


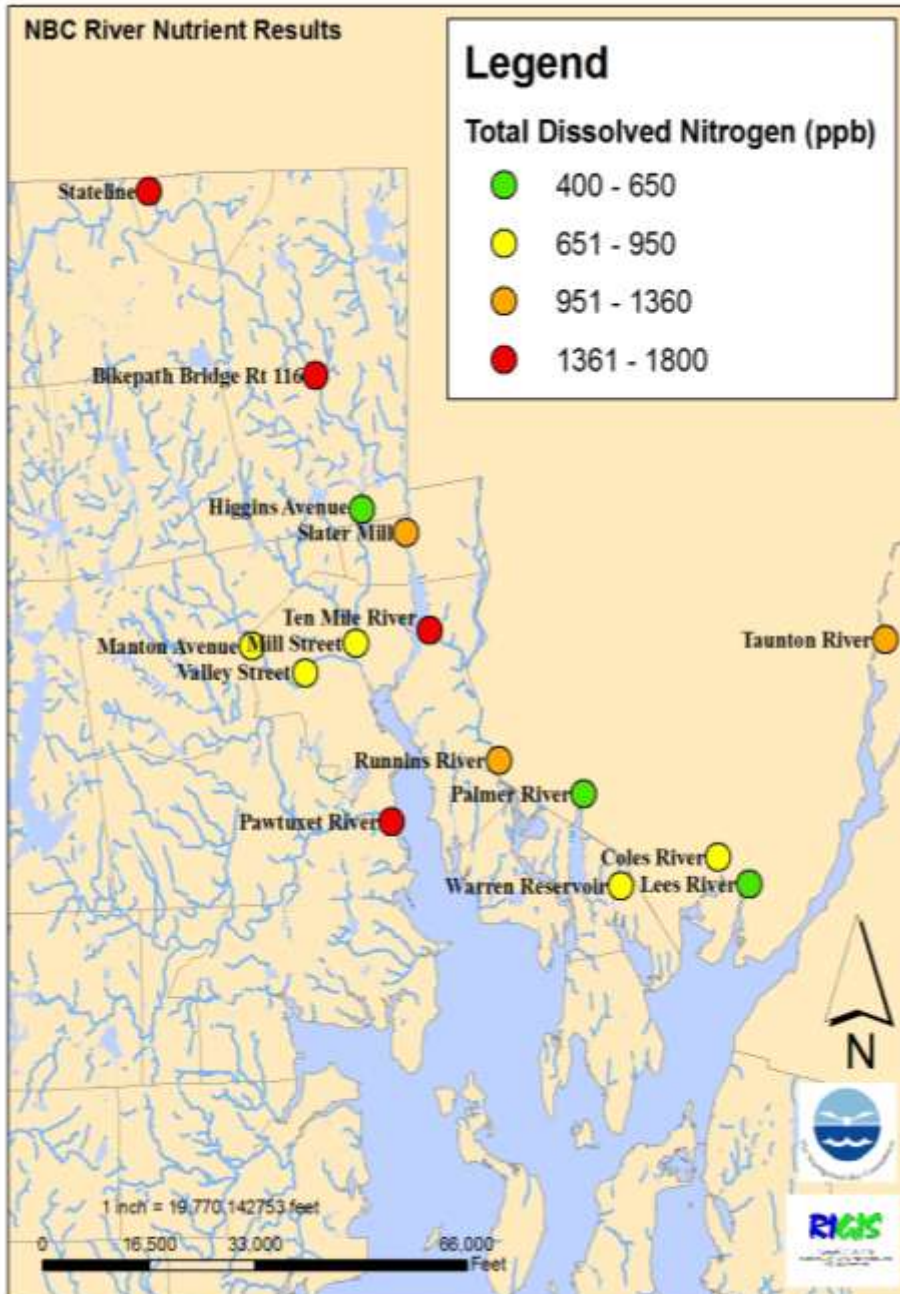


Narragansett Bay Commission Update

Blackstone River Users Conference
September 16, 2011

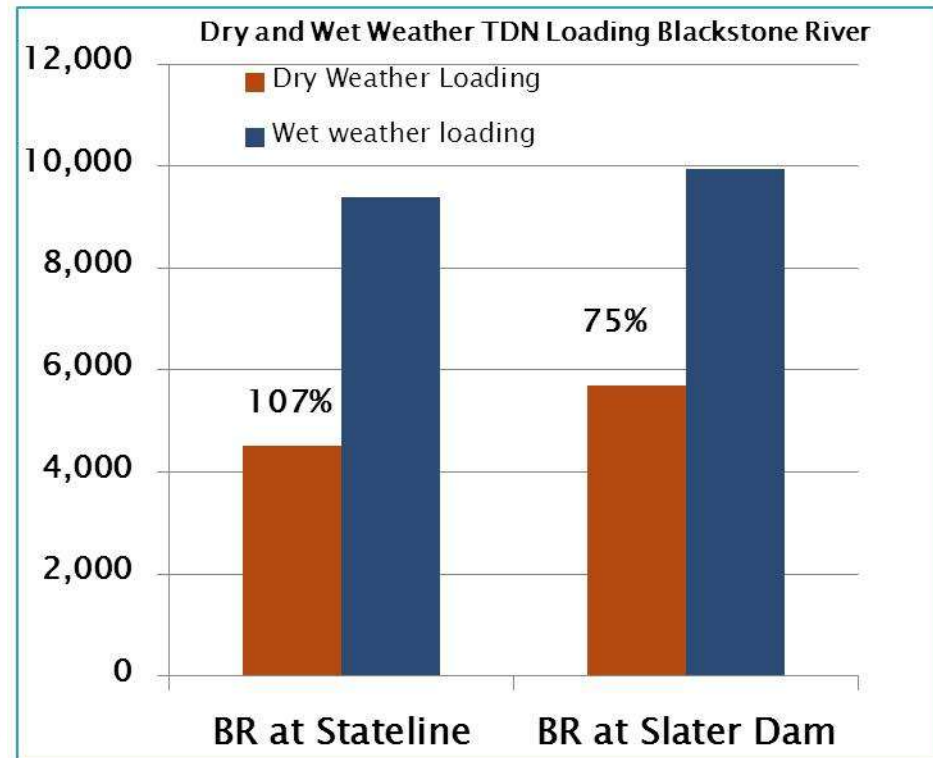
Receiving Water Monitoring & Major Initiatives at NBC

- ▶ Nutrients Monitoring Program
 - ▶ Combined Sewer Overflow (CSO) Abatement Project
 - ▶ Biological Nutrient Removal at both Field's Point and Bucklin Point
 - ▶ Alternative Energy Projects
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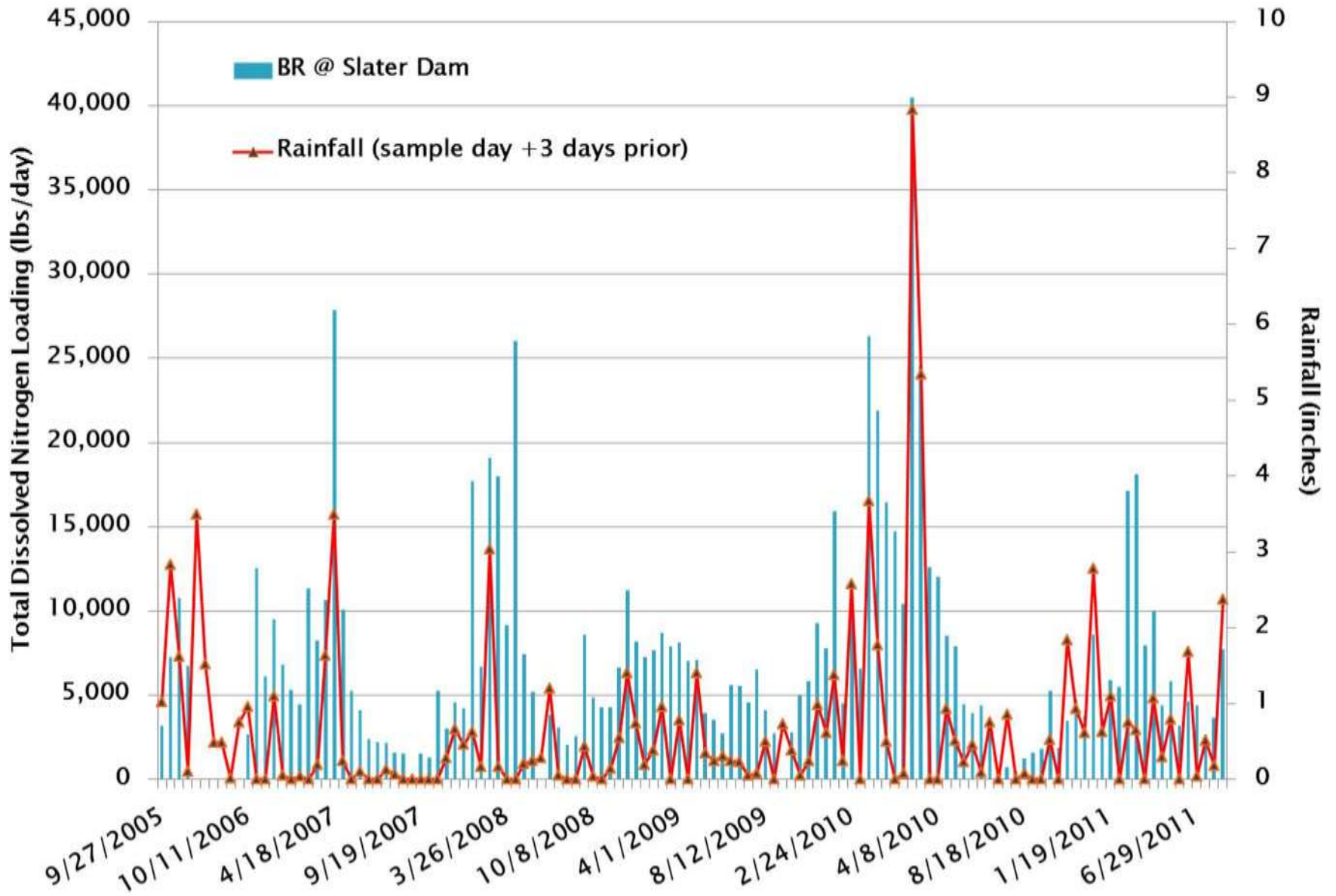


Total Dissolved Nitrogen

- ▶ 3 sites along the Blackstone River
- ▶ High TDN concentrations
- ▶ BR has highest loading into the Upper Bay of all measured rivers



Blackstone River Loading at Slater Dam



CSO Abatement Project – Phase I

- ▶ 3 Phases over 20 years
- ▶ Phase 1: 2001 – 2008 (~\$359 million)
 - Design storm: 3-month 6-hour, 1.61 inches of rain
 - 3+ mile long tunnel; 300 ft. below ground
 - Main Spine tunnel in Providence from the Foundry to Field's Point WWTF
 - 26 ft. finished diameter
 - 62 MG design capacity (actual~65 MG)
 - Collects sewer/stormwater from 12 CSOs in Field's Point service area
 - 40% of overflow volumes captured

CSO Tunnel Success – Phase I

- ▶ CSO Tunnel has captured 3.3 billion gallons since November 2008
 - ▶ Fecal coliforms in the Upper Bay have decreased by 28 %
 - ▶ Changes in shellfishing criteria by RIDEM due to tunnel success
- Phase I tunnel has prevented thousands of pounds of pollutants from entering the Upper Bay by being captured and processed at Field's Point

Pollutant	Pounds
TSS	868,521
BOD	776,630
Total Nitrogen	81,333
Aluminum	5,972
Cadmium	51
Chromium	192
Copper	264
Cyanide	131
Iron	28,049
Lead	226
Nickel	84
Silver	82
Zinc	678


CSO Abatement Project – Phase II

▶ Phase II: 2011 – 2014

Cost: ~\$363 million

- Collect 14 CSO's into interceptors and then to tunnel
 - Woonasquatucket River CSO Interceptor (2.35 miles)
 - Lower Seekonk River CSO Interceptor (1.4 miles)
- Sewer/stormline separation of 2 CSOs
- Construction of wetlands treatment facility for 1 CSO in Central Falls (OF 106 Higginson Park)
- Will coincide with the completion of WWTF BNR upgrades

CSO Abatement Project – Phase III

- ▶ Phase III – evaluation period after Phase II
 - Estimated Cost – \$603 million
 - Design complete 2016/2017
 - Anticipated construction 2017 – 2022
 - Pawtucket Tunnel – deep rock tunnel to Bucklin Point
 - 12 CSO's from Blackstone River area collected into tunnel
 - Sewer separation of 4 CSOs
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Biological Nutrient Removal

Total Nitrogen (TN) – Field's Point



- ▶ Construction ongoing @ Field's Point – complete by 2013/2014
- ▶ Current effluent ~13.2 mg/l → 5 mg/l
- ▶ Reduction of ~3000lbs. TN/day
- ▶ Cost – \$31 million



Re-design of aeration tanks at Field's Point

Aeration tank filled with Biological Nutrient Removal IFAS media



Biological Nutrient Removal Upgrades – Total Nitrogen (TN) – Bucklin Point



- ▶ Built to 8.5 mg/l TN in 2005 – 2006
 - \$8.3 million for initial upgrades
- ▶ Currently achieves ~7.6 mg/l TN
- ▶ Upgrade design to 5 mg/l underway
 - Estimated cost – \$13 million
 - Reduction of ~461 pounds TN/day

Alternative Energy Projects



Simulated view of skyline with wind turbines at Field's Point

- ▶ **Wind Turbines – Field's Point**
- ▶ 3 (360ft.) wind turbines
 - Installation: Dec 2011 – Aug 2012
- ▶ Expected to supply approximately half of all electricity needs for the FP WWTF (6.4 million kWh/year)

- ▶ **Biogas–Fired Generator– Bucklin Point – in design phase**
- ▶ Biogas generated from anaerobic digestion of sewage sludge
 - October 2012
- ▶ Expected to supply facility with approximately half of the 1.3 MW of electricity needs

Questions?



- ▶ Contact info:

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