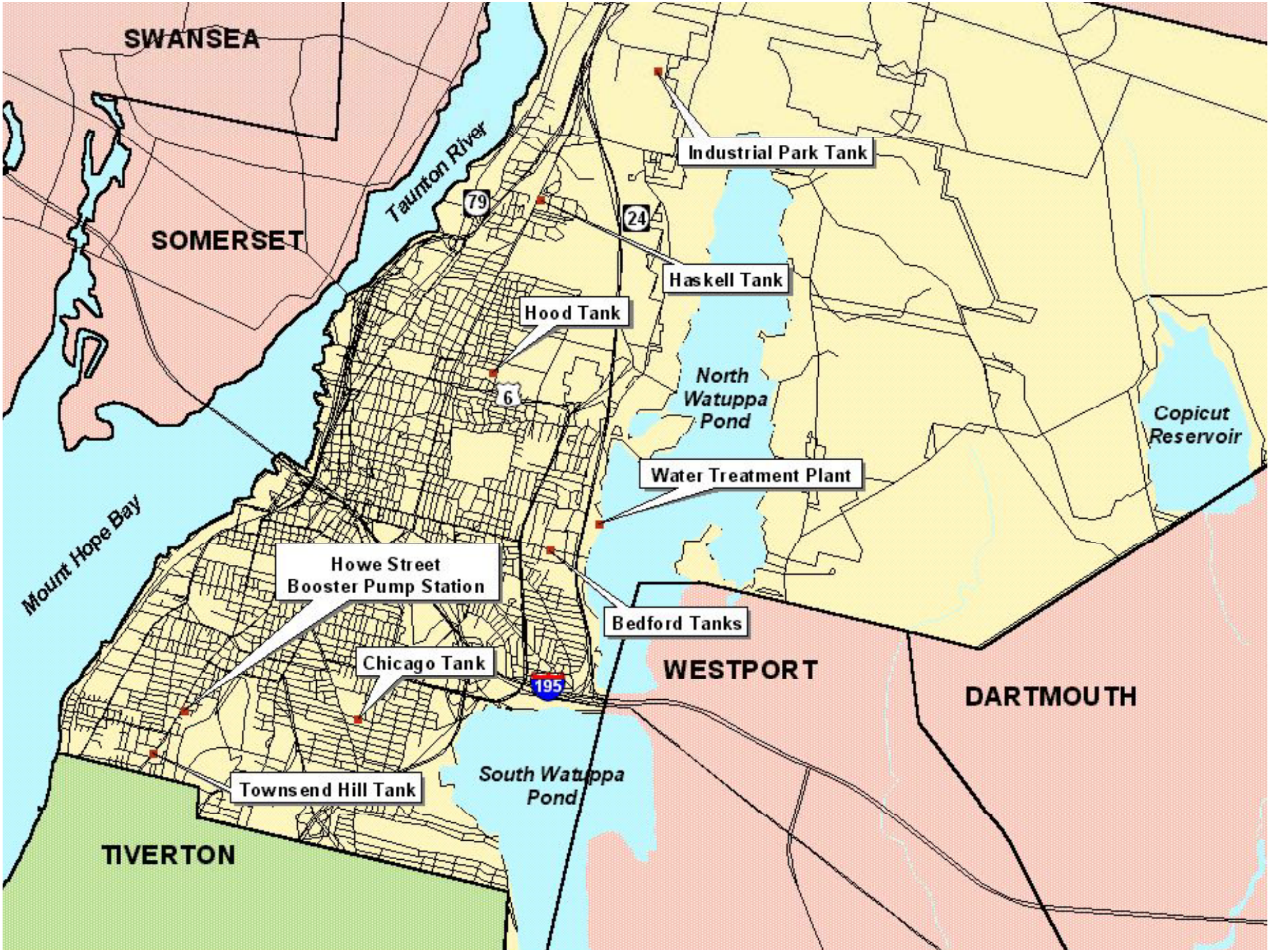
City of Fall River, Massachusetts
Water System Improvements

February 2009

Fall River's Water System

- Population – 98,000
- Ave Day - 12 MGD
- Max Day - 16 MGD
- Peak Hour - 20 MGD
- 24 MGD WTP capacity
- 250 miles of pipe up to 36"
- Installed primarily before 1930s
- 21.2 million gallons (MG) of storage (7 Tanks)

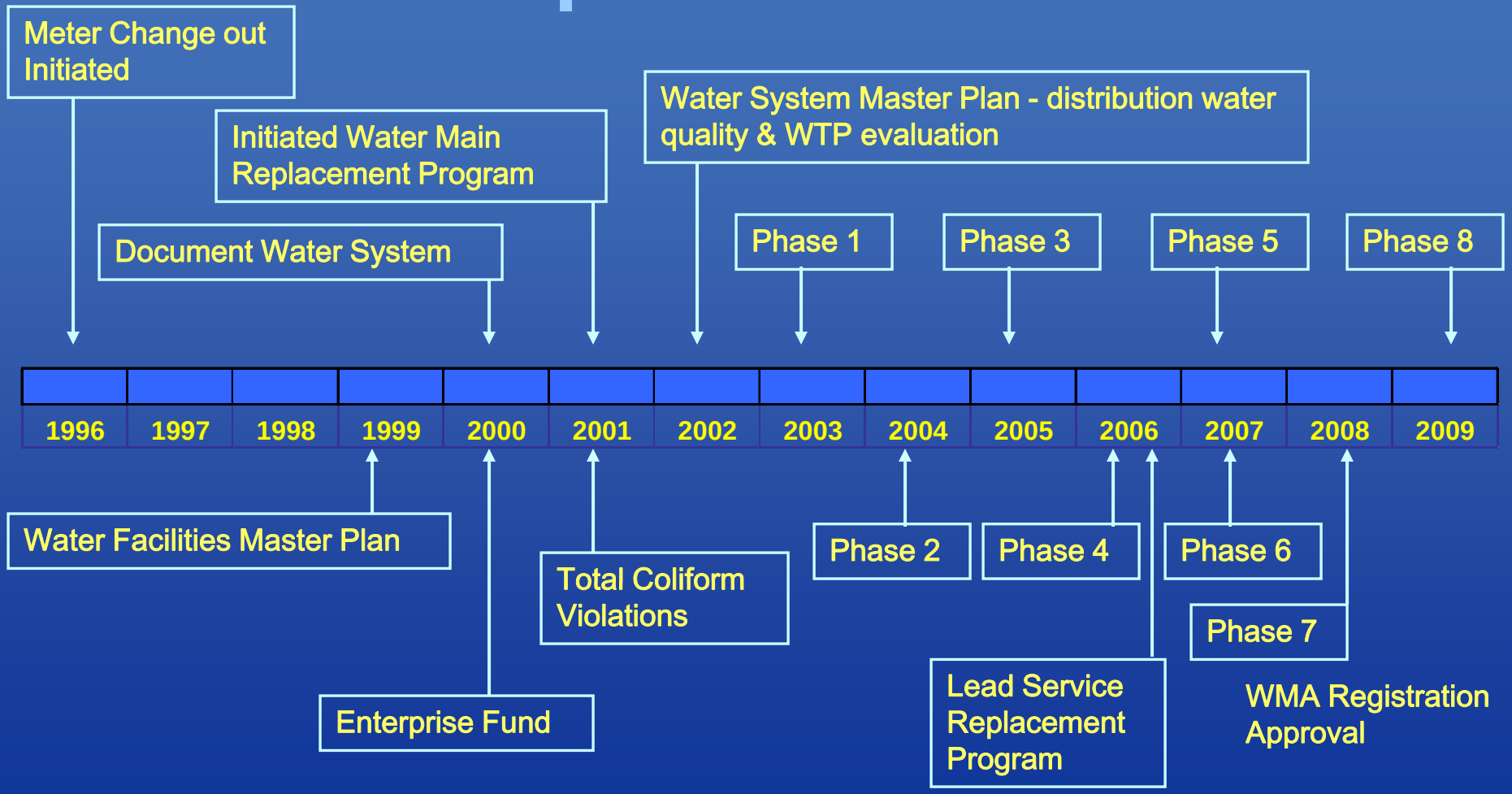

SWANSEA
SOMERSET
Taunton River
79
24
Industrial Park Tank
Haskell Tank
Hood Tank
6
North Watuppa Pond
Copicut Reservoir
Water Treatment Plant
Mount Hope Bay
Howe Street Booster Pump Station
Bedford Tanks
Chicago Tank
WESTPORT
195
DARTMOUTH
South Watuppa Pond
Townsend Hill Tank
TIVERTON

- North and South Wattuppa

- Copicut Reservoir

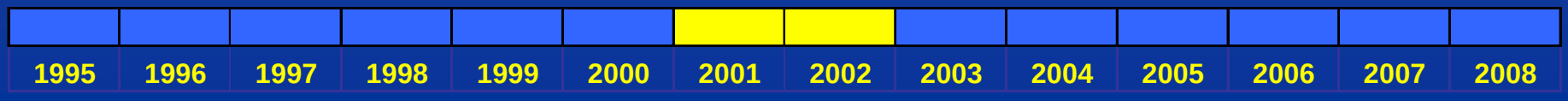
Water Treatment Plant

History of Water System Improvements



Water System Master Plan

- **Focused on water quality**
  - Water treatment plant
  - Distribution system
  - Repairs and Rehabilitation of Storage Tanks
- **Recommendations included**
  - Corrosion Control
  - Water Turnover/Mixing in Storage Tanks
  - Distribution System Flushing
  - Continue aggressive water main replacement



Water Storage Improvements

- Seven water storage tanks totaling 21.2 MG
- City has begun significant tank maintenance program

Tank Maintenance

- **Cleaning and Painting Storage Tanks is typically done every 15-20 years, depending on:**
  - Weather/Environment
  - Type/ frequency of use
  - Paint manufacturer's recommendations
  - Age of earlier painting system
  - Pre-existing condition of tank

- **April 2007 DEP Sanitary Survey**

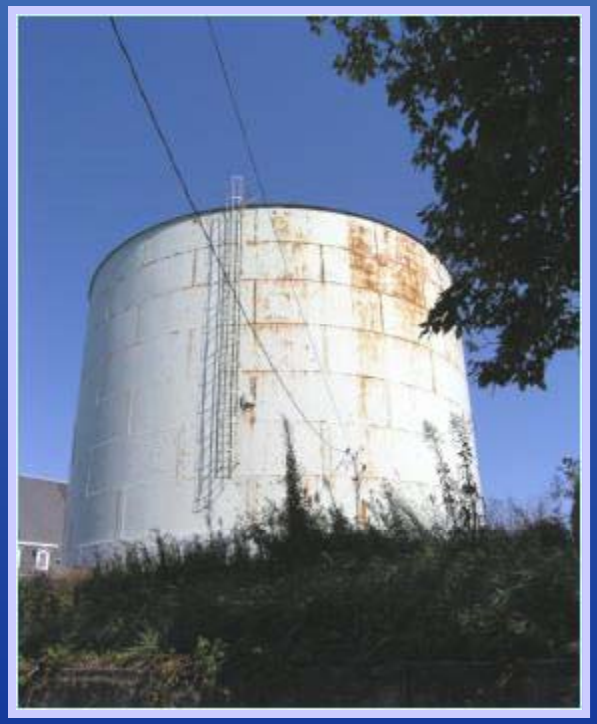
  "Establish a corrective action plan with timelines for routine inspection and maintenance, as well as the recoating of the water storage facilities."

Storage Tank Improvement Program

- Recommended rehabilitation and repair of all storage facilities
- Townsend Hill Tank has been replaced, with taller tank to increase pressure
- Bedford Street Tanks to be rehabilitated Spring 2009
- Rehabilitation of Chicago Street Tank approved by DEP for funding in 2010

Townsend Hill Tank

1MG tank (1939)



- Overflow elevation lower than 5 of the 6 other tanks
- Operating pressures less than 20 psi

Townsend Hill Tank

- Add 42 feet to overflow elevation
- Increase in operating pressures
- Improved fire protection
- Establish high service area

2.2 MG (2008)

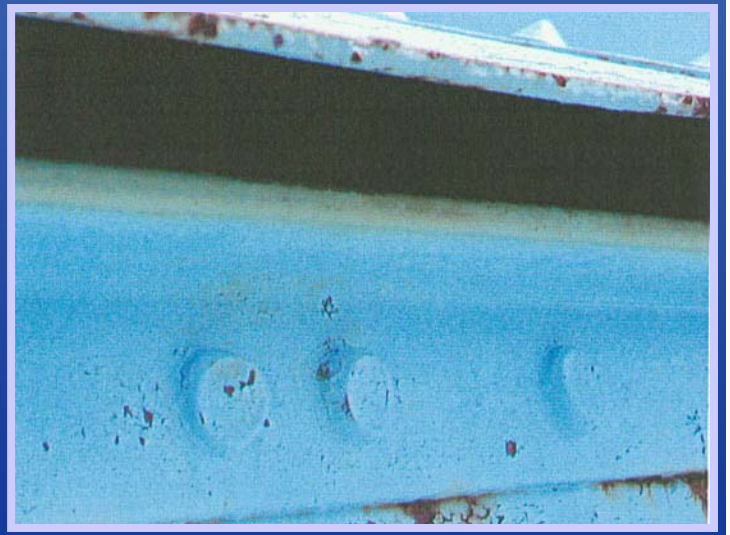
Bedford Street Storage Tanks

- North Bedford Street Tank built in 1939
- South Bedford Street Tank built in 1945
- Steel, 1.6 MG each

- Master Plan recommended Bedford Tanks to be the first for repair and rehabilitation

Public Health Issues

- 4” gap between roof edge and top of shell
- Age of tanks (60+ years old)
- Mixing systems are needed for:
  - better tank turnover
  - higher disinfection residual, and
  - prevention of microbial growth



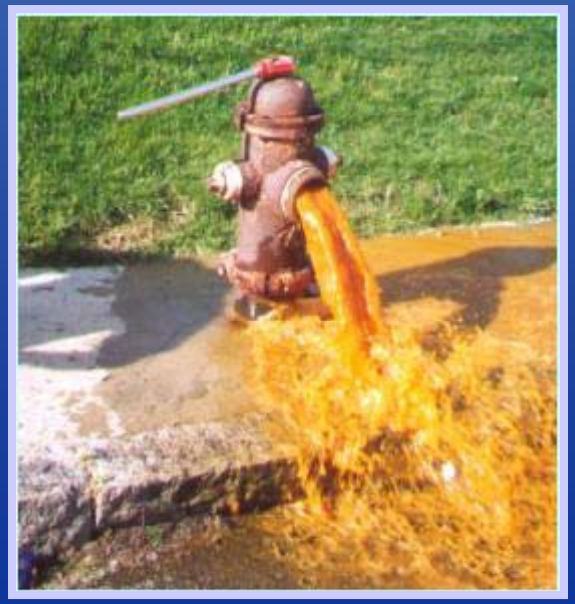
Chicago Street Tank

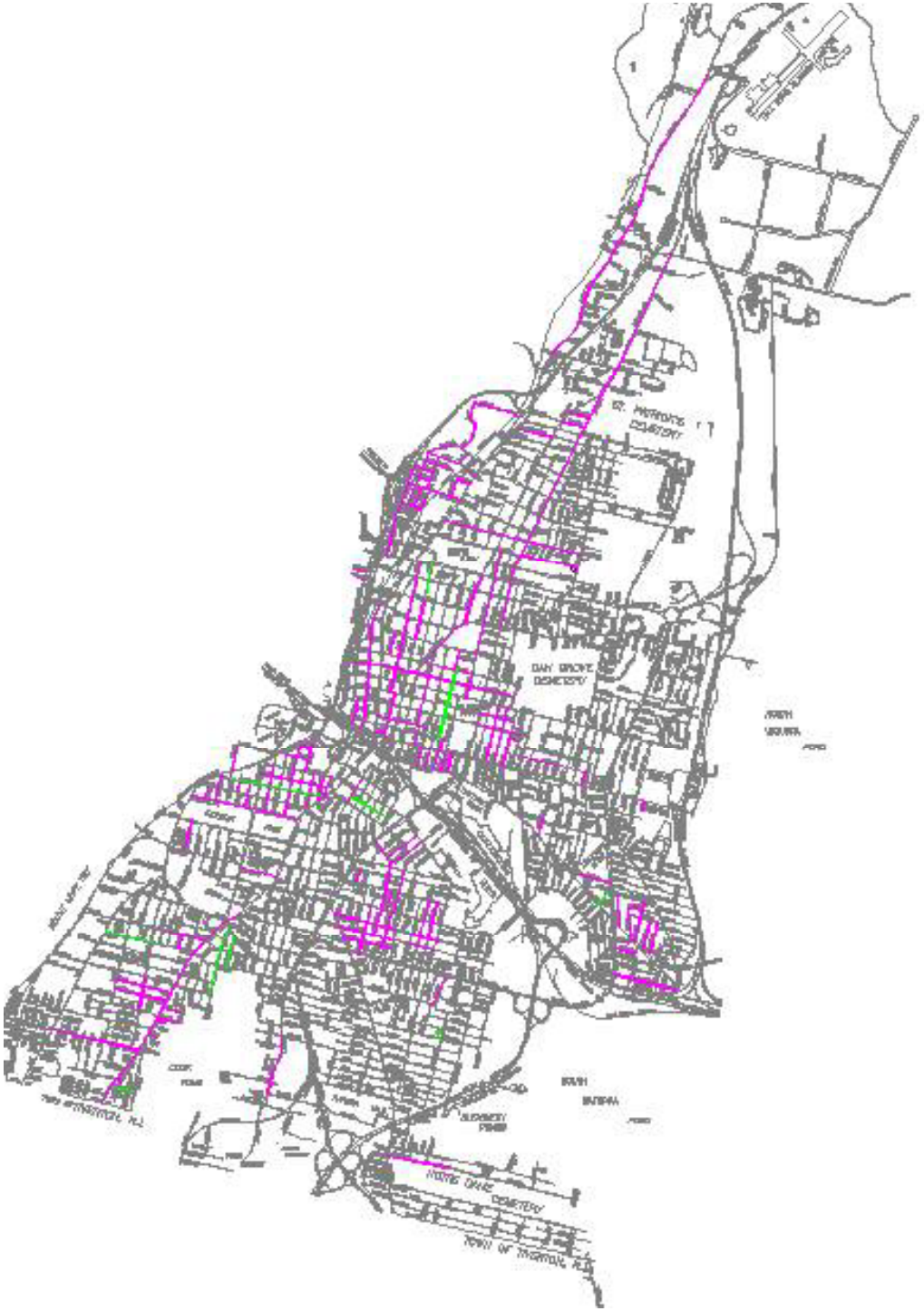
- Leak repaired in Summer 2008

- Significant rust stains indicate more possible leaks

Water Main and Lead Service Replacement Program

- City committed to replace 100 year old, tuberculated cast iron water mains with cement lined ductile iron water mains





ENGINEERS FST Since 1914

Map of Recent Water Main Replacement

DWSRF 845 - Phase 1

- Replace water mains and lead services
- Total Project Cost: $3.2 M

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008

DWSRF 1082–Phase 2

- Replace water mains and lead services
- Water Treatment Plant improvements
  - Generator Replacement
  - Filter Bed Rehabilitation
  - Alkalinity Adjustment
    - Carbon Dioxide/Sodium Hydroxide
  - Supervisory Control and Data Acquisition (SCADA)
- Total Project Cost: $9.5 M

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008

DWSRF 1696 – Phase 3

- Replace water mains and lead services
- Total Project Cost: $4.2 M

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008

DWSRF 1987 – Phase 4

- Replace water mains and lead services
- Total Project Cost: $2.4 M

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008

DWSRF 2833 – Phase 5

- **Establish High Service Area at Townsend Hill**
  - New 2.2 MG steel water storage tank
  - Rehabilitation of the existing Howe Street Booster Pump Station
  - Replace water mains and lead services
  - Install isolation valves
- **New Roof on WTP**

- **Total Project Cost: $4.3M**

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008

DWSRF 2949 – Phase 6

- Replace water mains and lead services
- Total Project Cost: $1.6M

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008

DWSRF 2999 – Phase 7

- Replace water mains and lead services
- Total Project Cost: $1.1M

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008

DWSRF 3118 – Phase 8

- Construction to begin Spring 2009
- Replace 2.5 miles of water main, and over 100 lead water services
- Clean, Paint and Repair Bedford Street Tanks
- Estimated Total Project Cost $3.4M

Lead Service Replacement Program

- City remains under Administrative Consent Order for violations of the Lead and Copper Rule
- Water Main Replacement Program has eliminated over 3,500 Lead Services
- 1,388 Lead Water Services remain in the system as of December 31, 2008

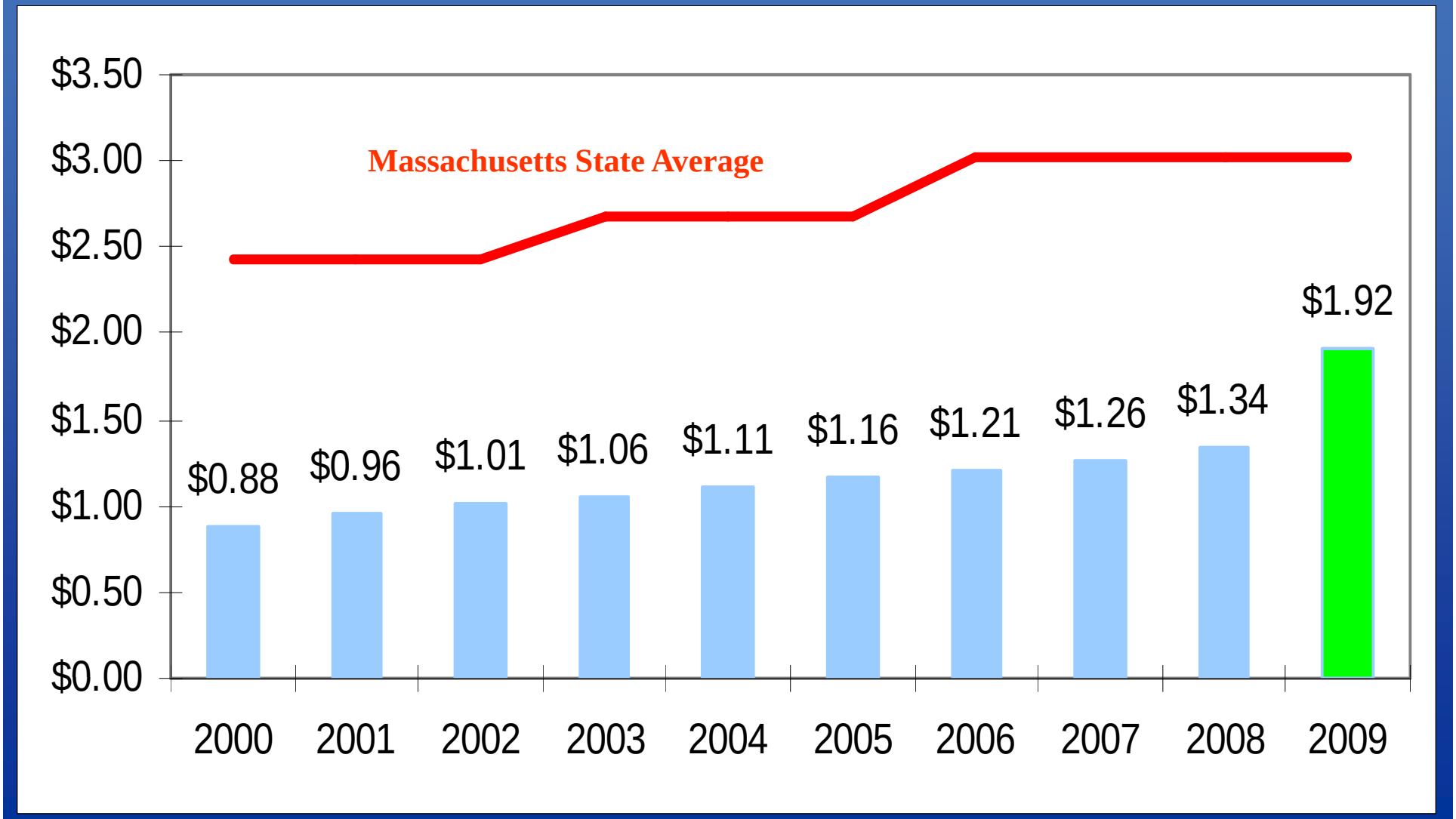
DWSRF 3225 – Phase 9

- Replace 2.3 miles of water main, and over 100 lead water services
- Clean, Paint and Repair Chicago Street Tank
- Project has been approved for State Revolving Loan Funding
- Local Appropriation needed to secure 2% interest loan for a term of 20 years

TABLE 1
DRINKING WATER STATE REVOLVING FUND
Calendar 2009 DWSRF Draft Intended Use Plan
NEW PROJECTS

Rating	Applicant	SRF ID	Project	Project Cost	2009 IUP Cost
112.3	**FALL RIVER**	**3225**	**Water System Improvements Phase 9**	**$3,159,500**	**$3,159,000**
107.7	BARNSTABLE WATER COMPANY	3222	Hyannis Water Supply System Improvements	$13,204,000	$5,465,000
105.4	LAWRENCE	3217	Water Distribution System Improvements	$2,710,000	$2,710,000
103.4	WOBURN	3212	Water System Improvements WTP & Storage Tank	$24,500,000	$12,250,000
97.5	FRAMINGHAM	3211	New Water Treatment Plant	$39,180,000	$22,373,050

Fall River Water Rates
(/100 cf)



Average Family Quarterly Water Bill

(246 gallons per day)