



Presented to

Water Supply Citizens Advisory Committee

**2020 Annual Update on New Connections
to the MWRA System**

May 18, 2021



MWRA Expansion Policies

- MWRA has five operating policies related to system expansion.
 - OP.04 - Sewer Connections Serving Property Partially Located in a Non-MWRA Community (Sewer Straddle Policy)
 - OP.05 - Emergency Water Supply Withdrawals
 - OP.09 - Water Connections Serving Property Partially Located in a Non-MWRA Community (Water Straddle Policy)
 - OP.10 - Admission of New Community to the MWRA Water System
 - OP.11 - Admission of New Community to MWRA Sewer System and Other Requests for Sewer Service to Locations Outside MWRA Sewer Service Area



2020 Annual Update Staff Summary

- This report on new connections is prepared annually pursuant to requirements of MWRA's expansion policies.
- Includes "new" connections since 2002
- The purpose is to monitor compliance with agreement requirements
 - Water – Withdrawal Limits and Entrance Fee Payments
 - Wastewater – Discharge limits and inflow removal requirements
- Flash Drought in 2020
 - Level 2 – Significant Drought
 - Quabbin remained within normal operating band and spilled 4.49 billion gallons
- Certain entities saw impacts on withdrawals/discharges due to the pandemic

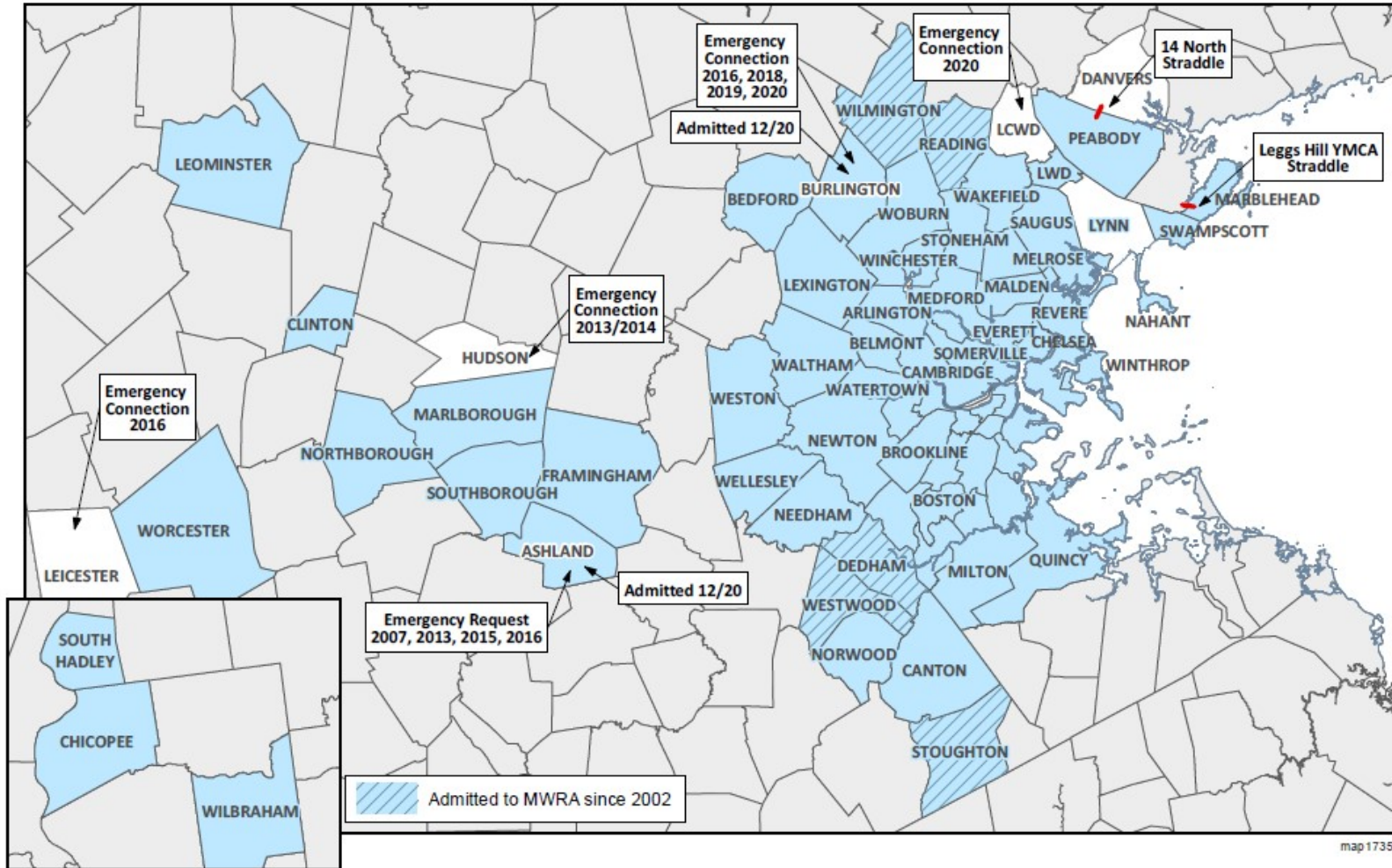


2020 Water Update

- Two communities were approval for admission to the MWRA water system under OP.10
 - Burlington
 - Approved for up to 6.5 mgd
 - Presently intend to withdraw 0.0886 via Lexington
 - In the process of constructing direct connection to MWRA
 - Ashland
 - Approved to withdraw up to 1.67 mgd via Southboro
 - Intend to withdraw 90,000 gallons per day
 - Supplemental supply between October & January
- Emergency Connections
- All other water withdrawals were below limit or approved for temporary increase



New Water Connections Since 2002



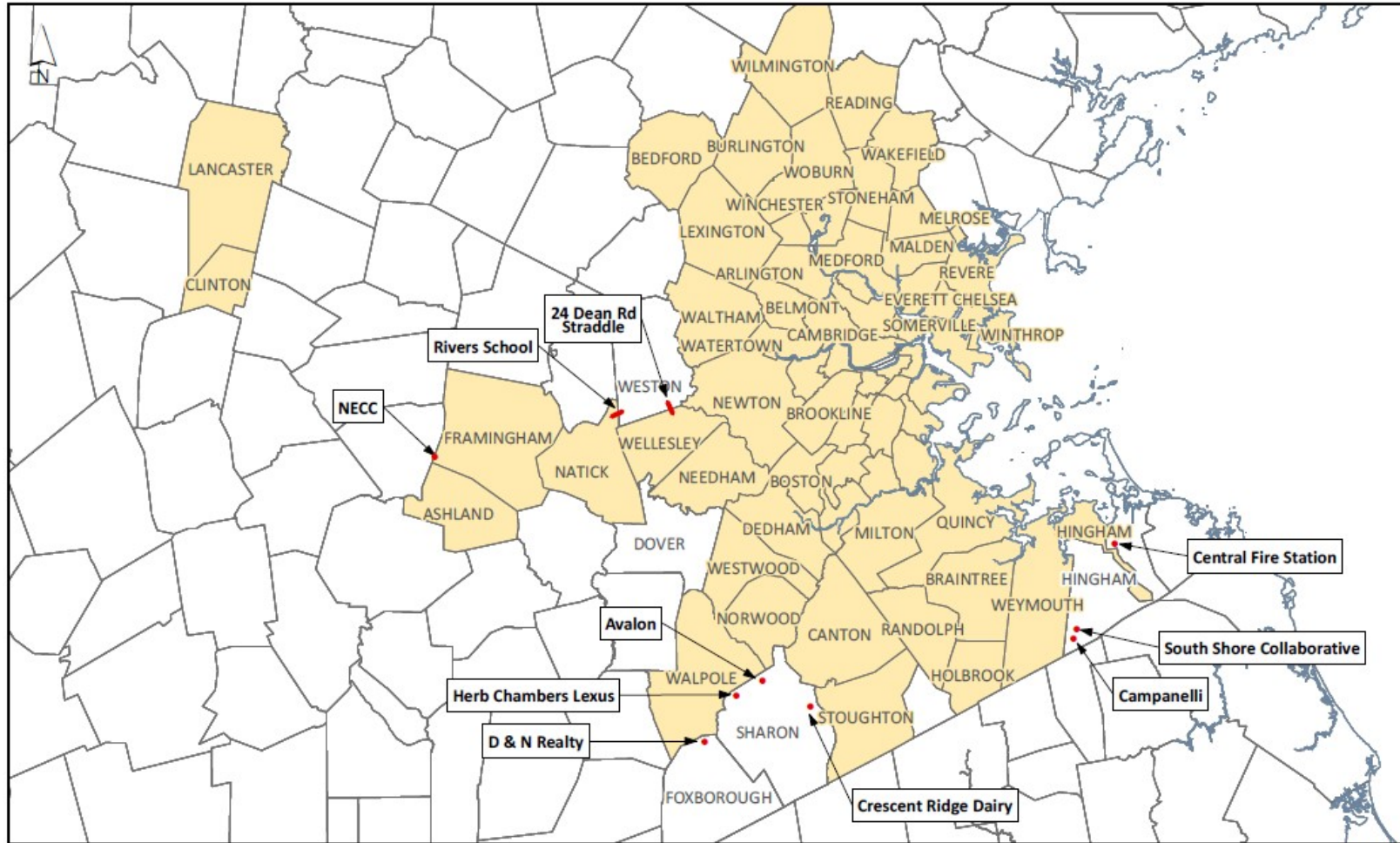


2020 New Wastewater Connections

- The Rivers School was approved to discharge to the MWRA wastewater system via Natick
 - OP.04 Sewer Straddle Policy
 - Located on the Weston/Natick municipal boundary
 - Average discharge of 3,000 gpd
- Most connections were within agreement requirements
 - A few entities saw decrease in discharges due to the pandemic
 - An apartment complex was over approved discharge limit
- In 2018, Crescent Ridge Dairy was approved to discharge to MWRA wastewater system via Stoughton
 - Expected to begin discharging in 2021



New or Increased Volume Sewer Connections Since 2002



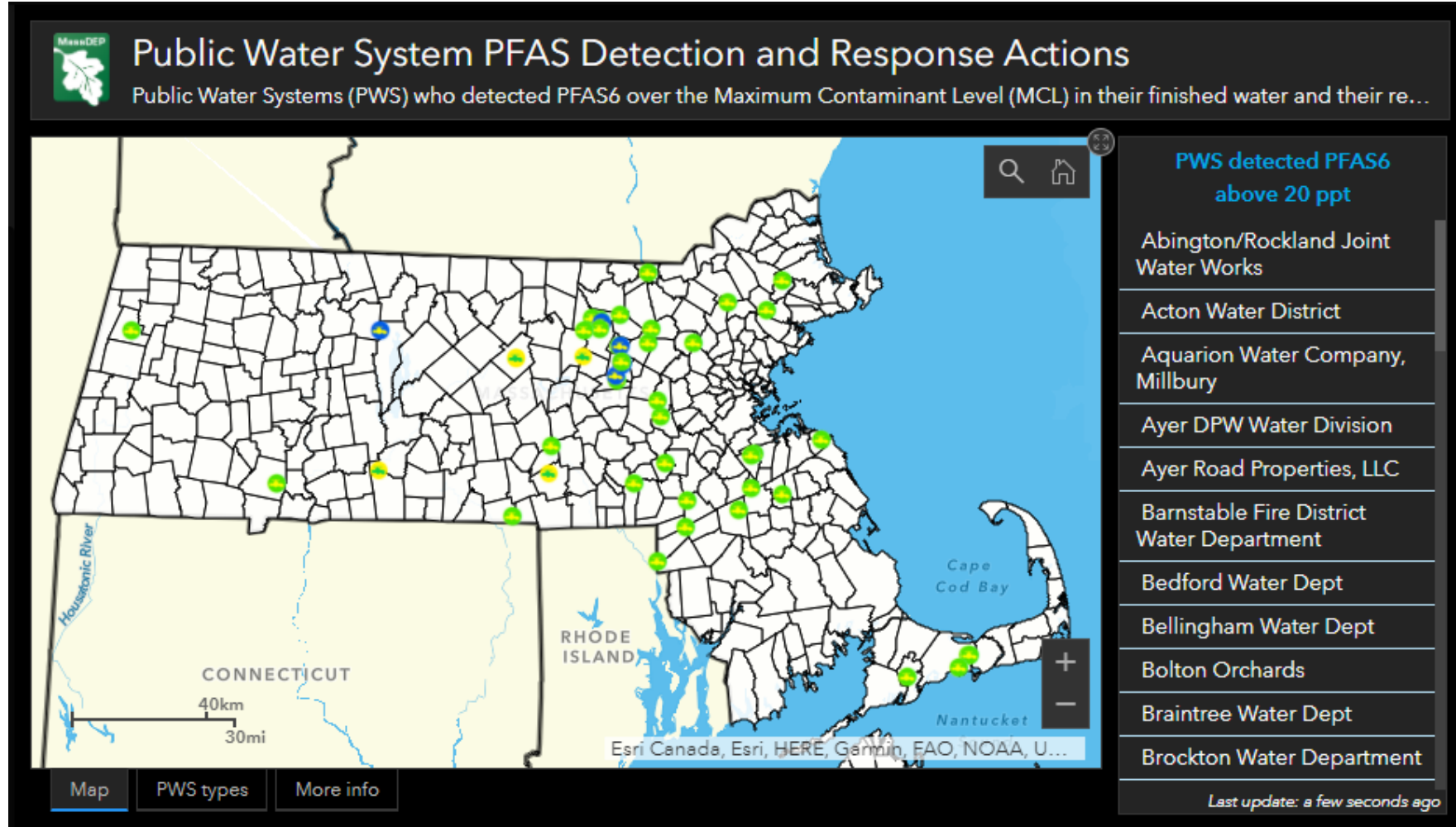


Inquiries about Admission to MWRA

- MWRA typically receives a variety of inquires from communities in any given year
 - We provide information on the admission policies and process
- In the past, non-MWRA community inquires have often related to water quantity issues
 - Impacts of drought on local sources
 - Local pipe breaks or maintenance in local system
 - Can cause communities to consider emergency connection or membership
- Some communities evaluate MWRA versus local treatment plant upgrades
- Recently, have received more inquires from communities with water quality issues
- A number of non-MWRA communities have recently detected PFAS



- Group of contaminants called Per- and polyfluoroalkyl substances
 - Used since the 1950's in stain resistant, water resistance and nonstick products
 - Certain firefighting foam, food packaging, outdoor clothing, carpets, leather goods, etc.
 - Forever chemicals that may cause variety of health effects
- Soluble in water and can leech into groundwater and surface water
- MassDEP set standard in October 2020 regulating six specific PFAS (PFAS6)
 - 20 nanograms per liter or parts per trillion
 - All public water system (PWS) are required to test for PFAS
- MWRA has not detected more than trace amounts of PFAS
- Non-MWRA communities are weighing options - PFAS treatment v. MWRA connection

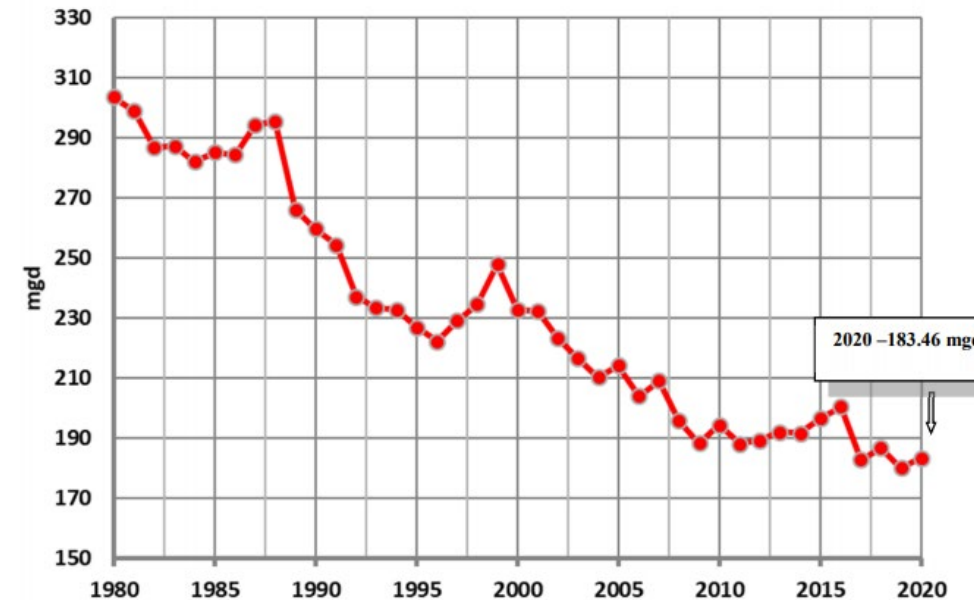




2020 Water Use

- 2020 water use was unusual
- Pandemic caused sustained shift in use
 - Decrease in Boston and increases elsewhere
- Drought increased seasonal use, use by partial users and slight increase in total use
 - Total water consumption 183.46 mgd
 - About 3.24 (1.8 percent) higher than 2019
- Quabbin remained in normal operating band for the entire year

Figure 1 – Total Consumption by MWRA Communities (1980 to 2020)

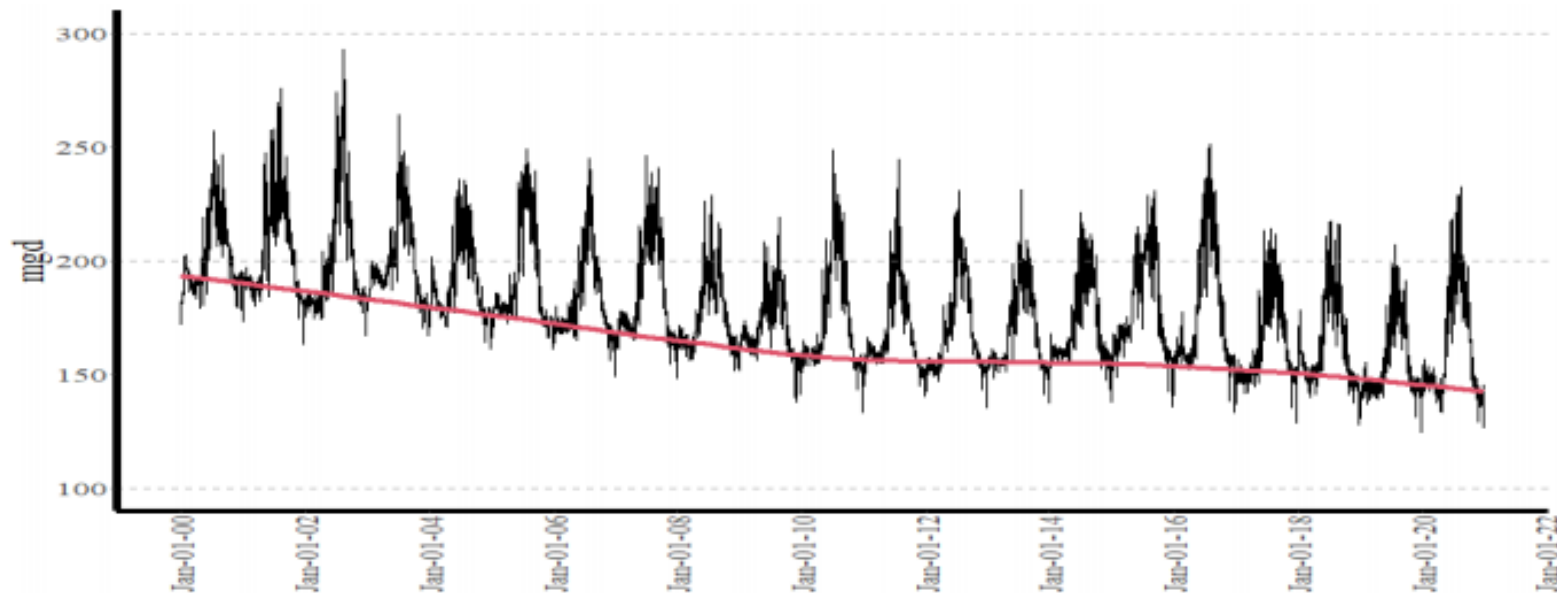




Fully Supplied Communities

- Base/indoor water use continues to decrease
- Despite population increases and strong economy since the end of the recession
- Result of efficiency improvements, water saving technologies, leak reduction program

Figure 5: Fully-Supplied Communities Demand (1999 to 2020)¹

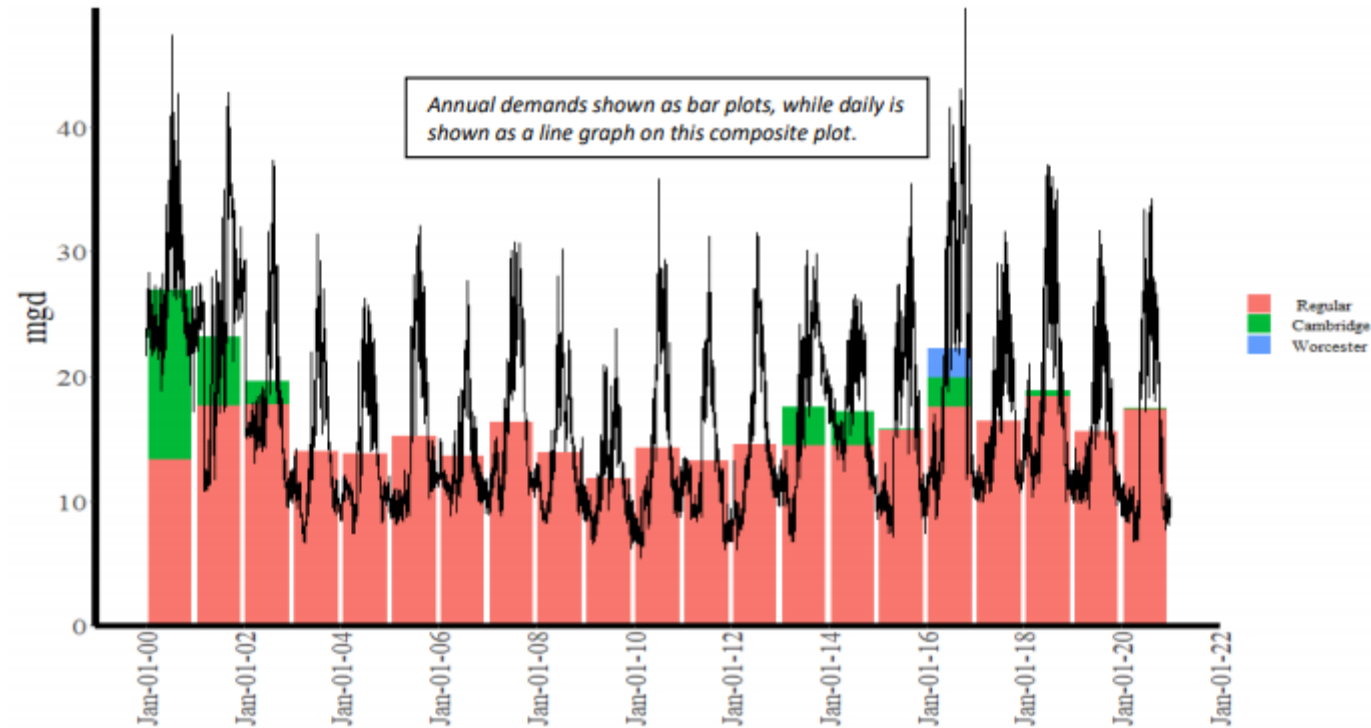




Partially Supplied Communities

- Partially-supplied communities demand was 1.84 mgd (11.8%) in 2020 as compared 2019.

Figure 8: Partially Supplied Communities – MWRRA Supplied Demand (Daily and Annual)

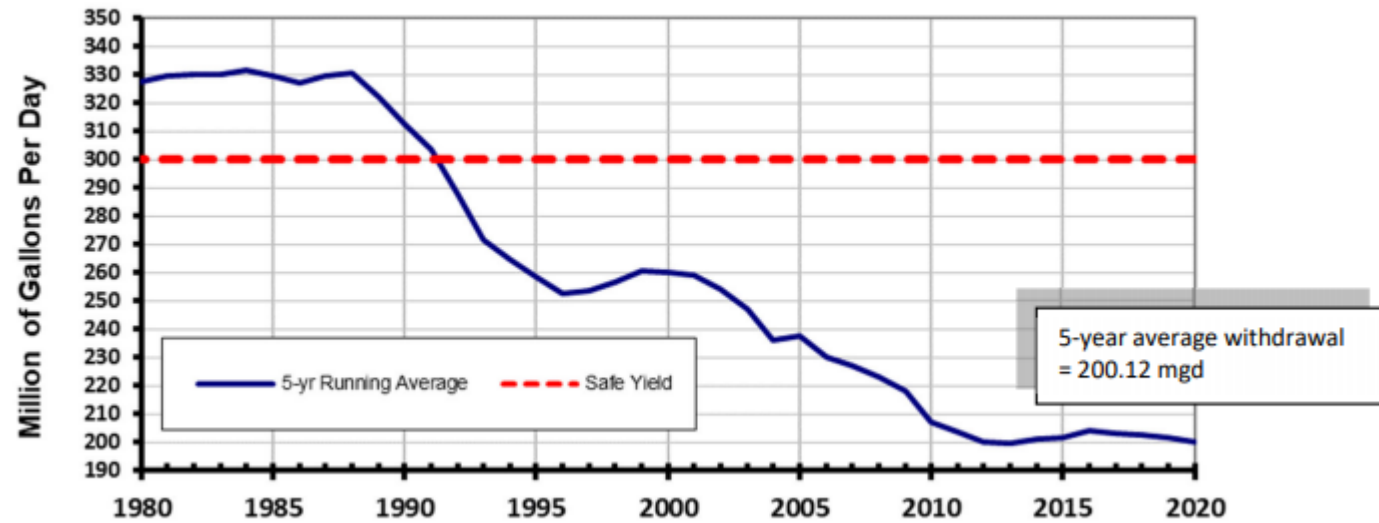




Declining Water Use

- MWRA's total 2020 water withdrawal was 199.43 mgd
 - 1.43% increase from 2019
- Current 5-year average withdrawal is 200.12 mgd
- Quabbin spilled 4.49 billion gallons over 73 days

Figure 9: Total Reservoir Withdrawals – Five-Year Running Average 1980 to 2020





Impacts of Climate Change

- Climate models anticipate increase in temperatures and precipitation as well as potentially more extreme conditions.
- MWRA's large reservoirs are well suited to withstand more frequent droughts
- MWRA worked with the National Center for Atmospheric Research (NCAR) to develop a probabilistic estimate of the impact of climate change on safe yield.
- The estimate predicts a modest 8% increase over current safe yield, for a total of 324 mgd.
- Partially-supplied and emergency communities may be more vulnerable and turn to MWRA for additional supply.
- May receive more inquiries from non-MWRA communities



Future Demand Projections & Capacity

- MWRA’s conservative demand projections for the water system acknowledge...
 - Continuing increases in water efficiency
 - Increases in population and employment within the service area
 - Potential for partially supplied communities to take more water
 - Potential for new communities to join MWRA

Current demand within the service area (5-year average)	203mgd
Potential growth due to increased population and employment	29 mgd
Contingency for potential increase in demand from partial user communities	17 mgd
TOTAL PROJECTED DEMAND IN 2040	249 mgd
MWRA Supply System Safe Yield	300 mgd
AVAILABLE MARGIN	51 mgd



Benefits to Joining MWRA

- High quality drinking water - protected watersheds & treatment
- Water quality monitoring & reporting
- Management of compliance with new DEP and EPA requirements
- Eligibility for loan programs
 - Local Water System Assistance Program
 - Lead Service Line Replacement Loan Program
- Emergency and Technical Assistance & Training Opportunities
- Water Conservation and Demand Management Program



Hurdles to Joining MWRA

- Geographically limited area
- Infrastructure
 - Community is responsible to make connection – Direct or Indirect
 - Regional planning may be helpful
- Environmental and Regulatory Review processes
 - MEPA & Interbasin Transfer Act
- Entrance Fee/Water Rates
 - FY21 Entrance Fee for 1 mgd customer is approx. \$4.4 million
 - FY21 water rate is \$4,320.63 per million gallons