NJDEP's Division of Water Monitoring and Standards
Raritan Water Region Informal Work Group Meeting
Stony Brook Millstone Watershed Association
31 Titus Mill Road, Pennington
Held June 30, 2016

Summary of Interactive Session

The New Jersey Department of Environmental Protection's Division of Water Monitoring and Standards hosted an informal work group to discuss water quality in the Raritan Water Region (WMAs 7, 8, 9, 10) which was held at the Stony Brook Millstone Watershed Association. The purpose of this work group is to share information about water quality issues and actions that will inform the New Jersey Department of Environmental Protection's (Department's) assessment of the Raritan Water Region. This assessment will be conducted as part of the Department's Integrated Water Quality Assessment Report (Integrated Report) for the State of New Jersey. Under the federal Clean Water Act (CWA), states are required to submit a report to USEPA every two years describing the quality of their waters, identifying waters that do not meet water quality standards, and describing efforts underway to improve and restore water quality.

The Division of Water Monitoring and Standards is responsible for preparing New Jersey's Integrated Report (http://www.state.nj.us/dep/wms/bears/assessment.htm), which includes the CWA Section 303(d) List of Water Quality Limited Waters (303(d) List) and the CWA Section 305(b) Integrated List of Waters The 2016 Integrated Report will focus on the Raritan Water Region and will similarly build upon the ten-year effort that resulted in the Raritan River Nutrient TMDL, that was recently approved by USEPA and adopted by the Department (http://www.state.nj.us/dep/wms/bears/tmdls.html) and depicted the extensive work of the watershed partners. Stakeholder input will help the Department develop a more comprehensive assessment of water quality in the Raritan Water Region and to communicate a more meaningful message about water quality issues, impacts and solutions for the Raritan Water Region as part of the water quality "story" that will be delivered through the 2016 Integrated Report.

During the interactive portion of the Work Group Meeting, eight questions were available on a survey website to encourage participation and informal dialogue. Workshop attendees were able to use their smart phones to input answers to poll questions. Participants could also contribute verbally and their answers were recorded as well. The polls remained open for 2 weeks until July 15th and could be accessed online. The synopsis below summarizes the key points that emerged from the survey and discussion. All the individual answers are provided in the tables which follow. When a responder combined more than one theme in his or her answer, these were divided into separate responses. As a result, the number of responses exceeds the number of responders.

1. Synopsis

Question 1

Primary Water Quality Concerns: What are the primary water quality concerns in the Raritan Region?

Non-point source (NPS) pollution was clearly the highest priority water quality concern, cited in 34% of responses (21 out of 62 responses). While 9 of the respondents mentioned NPS pollution or stormwater management in general, 10 mentioned impervious surfaces or urban runoff, and 2 felt agricultural runoff is the primary concern. Other top concerns included nutrients (10%), pathogens (10%), ground water (8%), riparian zones (8%) and recreation use impairment (6%).

Question 2

Priority Areas: What do you think are priority areas for restoration in the watershed?

The "priority area" question was interpreted differently by different people, with 20% citing a specific geographical portion of the Raritan watershed as the priority area, emphasizing the Lower Raritan, Neshanic, the North and South Branches, the main stem, and the Rahway/Elizabeth Rivers. The rest of the responses expressed that priority areas for restoration are NPS control (18%), riparian zones (16%), urban areas (11%), impervious cover (7%) and highways (7%).

Question 3

Ongoing Restoration Programs: What are the ongoing restoration programs in the Raritan?

The most frequently mentioned ongoing restoration programs involved habitat restoration (31%), including riparian habitats, wetlands, deer management and fish ladders. Five responses (13%) encompassed planning activities, such as impervious cover assessments and reduction plans, as well as watershed based plans. NPS reduction programs were mentioned in another 13% of responses, while dam removal and Point Source (PS) reduction programs were listed in 10% and 8% of responses, respectively.

Question 4

Projects that worked: Which programs are working really well in the Raritan watershed?

Outreach/education activities were most often cited as successful, receiving 34% of responses. These programs include River Friendly, Watershed Ambassadors, Riverkeeper, Baykeeper and stewardship by the many non-profit watershed groups working in the Raritan region. Other effective programs include NPS reduction (14%), PS reduction (10%), riparian restoration (10%), clean-ups (7%) and monitoring (7%).

Question 5

Novel Strategies to address Stormwater: What type of novel strategies would you suggest to address stormwater in your local area?

Out of 33 responses to this question, 21% suggested green infrastructure as a novel strategy to address stormwater. Outreach/education, pervious paving and stormwater fees/utilities were each mentioned in 12% of responses. Use of BMPs to control stormwater and enforcement of regulations were novel strategies each cited in 9% of answers.

Question 6

Single most preference: If you would want one environmental improvement, what would you do?

Responders' most frequent wish list item was the protection and enhancement of riparian buffers (21%). Other environmental improvements preferred by responders included reduction of point source pollution (17%), installation of green infrastructure (13%), enforcement (8%), and a reduction of impervious cover (8%).

Question 7

Follow-up Workgroups: What follow-up stakeholder workgroups would you like to see?

The diversity of answers to this question suggests interest in collaboration among Raritan watershed stakeholders. Many of the responses (21%) fell into a broad category that could be called the Implementation Work Group, which would emphasize implementation through partnerships, watershed based plans, source reduction and discussions of funding. Others (10% each) suggested work groups based on monitoring (including citizen science) and outreach/education. Another 4 responses (10%) recommended a work group focused on incorporating science into policy, regulations and permitting. Three responders (8%) suggested that work group themes could be based on the six water uses evaluated in the DEP's Integrated Report (i.e. General Aquatic Life, Trout Aquatic Life, Water Supply, Recreation, Shellfish Harvest for Consumption, and Fish Consumption). An equal number (8% each) mentioned that a work group focused on municipalities and one on NPS management would be beneficial. Creation of a Benchmarking Work Group to focus on researching the effectiveness of various strategies was favored in 8% of responses. Other suggestions included creation of a NPS Trackdown Strike Team and work groups based around the issues of agriculture, ecology and information sharing.

Question 8

Anything missing: Is there anything we didn't cover today that we need to know to inform he water quality story in the Raritan River Basin?

No one item emerged as the most frequent answer to this question. An equal number of responses (15% each) expressed that additional issues key to informing the water quality story in the Raritan River Basin include the following: Evaluate & report on progress/success stories; goals & objectives; identify pollution sources/collect data; outreach/education; and resources for implementation. Two responses voiced the concern that ground water is not being adequately studied or prioritized. Other responders considered that more attention was needed in the areas of closing the gap between science and policy/regulations and on the history of degradation of waters in the Raritan basin.

2. Survey Details

In the tables below, Individual Responses were grouped into broad categories ("Response Category" column). In a few cases, it made sense to also have sub-categories. The number of individual responses in each category are shown in the "#" column, while the "%" column shows the percent of responses for that question in that category. For example, in Question 1, 21 responses (or 34%) identified non-point source pollution as a primary water quality concern in the Raritan Region. In this case, it made sense to divide these into sub-categories to better represent the range of answers: 6 of these mentioned stormwater management, 2 specifically mentioned agricultural runoff, 6 mentioned impervious cover, and 4 cited urban runoff.

Question 1: Primary Water Quality Concerns: What are the primary water quality concerns in the Raritan Region?
47 responders

62 responses			
#	**%**	**Response Category**	**Individual Responses**
21	34%	Category: Non-point Source Pollution	Nonpoint source contamination
			non-point source pollution
			sedimentation
		Category: Non-point Source Pollution Sub-category: management	Capture Stormwater runoff from existing development
			Failure to fully implement stormwater requirements
			Maintenance of stormwater structures
			Stormwater Management
			stormwater management
			Stormwater runoff
		Category: Non-point Source Pollution Sub-category: agricultural	Agricultural runoff
			Farms/Agricultural runoff
		Category: Non-point Source Pollution Sub-category: impervious	Existing development / impervious cover
			Impervious cover
			Impervious cover
			Impervious cover
			impervious coverage
			Reduce impervious cover
		Category: Non-point Source Pollution Sub-category: urban	City/urban storm water run off
			Increased urban/suburban development
			Legacy development
			stormwater runoff
6	10%	nutrients	Eutrophication
			Eutrophication
			Phosphorus
			Phosphorus
			Phosphorus
			Phosphorus
6	10%	pathogens	E Coli
			E-Coli
			Fecal
			Fecal
			Pathogens
			Pathogens and track down of sources
5	8%	ground water	Drinking water
			Ground water/surface water connection/interaction
			Groundwater quality
			What is your well water quality program?
			Arsenic in certain ground water areas
5	8%	riparian zones	Impacts to the riparian zone from development
			lack of riparian buffers
			Lack of riparian zone
			Riparian zone restoration

#	%	Response Category	Individual Responses
			streambank erosion
4	6%	recreation use impairment	ability for recreation
			Improve recreation related stressors mitigation
			Knowing if and when water is safe for Recreational use
			Recreation and water quality
3	5%	aquatic life use impairment	aquatic life impairment
			Fishing
			Impacts to aquatic life
2	3%	arsenic	arsenic
			Arsenic increasing
2	3%	public awareness	Public awareness
			Public awareness
8	13%	Other	flooding in Lower Raritan
			High temperature, dams
			Legacy industrial
			Odors
			Protection of habitat
			Requirements for characterizing measurement and treatment options.
			unknown
			unknown

Question 2: Priority Areas: What do you think are priority areas for restoration in the watershed?

37 responders
45 responses

#	%	Response Category	Individual Responses
9	20%	Specific waterbody	Hillsborough [Neshanic River] to bay
			Degraded wetlands in Lower Raritan
			Lower Raritan
			Lower Raritan stressor work... run off
			Lower Raritan where flooding is frequent
			Non-point sources in Neshanic.
			Non tidal waters, main stem Raritan, Raritan branches
			North branch
			Rahway/Elizabeth Rivers
8	18%	Category: NPS control	Non-point pollution
			repair and retrofit storm water management systems
		Category: NPS control Sub-category: agricultural	Farms
			Farms
			Farms
			we should tend to agricultural runoff as well
			working with farmers for implementation of BMPs

#	%	Response Category	Individual Responses
		Category: NPS control Sub-category: green infrastructure	Green infrastructure
7	16%	riparian zones	Forest and riparian buffers
			Increase riparian zones
			Increasing riparian buffers
			Restoration of riparian zone in urban areas
			Restoring forested riparian buffers
			Riparian buffers
			stream bank restoration
5	11%	urban areas	Anything near population centers
			More highly developed areas
			Urban areas
			Urban areas with large percentage of impervious cover
			Redevelopment areas
3	7%	impervious cover	Impervious cover reduction
			Reducing impervious cover
			We are focused on impervious cover with ICA and RAP
3	7%	roads/highways	Highway cleanup.
			Road salt reduction
			Roadside drainage
2	4%	ground water	GW / SW interactions
			Well water improvement
2	4%	Water bodies on the edge	protection of more rural areas so water quality does not decrease
			Water bodies on the edge
6	13%	Other	Incorporating water quality data into the municipal and dep permitting decisions
			Known contamination site remediation
			Parks
			Protect national infrastructure
			Protection of upland forest
			Reduce pesticide use

Question 3: Ongoing Restoration Programs: What are the ongoing restoration programs in the Raritan?

32 responders
39 responses

#	%	Response Category	Individual Responses
12	31%	Category: Habitat	Deer
			Deer management
			Fish Ladders
			Habitat Regeneration
			Habitat restoration

#	%	Response Category	Individual Responses
			upland forest protection
		Category: Habitat Sub-category: riparian	creating stream buffers
			restoration of riparian habitats
			riparian restoration
		Category: Habitat Sub-category: wetlands	Duke Farms WRP (Wetlands Reserve Program)
			Phragmites removal in Lower Raritan wetlands
			Wetlands mitigation in Lawrence Brook
5	13%	Planning	Impervious cover assessment
			Impervious Cover Assessments and Reduction Action Plans by Rutgers and SBMWA
			Impervious cover reduction plans
			Manalapan Brook Watershed P&R plan
			Website for Watershed Based Plans
5	13%	Non-point Source Reduction	319 programs between Rutgers and Stony Brook Millstone Watershed Association
			BMPs for agriculture
			Green Infrastructure
			Pesticide use
			Stormwater management basin monitoring in Royce Brook
4	10%	Dam Removal	Breach dams
			Dam removal
			dam removal
			Dam removals
3	8%	Point Source Reduction	control/monitoring of point source impacts
			point source discharge quality improvements
			Point source upgrades
2	5%	Clean-ups	Clean ups
			Tire removal
2	5%	Monitoring	Citizen science and water monitoring
			Well water testing
2	5%	Outreach/Education	Citizen Scientist
			River-Friendly
4	10%	Other	Inventory of actions
			Reintroducing oysters to Raritan Bay
			Looking to install fish ladders in Lawrence Brook
			Many

Question 4: Projects that worked: Which programs are working really well in the Raritan watershed?

26 responders
29 responses

#	%	Response Category	Individual Responses
10	34%	Outreach/Education	Ambassadors educating everyone!
			Environmental education

#	%	Response Category	Individual Responses
			Public outreach thru ICA & RAP reports in lower Raritan
			River Friendly
			River Friendly certification programs
			River-Friendly
			River-Friendly
			River-Friendly programs
			Riverkeeper & Baykeeper
			Stewardship by the great watershed groups - SBMWA, RH, LRWP, LBWP, Bayshore...
4	14%	Non-point Source Reduction	green infrastructure
			Rain Gardens
			Rutgers impervious cover projects
			Storm water management
3	10%	Point Source Reduction	Improvements in point source discharge quality
			Point source
			Point source pollution control
3	10%	Riparian Restoration	Deer management
			riparian restoration
			Riparian zone restoration.
2	7%	Clean-ups	clean up efforts
			Clean ups
2	7%	Monitoring	LRW Partnership volunteer citizen scientist
			Well water testing
5	17%	Other	Dam removals
			Duke Farms WRP
			None
			SRRA mandated timetables for remediating impacted groundwater discharges to surface water
			Various

Question 5: Novel Strategies to address Stormwater: What type of novel strategies would you suggest to address stormwater in your local area?

28 responders
33 responses

#	%	Response Category	Individual Responses
7	21%	Green Infrastructure	green infrastructure
			Mandating green infrastructure for urban area's
			More focus on implementing green infrastructure practices throughout the watershed, not just in particular locations where everything fell into place. There's enough data now that we're beyond the pilot phase, we just need to build this stuff. We also need to model it -- how many of these things do we need and where (i.e., what sub-

#	%	Response Category	Individual Responses
			watersheds) to really move the needle on NPS using green infrastructure?
			Naturalizing stormwater basins
			Rain gardens and impervious disconnect
			Residential/ street tree pits, municipal rain gardens used for function and demonstration
			Vegetated swales
4	12%	Outreach/Education	Educate local engineers
			Educating people about sustainable lawn care- reduce pesticides and fertilizers
			Homeowner education
			River Friendly
4	12%	Pervious paving	All parking should be pervious
			Fund incentives for existing development to replace impervious surfaces with pervious replacements
			Pervious cover
			Pervious pavement
4	12%	Stormwater fees/utilities	Muni monitoring funded by fee system
			Storm water fee
			stormwater utilities
			Stormwater utilities
3	9%	Control stormwater	Detention basins
			Municipal installations of bmp's
			Stormwater basin monitoring groups
3	9%	Regulations/enforcement	enforcement and enhancement of stormwater rules
			I think we also need to take a closer look at the redevelopment of the Somerville landfill site. As they begin to disturb the sediments on that site, the fear is that stormwater will carry historical contaminants into the Peter's Brook system. I don't think this issue is getting enough scrutiny and the work and plans for the site are not being well communicated to the public. I think politics are getting in the way of public health in this case.
			require redevelopment to address stormwater
2	6%	Reduce fertilizers/pesticides	decrease use of pesticides and fertilizers
			I think it's time to really address source reduction. Some communities outside NJ are beginning to ban use of pesticides/fertilizers on lawns. We need to take a hard look at this. Of course there are special interests to consider here, but if they could move away from lawns in Phoenix and surrounding areas, we can stop pollution from overly exuberant lawn care here.
6	18%	Other	Have goose feasts
			E. coli verses deer population.
			A dome...
			get Blue Acres up and running

#	%	Response Category	Individual Responses
			Incentivizing
			Why is NJ arsenic level lower than US standard

Question 6: Single most preference: If you would want one environmental improvement, what would you do?

24 responders
24 responses

#	%	Response Category	Individual Responses
5	21%	Protect/enhance Riparian buffers	300ft+ buffers for waterways
			Expand riparian buffers
			Increasing riparian buffer width and protections
			Stream bank/buffer restorations
			Widen buffer requirements
4	17%	Reduce Pollution Sources	Contaminated site cleanup
			less use of chemicals
			reduce nutrients
			Source reduction at all scales (household, commercial, industrial). Restoration efforts will not be sustainable if we are not attacking the source of the problems.
3	13%	Install Green Infrastructure	Mandatory green infrastructure installations
			Milord residential storm water management and small-scale green infrastructure
			More green infrastructure especially in Lower Raritan
2	8%	Enforcement	Enforcement of existing regarding more
			Strictly enforce stormwater and rz buffers
2	8%	Reduce impervious cover	Reduce impervious cover
			Reduce impervious.
2	8%	Unknown	Unk
			Unk
6	25%	Other	Dam removal
		Other	Fix Combined Sewer Overflows
		Other	Forest protection
		Other	Groundwater recharge to be required on meaningful level.
		Other	Native vegetation in developed areas
		Other	Nonpoint source controls

Question 7: Follow-up Workgroups: What follow-up stakeholder workgroups would you like to see?

34 responders
52 responses

#	%	Response Category	Individual Responses
11	28%	Implementation Work Group	Amplify Lower Raritan Watershed Partnership's work

#	%	Response Category	Individual Responses
			Available funding for environmental cleanup and monitoring.
			Buffers Including for forest stewardship plans, water supplies
			Buffers Including for forest stewardship plans, water supplies
			Buffers Including for forest stewardship plans, water supplies
			Buffers Including for forest stewardship plans, water supplies
			How are the watershed-based plans going to be implemented.
			Implementation of restoration plans
			Partnership with Audubon
			source reduction (pollution from septic systems, brownfields/Superfund sites, emerging contaminants (i.e., pharmaceuticals, endocrine disruptors, etc.), road salt management, green infrastructure, WWTP)
			Wider buffer requirements (including for forest stewardship plans)
4	10%	Monitoring Work Group	Citizen science and volunteer monitoring!
			Citizen science and volunteer monitoring!
			water quality monitoring and data analysis
			WQ monitoring
4	10%	Outreach/Education Work Group	Continuing Education for Engineers
			education and outreach
			share how to effectively engage the public
			Youth engagement, Citizen/resident stakeholders
4	10%	Policy/Planning/Permitting Work Group	Incorporate what we do
			incorporating science into policy/planning/regulations
			Land Use permitting decisions w/where we have water quality impairment
			no action on permits
3	8%	Benchmarking Work Group	Benchmarking across regions and similar states
		Benchmarking Work Group	research on effectiveness
		Benchmarking Work Group	research on effectiveness of strategies on improving water quality
3	8%	Municipalities Work Group	Improving the green infrastructure adherence of municipalities
			local land-use issues
			Municipal outreach, without it riparian buffers on private property will continue to be a struggle, Green Infrastructure will struggle, etc.
3	8%	NPS Management Work Group	Green Infrastructure adherence
			Green infrastructure, storm water management
			Nonpoint source

#	%	Response Category	Individual Responses
3	8%	Work Groups by Use (General Aquatic Life, Trout Aquatic Life, Water Supply, Recreation, Shellfish Harvest for Consumption, and Fish Consumption)	By use (recreation, fishing, ...), and move them around the region, get more municipal & county representatives at mtgs
			By use (recreation, fishing, ...), and move them around the region, get more municipal & county representatives at mtgs
			By use (recreation, fishing, ...), and move them around the region, get more municipal & county representatives at mtgs
2	5%	NPS Track down Strike Team	Nonpoint Source Track down Strike teams
		NPS Track down Strike Team	NPS Track Down Strike Teams
1	3%	Agriculture Work Group	agriculture
1	3%	Communication Work Group	Work on info sharing
1	3%	Ecology Work Group	Deer impact on ecology

Question 8: Anything missing: Is there anything we didn't cover today that we need to know to inform the water quality story in the Raritan River Basin?

18 responders
20 responses

#	%	Response Category	Individual Responses
3	15%	Evaluate & report on progress/success stories	Said previously, but pull together all reports/ studies see what is/ isn't working.
			Success stories
			update routinely with data driven results to show progress
3	15%	Goals & Objectives	Broadly communicate objectives and goals
			Volunteer monitoring groups and NJDEP monitors are on the same team
			Volunteer monitoring groups and NJDEP monitors are on the same team
3	15%	Identify Pollution Sources/collect data	Better data on TDS's
			I was unable to attend the initial workgroup meeting, but based on the powerpoints and notes from participants that attended, it's not clear to me that brownfields and Superfund cleanup/redevelopment sites were covered. I also didn't see any mentions of emerging contaminants or pollution from leaking septic systems. I think any analysis of the basin needs to include these elements in some manner.
			Identify location of impacted sites discharging into the river and location of leaking sanitary sewer lines under or near the River
3	15%	Outreach/Education	CSO education

#	%	Response Category	Individual Responses
			Educating the public about what they can do to protect water quality
			Importance of downstream effects
3	15%	Resources for implementation	An honest disclosure of where the NJDEP lacks the resources to effectively help Raritan stakeholders achieve fishable/swimmable for the Raritan
			An honest disclosure of where the NJDEP lacks the resources to effectively help Raritan stakeholders achieve fishable/swimmable for the Raritan
			An honest disclosure of where the NJDEP lacks the resources to effectively help Raritan stakeholders achieve fishable/swimmable for the Raritan
2	10%	Ground water	Ground water priority
			groundwater chemistry is changing due to human causes; arsenic may be increasing because of an increase in rate of release from bedrock
3	15%	Other	gap between science and policy/regulations
			How did we get to where we are, history of the degradation of the basin, what caused our problems?
			You guys did pretty good. Can't think of anything...