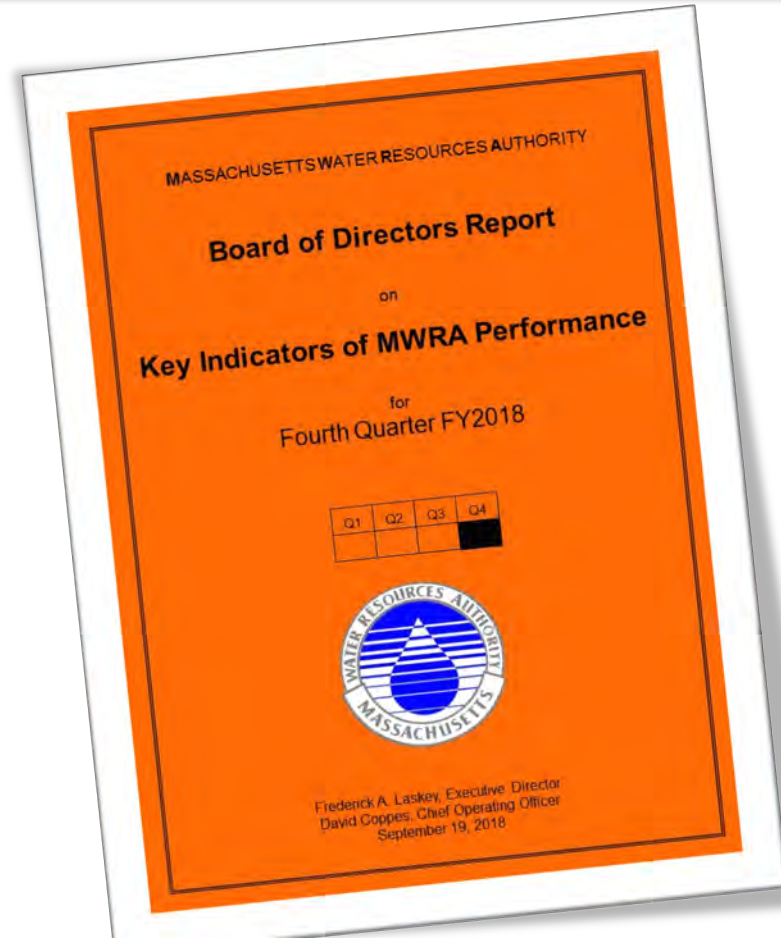




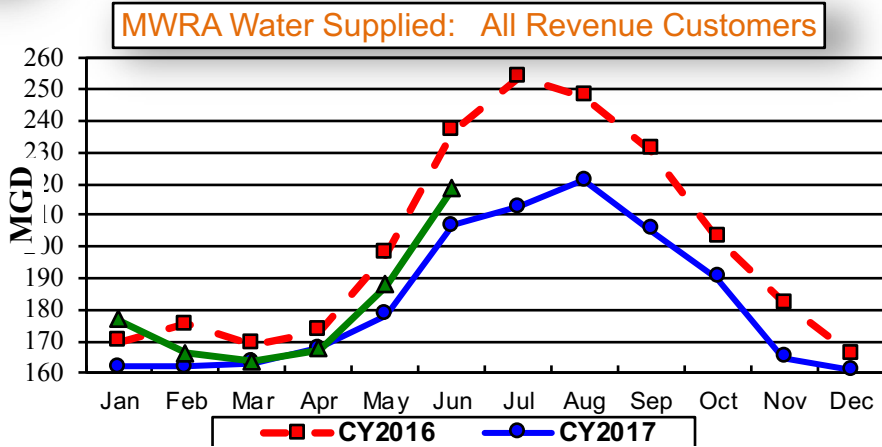


Massachusetts Water Resources Authority

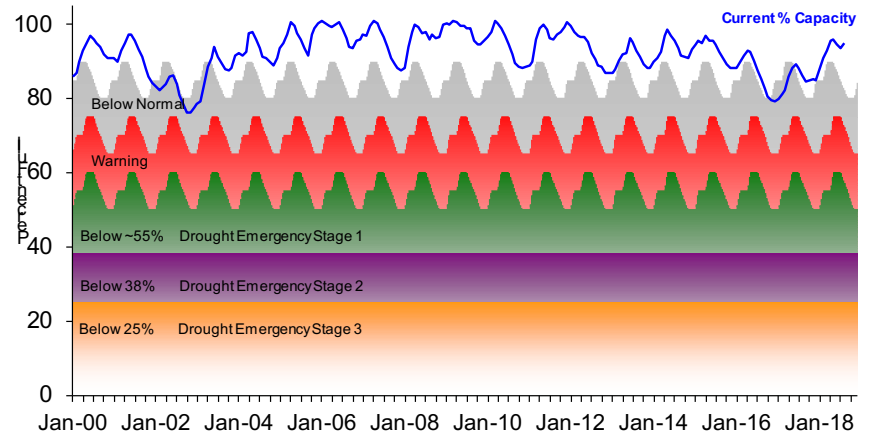




Water Use



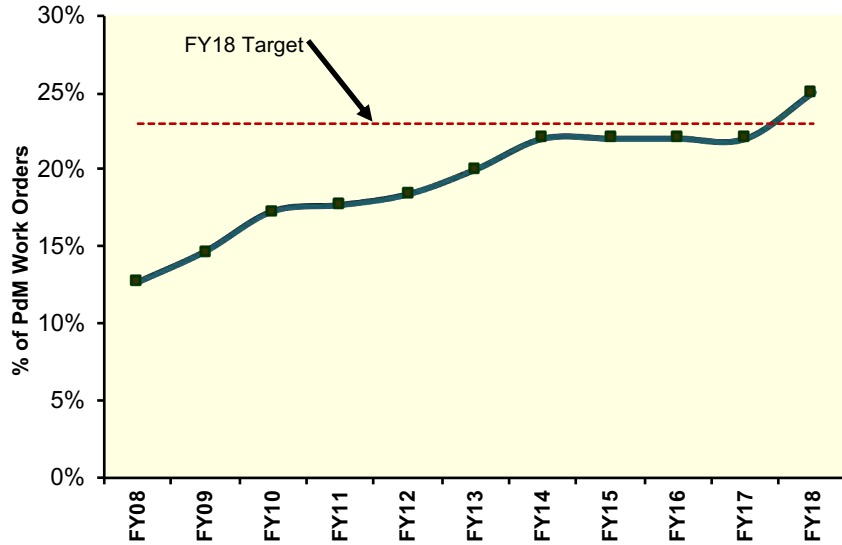
Quabbin Reservoir Levels
With Drought Emergency Planning Stages



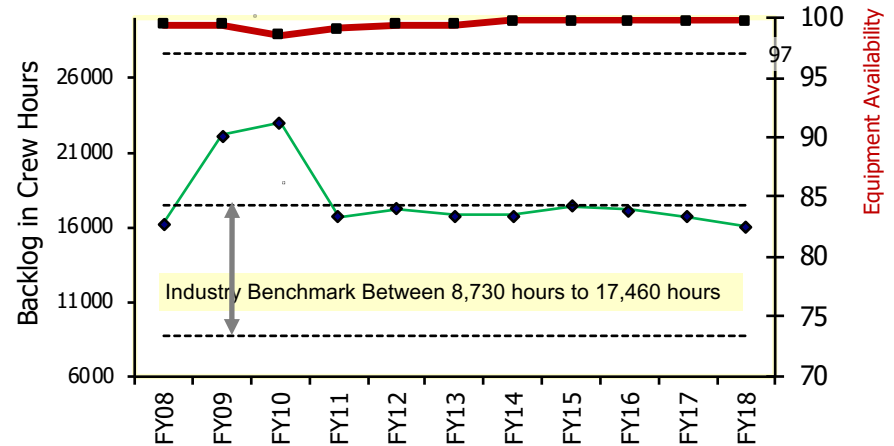


Deer Island Maintenance Metrics

Predictive Maintenance

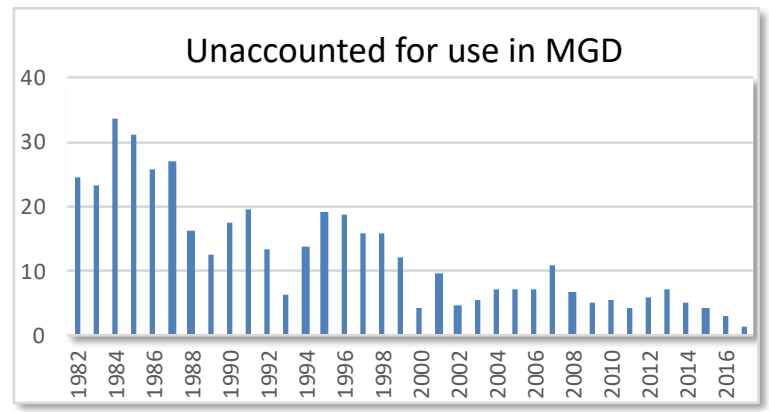
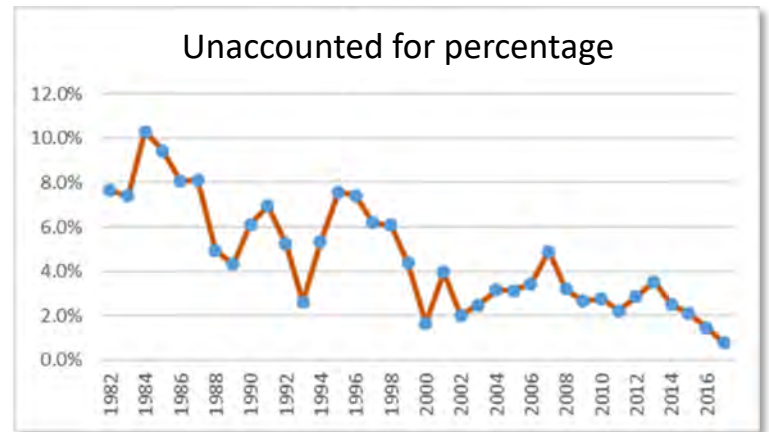
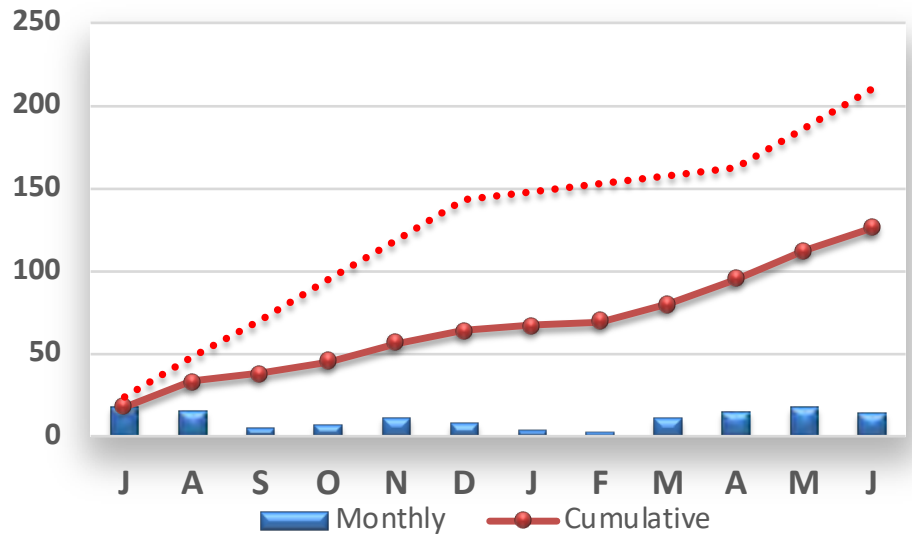


Backlog and Availability





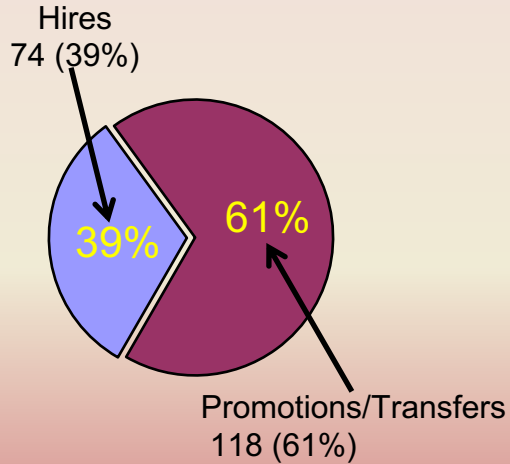
Miles Surveyed for Leaks MWRA Unaccounted For Water Use Has Declined Significantly



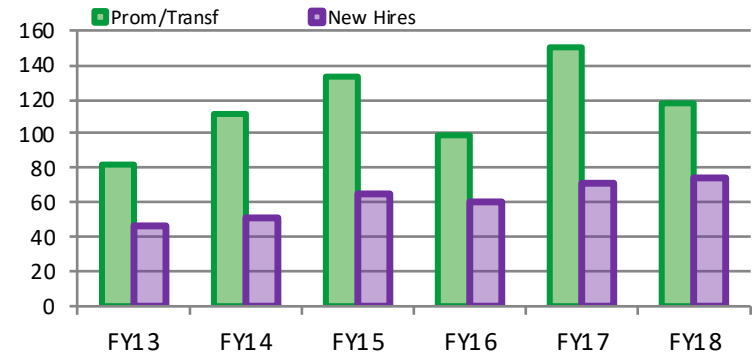


Workforce Management

Positions Filled by Hires/Promotions FY18-YTD



	Prom./Transf.	Hires	Total
FY13	82 (64%)	47(36%)	129
FY14	111 (69%)	51 (31%)	162
FY15	133 (67%)	65 (33%)	198
FY16	99 (62%)	60 (38%)	159
FY17	150 (70%)	72(32%)	222
FY18	118 (61%)	74 (39%)	192







***Struvite, Scum, Sludge and Grit
Removal Services at Deer Island***

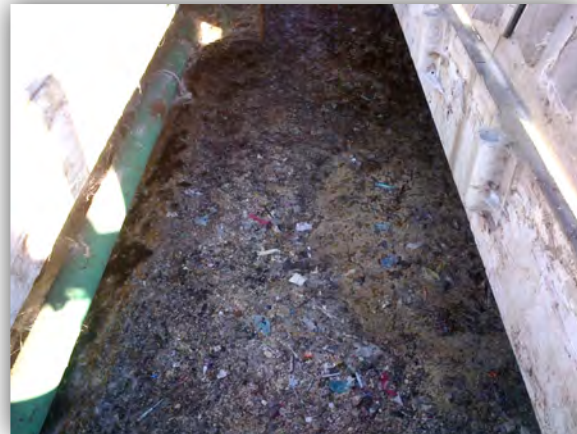
September 19, 2018



Scum, Sludge and Grit Removal Contract Services

Services beyond in-house capabilities:

- Removal of severe blockages in:
 - Gravity thickeners
 - Primary clarifiers
 - Influent channels
 - Scum receiving wells
 - Digester Overflow Lines—Struvite Mitigation
- Vactor trucks and boxes used
- Off site material disposal
- Struvite Mitigation Services
 - Water jetting pressures up to 10,000 psi





Struvite Removal / Mitigation

Cause

- Struvite - pipe scale
- Struvite coats digested sludge lines
 - Digester overflow piping
 - Centrifuge piping
- Extremely difficult to remove once formed

Prevention

- Ferric chloride added to control

Remediation

- Specialized equipment and services





Contract Terms

- Two year contract - \$901,960
- Moran Environmental Recovery, LLC
 - Performed contract work (2014-2016)
- Incumbent: Clean Harbors (2016-2018)
 - Last 2 year contract - \$672,300
 - CH severely underpriced labor costs to gain contract.





- Bids were opened on August 1, 2018 with the following results:

BIDDER	TOTAL BID PRICE
Moran Environmental Recovery, LLC	\$901,960
Clean Harbors Environmental Services	\$928,400
Clean Venture, Inc.	\$1,027,850





***Chelsea Creek Headworks Upgrade
Contract 7161, Change 18***

September 19, 2018



Chelsea Creek Headworks: Micro Piles for Antenna Tower





Chelsea Creek Headworks: Micro Piles for Antenna Tower





Chelsea Creek Headworks: Section 37 Thrust Block





Chelsea Creek Headworks: Section 37 Pile Cap Monitoring





Chelsea Creek Headworks: Grit Collection Equipment





Chelsea Creek Headworks: Energizing 480 Volt Switchgear





Chelsea Creek Headworks: Odor Control Foundations





Chelsea Creek Headworks: Flood Protection at Tunnel Shaft







Update on Water Quality

September 19, 2018



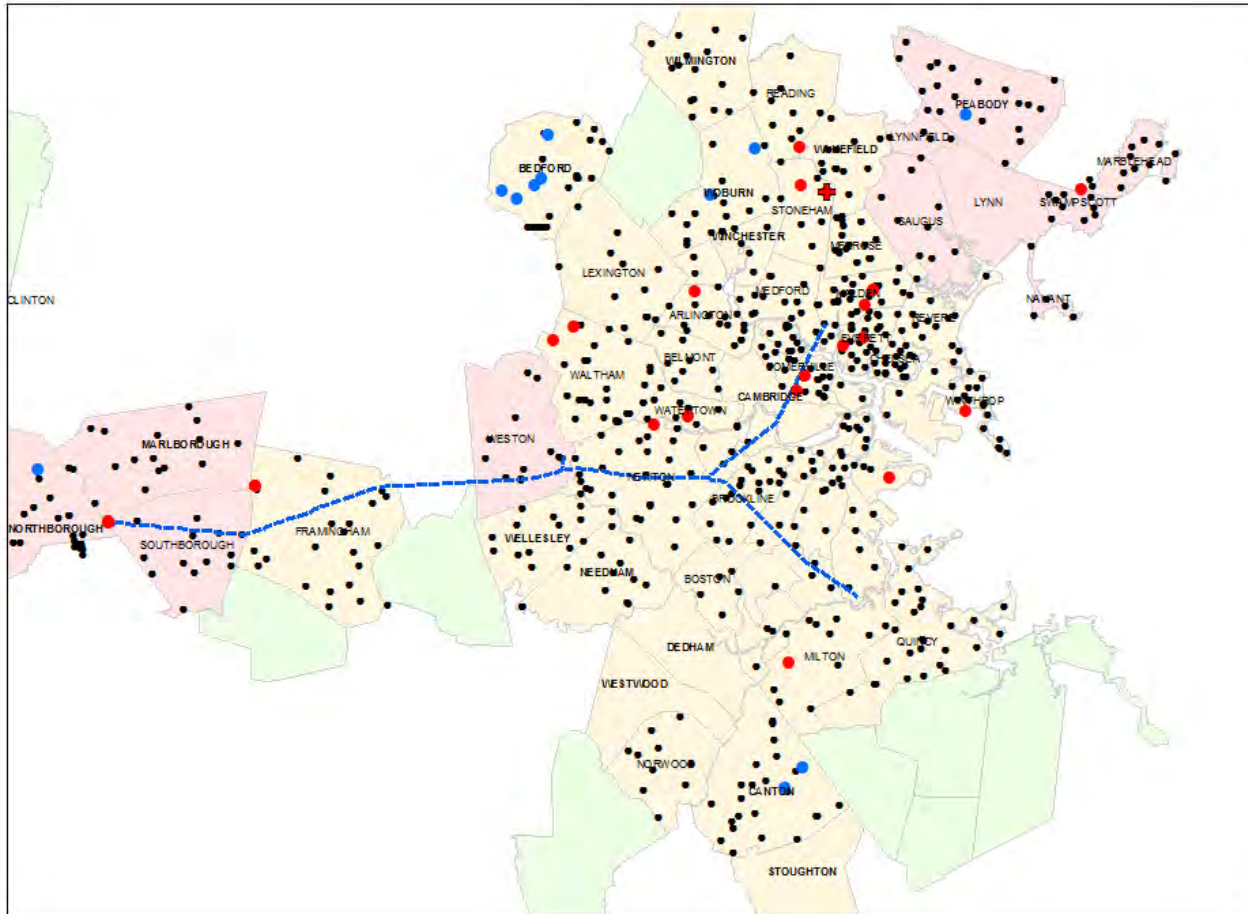
Water Quality Monitoring

- Wachusett Reservoir
- Carroll Water Treatment Plant
- Continuous Monitoring at key distribution sites (contaminant monitoring system)
- **Routine Monitoring in Community Systems under the Total Coliform Rule**



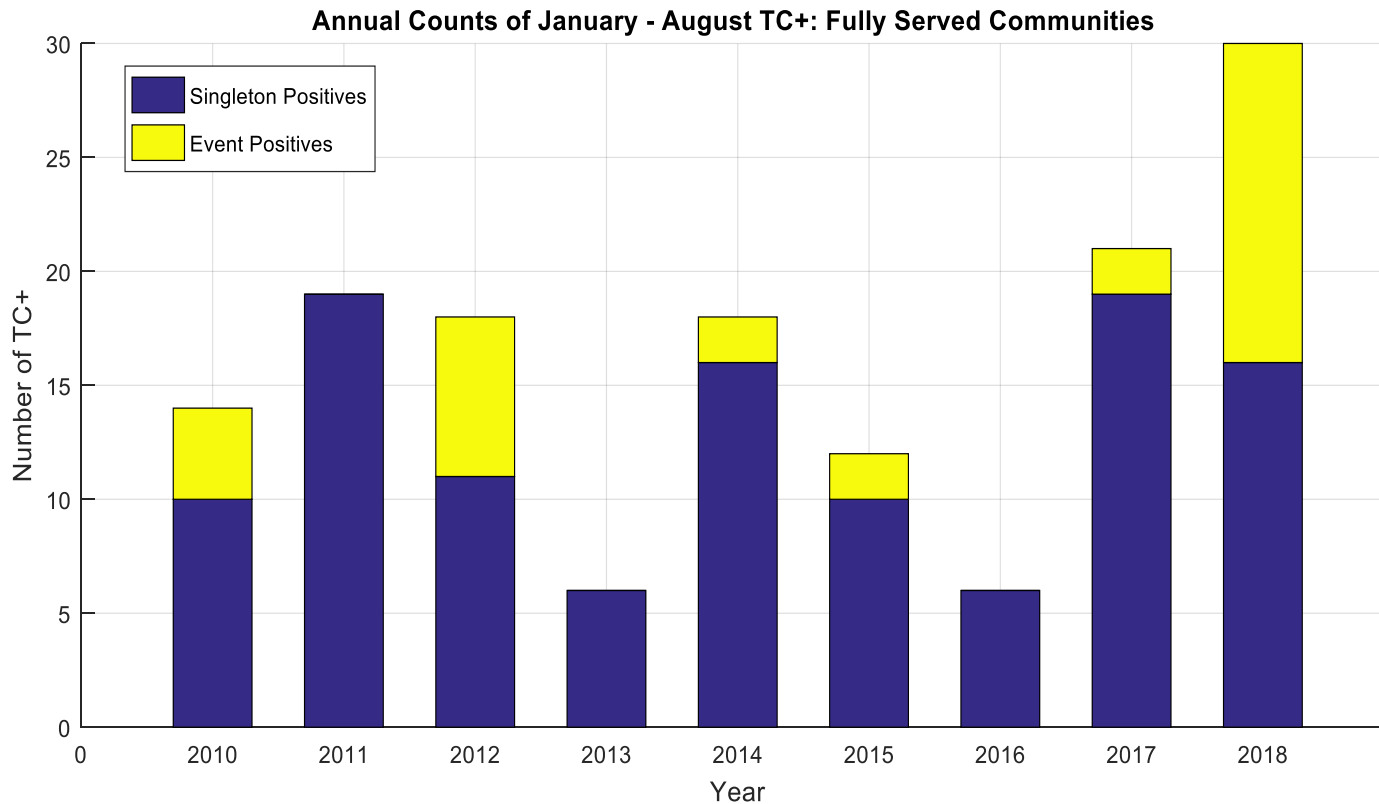


2018 TCR Sampling Locations Fully Served and Partial with TC Positives





Total Coliform Positives, January - August





Coliform "Singleton" Positives, June- September 2018

Community Locations

DATE_COLLECTED	FACILITY_ID	TCL2	Temp
05-Jun-18	Malden	1.88	16
13-Jun-18	Somerville	2.6	14.7
20-Jun-18	Newton	1.44	20
28-Jun-18	Milton	2.32	16
05-Jul-18	Watertown	2.15	18.3
16-Jul-18	Everett	1.47	20.3
20-Aug-18	Waltham	1.76	21.2
20-Aug-18	Waltham	2.02	20.6
20-Aug-18	Everett	2.12	22.5
22-Aug-18	Winthrop	1.44	20.4
22-Aug-18	Swampscott	0.95	19
05-Sep-18	Somerville	2.47	19.1
12-Sep-18	Boston	1.8	23

MWRA Locations

DATE_COLLECTED	LOCATION	TCL2	Temp
16-Jul-18	CWTP Fin A	2.98	13.8
29-Jul-18	CWTP Fin A	3	15.1
29-Jul-18	CWTP Fin B	2.89	15.1
13-Aug-18	SPOT POND	2.36	16.5
10-Sep-18	TURKEY HILL	2.38	16
10-Sep-18	BEAR HILL	2.19	17
17-Sep-18	TURKEY HILL	2.46	17.2



Coliform Positive Events 2018

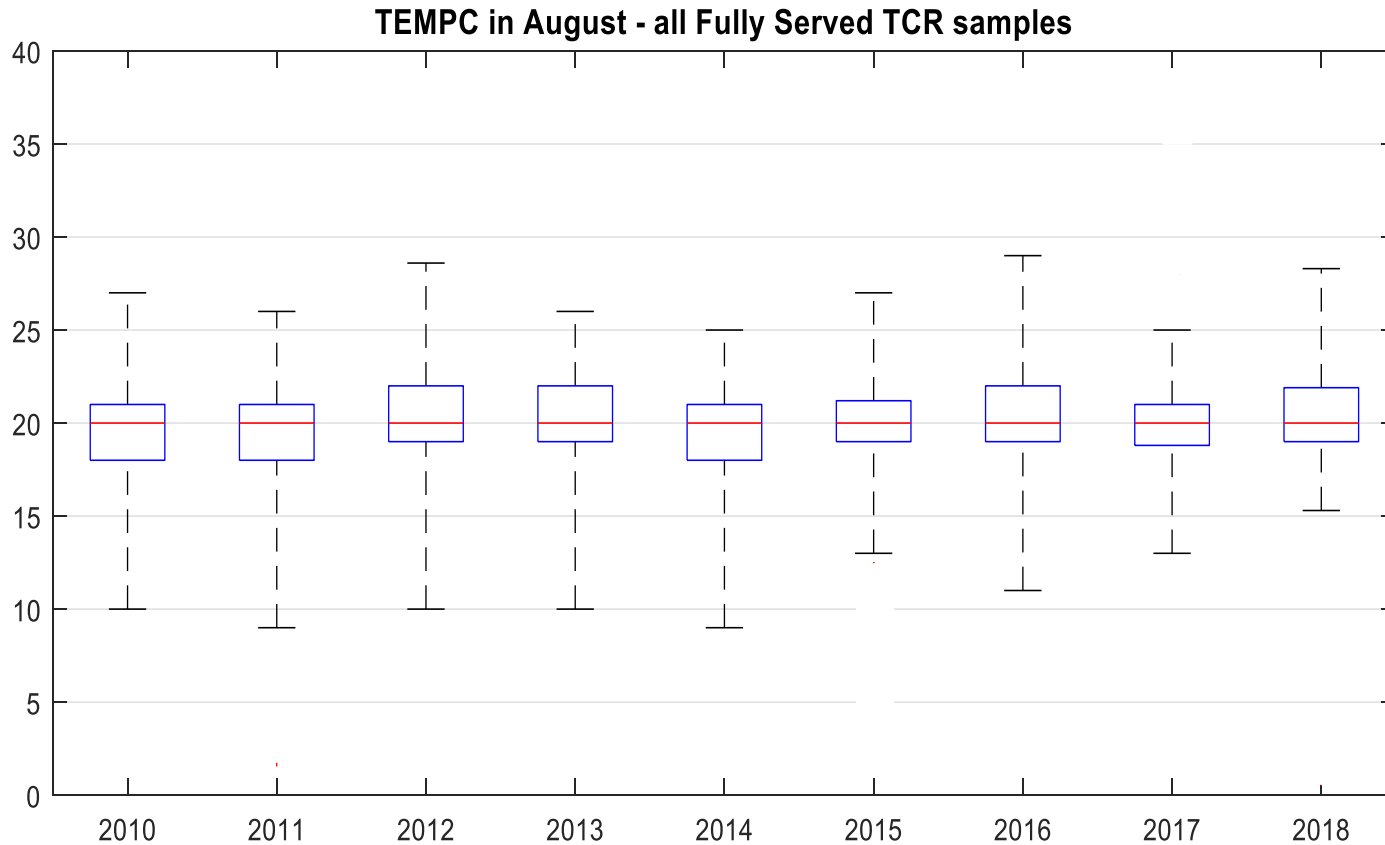
StartDate	Community	NumPos	MinTCL2	# Days
8/13/2018	Everett	2	0.61	2
8/22/2018	Malden	6	0.13	4
8/29/2018	Somerville	4	1.01	4
8/29/2018	Framingham	3	0.71	2
9/4/2018	Malden	15	0.03	11
9/11/2018	Somerville	3	0.55	2
9/12/2018	Stoneham	2	1.86	2
9/12/2018	Stoneham	2	1.99	2
TOTAL		37		

E.Coli

8 events in **5** communities: Everett, Malden, Somerville, Framingham and Stoneham
August and September



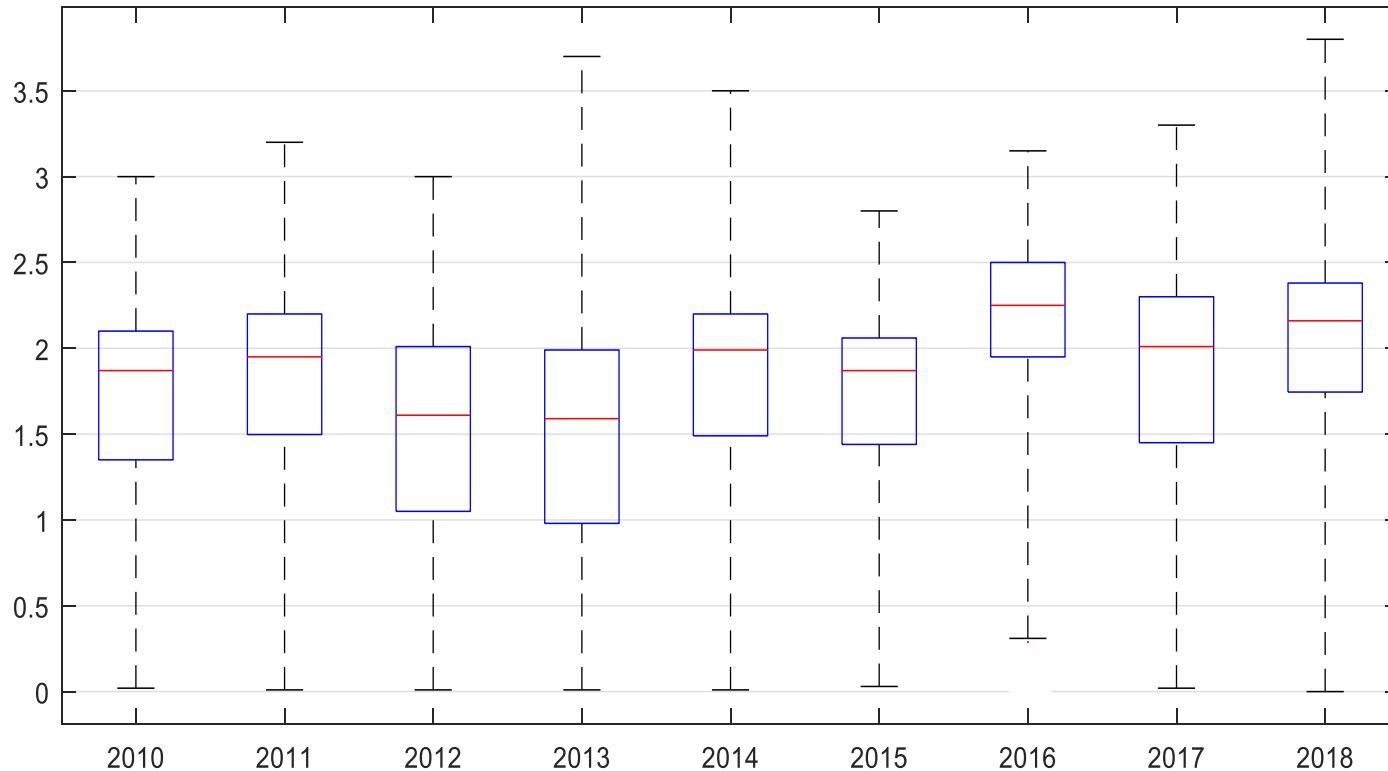
Community Water Quality - Temperature





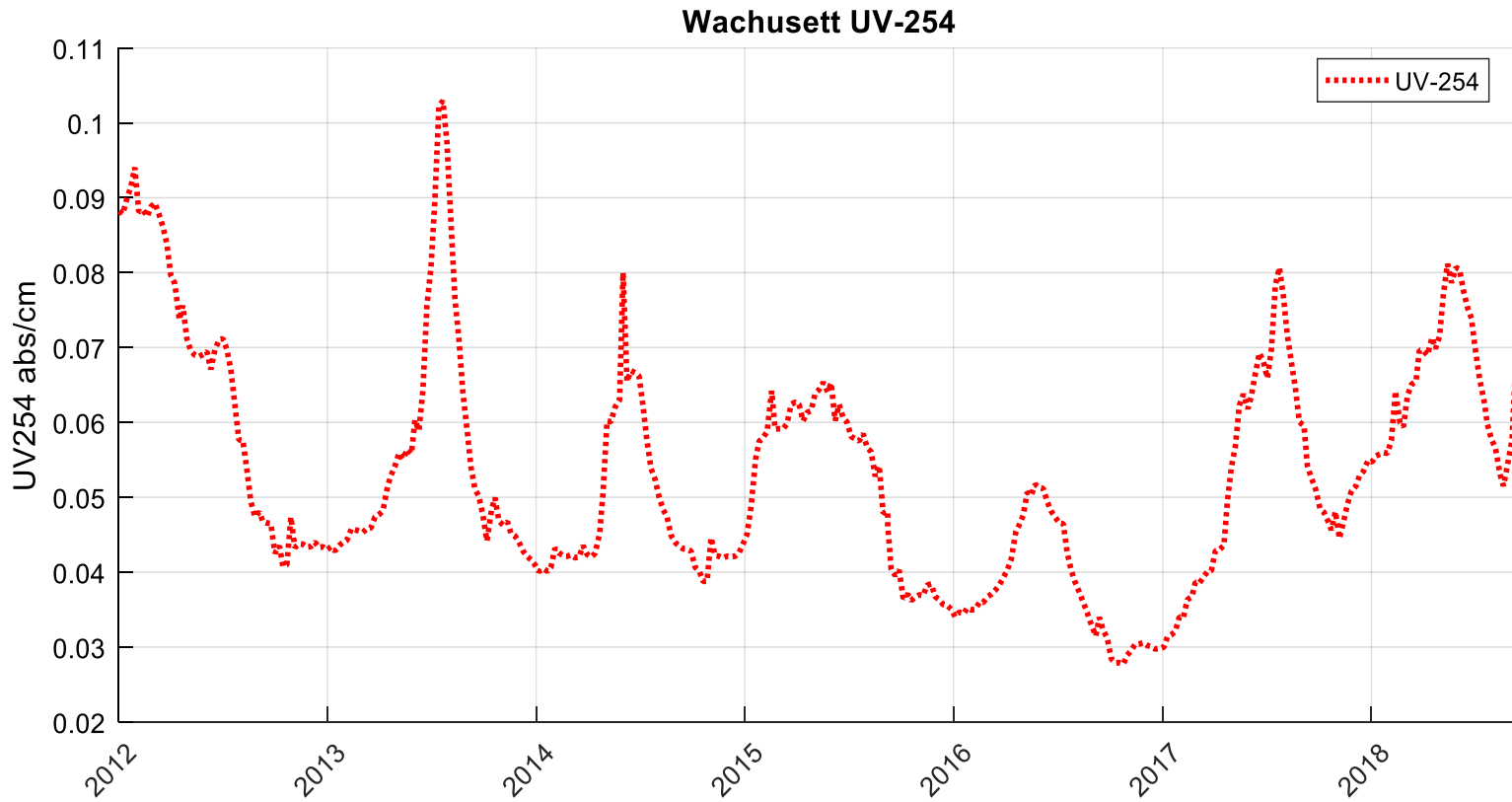
Community Water Quality – Chlorine Residual

CHLORINE RESIDUAL in August - all Fully Served TCR samples



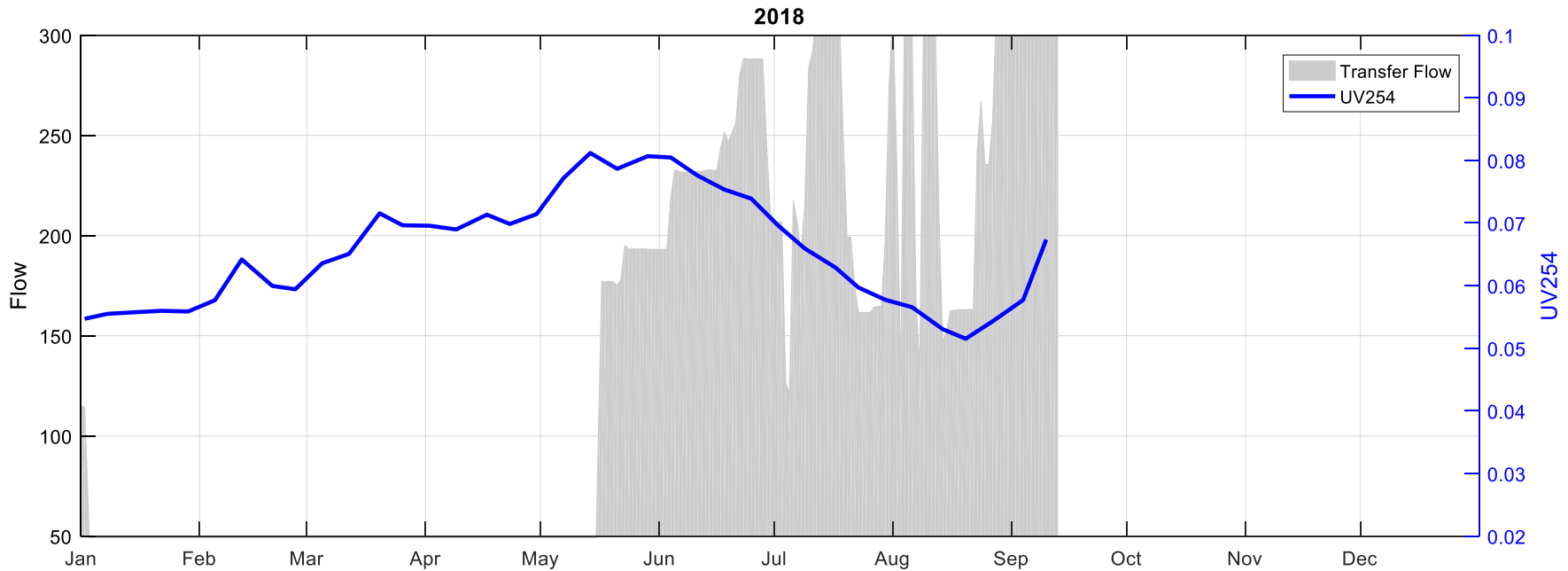
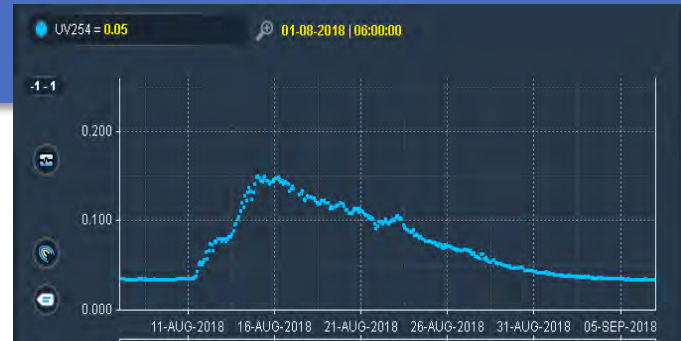


UV254 Trends 2012-2018





UV254 and Quabbin Transfer





Stoneham E. coli Incident

- September 12 - Seven routine samples collected by Stoneham WD
- September 13 – One was positive for *E. coli*
 - Outside sample tap, rain, and flushing in the area thought to be potentially responsible.
- September 13 - MWRA staff meet with Stoneham officials to discuss potential for a Boil Order and steps that would be required to implement.
- September 13 – Repeat sample plus up and downstream sites collected.





Stoneham E. coli Incident

- September 14 - One site (upstream) positive for total coliform
 - This triggered the Boil Order
- September 14 - MWRA staff assist Stoneham with DEP discussions and plans on what is required to lift Boil Order
- September 14 & 15 - MWRA staff assisted with collection of system-wide repeat samples.
- September 15 - Repeats all ABSENT of Total coliform, and the Boil Order was lifted.

