



THE DROUGHT AND ITS IMPACT ON THE CAMBRIDGE WATER SYSTEM

HEALTH AND ENVIRONMENT COMMITTEE HEARING

CAMBRIDGE CITY COUNCIL

SEPTEMBER 28, 2016



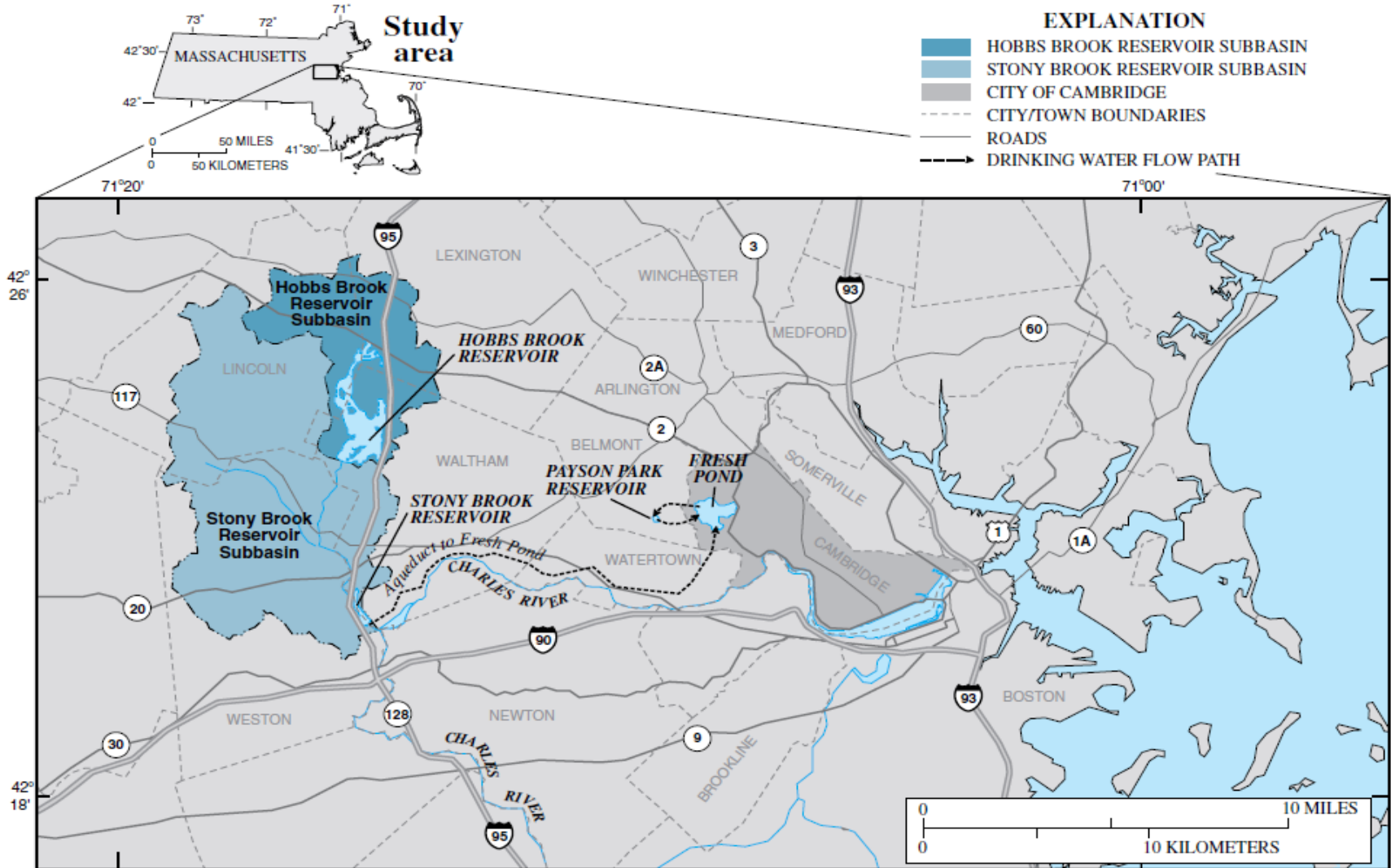


AGENDA

- CAMBRIDGE WATER SYSTEM
- DROUGHT
 - STATUS
 - TRACKING
- WATER CONSERVATION
- WATER SYSTEM STATUS
- GO FORWARD STRATEGY



CAMBRIDGE WATER SYSTEM





CAMBRIDGE WATER SYSTEM (CONT.)

- RESERVOIR SYSTEM CAPACITY WHEN FULL IS 8 MONTHS (WITHOUT ANY PRECIPITATION)
 - BENEFICIAL ASPECTS
 - CAN FILL QUICKER THAN OTHER SYSTEMS
 - CAN READILY WITHSTAND SHORT TERM PRECIPITATION VARIATIONS (+/- 1 YEAR)
 - CHALLENGING ASPECTS
 - CANNOT WITHSTAND LONG TERM DROUGHTS (+/- 2 YEARS OR MORE)
 - NOT A LOT OF WARNING FOR PROBLEM CONDITIONS/SHORT PLANNING HORIZON
 - RESERVOIR SYSTEM ANNUAL RECHARGE CYCLE STARTS IN SEPTEMBER

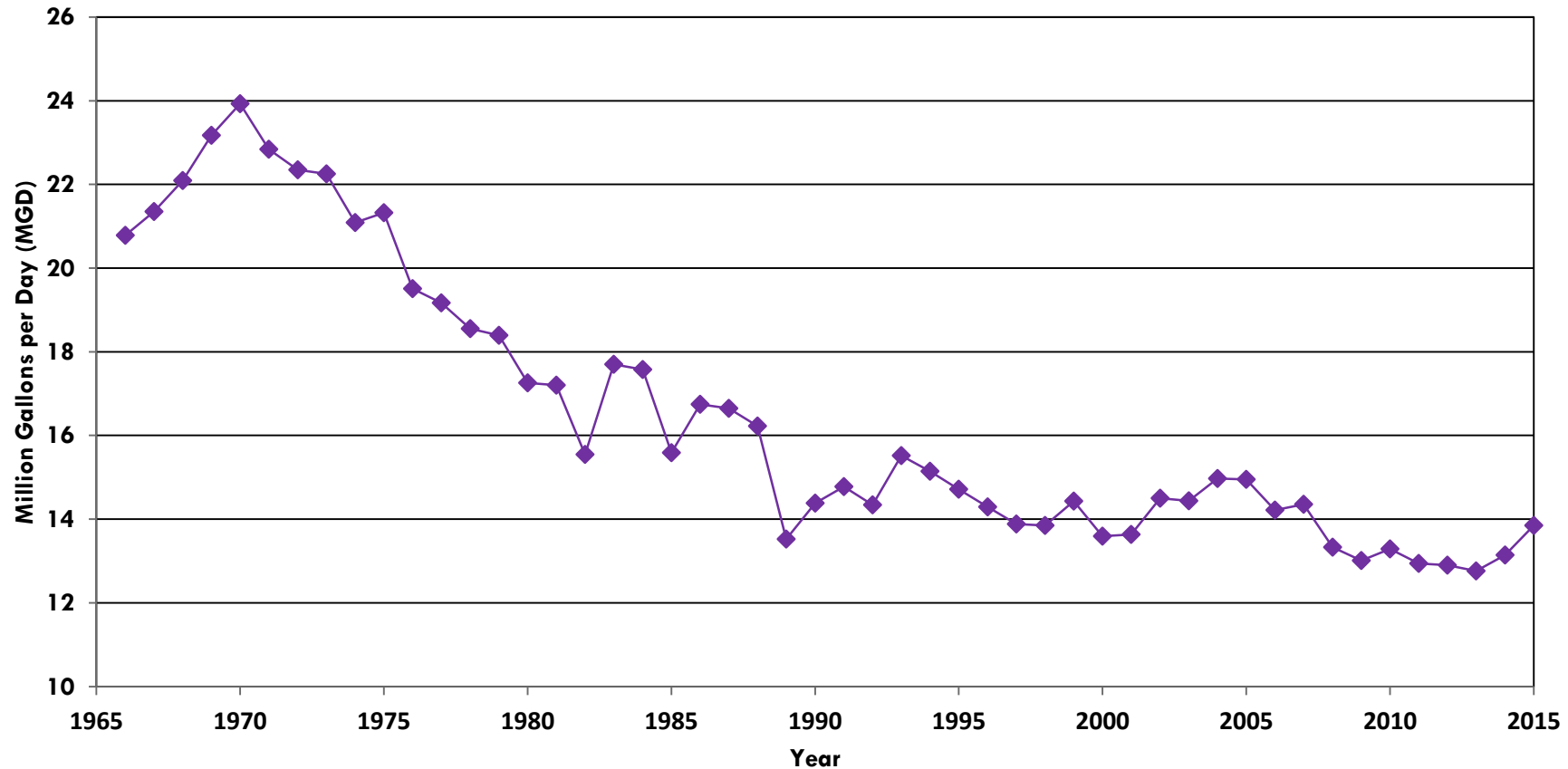


CAMBRIDGE WATER SYSTEM (CONT.)



- OUR AVERAGE DAILY WATER DEMAND HAS STEADILY DECLINED SINCE THE EARLY 70'S

Average Daily Water Consumption in MGD (1966 - 2015)





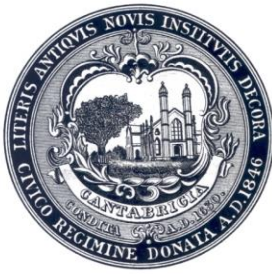
CAMBRIDGE WATER SYSTEM (CONT.)

- OUR RESIDENTIAL GALLON PER CAPITA PER DAY (RGPCD) USE IS SIGNIFICANTLY BELOW THE STATE GOAL OF 65
- OUR UNACCOUNTED FOR WATER (UAW) IS ALSO LISTED FOR THE SAME TIME PERIOD AND IS ABOVE THE STATE GOAL OF 10%

CAMBRIDGE 6 YEAR RECORD

- 2010: 51 RGPCD; 13.3% UAW
- 2011: 48 RGPCD; 14.3% UAW
- 2012: 48 RGPCD; 16.7% UAW
- 2013: 52 RGPCD; 13.3% UAW
- 2014: 46 RGPCD; 12.4% UAW
- 2015: 49 RGPCD; 12.2% UAW





CAMBRIDGE WATER SYSTEM (CONT.)

- FULL MEMBER OF MASSACHUSETTS WATER RESOURCES AUTHORITY (MWRA)
 - PERMANENT CONNECTION TO MWRA WATER SYSTEM
 - FOLLOW MWRA DROUGHT MANAGEMENT PLAN VS. STATE PLAN
 - ACCESS TO WATER IS READILY AVAILABLE
 - USED MWRA WATER EARLIER THIS YEAR (2016)
 - PRACTICED ACTIVATION AND SHORT TERM USE IN 2015
 - USED MWRA WATER IN 2014
 - MWRA WATER COST IS ~2.0 X OUR COST

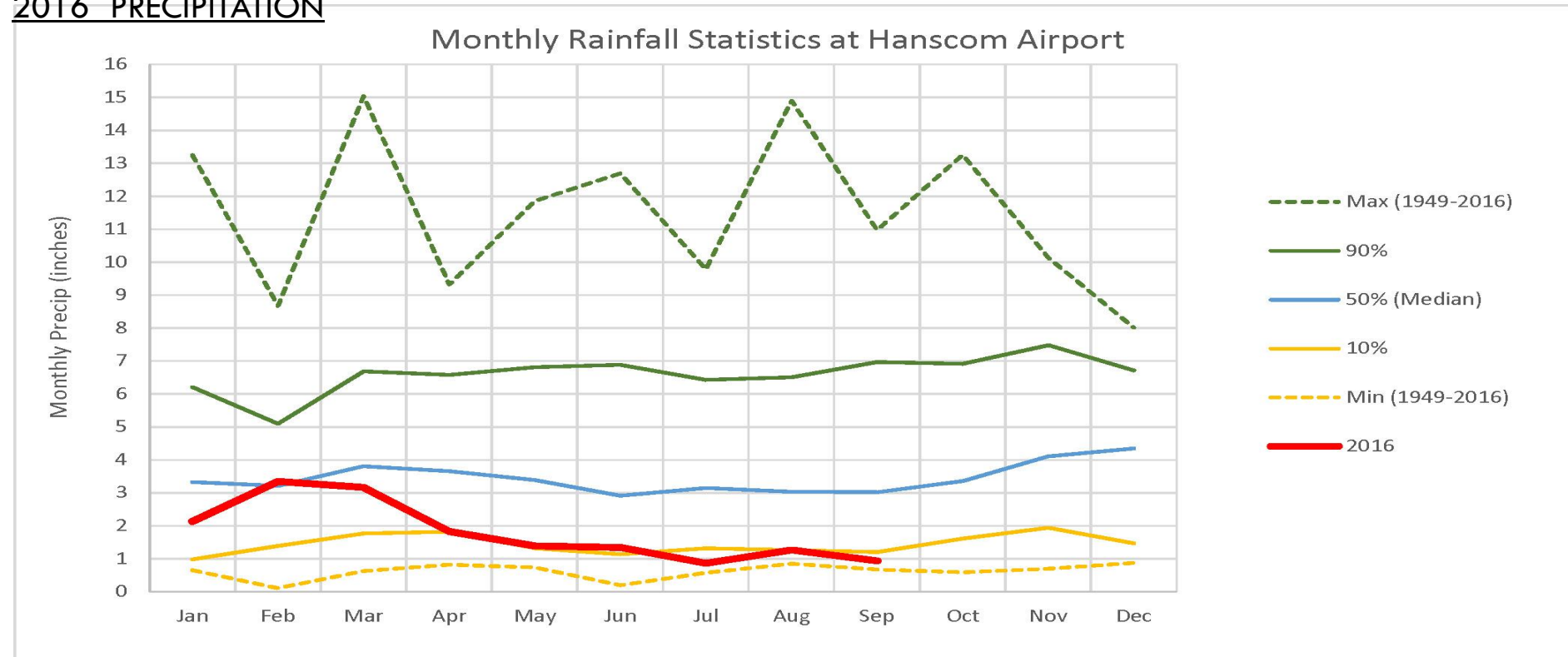


DROUGHT - STATUS



- MAY, JUNE, JULY AND AUGUST 2016 RECORD LOW PRECIPITATION
- SEPTEMBER IS CONTINUING RECORD LOW PRECIPITATION TREND
- NOAA WEATHER PREDICTION IS FOR DROUGHT TO CONTINUE WITH NO ABOVE AVERAGE PRECIPITATION UNTIL SUMMER/FALL 2017
- WOULD NEED 9-12 INCHES OF RAIN OVER THE NEXT 4 WEEKS TO GET US BACK TO RETURN TO “NORMAL” CONDITIONS

2016 PRECIPITATION





DROUGHT - TRACKING

- JANUARY 2016 RESERVOIR SYSTEM ~400 MG BELOW FULL CAPACITY
 - FOCUSED MONTHLY REVIEW
- SOMEWHAT AVERAGE PRECIPITATION THROUGH APRIL
- ENTERED RECORD LOW PRECIPITATION PERIOD IN MAY
- JULY: INITIATED DETAILED WEEKLY REVIEW/DROUGHT CONTINUING
- SEPTEMBER: SERIOUS SITUATION/DROUGHT CONTINUING
 - SYSTEM RECHARGE NOT INITIATED
 - LIKELY ENTERING YEAR 2 OF DROUGHT





WATER CONSERVATION

- AUGUST: STRONGLY ENCOURAGED WATER CONSERVATION – WATER DEPARTMENT WEBPAGE
- SEPTEMBER:
 - URGED OUTDOOR AND INDOOR WATER CONSERVATION – UPDATED WATER DEPARTMENT WEBPAGE
 - REDUCING MUNICIPAL OUTDOOR IRRIGATION BY 50% OR MORE WHERE POSSIBLE AND LOOKING TO TURN OFF IRRIGATION SYSTEMS EARLY
 - URGING WATER CONSERVATION THROUGH ALL CITY SOCIAL MEDIA ACCOUNTS
 - POSTED DROUGHT AND WATER CONSERVATION LINK TO CITY WEBPAGE
 - ADDED WATER CONSERVATION NOTE TO WATER BILLS
 - INITIATED UPDATING WEBPAGE DROUGHT INFORMATION WEEKLY

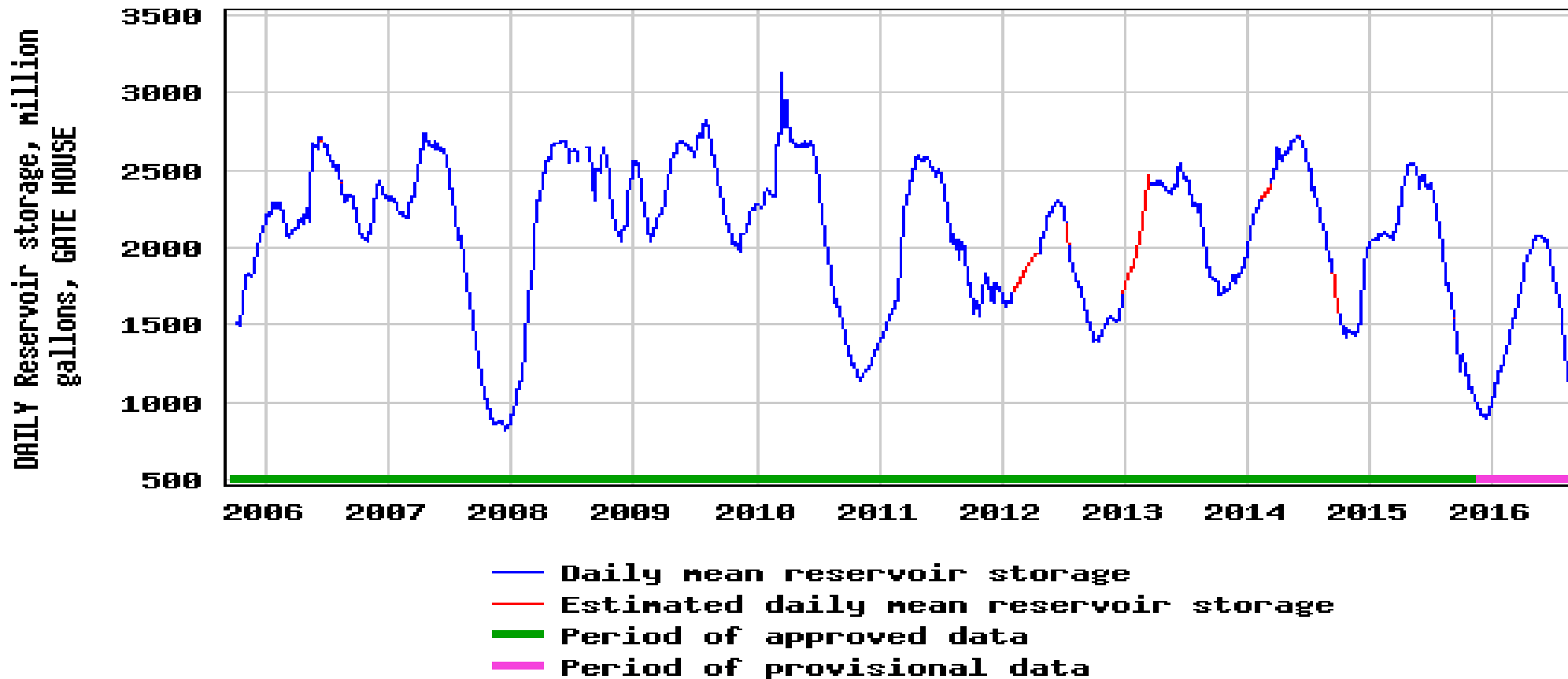


WATER SYSTEM STATUS



RESERVOIR CAPACITY BEYOND 10 YEAR LOW A/O SEPTEMBER 26, 2016

USGS 01104430 HOBBS BK BELOW CAMBRIDGE RES NR KENDALL GREEN, MA





WATER SYSTEM STATUS (CONT.)

- ABOUT 35-40 DAYS OF USEABLE CAPACITY REMAINING IF SEVERITY OF DROUGHT CONTINUES
- AS A RESULT OF THE CONTINUED DROUGHT THROUGH SEPTEMBER AND NO WEATHER PATTERN CHANGE FORECASTED, WE WILL BE DECIDING HOW MUCH MWRA WATER WE WILL NEED TO SUPPLEMENT OUR WATER. THIS WILL BE BASED ON OUR COMPREHENSIVE EVALUATION, ANALYSIS AND DISCUSSIONS
- THIS WILL HAVE A SIGNIFICANT COST IMPACT TO THE WATER DEPARTMENT BUDGET



GO FORWARD STRATEGY



- CONTINUE AND EXPAND CONSERVATION PROGRAM
 - STRATEGIZE WITH TOP WATER USERS
 - UNIVERSITIES, PUBLIC SCHOOLS, MUNICIPAL FACILITIES, BUSINESSES AND CITIZENS
 - CITY WEB PAGES, SOCIAL MEDIA, WATER AND SEWER BILLS, FLYERS, NOTICES, ETC.
 - DEVELOP OUTDOOR WATER USE RESTRICTION PLAN TO TAKE EFFECT BEFORE THE SPRING WATERING SEASON (2017)
- CONTINUE DETAILED WEEKLY OPERATIONAL REVIEW
 - MINIMIZE MWRA WATER USE, MAINTAIN RESERVOIR SYSTEM AND PLANT OPERATIONAL STATUS
- COMPREHENSIVE FINANCIAL ANALYSIS UNDERWAY
 - MWRA COST
 - REVENUE LOSSES
 - RATE IMPACT
- MONTHLY STATUS UPDATES
 - CITY MANAGERS OFFICE, CITY COUNCIL, CITY STAFF AND THE GENERAL PUBLIC

