



Moswansicut Reservoir Phosphorus

Outreach and Monitoring Project

Molly Allard, Northern RI Conservation District; Christopher Riely, Providence Water; Gina DeMarco, Northern RI Conservation District; Linda Green, URI Watershed Watch, Richard Blodgett, Providence Water



Project Description

Overall objective: To reduce phosphorus loading to the Moswansicut Reservoir, a public drinking water supply, by implementing outreach and education efforts throughout the Moswansicut Reservoir's small watershed in Scituate, Gloucester, Johnston, and Smithfield, RI.

Moswansicut Reservoir is a 286-acre drinking water reservoir that is fed by an approximately 3.2-square mile watershed and is part of both the Scituate Reservoir system and the Narragansett Bay watershed. Currently, the ecological functions of Moswansicut Reservoir are at risk due to anoxic conditions at depth and potentially harmful cyanobacteria blooms during the summer months (ESS Group, 2013). A 2013 limnological assessment of Moswansicut Reservoir by ESS Group found that Moswansicut is currently mesotrophic, but moving towards eutrophic status based on current total phosphorus concentrations and phosphorus loading models. In their study, ESS group recommended the creation of education and outreach programs focused on creating behavioral change in areas such as lawn maintenance and pet waste management, which ESS Group (2013) estimated could reduce pollutant loading to the Reservoir by up to 5%. Other specific recommendations in the ESS Group study included in-water phosphorus inactivation, water quality monitoring, and resident Canada Goose management.

This project sought to reduce phosphorus loading to Moswansicut Reservoir by utilizing techniques including educational mailings, workshops, community nights, and volunteer opportunities. Additionally, NRICD and partners from both Providence Water and the University of Rhode Island implemented Canada Goose management techniques at Moswansicut Reservoir and monitored phosphorus loading to the Moswansicut with a volunteer water quality monitoring program.

Site Description

Project activities took place through the Moswansicut Reservoir watershed. A map of volunteer water quality tributary monitoring sites can be seen in Figure A. Figure B shows Moswansicut Dam, the site of a Canada Goose abatement vegetated buffer planting and watershed tour. The Moswansicut Reservoir watershed contains a mix of land uses, including commercial, high-density residential, and agricultural. The watershed is approximately 3.2 square miles in total area and contains between 500 and 600 residential homes.

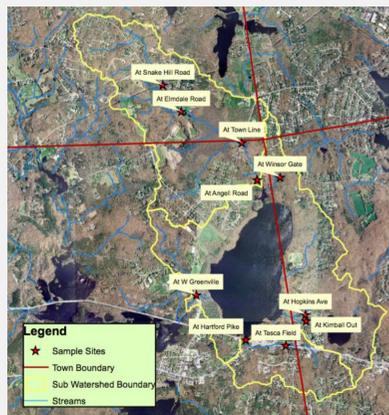


Fig. A



Fig. B

Results/Conclusions

The Moswansicut Reservoir Phosphorus Outreach and Monitoring Project yielded the following deliverables:

- Six educational events with a total of 158 attendees. Topics included low-input lawn care, septic system maintenance, safe composting, private well testing, and low impact development, as well as a watershed field tour on Providence Water land
- Recruitment of a team of seven volunteers who collected monthly water quality samples at 10 tributary sites around the Moswansicut Reservoir watershed
- Planting of tall native grasses at Moswansicut Dam to discourage congregation of native Canada geese
- Educational visits to three elementary schools to teach 3rd and 4th graders about stormwater and phosphorus pollution concepts
- The production of two educational mailings which were each received by approximately 600 homes.

Future educational efforts will continue to be funded in this area by Providence Water and NRICD. Recommendations include increased outreach on the topics of septic maintenance and lawn care, as well as providing funding for future years of water quality monitoring to build a 5-year dataset of tributary nutrient loading data. A toolkit of techniques used was developed to share with partner organizations.

2015 Total Phosphorus Summary Moswansicut Special Project (Linked to collection worksheets)									
LOCATION	Depth (m)	Reported as ug/L or ppb, Limit of detection = 4 ug Sample							
		MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	
Moswansicut @ Snake Hill Road	0.2	13	35	12	dry	dry	dry	28	
Moswansicut @ Elmsdale Road	0.2	18	31	40	25	dry	dry	31	
Moswansicut @ Angell Road	0.2	48	80	69	dry	76	60	25	
Moswansicut @ Kimball Outflow	0.2	15	22	35	7	dry	30	20	
Moswansicut @ Hopkins Ave	0.2	11	20	<4	dry	dry	dry	dry	
Moswansicut @ Tasca Field	0.2	10	42	<4	30	42	18	30	
Moswansicut @ Hartford Ave	0.2	12	54	Dry	dry	dry	28	16	
Moswansicut @ W. Greenville Rd	0.2	18	19	<4	7	4	23	16	
Moswansicut @ Town Line	0.2	-	-	219	318	dry	49	dry	
Moswansicut @ Windsor Gate	0.2	-	-	28	-	dry	dry	dry	
Moswansicut @ Scituate by the sign	0.2							55	

Fig. C Total Phosphorus Data (URI Watershed Watch). Data was also collected on dissolved phosphorus, nitrate, and nitrite

Acknowledgments & References

The project team would like to thank Elizabeth Herron (URI Watershed Watch), Alyson McCann (URI Home-A-Syst), Tom Angell (Scituate Conservation Commission), Cindy Gianfrancesco (Scituate Conservation Commission), Lili Feinstein (Northwest Kate Sayles (NRICD)), Jim Turrone (USDA NRCS), and Scott Millar (GrowSmart RI), as well as our water quality monitoring volunteers: Cindy Gianfrancesco, Gary DeBlois, Jodi Lyons and family, Celeste Jacarone, Diana Reisman, Bob Sherman, and Lili Feinstein

References
ESS Group, Inc. 2013. Limnological assessment of Moswansicut Reservoir. Prepared for Mr. Richard Blodgett, Providence Water Supply Board.

Contact Information

Molly Allard
Northern Rhode Island Conservation District
(401) 934-0840
mallard.nricd@gmail.com