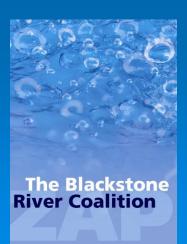
Blackstone River Coalition Watershed-wide Volunteer Water Quality Monitoring Program

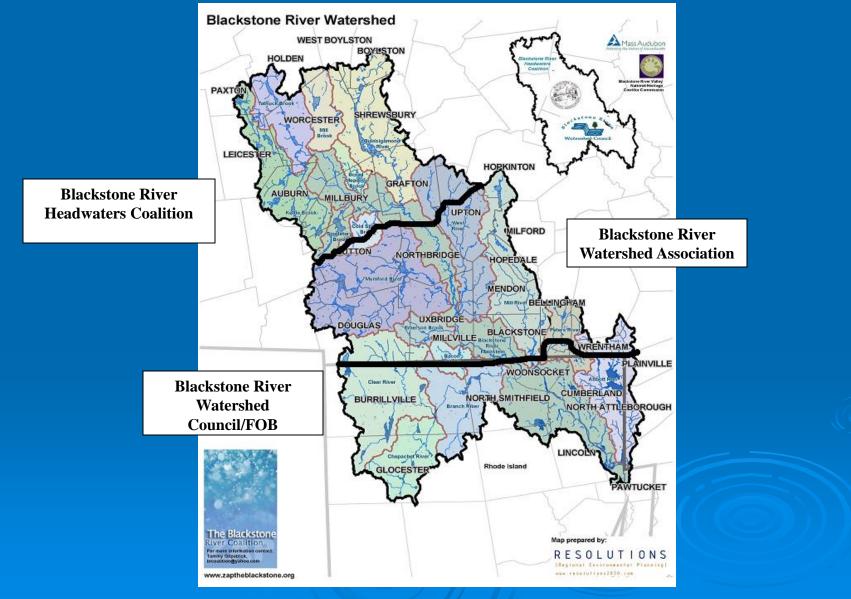


WQM Summit and Volunteer Appreciation Breakfast

March 21, 2015

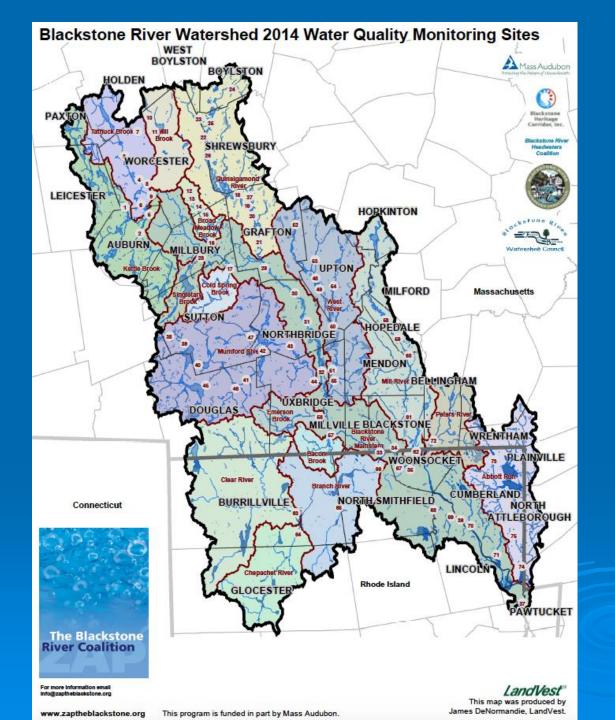
	AGENDA
9:15 am	Sign-in – coffee and pastry
9:30 am	Welcome and Introductions by Rachel Calabro, President, BRC
9:45 – 10:30 am	Overview of 2014 Report Card by Susan Thomas; Volunteer Thank You
10:30 – 11:30 am	Fisheries of the Blackstone River Watershed: Status and Research by Richard Hartley, Fisheries Biologist, Mass DEP
11:30 – 12:00 pm	BRC's Campaign for a Fishable Swimmable Blackstone: Next Steps by Peter Coffin, BRC Coordinator

## Watershed-wide



#### Volunteers & Sites

- > 75 Sites/ 85 Volunteers
- Blackstone Headwaters Coalition
  - 30 Sites
  - 38 Field and Lab Volunteers
- Blackstone River Watershed Association
  - 28 Sites
  - 28 Field and Lab Volunteers
- Blackstone River Watershed Council
  - 17 Sites
  - 19 Field and Lab Volunteers



#### Parameters

- > Water temperature
- > Air temperature
- Dissolved oxygen
- > Turbidity
- > Orthophosphate
- Nitrate
- > Conductivity





#### **Report Card Development**

Raw data color coded by parameter according to water quality index

#### Six categories established

- Aesthetics turbidity, water appearance, water odor and visual assessment of turbidity
- Water Temperature
- Dissolved Oxygen
- DO % Saturation
- Nutrients nitrate and orthophosphate

#### **Report Card Notations**

\*cwf = designated a cold water fishery

\*\* = no-flow conditions during one or more sampling events

June was considered a wet weather event for sites in Massachusetts and Rhode Island

#### Blackstone River Coalition Watershed-wide Volunteer Water Quality Monitoring Program Report Card for 2014 Monitoring Season

			_					Nutrient	
map #	WaterBody	Site Location	Town	Aesthetics	Temp.	DO	% Sat.	S	
	HEADWATERS TRIBUTARIES								
1	Kettle Brook	Stafford Street	Worcester						KEY TO COLOR
2	Dark Brook	Auburn High	Auburn						CODES
3	Tatnuck Brook	VFW-south	Worcester						
4	Tatnuck Brook <sup>*</sup>	Park Ave.	Worcester						Excellent
5	Leesville Pond	Leesville inflow	Auburn						Good
6	Leesville Pond	Leesville outflow	Worcester						Fair
7	Beaver Brook	Jewish Community Center	Worcester						Poor
8	Beaver Brook	Park Ave. Carwash	Worcester						Not Enough Data
9	Middle River	St. John's Cemetery	Worcester						
	Ararat Brook	Ford Brook	Worcester						Categories
11	Delaney Brook	Delaney Brook	Worcester						(Each category is derived
12	Broad Meadow Brook		Worcester						from the combination of
13	Broad Meadow Brook	Dupuis	Worcester						the following factors)
14	Broad Meadow Brook	Holdridge	Worcester						
15	Broad Meadow Brook	Knollwood	Millbury						
16	Broad Meadow Brook	Dosco	Millbury						
17	Cold Spring Brook	Hatchery Road	Sutton						Aesthetics - turbidity,
18	Quinsigamond River	Flint Pond Outlet	Grafton						water appearance,
19	Quinsigamond River	Rte 140	Grafton						water odor & visual
20	Quinsigamond River	Wheeler Road	Grafton						assesments
21	Quinsigamond River	Pleasant Street	Grafton						Temp temperature
22	Coal Mine Brook <sup>*ew</sup>	Plantation Street	Worcester						DO - dissolved oxygen
23	Poor Farm Brook <sup>*em</sup>	Roberto Clemente	Worcester						% Sat dissolved
24	Sewall Brook	School Street**	Boylston						oxygen % saturation
25	Sewall Brook	Holden Street	Shrewsbury						Nutrients - nitrate &
26	Tilly Brook	Vinny Testa's	Shrewsbury						orthophospate
27	Bummitt Brook	Pratts Pond	Grafton						
28	Singletary Brook	Sycamore Circle	Millbury						

#### **HW Cold Water Fisheries**

June – August were temp-stressed for most sites especially Tatnuck at Park Ave. and Sewell at Holden St.

These sites showed a concern in shoulder months as well.

Sewell at Holden was poor for DO and % saturation; Tatnuck at Park Ave. also had low levels.

#### Nutrients in Headwaters

Most sites were good for total phosphorous levels. A handful were fair.

Poor Sites:
 Beaver Brook at Park Ave.
 Broad Meadow Brook at Dunkirk
 Coal Mine Brook
 Poor Farm Brook

#### Blackstone River Coalition Watershed-wide Volunteer Water Quality Monitoring Program Report Card for 2014 Monitoring Season

map #	WaterBody	Site Location	Town	Aesthetics	Temp.	DO	% Sat.	Nutrient s	
	BLACKSTONE RIVER								KEY TO COLOR
29	Blackstone River	Fisherville Pond Outlet/122A	Grafton						CODES
30	Blackstone River	Sutton St. USGS flow station	Northbridge						
31	Blackstone River		Northbridge						Excellent
	Blackstone River	Tow path / Stanley Woolen	Uxbridge						Good
	Blackstone River		Blackstone						Fair
	Blackstone River	Main St. Blackstone/TKO	Blackstone						Poor
	Blackstone River	River Island Park	Woonsocket						Not Enough Data
36	Blackstone River	Below Albion Dam	Lincoln						
37	Blackstone River	Slater Mill	Pawtucket						
	TRIBUTARIES								Categories
38	Mumford River	Hotel Pond Outlet	Sutton						(Each category is derived
39	Mumford River	L. Manchaug Inlet	Sutton						from the combination of
40	Mumford River	L. Manchaug Out./Parker Rd	Sutton						the following factors)
41	Mumford River	Gilboa Street/above WWTP	Douglas						
42	Mumford River	Lackey Dam	Uxbridge						
43	Mumford River	Northbridge Middle School	Uxbridge						Aesthetics - turbidity,
44	Mumford River	Downstream @Depot Street	Uxbridge						water appearance,
45	unnamed tributary	Whitin Reservoir Outlet	Douglas						water odor & visual
46	Centerville Brook <sup>*</sup> CM	West Street	Douglas						assesments
47	Cook Allen Brook	Upstream of bridge/Johnson	Sutton						Temp temperature
48	West River <sup>*em</sup>	Hartford Avenue	Upton						DO - dissolved oxygen
49	West River <sup>*em</sup>	Pleasant and Glen	Upton						% Sat dissolved
50	West River <sup>*em</sup>	Mendon Road	Northbridge						oxygen % saturation
51	West River <sup>*ext</sup>	Under Rte. 16 bridge	Uxbridge						Nutrients - nitrate &
52	Miscoe Brook <sup>*ewt</sup>	Merriam Road	Grafton						orthophospate
53	Warren Brook <sup>*ew</sup>	Fowler Road Bridge	Upton						
54	Center Brook	Mendon Road	Upton						
55	Meadow Brook	Upstream@Blackstone St. B	Uxbridge						
56	Emerson Brook <sup>*ewt</sup>	Above Quaker Highway	Uxbridge						
57	Bacon Brook* <sup>cvr</sup>	Balm of Life Springs Road	Uxbridge						

### Main Stem Nutrient Levels

> All sites received a poor grade for season.

- Worst sites with high phosphate and nitrate for the second half of the season:
  - Fisherville
  - Sutton
  - Plummers Landing
  - Stanley Woolen
  - Below Albion Dam

#### Mid Reach Cold Water Fisheries

- West River at Pleasant/Glenn
   poor DO and % Sat. for July, September.
- Miscoe Brook:
   poor DO and % Sat. for July, October
- Meadow Brook:
   poor % Sat. for October

#### Blackstone River Coalition Watershed-wide Volunteer Water Quality Monitoring Program Report Card for 2014 Monitoring Season

	We to De da		<b>T</b>		<b>T</b>		N 0-1	Nutrient	
map #	WaterBody	Site Location	Town	Aesthetics	Temp.	DO	% Sat.	S	
58	TRIBUTARIES contin Mill River		Hanadala						KEY TO COLOR CODES
	Mill River	Fitzgerald Street Mill Street	Hopedale						CODES
	Mill River	Hartford Avenue East	Hopedale						Excellent
	Mill River	Park Street Valati Park	Hopedale Blackstone						Good
	Mill River	Privilege Street	Woonsocket						Fair
	Clear River	RI 102	Burrillville						Poor
	Chepachet River	Gazza Road	Burrillville						
65	Tarkiln Brook	Tarkiln Road	Burrillville						Not Enough Data
	Branch River	Rte. 146A/Great Road	N. Smithfield						
67	Cherry Brook	Olo Street	Woonsocket						Categories
68	Crookfall Brook	Sayles Hill Road	Lincoln						(Each category is derived
	Mussey Brook	New River Road	Lincoln						from the combination of
70	Sneech Brook	Albion Road	Cumberland						the following factors)
	Monastery Brook **	Mendon Road	Cumberland						
	Peters River* <sup>cm</sup>	Paine Street	Bellingham						Aesthetics - turbidity,
	Sylvys Brook	Grants Mill Road	Cumberland						water appearance,
	Robin Hollow Pond	Dexter Street	Cumberland						water odor & visual
	Millers River em	Hines Road	Cumberland						assesments
10		Times Road	oumberiand						Temp temperature
									DO - dissolved oxygen
									% Sat dissolved
									oxygen % saturation
									Nutrients - nitrate &
									orthophospate
									orarophicopato

# Nutrients in Tributaries of Mass/R.I. with a Poor Grade

- Mill River at Mill St: phosphate (Nov.) and nitrate (July-Sep.)
- Mill River at Pivilege St: phosphate (April, Oct.) and nitrate (Aug.)
- Clear River: phosphate and nitrate (April, Aug.-Nov.)
- Cherry Brook: phosphate (July, Sep) and nitrate (Aug. Oct.)
- Crookfall Brook: phosphate (April)
- Mussey Brook: nitrates (Aug. Oct.)
- Sneech Brook: phosphate (July, Aug., Oct.) and nitrate (all but June)
- Peters River: phosphate (Sep., Nov.) and nitrate (Aug., Sep.)
- Robin Hollow Outlet: phosphate (April, Oct.)
- Millers River: phosphate (April, May, Nov.) and nitrate (all months)

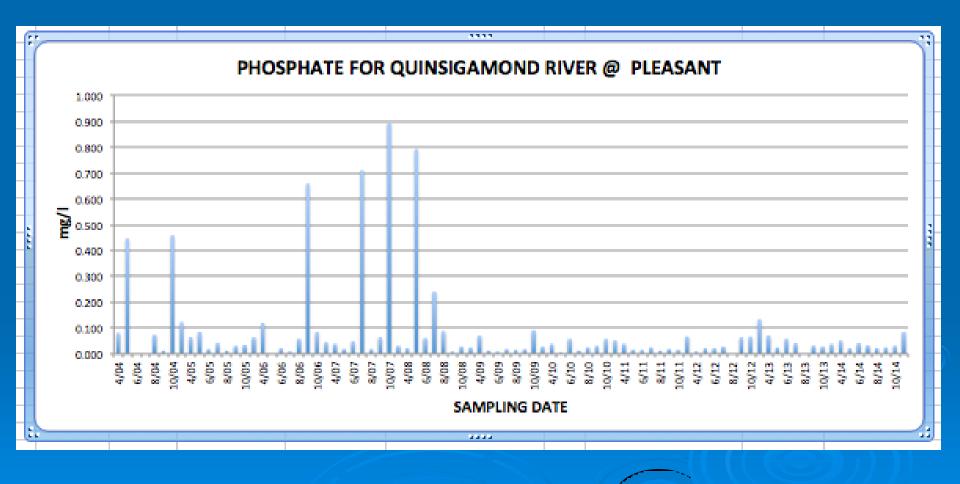
#### 2014 vs. 2013

PARAMETER	<b># SITES BETTER</b>	<b># SITES WORSE</b>
Aesthetics	6	3
Temperature	10	3
DO	7	13
% Saturation	11	18
Nutrients	8	33

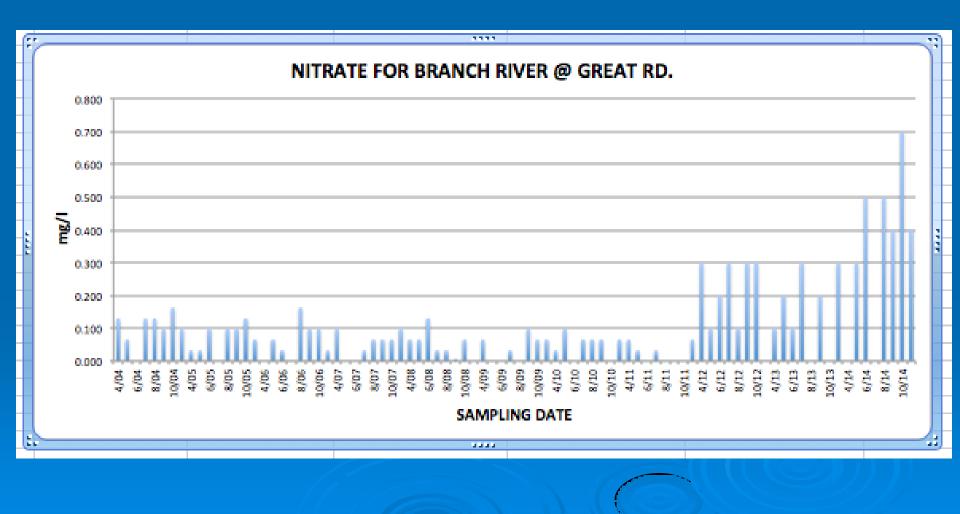
### Long-Term Trends Analysis

- > 11 years of Data
- > Phases of Statistical Review
- > Tributaries vs Main Stem
- > Wet Weather (Stormwater)
- Ranking sites to ID hot spots

# Complete Data Set for Phosphate by Site



# Complete Data Set for Nitrate by Site



#### Sites Needing Coverage

<u>Headwater sites</u>

Ford Brook
 Delaney Brook

 (Indian Lake)

<u>**R.I. Sites</u></u> ≻ Clear River (Burrillville)</u>** 

#### <u>Midreach Sites</u>

> West River at Rt. 16

### A Million Thanks To

All the volunteers who contributed over 1,000 volunteer hours to the program

#### MA DEP for technical support and advice

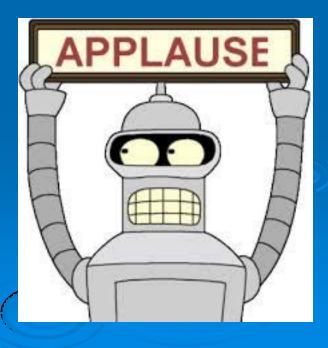
#### Mass Riverways for technical support and continued QA/QC assistance

Special Recognition to long-serving volunteers (field and lab)

>5 or more years

> Michelle Reed-Walsh

Gary Pothier



# Mass AudubonTri-River Health CenterBroad Meadow Brook





#### Cumberland Hills Fire Station



## Kit Pick-up Saturday March 28

> BHC – Broad Meadow Brook 9:00 to 11:30 am

> BRWA – Red House 9:30 to 11:00 am

BRWC – Cumberland Hills Fire Station 10:00 am to noon

# First Sampling Date is Saturday, April 11, 2015



