Navesink River Microbial Source Tracking Study

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Why are we here?

• Water quality is degrading in the Upper Navesink River.
• Discuss current findings of our Microbial Source Trackdown Study.
• Form Partnerships to address identified problem areas. Includes State Agencies, County, and Municipal Governments, as well as NGO’s and the public.
• Look for actions that can be taken now that may impact water quality, such as storm water infrastructure maintenance, domestic animal waste management, septic systems, boat discharges, sewage infrastructure.
• Develop plans and actions that may be used for other areas.
Why perform a Study?

- 2006 a Bacterial TMDL was put in place.
- 2008 NJDEP BMWM Report on Storm Studies which identified problem areas.
- After the Report Monmouth County Health Dept. worked with Municipalities to find and fix sources of bacteria.
- Shellfish classification data analysis shows that large bacterial spikes occur after wet weather events.
- Based on the data analysis a suspension of harvest occurred in the Navesink River for 565.7 acres going from Restricted to Prohibited classification in 2015.
2015 Classification Change
Study Design

• Select sampling locations to address and monitor potential sources of bacterial pollution, storm water outfalls, tributaries, upstream waters and open river waters.

• Sample dry weather events for tide cycles, ebb and flood, to understand movement of water and to look for dry weather sources. Samples collected hourly from low to high and high to low.

• Monitor wet weather events, pre-storm, 1st Flush, 1 and 2 hours after the 1st flush.

• Analyze for enterococcus (recreational waters) and fecal coliform (shellfish classification).

• Use ARA (antibiotic resistance analysis) to look for the signature of source type (domestic animal, wildlife or human).
Sampling Conducted to Date

- June 5\textsuperscript{th} 2016, Storm Event 0.56” of rain.
- July 7, 2016 Flood tide study dry weather.
- July 18\textsuperscript{th} 2016 Storm Event 0.21” of rain in 15 min.
Results
Navesink Storm Study

Fecal Coliform (CFU)
- 3 - 200
- 200 - 1,000
- 1,000 - 5,000
- 5,000 - 15,000
- >15,000

07/18/16 18:10 – 1 Hour past First Flush 0.21”
Geometric Mean Results

Fecal Coliform Geometric Mean by Event Type

- Wet weather 6/5/16
- Flood tide
- Wet Weather 7/18/16
Results Summary to Date

- Site 10-Pine Brook, Shrewsbury Twp. – elevated bacteria levels under wet and dry- wildlife signature- but area should be evaluated strong smell.
- Site 14-Railroad Bridge and Front St., Red Bank – Human signature, also domestic animal and wildlife.
- Site 32-Chapin Ave., Red Bank – Domestic Animal signature, strong rainfall impact.
- Site 34- Maple Ave., Red Bank- Human signature, also domestic animal and wildlife, strong rainfall impact.
- Site 35-Oyster Point, Red Bank- Human signature, also domestic animal, strong rainfall impact.
- Site 55- River Rd., Middletown Twp. below output of Marion Lake, domestic animal and wildlife signatures. 6/5 storm event strong impact, first flush sample 100,000 CFU/100ml fecal coliform, the highest recorded in the study. Second wet weather event was lower. Details to come in upcoming slide.
- Sites 56 and 57- McClees Creek, River Rd., Cooper Rd., Middletown Twp.- Human signature, also domestic animal and wildlife. Cooper Rd. site further inland from the Navesink River has higher bacteria levels suggesting source is up in the Creek, but can impact the River with tide flow and rainfall events.
Site 55

• Site 55 had a 100,000 CFU/100ml fecal coliform result on the first flush, during the first storm event.

• Monmouth County Health Dept. inspected the area looking for a source, found stall muckings and manure from horses dumped on the edge of the Lake, a small farm.

• Dept. of Agriculture visited the site and informed the owners that they need to follow BMP’s for the waste handling.

• Monmouth County Health Dept. and NJDEP Land Use inspected the area, and informed the owners that the disposal area needs to be cleaned up, and the disposal practice in the area cease.

• On 7/18/2016 in the morning, Monmouth County Health Dept. was informed that the clean up was done, inspection showed great improvement.

• On 7/18/2016 in the evening a storm event was conducted, results were much lower, event was smaller so awaiting confirmation of preliminary water quality improvement with future sampling events.
Moving Forward

• We have defined the areas with impairments.
• We have things that can be performed, such as ensuring proper waste management of domestic animals, ensure septic systems are maintained and functioning properly, storm water system maintenance, and inspection and testing of sewage infrastructure.
• NJDEP will continue to collect samples throughout the time frame of local work performed, and will work with partners to revise sampling if needed to help zero in on sources within the defined areas.