

Narragansett Bay Commission – 2015 Monitoring Season Update

Environmental Monitoring Collaborative Meeting, January 14th, 2016

Nitrogen Loading to Upper Narragansett Bay

- Both Bucklin Point and Field's Point remained in compliance with seasonal total nitrogen permit limits (5 mg/L) throughout 2015.
- Overall average TN for the season:
 - Field's Point – 4.18 mg/L
 - Bucklin Point – 4.26 mg/L
 - 78% reduction in loading compared to 2003
- Table at right compares N loading from *all sources* to upper Bay pre- (2006 - 2013) and post-nitrogen treatment upgrades (2014 - present) at NBC facilities. Overall loadings are down 49% compared to the pre-upgrade period.

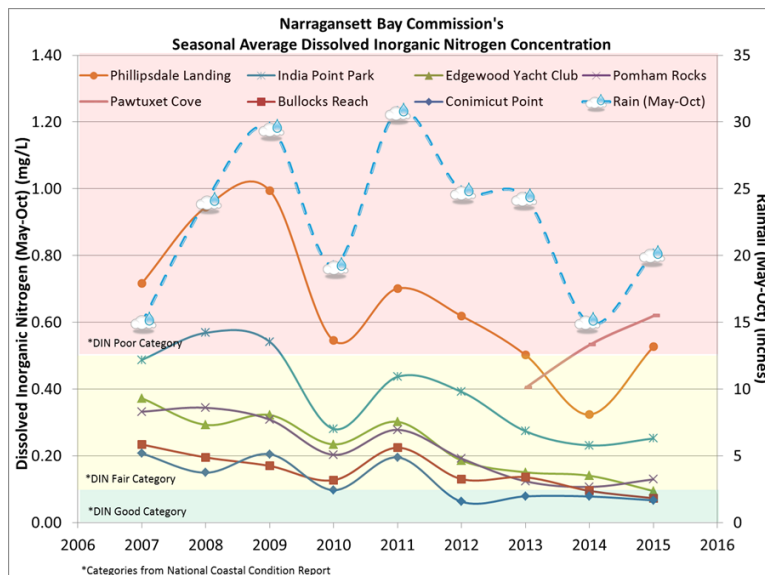
	2006 - 2013 Average	% of Total Loading	2014 - 2015 Average	% of Total Loading
	lbs/day	%	lbs/day	%
Bucklin Point	1,184	5.8%	596	5.7%
Field's Point	3,985	19.5%	1,219	11.7%
Blackstone River*	4,426	21.7%	1,726	16.6%
Moshassuck River*	174	0.9%	116	1.1%
Woonasquatick River*	425	2.1%	113	1.1%
Pawtuxet River*	2,156	10.5%	1,173	11.3%
Ten Mile River*	812	4.0%	141	1.4%
East Providence WWTP**	517	2.5%	265	2.5%
Taunton River*	2,692	13.2%	1,058	10.2%
Fall River WWTP	3,227	15.8%	2,993	28.7%
Other Sources TOTAL***	844	4.1%	1,010	9.7%
Total Contribution	20,442		10,411	

*River data is Total Dissolved Nitrogen only

**Data for this plant for October 2015 is not yet available.

***"Other Sources" includes the East Greenwich, Bristol, and Warren WWTP. October 2015 data not yet available for these plants.

Dissolved Inorganic Nitrogen in Upper Narragansett Bay



National Coastal Conditions Report:

Poor: >0.5 mg/L

Fair: 0.1 – 0.5 mg/L

Good: <0.1 mg/L

DIN concentration (mg/L)	2014	2015
Conimicut Point	0.078	0.07
Bullock's Reach	0.095	0.07
Edgewood Yacht Club	0.14	0.09
Pomham Rocks	0.11	0.13
India Point Park	0.23	0.25
Phillipsdale Landing	0.32	0.53
Pawtuxet Cove	0.53	0.62
RAIN (May - Oct)	14.94	20.1

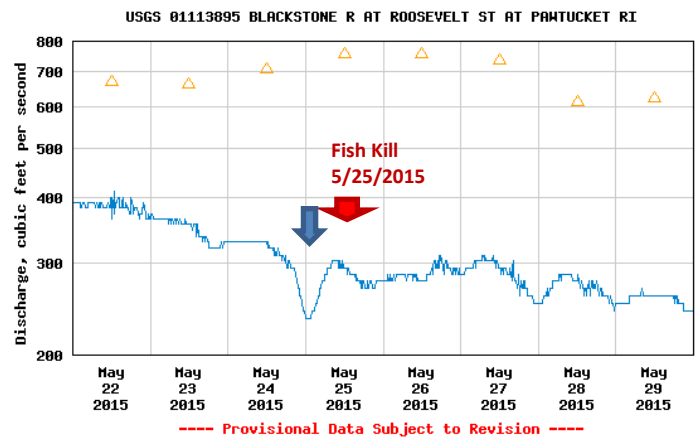
- 3 stations in "good category".
- Phillipsdale increased after 3 years of decline.
- Pawtuxet Cove increasing, highest of all sampled locations.
- For data: <http://snapshot.narrabay.com/app/WaterQualityInitiatives/NutrientMonitoring>

Fixed-Site Monitoring

- Phillipsdale bottom – Fair DO, 18% of time was hypoxic (May – October).
- Edgewood Yacht Club bottom – Poor DO, 47% of time was hypoxic (May – October).
- Bullock’s Reach bottom – Good DO, 0.13% hypoxic conditions at the bottom (June – October).
 - Bottom DO data is missing from 8/25 – 9/9 due to sonde failure
- For data: <http://snapshot.narrabay.com/app/Buoys/Export>

2015 Fish Kills

- NBC conducted special sampling (Seabird casts, plankton tows, fish collection) and evaluated fixed-site data – provided data to DEM to support their investigations into four fish kill events from May to September, mainly in the upper reaches of the Seekonk River.
- Adult Atlantic menhaden almost exclusively affected - “Whirling”, surface spinning behavior observed.
- NBC developed a fish kill response SOP for future events.
- Hypoxia investigated as a contributing factor, not clear-cut as the direct cause.
- Low freshwater flows from the Blackstone, including sporadic drops (see chart), being considered as contributing factors, as well as “whirling disease” as suggested by CT DEEP, and “cornering” of abundant menhaden in upper reaches of Seekonk River.
- Freshwater plankton blooms from upstream also being considered – do the phytoplankton persist in low-salinity surface water past Slater Dam? Contribute to detritus?
- For a report on the May 2015 fish kill:
<http://snapshot.narrabay.com/app/LearnMore/WaterQualityReports>
- Presentation on NBC fish kill data through end of July:
<http://snapshot.narrabay.com/app/Services/MossFile.ashx?file=/s/emda/snapshot/Documents/Publications/PowerPoint%20Presentations/NBC%202015%20Workshop/Fish%20Kill.pdf>



Benthic Video Monitoring

- Began in earnest in late 2014, methods ironed out/improved throughout 2015.
- Late 2015 and into 2016, conducting quantitative data analyses to allow future time-series comparisons of species abundances and habitat change.
- Visibility problems during the summer, fall and winter surveys more successful. Conditions good enough to allow filming in the shipping channel in December, typically too low-light during most of the year. Bottom in the channel was unstructured, as expected, with few mobile organisms observed.
- <http://snapshot.narrabay.com/app/WaterQualityInitiatives/BenthicVideoMonitoring>

