



Massachusetts Water Resources Authority

Presentation to the

MWRA Wastewater Advisory Committee

FY2007 Accomplishments and Challenges for FY2008

**Frederick A. Laskey
Executive Director**

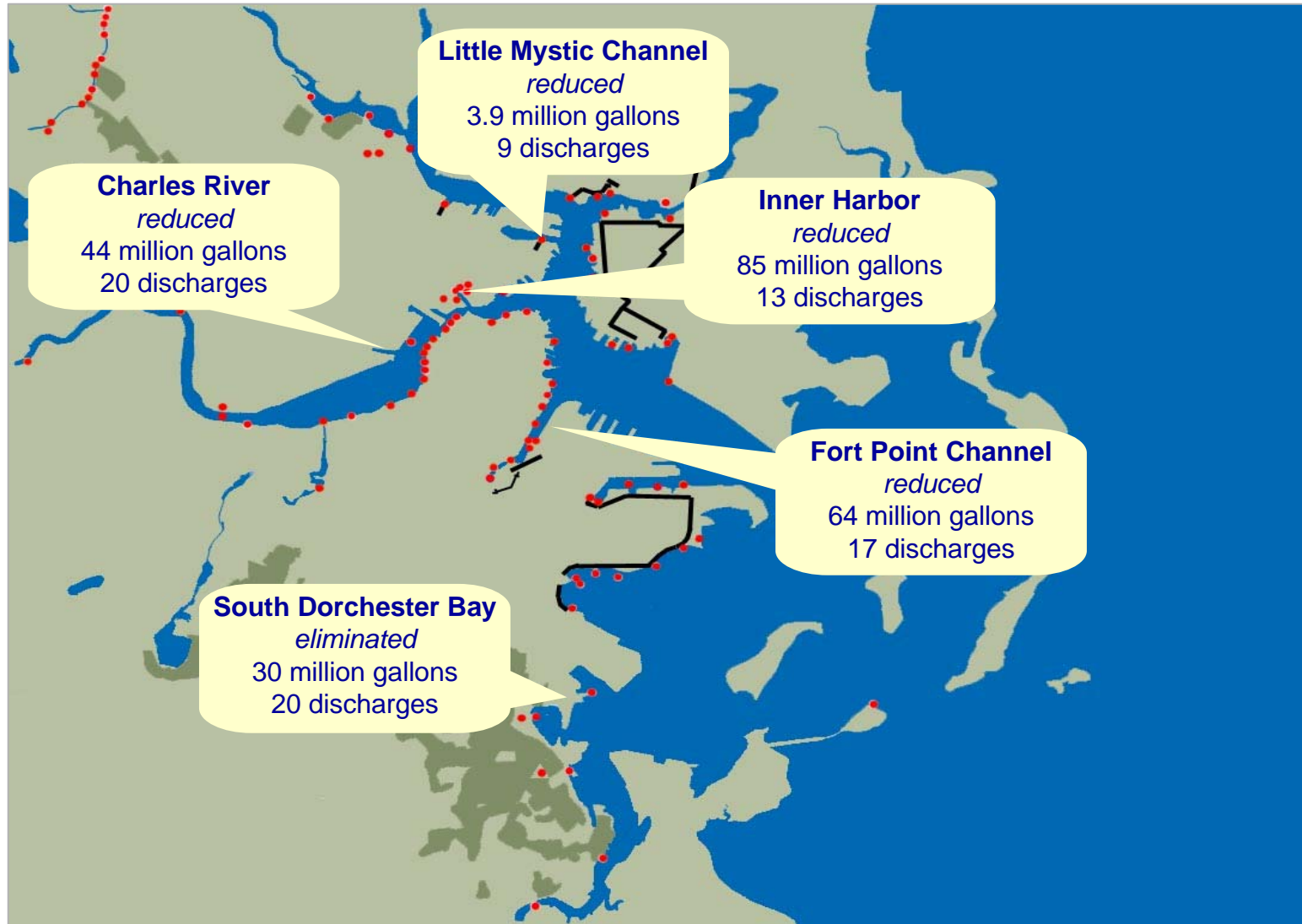
September 7, 2007



Progress on Capital Programs



Projects Completed In FY2007 Eliminate 227 Million Gallons Of CSO Discharge A Year



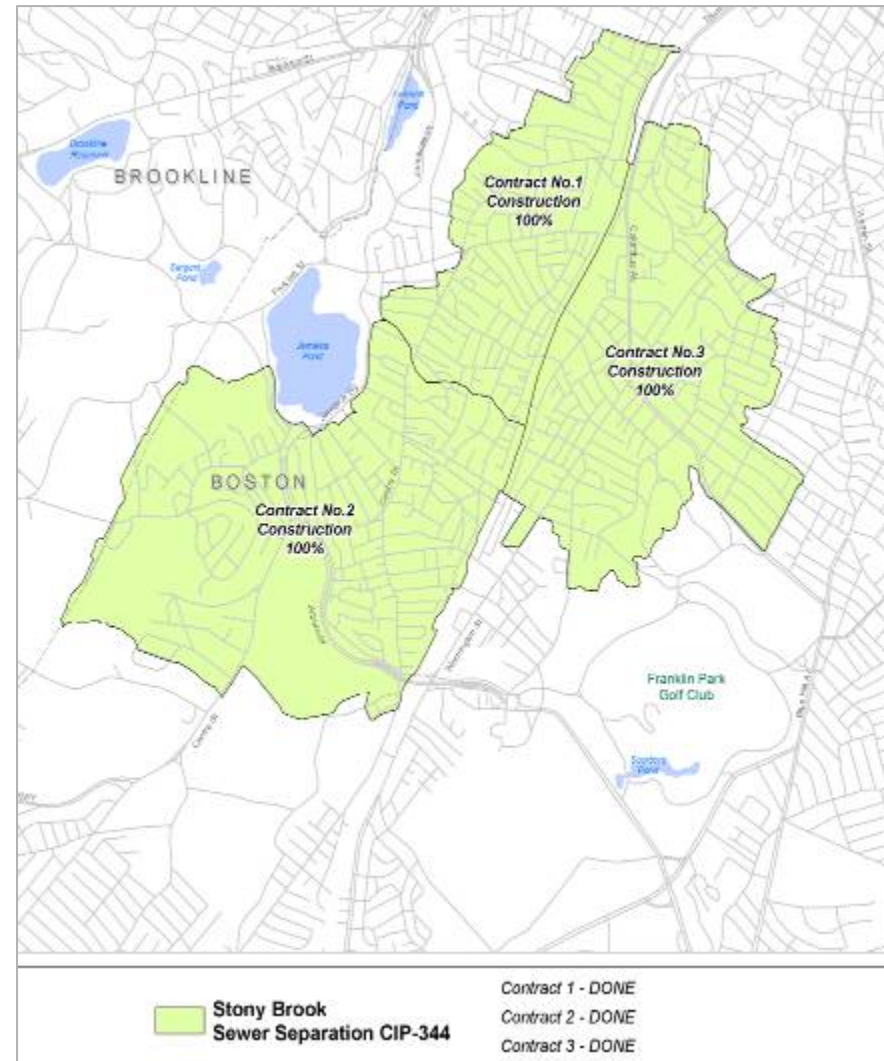


Stony Brook Sewer Separation

- Completed September 2006, on schedule
- Total cost: \$45 million
- 99.7% reduction in discharges:

Before	After
22 discharges	2 discharges
44.5 million gallons	0.13 million gallons

- Removed stormwater runoff from neighborhood and MWRA sewers by installing 74,000 feet of new storm drains serving 609 acres in Jamaica Plain, Mission Hill and Roxbury

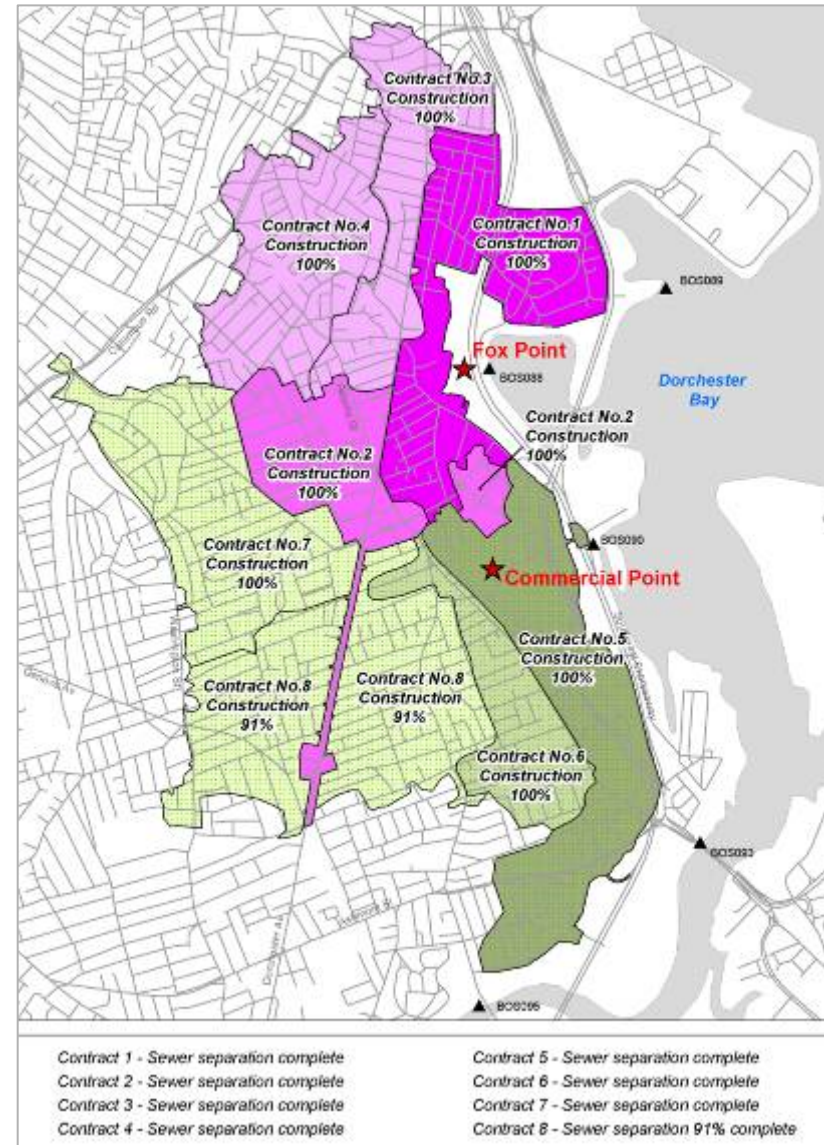




South Dorchester Bay Sewer Separation

- Construction completed December 2006, ahead of schedule (CSO facilities to be closed after testing)
- Total cost: \$118.2 million
- 100% reduction in discharges:

Before	After
20 discharges	Eliminated
30 million gallons	Eliminated
- Removed stormwater runoff from neighborhood and MWRA sewers by installing 136,000 feet of new storm drains serving 1,750 acres of Dorchester





CSO BOS019 Storage Conduit, Little Mystic River Channel

- Completed March 2007, on schedule
- Total cost: \$14.2 million
- 86% reduction in discharges:

Before	After
13 discharges	2 discharges
4.4 million gallons	0.6 million gallons

- Construction of new facility to provide 670,000 gallons of off-line storage in double barrel 10'x17' conduits installed between Chelsea Street and Mystic Tobin Bridge, Charlestown



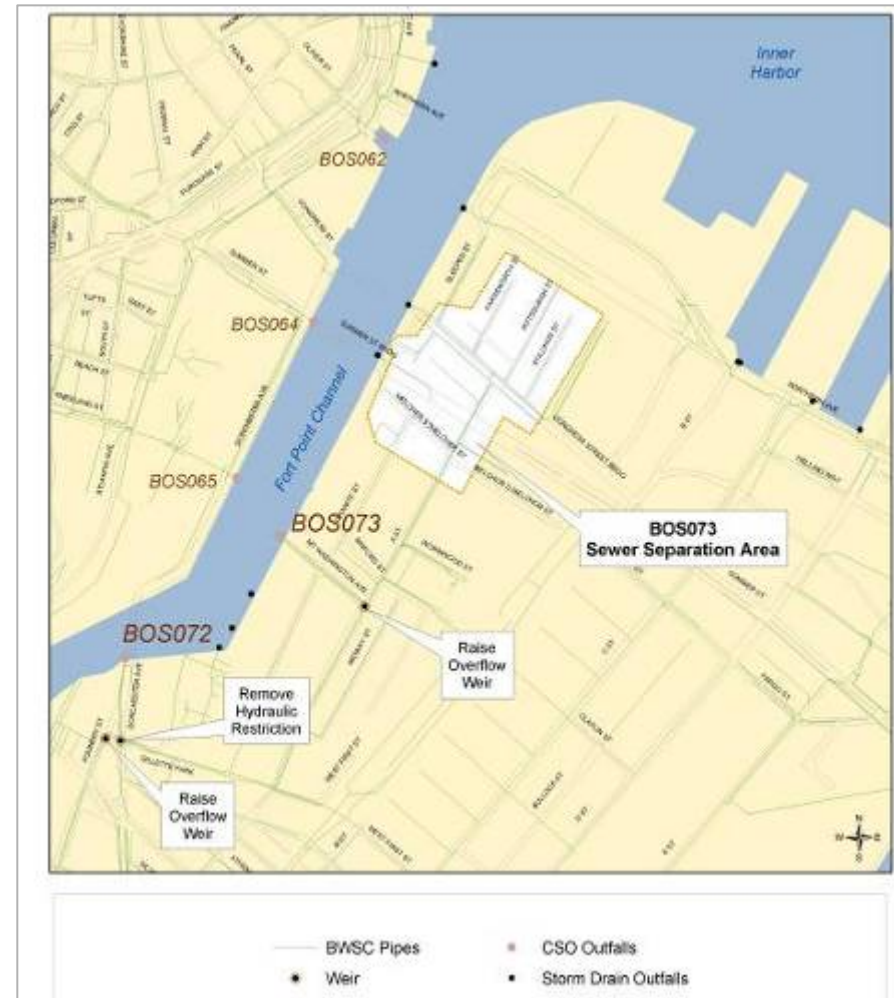


Fort Point Channel Sewer Separation

- Completed March 2007, on schedule
- Total cost: \$7.7 million
- 100% reduction in discharges:

Before	After
9 discharges	0
3.0 million gallons	0

- Removed stormwater runoff from neighborhood and MWRA sewers by installing 4,550 feet of new storm drains serving 55 acres in the Fort Point Channel area





Union Park Detention/Treatment Facility

- Partial acceptance December 2006, will be completed April 2007
- Total cost: \$49.5 million
- 45.9% reduction in discharges:

Before	After
25 discharges	17 discharges
132.0 million gallons untreated	71.4 million gallons treated

- Construction of new facility, adjacent to existing BWSC pump station, to provide 2.2 million gallons of storage and treatment of remaining discharge





Prison Point CSO Facility Optimization

- Completed March 2007, on schedule
- Total cost: \$50,000
- 25.4% reduction in discharges:

Before	After
30 discharges	17 discharges
335 million gallons treated	250 million gallons treated

- Minimizes treated CSO discharges to the Inner Harbor by optimizing the operation of existing facility gates and pumps to maximize in-system storage and convey more flow to Deer Island





Construction Continued On Braintree-Weymouth Replacement Pump Station





Construction Is Nearly Complete On The Upper Neponset Valley Relief Sewer





Construction Has Begun On The South Boston CSO Tunnel






The Tunnel Boring Machine Arrived From Japan Wednesday





The TBM "Launch" Is Scheduled For Next Wednesday

Please join us for the "launching" of the
Tunnel Boring Machine
for the
South Boston CSO Storage Tunnel
on
Wednesday, September 12, 2007
from 9:30 - 11:00 a.m.
Refreshments will be served
Please r.s.v.p. to 617-788-1108 by September 10th
(and let us know if you require special accommodations)



The site is located at Conley Terminal in South Boston. Take I-93 to Exit 15. Make a left at the light to the rotary, and onto Day Boulevard, follow the water until you reach Shore Road on the left. The entrance to the site will be the next left. Parking will be available.

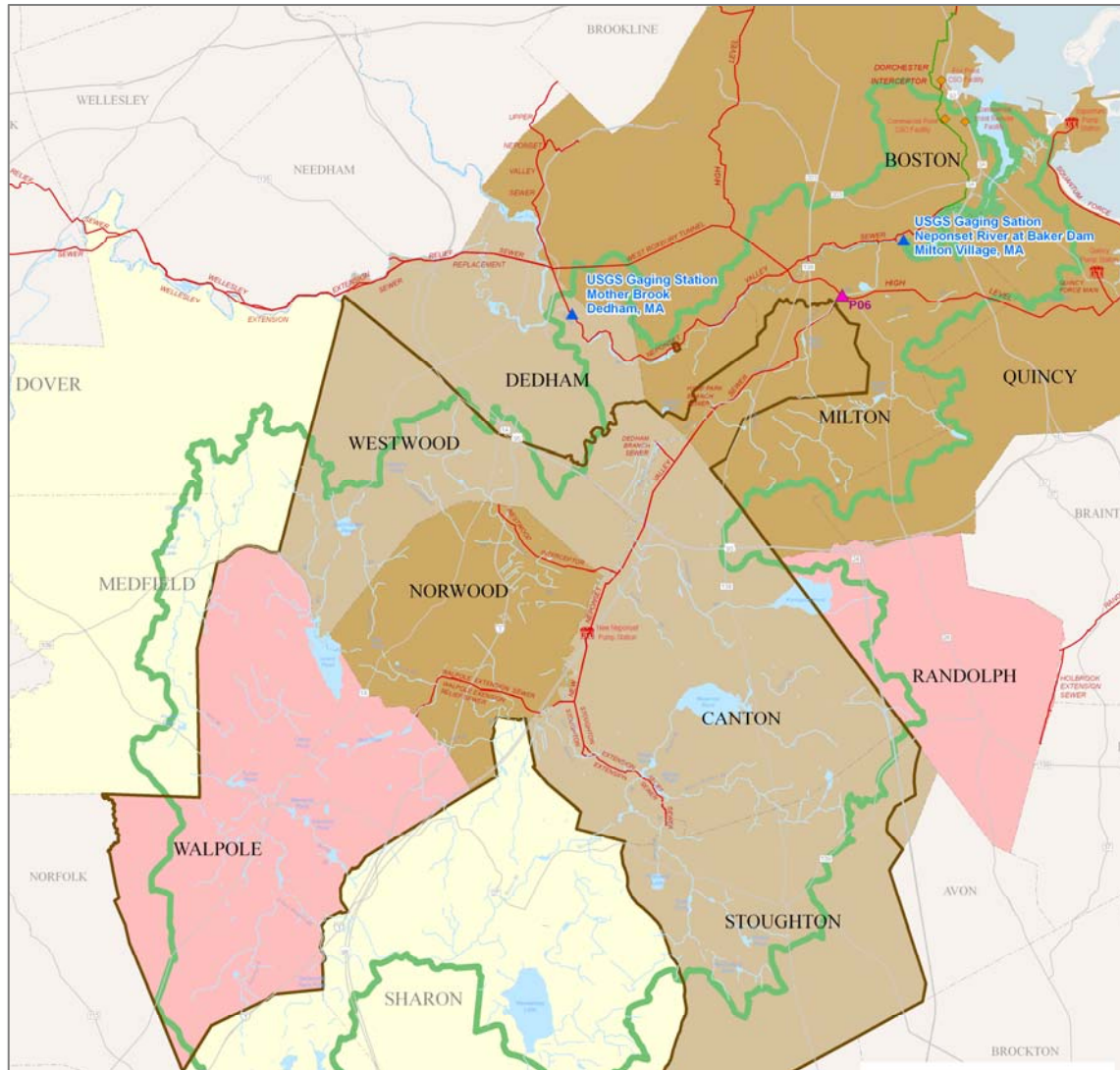


MWRA I/I Community Financial Assistance Program

- \$160 million grant/loan funds to local projects in 43 communities:
 - 900 miles sewer TV inspected
 - 30 miles sewer replaced
 - 120 miles sewer repaired
 - 8,000 sewer manholes repaired
 - 600 catch basins disconnected
 - 5,000 downspouts disconnected



Neponset River Watershed



Legend

- ▲ USGS Stream Gages
- ▲ MWRA Sewer Meters
- ◆ CSO Facilities
- Headworks
- Treatment Plants
- Pump Stations
- MassGIS Streams
- MWRA Interceptors
- Neponset Valley Sewers Tributary Area
- Neponset River Watershed
- MassGIS Ponds
- Non-MWRA Community
- MWRA Sewer Service Only
- MWRA Sewer and Partial Water
- MWRA Sewer and Water

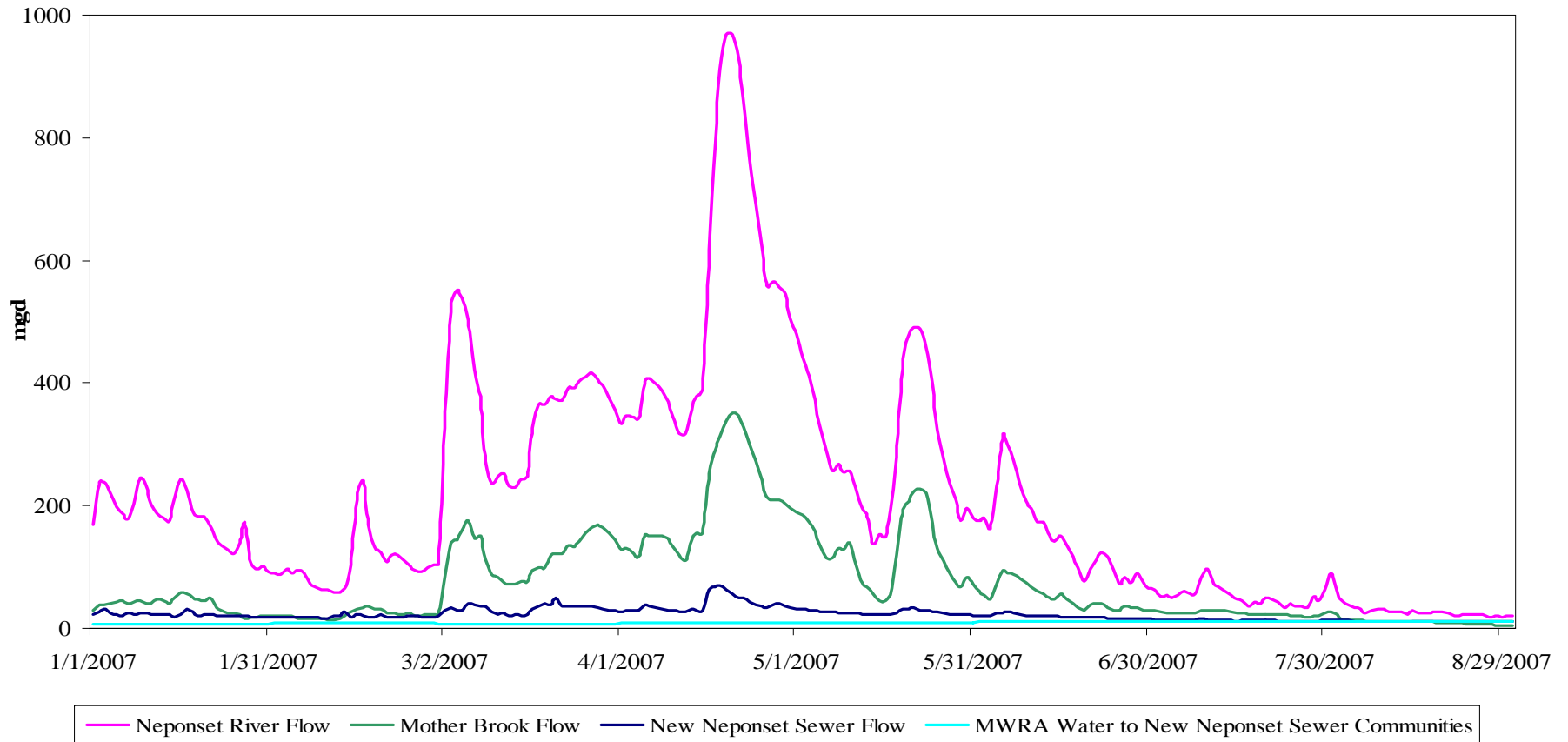


I/I Community Financial Assistance Program: Neponset River Watershed Communities

- \$12.3 million MWRA grant/loan funds expended in 7 communities (Canton, Dedham, Milton, Norwood, Stoughton, Walpole, Westwood):
 - 180 miles sewer TV inspected
 - 8 miles sewer replaced
 - 12 miles sewer repaired
 - 725 sewer manholes repaired



Neponset Basin Flow Comparison - 2007

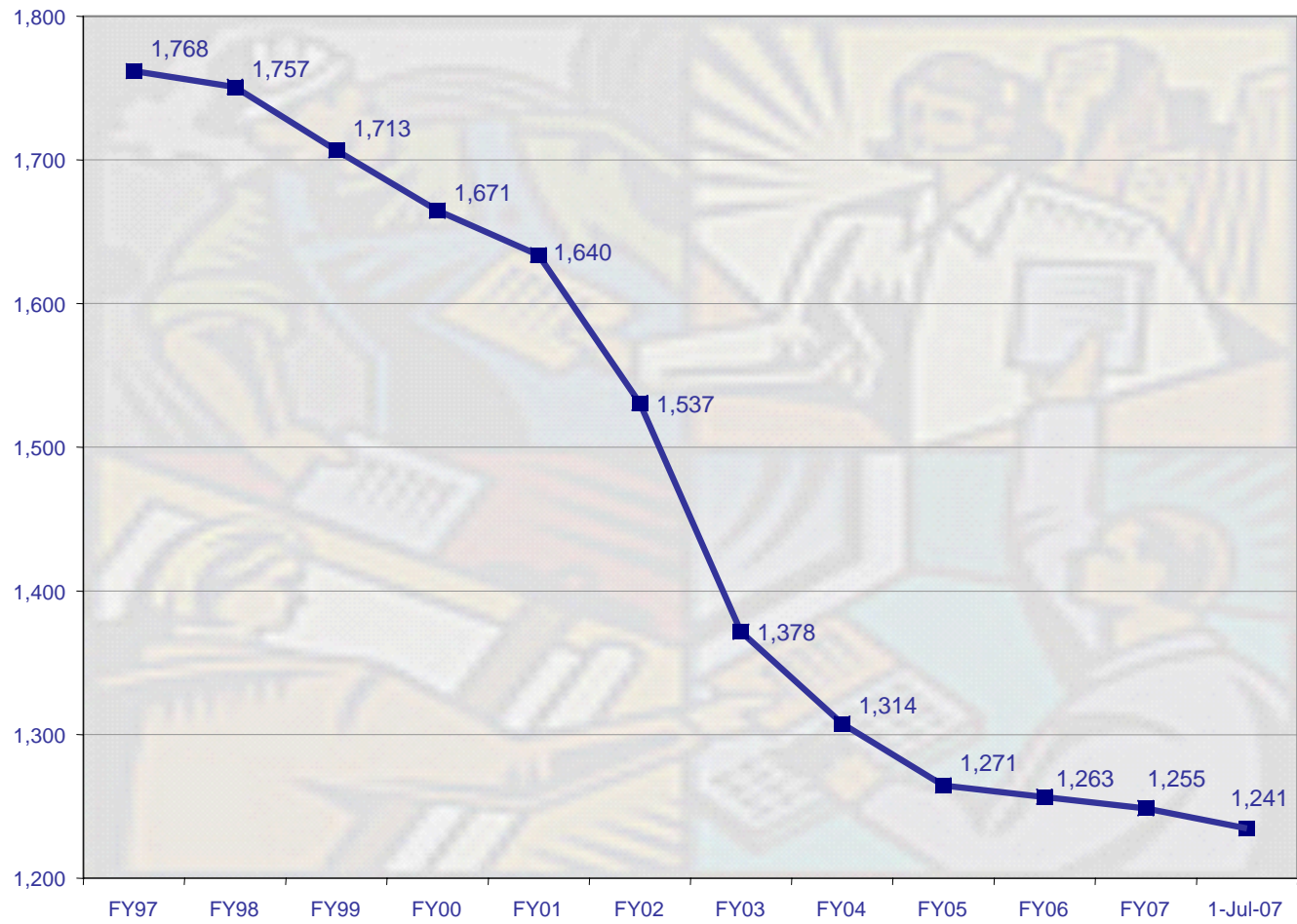




Operations and Maintenance



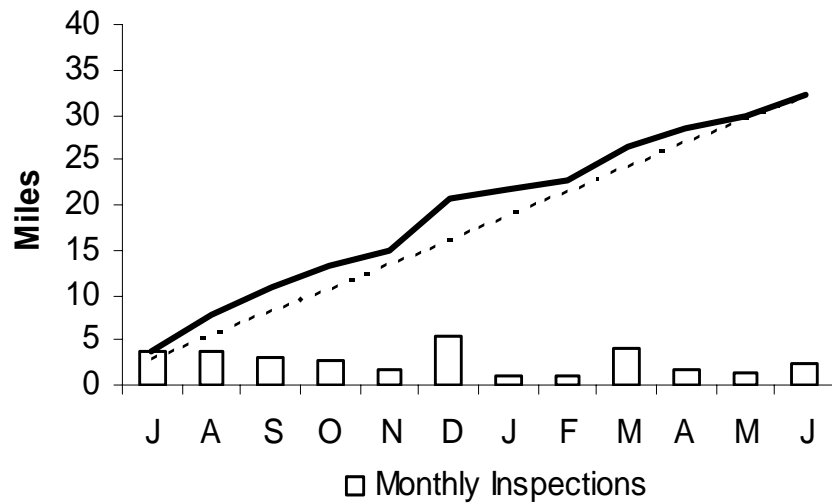
Staffing



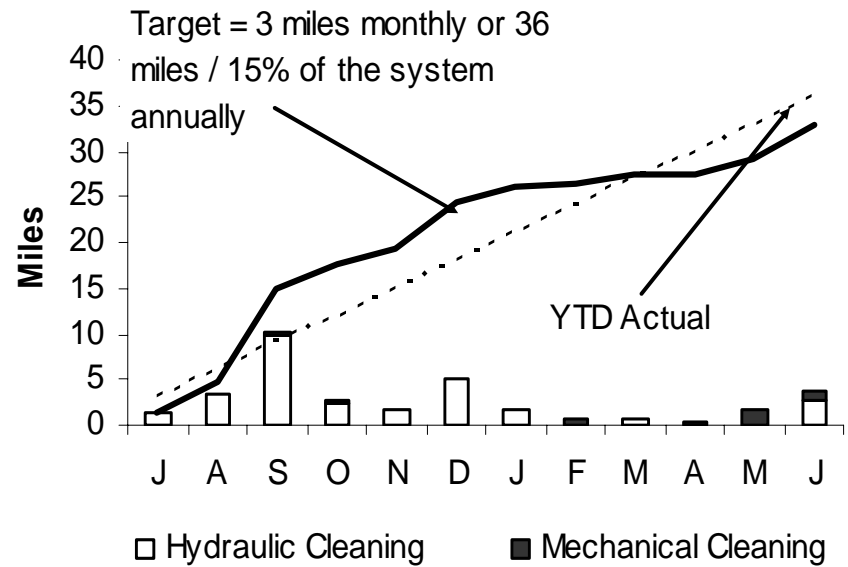


Wastewater System Maintenance

Pipeline Inspections



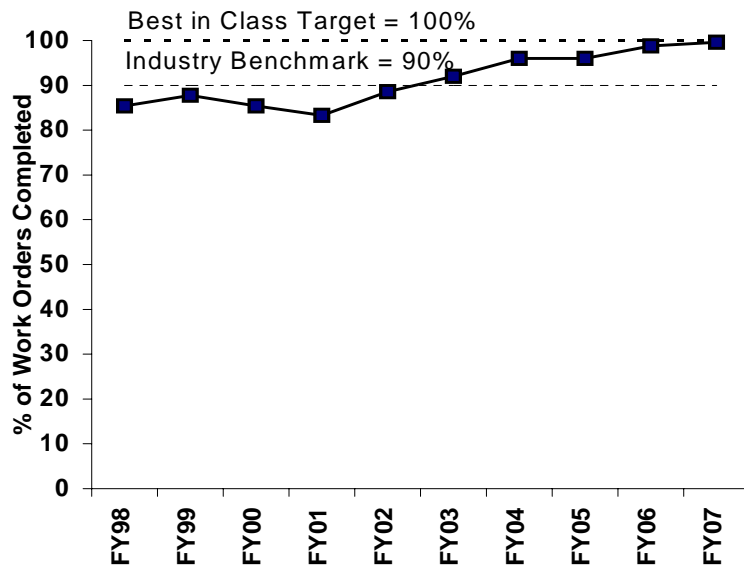
Pipeline Cleaning



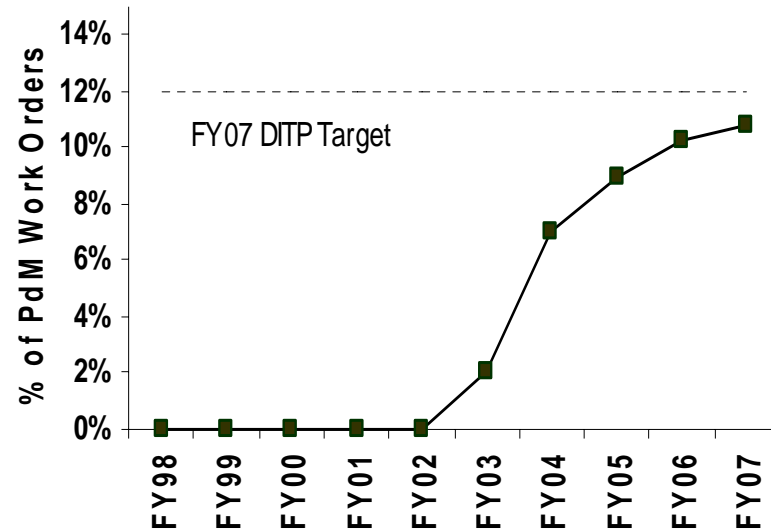


Deer Island Maintenance

Preventive Maintenance



Predictive Maintenance

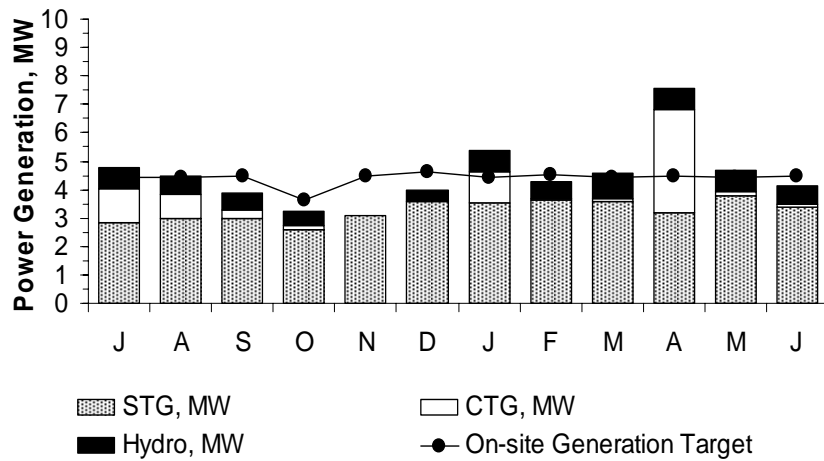




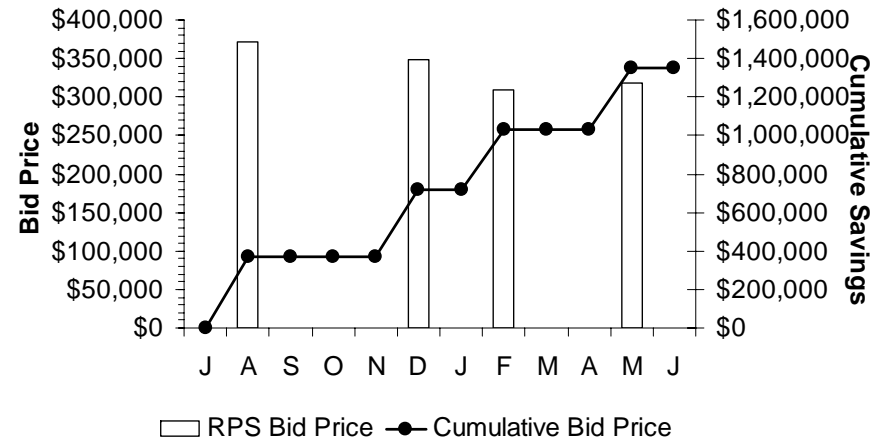
Deer Island Energy

- Deer Island's annual electricity budget is nearly \$14 million
- Self-generation target for FY2008 is 23%

Self-Generation



MA Renewable Portfolio Standard





Renewable Energy And Sustainability

- Fleet optimization
 - 23 Hybrid
 - 15 CNG
 - 6 Propane
 - 18 Ethanol
 - 188 Biodiesel
 - Retrofit 65 large diesel-powered units with catalytic converters
- Replaced 500 computer monitors with energy-star rated LCDs





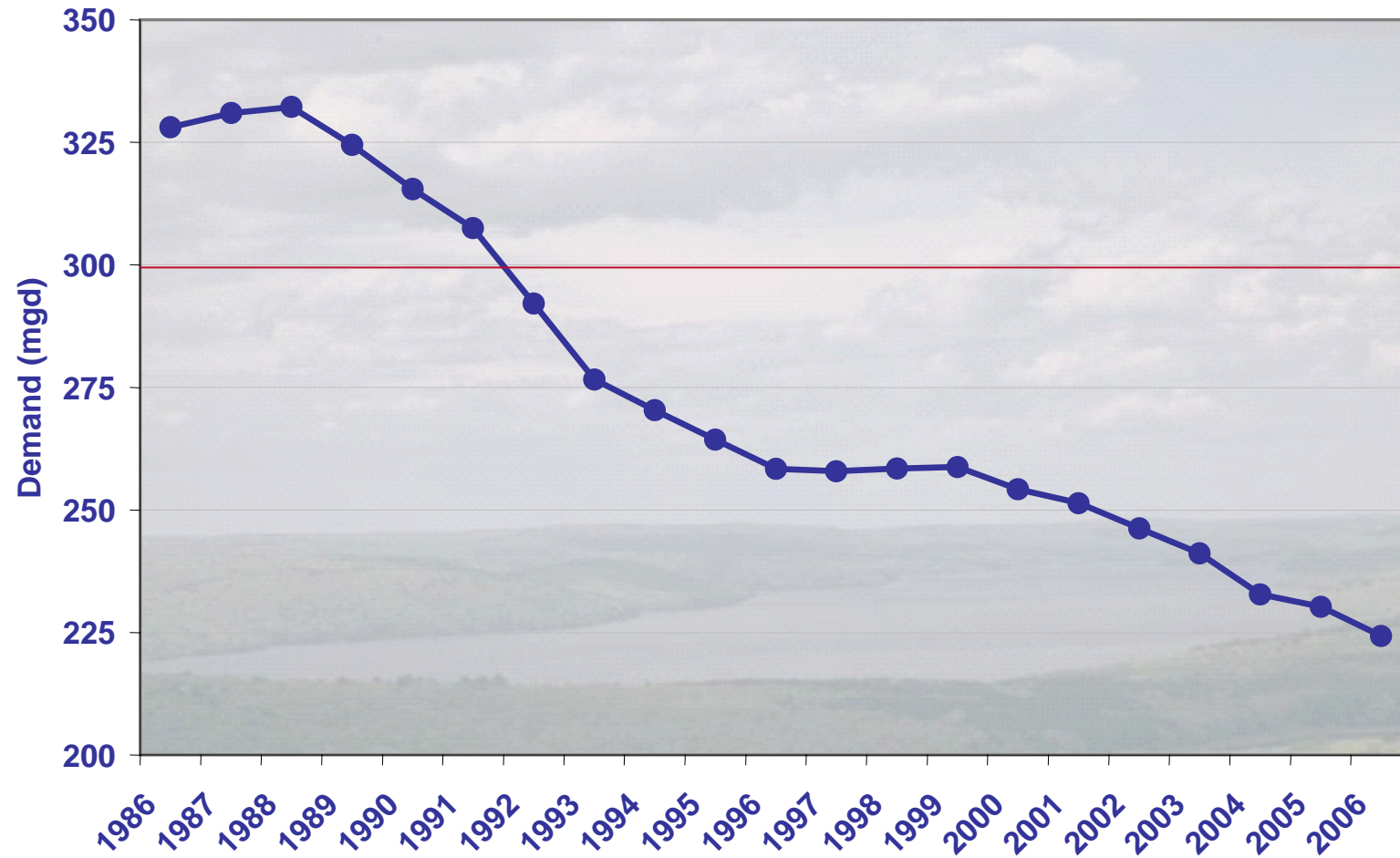
Renewable Energy And Sustainability

- Awarded \$870,000 in grants and no-interest loans for solar panels at Deer Island
- Recently submitted grant applications for:
 - Nut Island Wind - design & construction
 - IPS Wind - design & construction
 - Carroll Solar - design & construction
 - Norumbega Wind - feasibility study
 - Loring Road Hydro - feasibility study
- Cosgrove and Oakdale hydroelectric facilities generated almost \$1 million in FY2007





Water Demand Continues To Decrease





Wastewater Challenges Ahead



Complete The CSO Control Program

Completed		
Hydraulic Relief at CAM005		
Hydraulic Relief at BOS017		
Chelsea Trunk Sewer Replacement		
Chelsea Branch Sewer Relief		
CHE008 Floatables Control and Outfall Repair		
Cottage Farm CSO Facility Upgrade		
Prison Point CSO Facility Upgrade		
Somerville Marginal CSO Facility Upgrade		
	In Construction	
Commercial Point CSO Facility Upgrade	Cambridge/Alewife Brook Sewer Separation	In Design/Planning
Fox Point CSO Facility Upgrade	South Dorchester Bay Sewer Separation	North Dorchester Bay Facilities
MWRA Floatables/Outfall Closing Projects	Regionwide Floatables Control	Morrissey Boulevard Storm Drain
Neponset River Sewer Separation	Union Park Treatment Facility	Reserved Channel Sewer Separation
Constitution Beach Sewer Separation	East Boston Branch Sewer Relief (contract 1)	East Boston Branch Sewer Relief (except Contract 1)
Somerville Baffle Manhole Separation	Fort Point Channel Sewer Separation & Optimization	Bulfinch Triangle Sewer Separation
Pleasure Bay Storm Drain Improvements	Charlestown BOS019 Storage Conduit	Brookline Sewer Separation
Stony Brook Sewer Separation	North Dorchester Bay Storage Tunnel	Cottage Farm Improvements



Deer Island Treatment Plant Asset Protection

- Repairs and modifications of facilities and structures; equipment upgrades and replacements
 - FY08: \$15.8 million
 - FY09-FY13: \$128.1 million





Electrical Equipment Upgrades





Primary And Secondary Clarifier Rehabilitation

Expansion Joints



Longitudinal Chains

Scum Tip Tube Replacement





Sludge Pump Replacements





Seawall And Public Access





Digester Storage Tank Membrane Replacements





Process Instrumentation Control System (PICS) Upgrade

Primary Operations



Thermal Operations



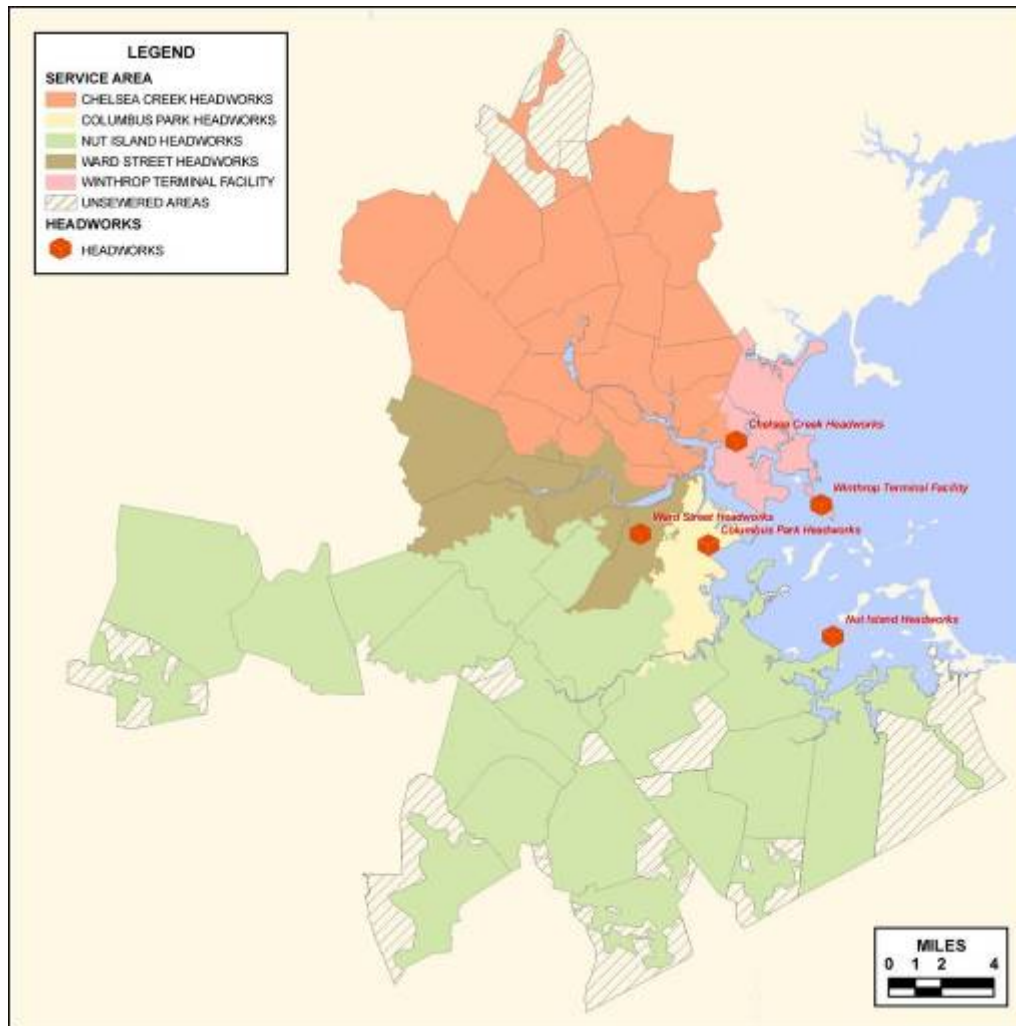


Centrifuge Replacement





Rehabilitation Of Remote Headworks



- Chelsea Creek 1967
- Columbus Park 1967
- Ward Street 1967
- Nut Island 1998

3 older Headworks remain operational, but are in only fair condition. Significant Investment is required now.

Nut Island Headworks is relatively new and in very good condition



Headworks Screens





Headworks Equipment

Knife Valve



Odor Control Media



Rehabilitation Of Collection System Sewers



- 227 Miles of Gravity Sewers
- 30 Miles of Force Mains, Siphons and Outfalls
- 4,000 Manholes and Structures



Rehabilitation Of West Roxbury Tunnel

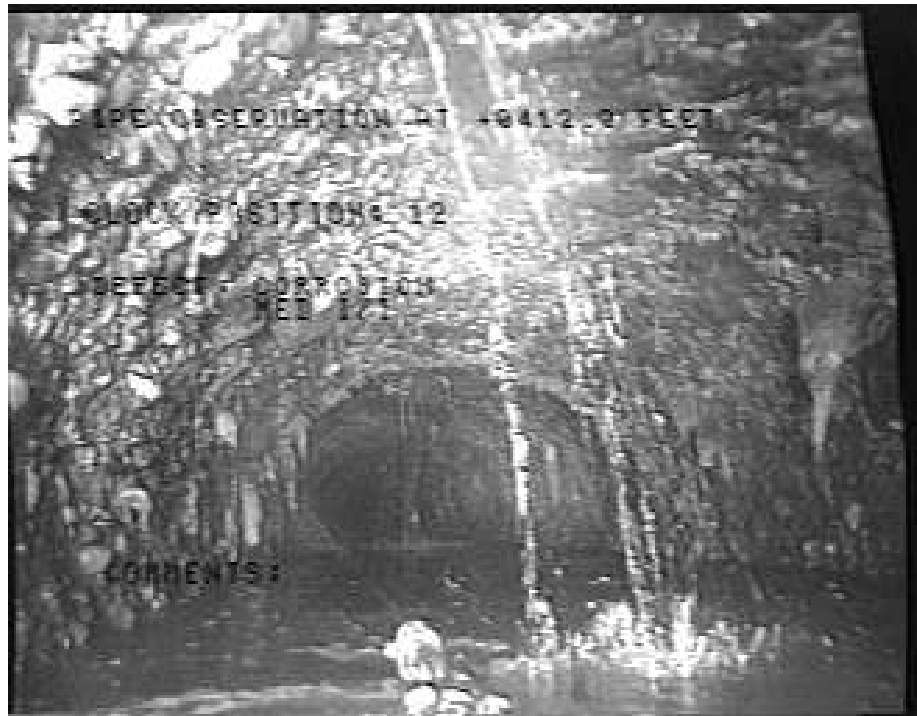


- Constructed 1963
- 2.5 mile long tunnel, Inspected 1999
- Access shafts at ends and mid-point
- Hydrogen Sulfide Corrosion





Rehabilitation Of Section 624, North Weymouth



- Constructed 1933
- 2,000 ft - Located Beneath Rte 3A in North Weymouth
- 5 ft Diameter
- Hydrogen Sulfide Corrosion



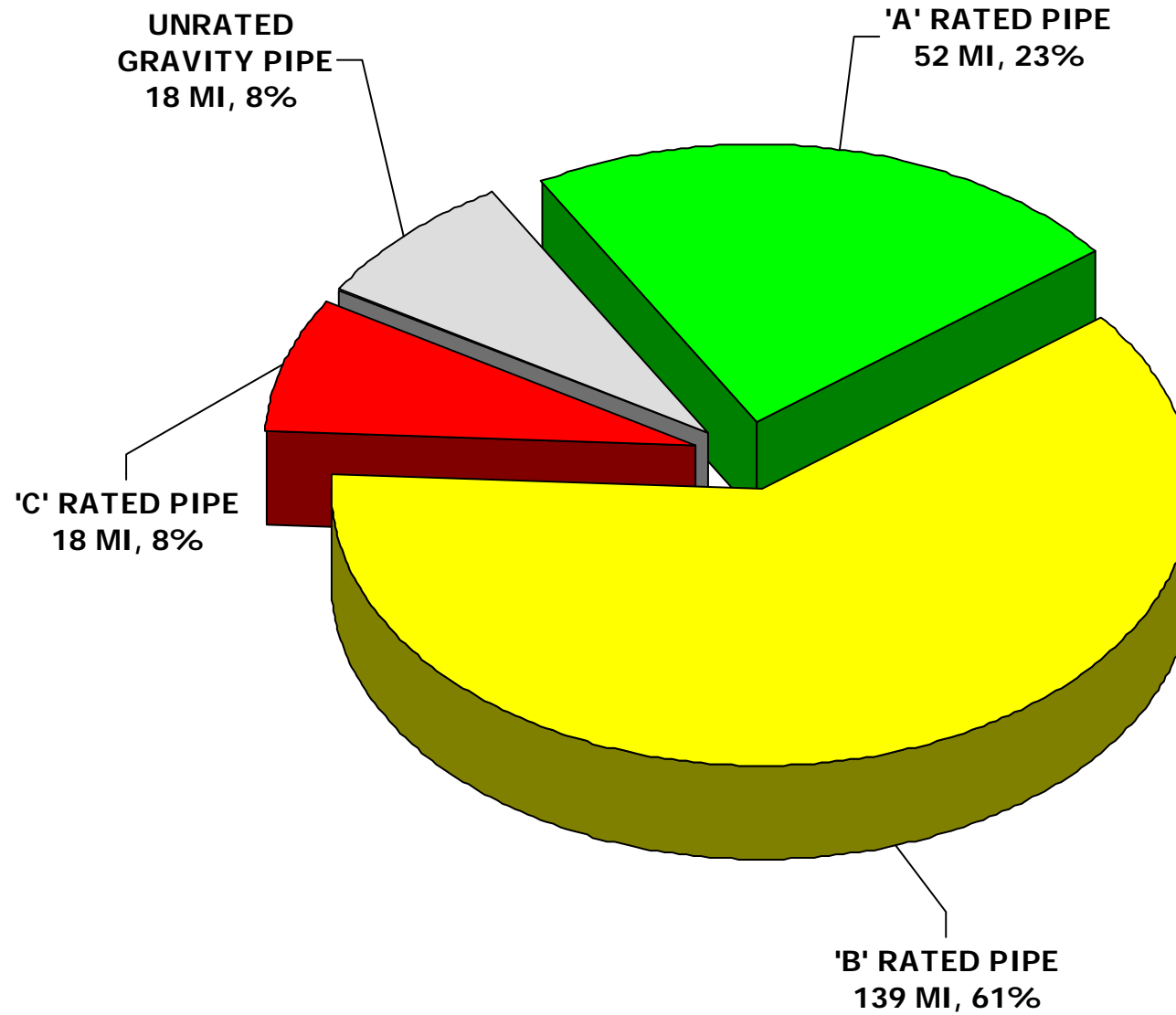


Rehabilitation Of Siphon Headhouse Chambers



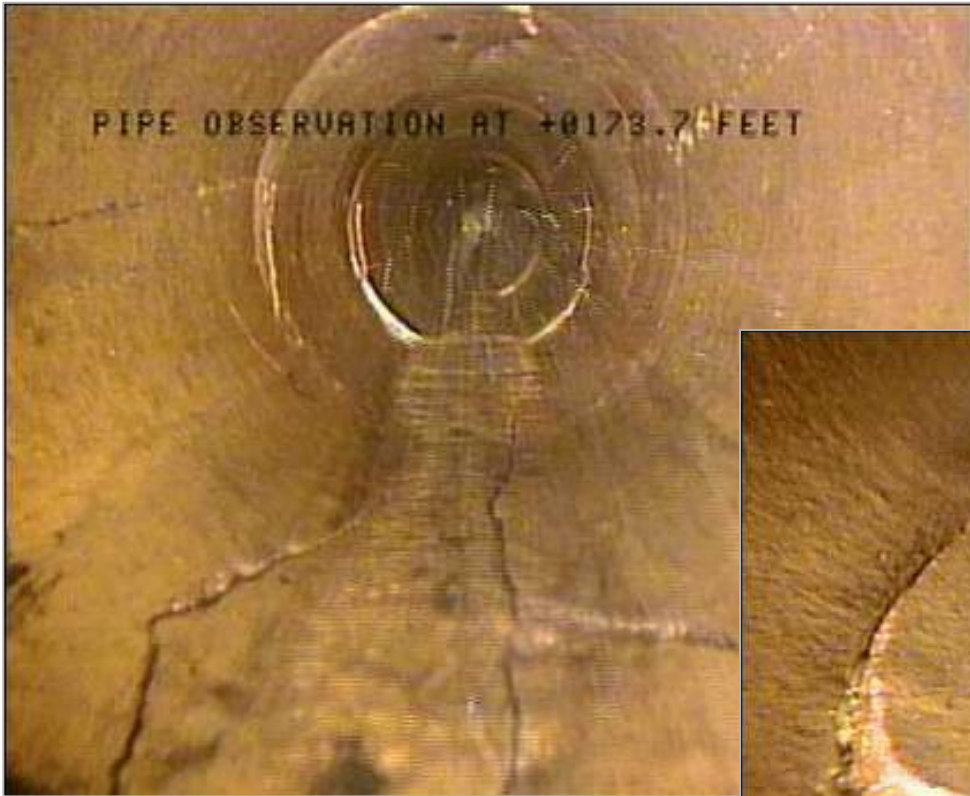


Pipe Ratings



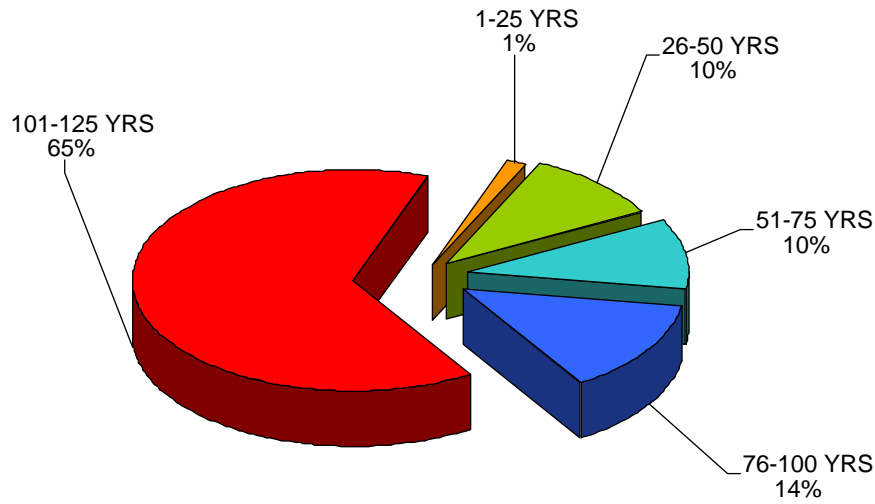


"C" Rated Pipe

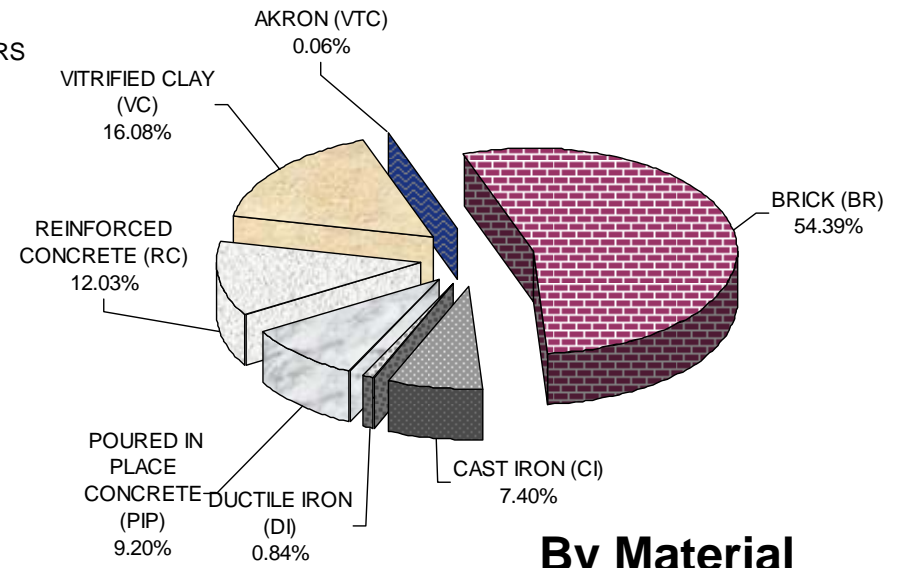




"C" Rated Pipe Critical Factors – Age and Material



By Age



By Material



Residuals Processing Facility

- The sludge-to-fertilizer plant in Quincy is currently operated under contract with NEFCo
- The contract will expire in 2015
- The facility will either have to be completely rehabilitated or replaced in-kind or with another technology

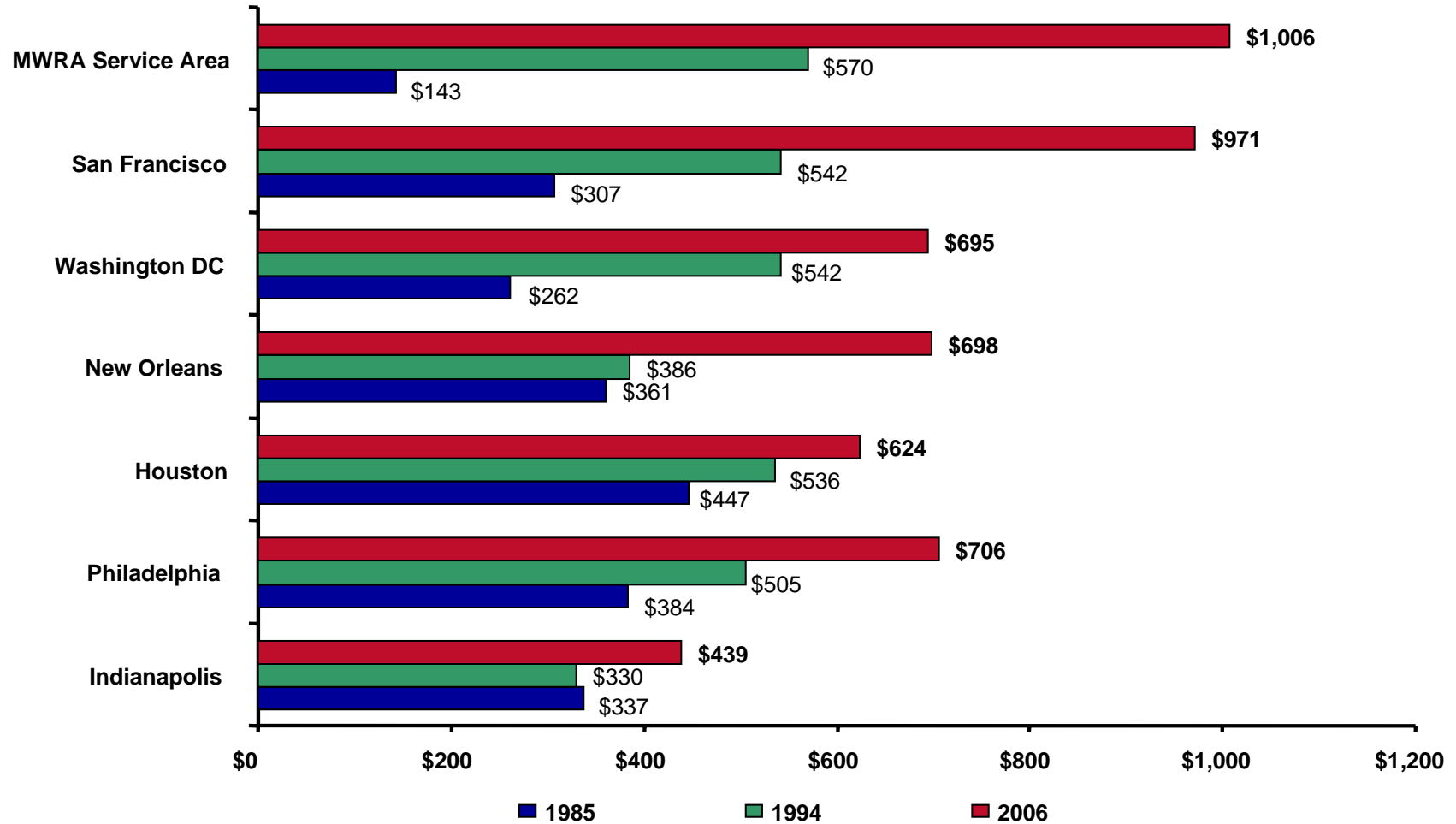




Rates Management



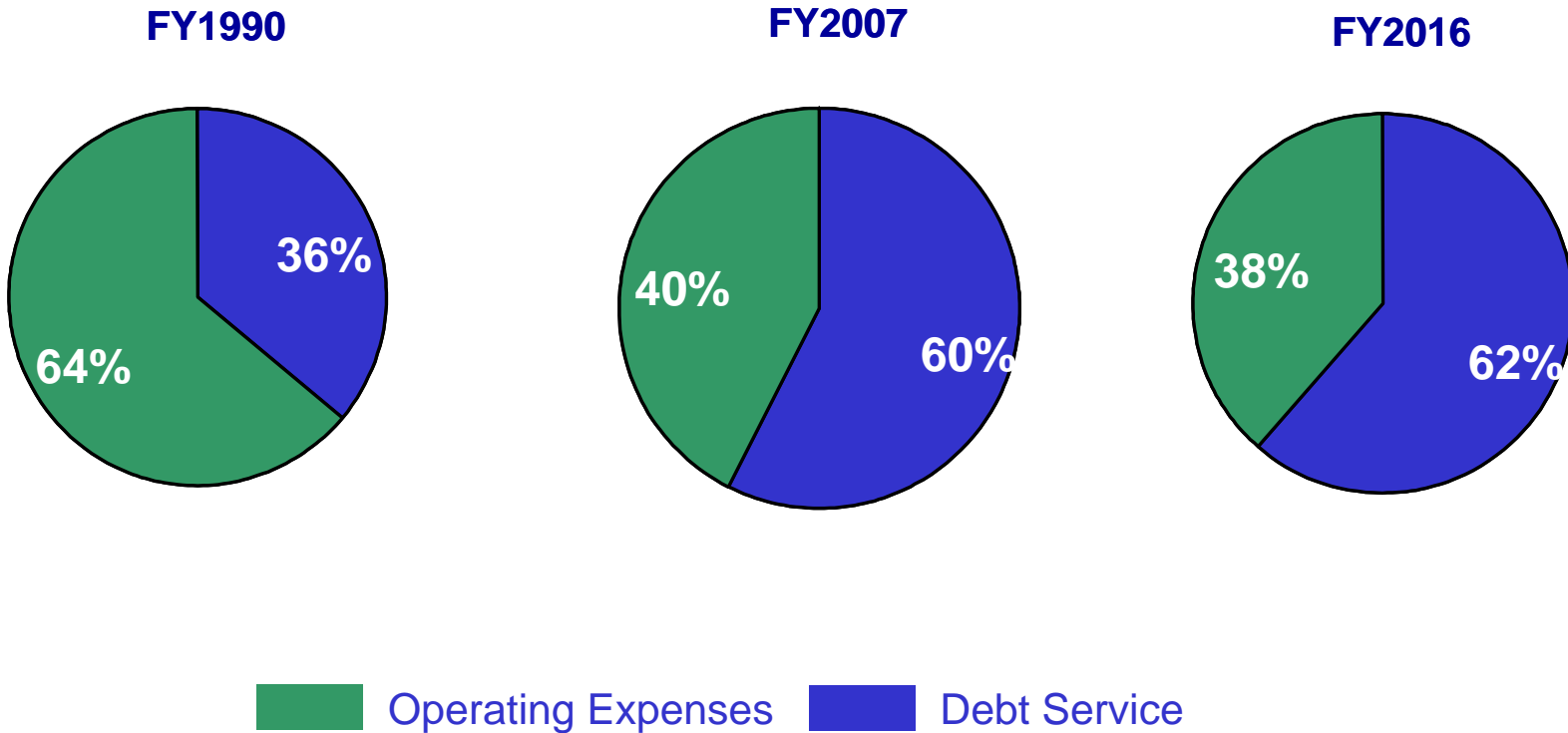
Combined Water And Sewer Rate Growth Comparison Among US Cities: 1985 to 2006



From the Advisory Board's 2006 Annual Water and Sewer Retail Rate Survey

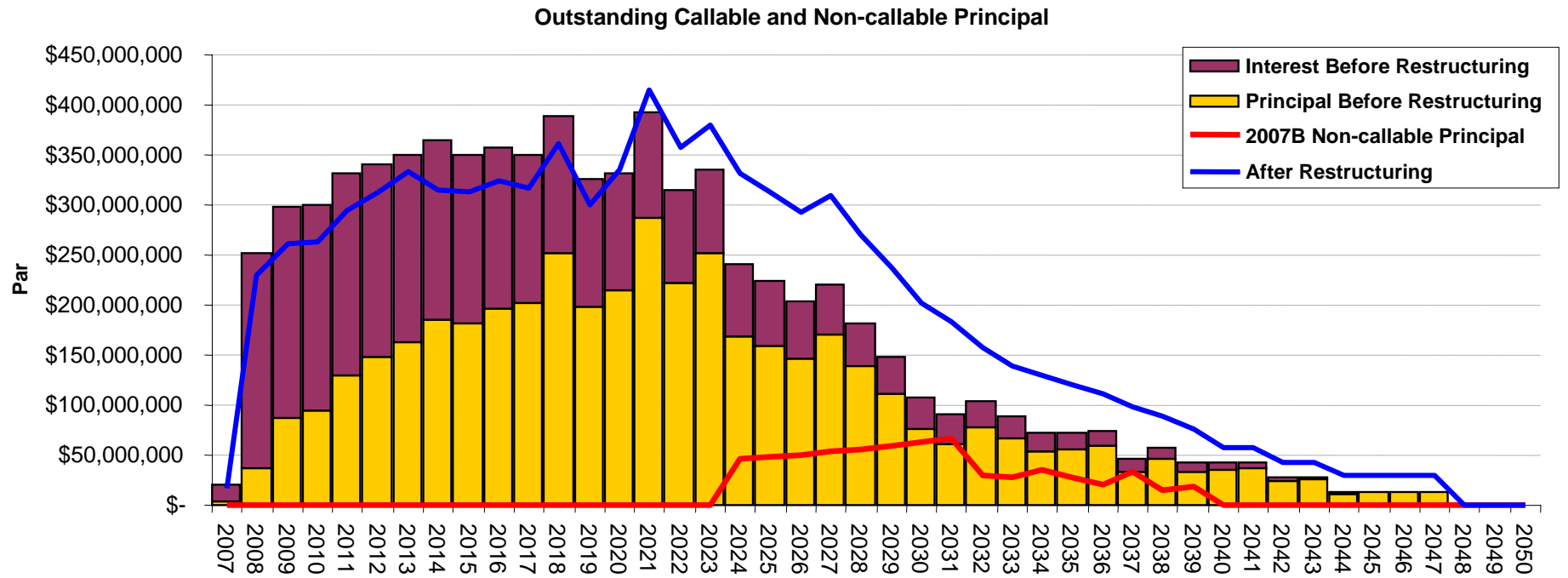


The Biggest Driver Of MWRA Rate Increases Is Debt Service





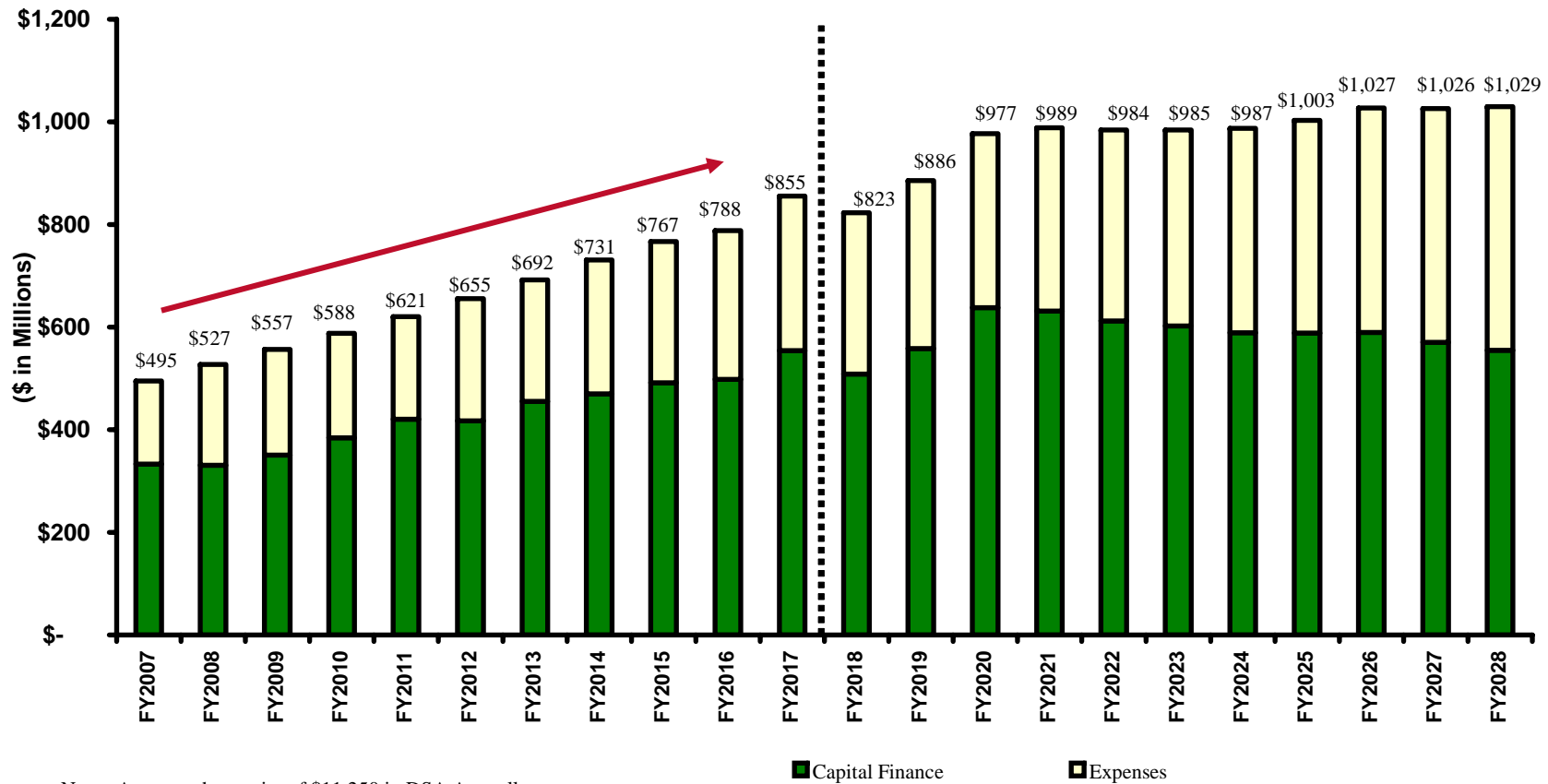
2007 Restructuring





Projected Rate Revenue Requirement

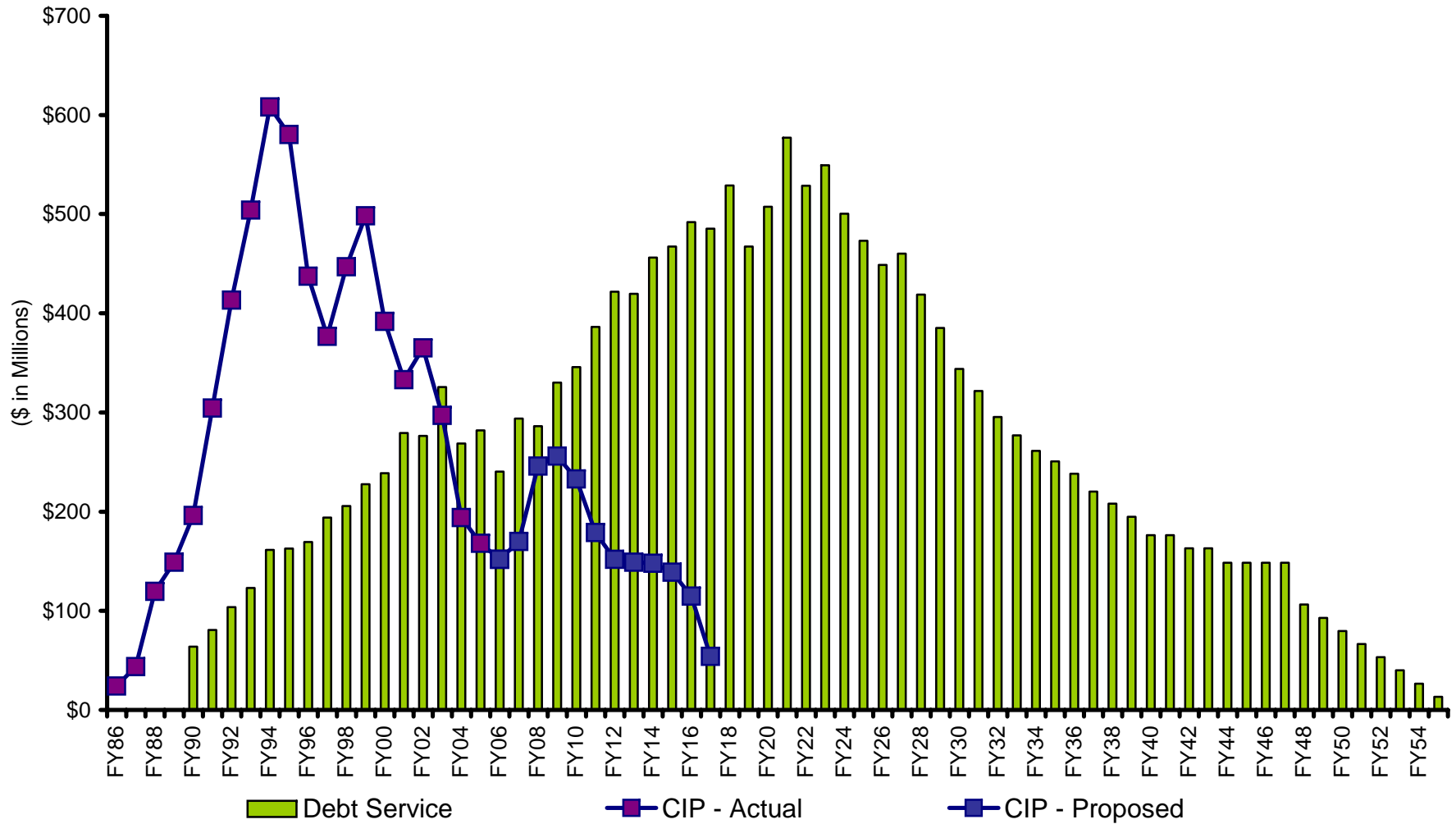
- Over the next 10 years (FY07-FY17), the rate revenue requirement grows by 73% or \$360 million



Note: Assumes the receipt of \$11,250 in DSA Annually

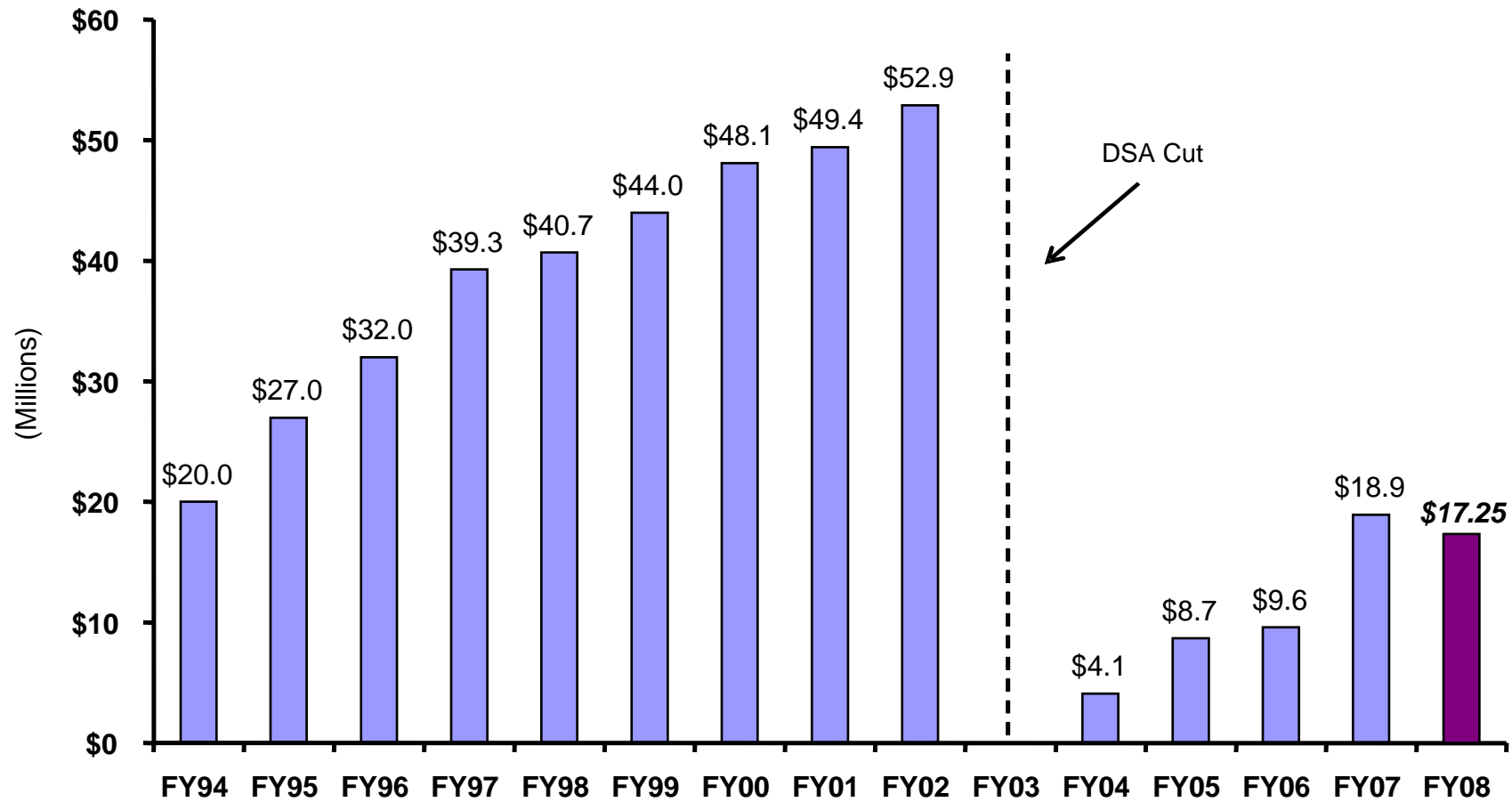


Capital Improvement Spending And Debt Service





Debt Service Assistance





Debt Service Assistance Must Continue

- The Commonwealth's budget included \$23 million for state-wide debt service assistance – of which MWRA's share is estimated to be \$17.25 million
- The FY08 rate increase was 4.5%
- The problem looms for the foreseeable future

Fiscal Year	FY08	FY09	FY10	FY11	FY12	FY13
Rate Revenue Requirement (in millions)	517.8	547.9	579.4	612.8	648.1	685.5
Rate Revenue Increase	4.5%	5.8%	5.8%	5.8%	5.8%	5.8%
Estimated Household Bill						
Based on water usage of 61,000 gallons per year	\$695	\$734	\$773	\$814	\$862	\$910
Based on water usage of 90,000 gallons per year	\$1,025	\$1,093	\$1,141	\$1,202	\$1,272	\$1,343



Look For Deer Island On *The History Channel* September 20th

Boneyard

Episode: Bio Waste

SCHEDULE

Thursday, September 20
09:00 PM
Friday, September 21
01:00 AM

[Search for other upcoming episodes](#)

[RSS](#) [What is RSS?](#)

See where millions of gallons of municipal sewage are processed on a daily basis. This sewage is a biowaste that can be transformed from a hazardous nuisance into an asset. Watch as agricultural wastes are reharvested for biofuels and animal and vegetable fats are refined into biodiesel for cars and trucks. Finally observe how human bodies are used to advance the science of forensic anthropology.

Rating: TVPG V

Running Time: 60 minutes

Genre: Society & Culture