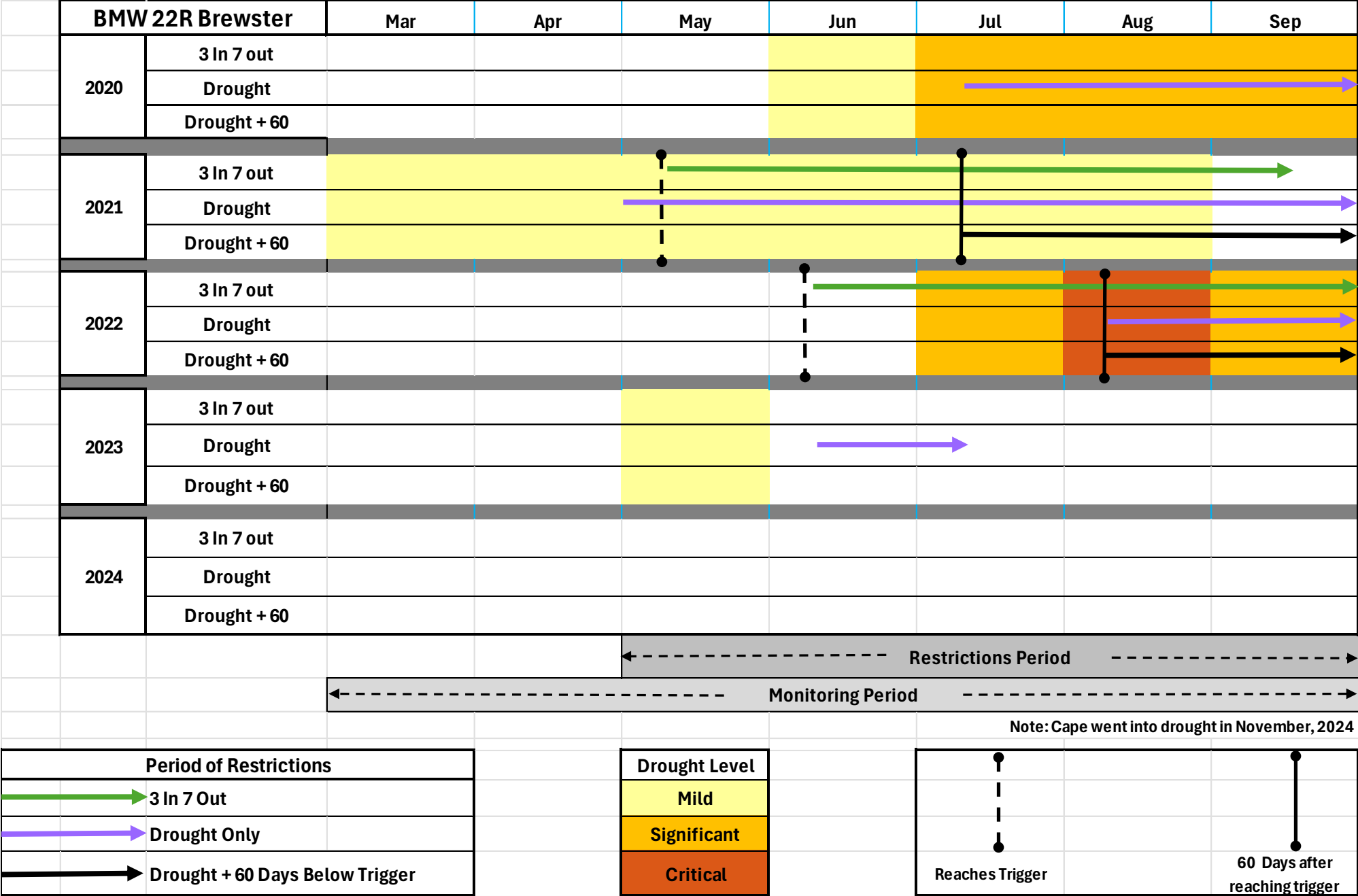
Days of Restrictions 2020 to 2024

Well WNW 17R in Wellfleet

WNW 17R Wellfleet													Existing System			
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Days below trigger May-Sept	Days below trigger for 60+ days	Days below trigger for 60+ consecutive days AND Drought	Days in restrictions (3 days below, 7 days above trigger)
2020													None	None	None	None
2021			31	30	31	30	31	31	30				153	153	153	153
2022			31	30	31	30	31	31	30				153	153	52	153
2023					3	19	14	18	22				76*	None	None	77*
2024			31	8				7	6				13	None	None	21*
<div> <div>Restrictions Period</div> <div>Monitoring Period</div> </div>													* Discontinuous periods			
															Drought Level	
															Mild	
															Significant	
															Critical	

31 = days below monthly 25th percentile trigger

Restriction Durations for Three Drought Trigger Systems



Trigger Well Assignments

USGS Well	Permittee Type
CAPE COD	
BHW 198 Bourne	1 PWS & 2 Golf Courses
A1W 306 Barnstable	5 PWSs & 3 Golf Courses
SDW 253 Sandwich	3 PWSs & 3 Golf Courses
BMW 22 Brewster	3 PWSs & 1 Golf Course
TSW 89 Truro	1 PWS
CGW 138 Chatham	2 PWSs
WNW 17 Wellfleet	1 PWS
ISLANDS	
NBW 228 Nantucket	1 PWS & 2 Golf Courses
ENW 52 Edgartown	3 PWSs & 1 Golf Course
SOUTH COASTAL & BUZZARDS BAY	
PWW 22 Plymouth	9 PWSs & 3 Golf Courses

Note: not all permittees have yet been issued a permit with outdoor water use restrictions.

Modifying the Nonessential Use Restrictions in Permits

- Consistency with Registrations
 - Time period
 - Watering allowed
- Simplification and Messaging
- Maintain existing principles
 - Flexibility for those meeting RGPCD Standard
 - Environmental Triggers in Permit Conditions

Alternative Approaches for restricting outdoor water use

- Current approach: 2 days/week restrictions, from May thru September:
 - Groundwater levels below trigger for 60 consecutive days **and** drought declared to institute restrictions, 30 consecutive days above trigger to lift restrictions.
- Other possible approaches:
 - 1) Drought **or** 60-day GW Trigger (replace **and** with **or** in existing system)
 - 2) Drought trigger only
 - 3) Groundwater trigger only (60 Days in/30 Days out, **or** 3 Days in/7 Days out)
 - 4) Implementation Period: Seasonal **or** Year-Round (to match registrations)
 - 5) More restrictive conditions with increasing drought levels
 - 6) Other?

Proposal for Cape, Island, Plymouth-Carver Aquifer

Standard Restrictions on Nonessential Outdoor Water Use: May 1 – October 31	
Groundwater Monitoring Well Trigger	7 days, no 9 am to 5 pm - except for watering with drip irrigation/hand-held hose/watering can
Restrictions Triggered by the Secretary's Drought Declaration: Year-Round	
Drought Restrictions are in effect year-round and supersede Groundwater Triggered Restrictions in place in the drought region, county or watershed	
Level 1	1 day, no 9 am to 5 pm
Mild Drought	- except watering with drip irrigation/hand-held hose/watering can
Level 2	Ban on all nonessential outdoor water use
Significant Drought	- except watering with drip irrigation/hand-held hose/watering can
Level 3	Ban on all nonessential outdoor water use
Critical Drought	Ban on all nonessential outdoor water use
Level 4	Ban on all nonessential outdoor water use
Emergency Drought	- any additional measures per a Governor's Emergency Declaration

Mainland Nonessential Outdoor Water Use Restrictions

Permit vs. Registration

Existing Condition

*** No watering 9 am to 5 pm on any day**

Permits – May 1 to Sept. 30

	Calendar*		STREAMFLOW *	
RGPCD & Aug. NGD	May 1 to Sept 30	7 day Low-Flow Trigger	Flow below ABF	7 day Low-Flow Trigger
< 65 & <25%	7 Days	1 Day	7 Days	1 Day
> 65 & <25%	2 Days	1 Day	2 Days	1 Day
<65 & >25%				
>65 & >25%	1 Day	1 Day	1 Day	1 Day

Registration Conditions- Year Round

State Drought Plan	Nonessential Outdoor Water-Use Restrictions
Level 1-Mild	1 day per week watering, before 9 a.m. or after 5 p.m.
Level 2-Significant	Hand-held hoses or watering cans only, before 9 a.m. or after 5 p.m.
Level 3-Critical	Ban on all nonessential outdoor water use
Level 4- Emergency	Ban on all nonessential outdoor water use

Mainland Nonessential Outdoor Water Use Restrictions

Permit vs. Registration

Proposed Condition

Permits – May 1 to October 31

* No watering 9 am to 5 pm on any day

	Calendar *		STREAMFLOW *	
RGPCD & Aug. NGD	5/1 – 10/31	MA Drought Plan Year Round	Flow < ABF 5/1 – 10/31	MA Drought Plan Year Round
< 65 & <25%	7 days	See Drought Plan	7 Days	See Drought Plan
>65 or depleted subbasin (>25% Aug NGD)	2 Days	See Drought Plan	2 days	See Drought Plan

Registration Conditions- Year Round

State Drought Plan	Nonessential Outdoor Water-Use Restrictions
Level 1-Mild	1 day per week watering, before 9 a.m. or after 5 p.m. and hand-held hoses, drip irrigation or watering cans
Level 2-Significant	Hand-held hoses, drip irrigation or watering cans only
Level 3-Critical	Ban on all nonessential outdoor water use
Level 4- Emergency	Ban on all nonessential outdoor water use

WMA-Regulated PWSs above RGPCD Standard of 65 in 2022 and/or 2023

PWSID	PWS Name	2022	2023	August NGD >25%	WMA Status
1209000	NORTH ADAMS WATER DEPARTMENT	107	104	NA	Reg. Only
4239045	PLYMOUTH WATER CO	102	95	No	Permit only
1029000	BERNARDSTON FIRE & WATER DISTRICT	57	89	Yes	Reg. & Permit
2039000	BOYLSTON WATER DISTRICT	65	89	Yes	Reg. & Permit
3347000	WOBURN DEPARTMENT PUBLIC WORKS		88	NA	Reg. Only
1132000	HINSDALE WATER SYSTEM	88	20	SW Only	Permit only
4082000	DUXBURY WATER DEPARTMENT	85	82	NO	Reg. & Permit
4065000	COHASSET WATER DEPARTMENT	82	75	NO	Reg. & Permit
3199000	NEEDHAM DEPARTMENT OF PUBLIC WORKS	81	65	NA	Reg. Only
3009000	ANDOVER WATER DEPARTMENT	79	63	SW only	Reg. & Permit
1329000	WESTFIELD WATER DEPARTMENT	79		NA	Reg. Only
3210000	NORTH ANDOVER WATER DEPARTMENT	78	65	SW Only	Reg. & Permit
2139000	HOPKINTON WATER DEPARTMENT	78	57	Yes	Reg. & Permit
3166000	MANCHESTER WATER DEPARTMENT	76	69	NA	Reg. Only
1289000	SUNDERLAND WATER DISTRICT	75	80	NA	Reg. Only
4036002	NORTH SAGAMORE WATER DISTRICT	75	74	NO	Reg. & Permit
1279000	SOUTHWICK WATER DEPARTMENT	74	78	Yes	Reg. & Permit
3344000	WINCHESTER WATER DEPARTMENT	73	62	NA	Reg. Only
3157000	LINCOLN WATER DEPARTMENT	73	60	Yes	Reg. & Permit
4350000	WRENTHAM DPW WATER DIVISION	70	59	Yes	Reg. & Permit
3317000	WELLESLEY WATER DEPARTMENT	68	59	NA	Reg. Only
3315000	WAYLAND WATER DEPARTMENT	68	58	Yes	Reg. & Permit

Questions?