

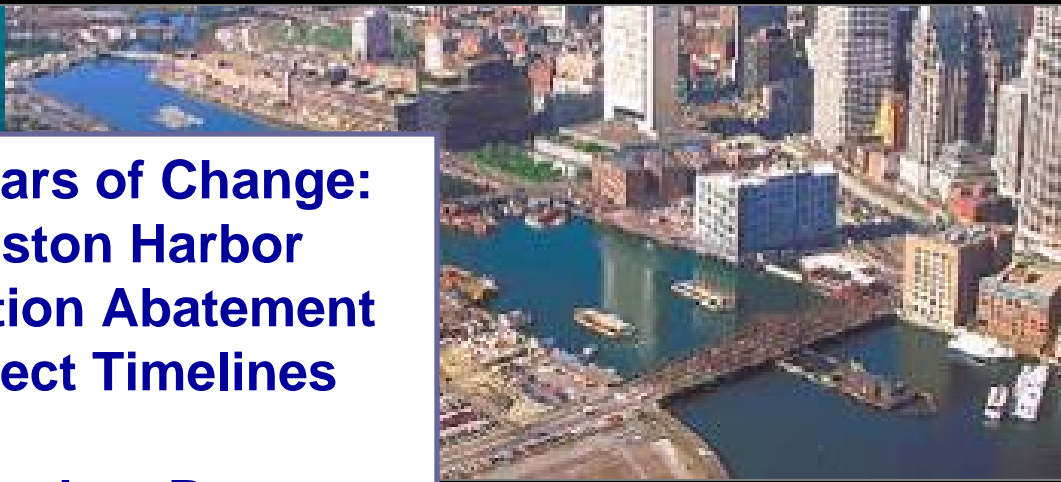
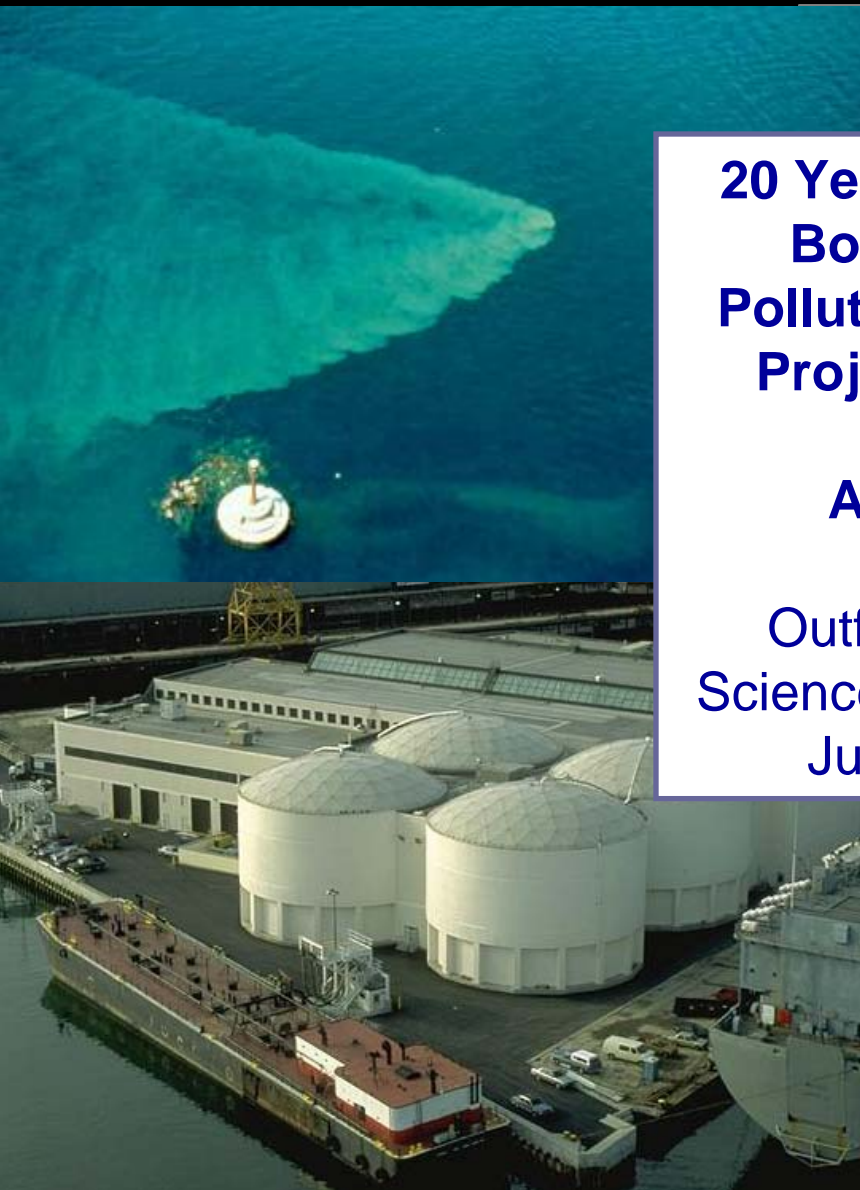


Massachusetts Water Resources Authority

20 Years of Change: Boston Harbor Pollution Abatement Project Timelines

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Outfall Monitoring
Science Advisory Panel
June 10, 2008





Timeline: Starting conditions

1986 Federal judge ordered schedule to construct new Deer Island Treatment Plant and related facilities.



- Two failing primary treatment plants discharged total 350 million gallons/day to harbor.
- Digested sludge discharged in northern harbor.
- 84 CSOs discharge 3 billion gallons annually during wet weather



Timeline: Early changes

1988-1991

- Upgrades old DITP, including improvements to disinfection.
- Sewage scum land-filled instead of being discharged into the harbor.
- 1991: End of sludge discharges into the harbor; sludge is made into fertilizer pellets.
- CSO discharges cut in half to 1.5 BGY





Timeline

- Improved pumping capacity at DITP decreases CSO further, most dramatic in Charles River
- Start-up of secondary treatment at DITP 1997
- Nut Island Treatment Plant flows transferred to DITP.
- NITP decommissioned 1998, end of discharges to the southern harbor!

1992-1998

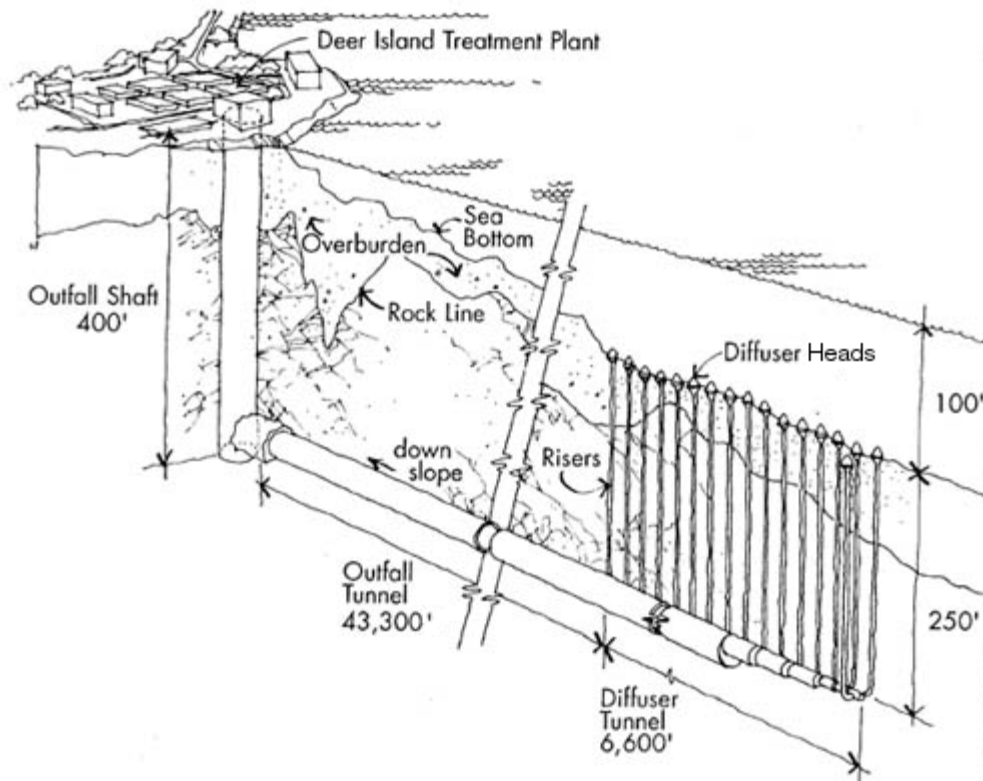




End of effluent discharges to Boston Harbor

September 2000

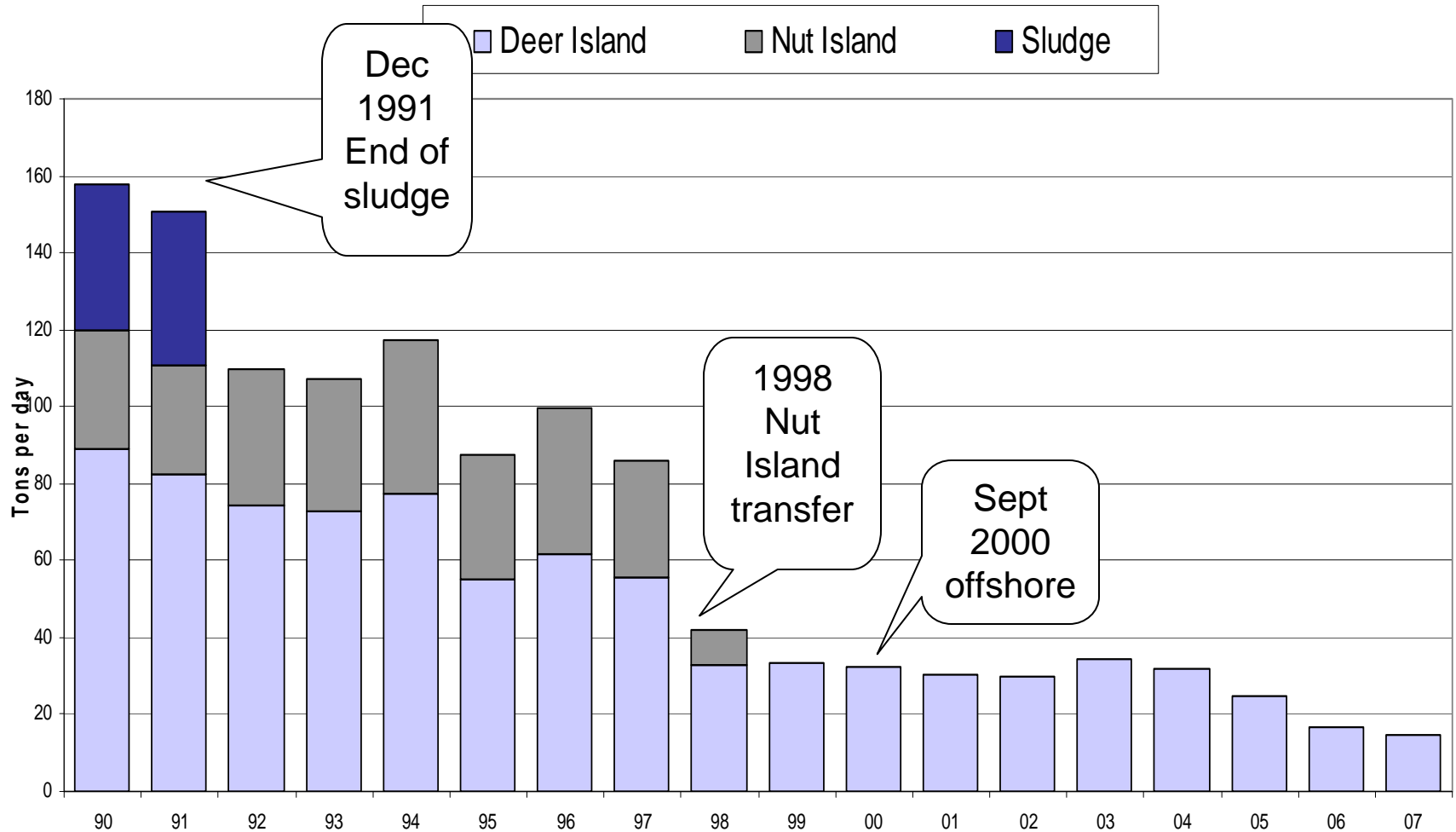
Start-up of new 9.5 mile-long outfall. DITP effluent discharged into Massachusetts Bay



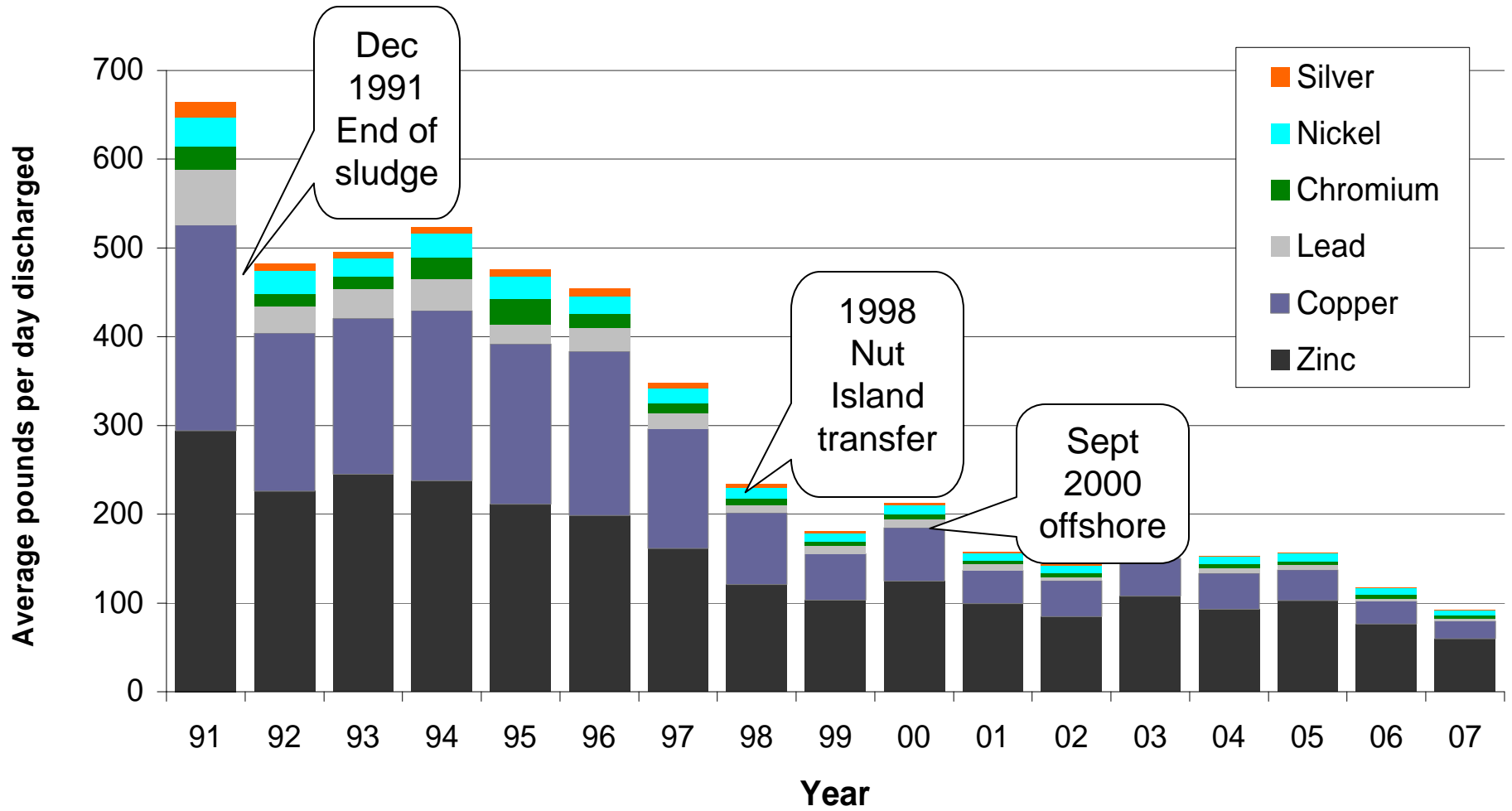


TSS discharges

Solids in MWRA Treatment Plant Discharges 1990-2007



Metals in MWRA Treatment Plant Discharges 1991-2007





CHANGES IN LOADINGS

<http://www.mwra.state.ma.us/harbor/enquad/pdf/2006-22.pdf>

Fraction	Before diversion (1995 thru Aug 2000)	After diversion (Sept 2000 - 2005)	Difference (%)	% contribution by WWTF loadings
TN	1835 ± 400	354 ± 186	-1481 (-81%)	99%
DIN	1185 ± 242	244 ± 134	-941 (-78%)	109%
TP	109 ± 25	12 ± 4	-97 (-89%)	100%
DIP	54 ± 15	6 ± 1	-48 (-89%)	100%
TSS	74 ± 15	12 ± 9	-62 (-84%)	94%
POC	5046 ± 1479	496 ± 380	-4450 (-90%)	93%

Includes : WWTF + Rivers + Non-point sources (CSO + stormwater + wet atmos + groundwater)

Units : kmol d⁻¹ - TN, DIN, TP, DIP and POC ton d⁻¹ - TSS



After 2000, WWTPs no longer significant source

CSO projects

2000

- **Constitution Beach (Winthrop Bay) CSOs ended.**
- **Several CSO hydraulic relief projects.**
- **Cottage Farm CSO facility upgrades.**
- **Neponset River sewer separation, CSOs closed**

2001

- **Dorchester Bay CSO facility upgrades**
- **Prison Point (mouth of Charles) facility upgrade**
- **Somerville Marginal (mouth of Mystic) upgrade**
- **Chelsea Relief Sewer projects**





CSO Projects

2006

- **Stony Brook (large discharge to Charles River) sewer separation**
- **South Dorchester Bay sewer separation**
- **Pleasure Bay storm drain improvements**

2007

- **BOS019 CSO storage facility (Charlestown)**
- **Union Park Detention and Treatment Facility (Fort Point Channel): Stores 2MG for pump-back, treats remaining overflows**
- **Fort Point Channel Sewer Separation and Optimization**
- **Decommissioning of South Dorchester Bay CSO facilities (Fox Point and Commercial Point)**

End of CSO discharges to South Dorchester Bay!





Summary: CSO Control Plan





Summary: changes in size and location of loadings

	PERIOD I	PERIOD II	PERIOD III	PERIOD IV	
N loadings (based on (Alber and Chan 1994)					
	<p>Pre 1991</p> <p>Sludge discharge ends 1991</p>	<p>1992-1998</p> <p>New primary facilities DITP 1995</p> <p>Upgrade to secondary began 1997</p>	<p>1998-2000</p> <p>Inter-island transfer</p> <p>Secondary upgrades continue</p>	<p>2000-present</p> <p>Outfall transfer</p>	



CSO control for South Boston beaches



Tunnel to store combined sewage for pump-back to treatment plant

