RRWA
Rahway River
WATERSHED ASSOCIATION

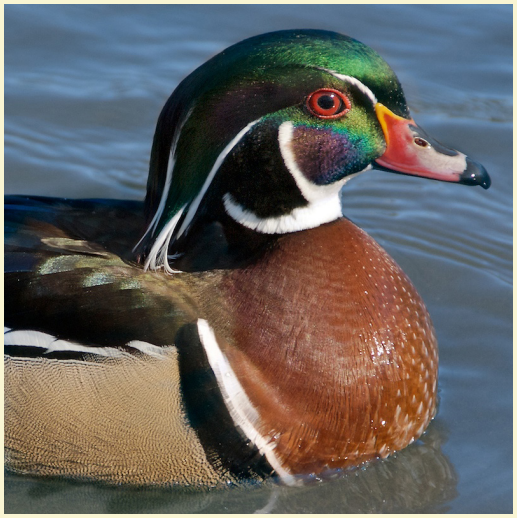
Rahway River Watershed Association

2021

Water Quality Report Card

Introduction & Acknowledgments

The Rahway River Watershed Association's water quality monitoring program began in 2018 when we started habitat assessments along various branches of the Rahway River. In 2019 the RRWA received funding to expand the program to include benthic macroinvertebrate identification, however in 2020 training and monitoring were sidelined by the Covid 19 pandemic which resulted in a delay to the roll-out of the program. Stream School, although well attended, suffered many postponements due to the pandemic and several rained out stream-side sessions. Stream School ended in late June 2021, after which we were only able to do 1 monitoring session before the summer break. We picked it up in October when we were able to monitor 3 locations.



We gratefully acknowledge the generous help and support of the individuals and organizations who made this program possible. We heartily thank The Watershed Institute for financial support and sharing the varied and indispensable expertise of their staff including Erin Stretz, Nick Ho and Pri Olivera. A special thank you goes out to the NJDEP for the use of their staff including Debbie Kratzer from the Division of Water Monitoring & Standards, Bureau of Environmental Analysis, Restoration & Standards, as well as AmeriCorps Watershed Ambassadors Heather Miara (WMA7), Sam Pfeffer (WMA20), Brian Pinke (WMA6), Sam LaRocca (WMA13), and Emily McGuckis (WMA12). These individuals trained our Stream Team, helped update our ArcGIS map and provided information that was crucial to the implementation of the program.

Finally, we sincerely thank the many volunteer members of our Stream Team who have attended these training sessions and adopted monitoring sites along the river. We are looking to increase the number of monitoring locations in 2022 and hold additional training for new and existing RRWA Stream Team members.

Thank you!

Report Prepared by Clea Carchia,
Executive Director, RRWA
Photos on cover and page 2 by Jacki Dickert
All other photos by Clea Carchia

Table of Contents

What is the Rahway River Watershed?

The Rahway River runs through Essex, Union, and Middlesex counties, draining 41 square miles of land in 24 municipalities, as shown on the watershed map.

The river runs through heavily-settled areas, with both current and legacy industrial sites, yet much of it is bordered by riverside parkland and stocked with fish. The river itself is the drinking water source for residents in the City of Rahway after being processed at the Suez water plant in Rahway.

Our water monitoring program is aimed at engaging residents as citizen scientists to become stewards of their local waterway.

In addition to it's main stem, the Rahway River has four main branches: East, West, South, and Robinson's, and numerous tributary streams, including Nomahegan Brook. The river's drainage area is divided into 10 sub-watersheds, as can be seen on the HUC 14 map on page 10. The RRWAs goal is to choose monitoring sites upstream and downstream on each branch or tributary. This provides data specific enough to pinpoint localize sources of pollution.

Water quality in the main stem and most of the branches of the Rahway River is often below the level that is appropriate for its use. By visiting their adopted sites twice a year, Stream Team volunteers will provide data that can be used by the NJ Department of Environmental Protection to address problems with the quality and quantity of water in this system.

The 2020/2021 RRWA Water Quality Monitoring Program

We are very happy to be able to call the 2020/2021 water quality monitoring season a success. After the coronavirus pandemic sidelined our plans for Stream School in Spring of 2020, we were able to reschedule the training course in Autumn of the same year. In the interest of safety, we held 3 virtual sessions on September 16, 17 and 18, and one socially distanced stream-side session on September 20. The RRWA expanded the scope of our monitoring program by including macroinvertebrate identification to habitat assessment. We also added some monitoring locations in Rahway, Westfield and Cranford. In Spring of 2021 we held a refresher repeat of the fall program with virtual sessions on April 7, 8 and 9 and a stream-side session on April 18. Students who made it this far were audited and tested for their proficiency in habitat assessment and macroinvertebrate identification on May 22 and June 5.

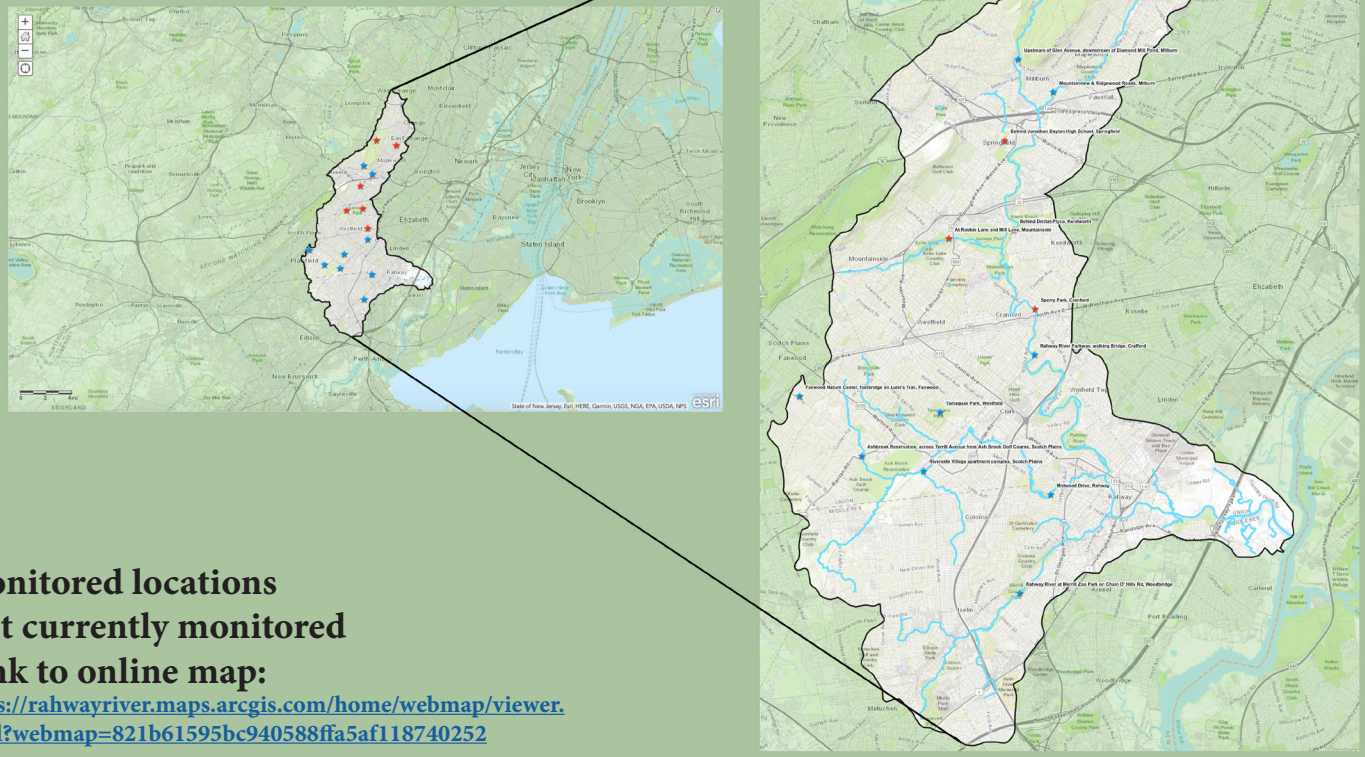
In addition to covid disrupting our plans, a few days of rain forced us to postpone training days, pushing the completion of Stream School to late Spring. For this reason, we were only able to schedule one monitoring session in "Spring", which actually took place on July 1. We were finally able to get a little momentum with 3 locations monitored in the fall, on October 9, 16, and 17.

All data contained in The 2021 Water Quality Report Card has been collected by staff and volunteer citizen scientists. Stream School was organized by Erin Stretz from the Watershed Institute and assisted by NJDEP AmeriCorps Watershed Ambassadors and Debbie Kratzer, also from NJDEP. Stream School students were taught using NJDEP habitat and macroinvertebrate assessment protocols.

Our arcGIS Map was updated to include the 3 new monitoring locations. A public StoryMap representation of the data can be viewed here:

https://www.arcgis.com/apps/MapSeries/index.html?appid=963522bac01d4ccd83ffddb77b932f8f

Map of Monitoring Locations along the Rahway River



★ Monitored locations

★ Not currently monitored

Link to online map:

https://rahwayriver.maps.arcgis.com/home/webmap/viewer.html?webmap=821b61595bc940588ffa5af118740252

Members of The Rahway River Watershed Association Stream Team in Action

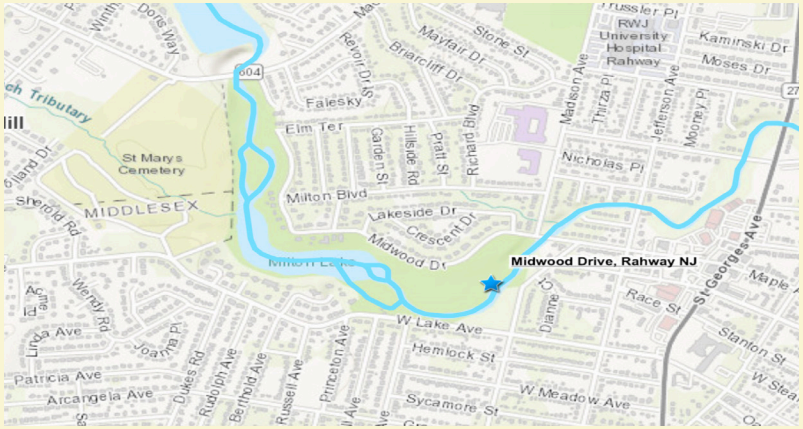
RRWA Monitoring Sites

Unique Site ID	Site Name	Location Description	Stream Name	Property Owner	Latitude	Longitude
RRWA-010-WB	Rahway River at Glen Ave Bridge	Upstream of Glen Avenue, downstream of Diamond Mill Pond, Milburn	Rahway River, West Branch	Essex County Parks	40.729013	-74.307272
RRWA-020-EB	Rahway River East Branch at Mountainview and Ridgewood Roads	Mountainview & Ridgewood Roads, Milburn	Rahway River, East Branch	Unknown	40.719731	-74.294197
RRWA-030-RRT	Rahway River Tributary, behind Jonathan Dayton High School	Behind Jonathan Dayton High School, Springfield	Rahway River, Rahway River Tributary	UCDPR	40.705986	-74.312358
RRWA-040-MS	Rahway River Parkway behind Dmitat-Plyco	Behind Dmitat-Plyco, Kenilworth	Rahway River, Main Stem	UCDPR	40.680687	-74.308976
RRWA-050-NB	Nomahegan Brook, at Robbie Lane and Mill Lane	At Robbie Lane and Mill Lane, Mountainside	Rahway River, Nomahegan Brook	UCDPR	40.678362	-74.333127
RRWA-060-RB	Riverside Village apartment complex	Riverside Village apartment complex, Scotch Plains	Rahway River, Robinson's Branch	Riverside Village apartment complex	40.612749	-74.342587
RRWA-070-ABT	Fanwood Nature Center, footbridge on Luisi's Trail	Fanwood Nature Center, footbridge on Luisi's Trail, Fanwood	Rahway River, Ash Brook Tributary	Fanwood Township	40.633812	-74.388836
RRWA-080-ABT	Ashbrook Reservation, across Terrill Avenue from Ash Brook Golf Course	Ashbrook Reservation, across Terrill Avenue from Ash Brook Golf Course, Scotch Plains	Rahway River, Ash Brook Tributary	UCDPR	40.616904	-74.365629
RRWA-090-WB	South Mountain Reservation, downstream of Reservoir	South Mountain Reservation, downstream of Reservoir, South Orange	Rahway River, West Branch	Essex County Parks	40.757690	-74.28853
RRWA-100-EB	Meadowland Park	Meadowland Park, South Orange	Rahway River, East Branch	South Orange Township	40.749968	-74.259552
RRWA-120-SB	Rahway River at Merrill Zoo Park on Chain O' Hills Rd	Rahway River at Merrill Zoo Park on Chain O' Hills Rd, Woodbridge	Rahway River, South Branch	Middlesex County Parks	40.578096	-74.306661
RRWA-130-RB	Tamaquas Park	Tamaquas Park, Westfield	Rahway River, Robinson's Branch	Westfield Township	40.6291940	-74.3364150
RRWA-140-RB	Milton Lake Park	Midwood Drive, Rahway	Rahway River, Robinson's Branch	UCDPR	40.6059720	-74.2951750
RRWA-150-MS	Walking Bridge, Rahway River Parkway	Blake Ave, Cranford	Rahway River, Main Stem	UCDPR	40.6456390	-74.3012000

Locations Monitored in 2021 and Results

Habitat Score
OPTIMAL: 160 - 200
SUB-OPTIMAL: 110 – 159
MARGINAL: 60 – 109
POOR: < 60

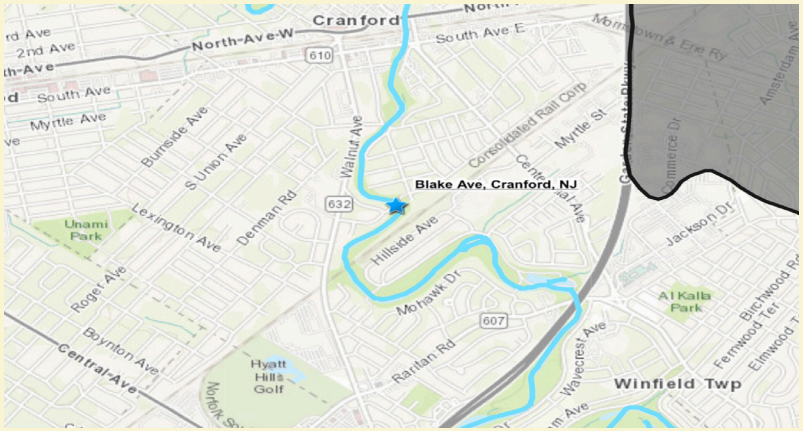
Macroinvertebrate Score
STRESSED: 0 - 12
UNDETERMINED: 13 - 19
HEALTHY: ≥ 20



Rahway River Watershed Association Monitoring Sites

Site	RRWA-140-RB
Stream	Rahway River, Robinson's Branch
Location	Midwood Drive, Rahway
Municipality	Rahway
Latitude	40.605972
Longitude	-74.295175
HUC-14	2030104050080
Site Name	Milton Lake Park
MonitoringStatus	Yes

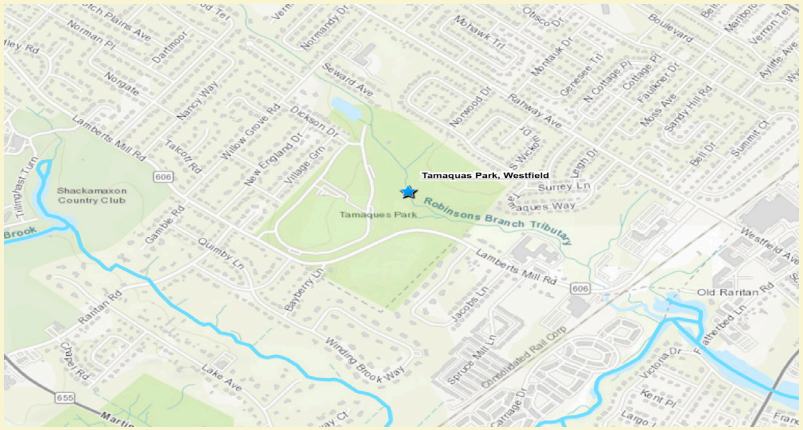
Dates Monitored	Monitored For	Score
October 16, 2021	Habitat (HG)	143 (Sub-Optimal)
October 16, 2021	Macroinvertebrates	17 (Undetermined)



Rahway River Watershed Association Monitoring Sites

Site	RRWA-150-MS
Stream	Rahway River, Main Stem
Location	Rahway River Parkway, walking Bridge, Crafford
Municipality	Cranford
Latitude	40.645639
Longitude	-74.301200
HUC-14	02030104050060
Site Name	Walking Bridge, Rahway River Parkway
MonitoringStatus	Yes

Dates Monitored	Monitored For	Score
October 9, 2021	Habitat (HG)	116 (Sub-Optimal)
October 9, 2021	Macroinvertebrates	24 (Healthy)

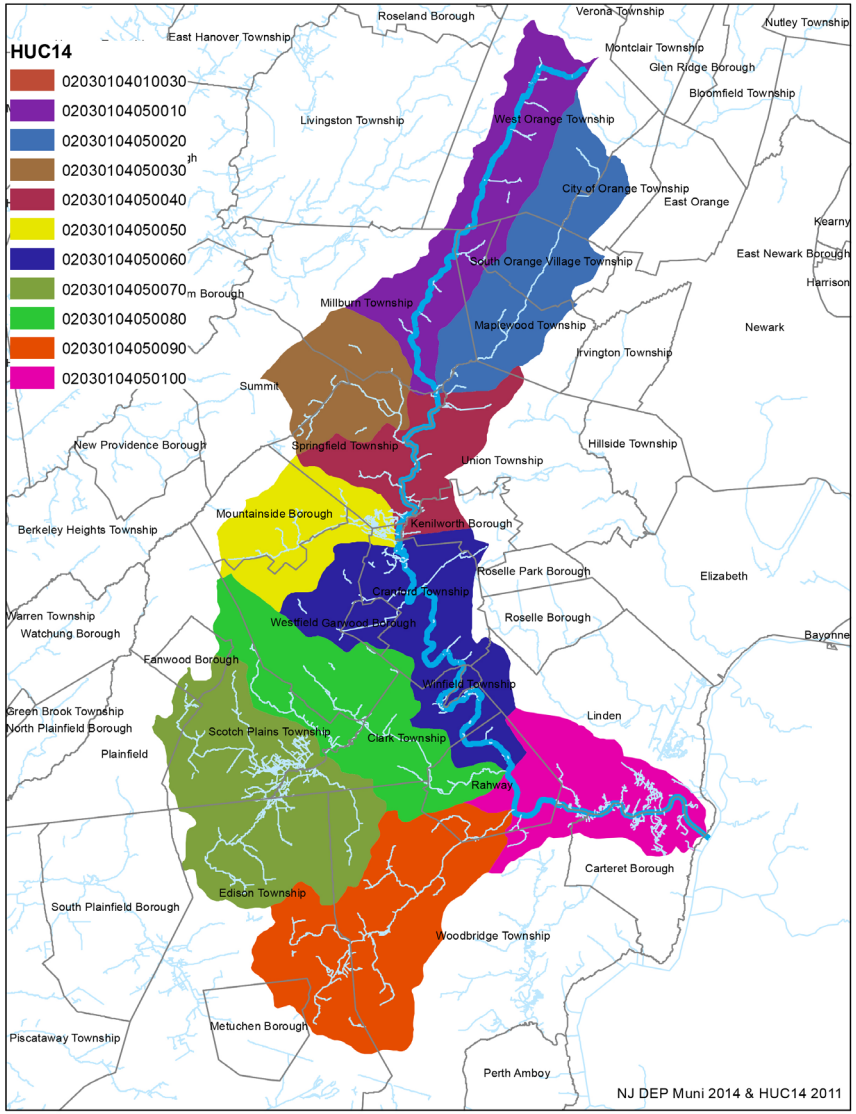


Rahway River Watershed Association Monitoring Sites

Site	RRWA-130-RB
Stream	Rahway River, Robinson's Branch
Location	Tamaquas Park, Westfield
Municipality	Westfield
Latitude	40.629194
Longitude	-74.336415
HUC-14	2030104050080
Site Name	Tamaquas Park
MonitoringStatus	Yes

Dates Monitored	Monitored For	Score
July 1, 2021	Habitat (HG)	148 (Sub-Optimal)
July 1, 2021	Macroinvertebrates	17 (Undetermined)
October 17, 2021	Habitat (HG)	120 (Sub-Optimal)
October 17, 2021	Macroinvertebrates	20 (Healthy)

Legacy Report



Water monitoring throughout New Jersey has been required since 1975 for compliance with the federal Clean Water Act. Since the beginning and on into the present, much of the water that flows into the Rahway River is polluted by fecal bacteria and phosphates. Both of these enter the river through storm drains when rain or melting snow carries pet waste, lawn fertilizer into the storm sewers. Regulating this storm water pollution is more challenging than correcting waste water pollution that comes out of a pipe. Waste water discharges are tightly regulated in New Jersey, but curing storm water pollution requires self-regulation of our own behavior.

How & Why We Perform Water Quality Assessments

Why is water quality assessment important?

Assessments provide base line information on water quality. Since water quality can change over time, continuous monitoring is essential.

Background on the DEP Volunteer Monitoring Program

The NJDEP and other stakeholders across New Jersey have been utilizing the help of volunteers to collect valuable data on surface water quality and watershed health. Volunteers such as the RRWA Stream Team, are of vital importance to the continuation of monitoring efforts throughout the state.

NJDEP's Volunteer Monitoring Program and the Watershed Watch Network are coordinated within Water Monitoring & Standards' Bureau of Environmental Assessment, Restoration and Standards. The Watershed Watch Network acts as an umbrella for the volunteer monitoring programs in New Jersey. The Watershed Watch website can be found here: https://njwatershedwatch.org

NEW JERSEY
WATERSHED WATCH
NETWORK

What is habitat assessment?

Habitat assessment is an easy-to-use approach for identifying and assessing the elements of a stream's habitat. It is based on a simple protocol using observations of stream habitat characteristics and major physical attributes.

The habitat evaluation process involves rating many different habitat conditions based upon criteria included on survey data sheets. Some of those conditions include: odor, tubidity, surface coating, stream flow, canopy cover, algae growth, litter, land use characteristics, and various physical characteristics such as erosion, embeddedness, and sediment deposition.

What are benthic macroinvertebrates?

Macroinvertebrates are organisms with no backbone that are large enough to be seen with the naked eye. They inhabit all types of running waters, from fast-flowing streams to slow-moving rivers. They are affected by the physical, chemical, and biological conditions of the stream.

Benthic (meaning "bottom-dwelling") macroinvertebrates are small aquatic animals and the aquatic larval stages of insects. They include dragonfly and stonefly larvae, snails, worms, and beetles. Benthic macroinvertebrates are often found attached to rocks, vegetation, logs and sticks or burrowed into the bottom sand and sediments.

Why is it important to evaluate benthic macroinvertebrates?

Benthic macroinvertebrates are commonly used as indicators of the biological condition of water bodies. They are reliable because they spend all or most of their lives in water, are easy to collect, and differ in their tolerance to pollution. Macroinvertebrates respond to human disturbance in fairly predictable ways, are relatively easy to identify, often live for more than a year and, unlike fish, have limited mobility. In fact, because they cannot escape pollution, macroinvertebrates have the capacity to integrate the effects of the stressors to which they are exposed, in combination and over time. Biologists have been studying the health and composition of benthic macroinvertebrate communities for decades.

What do benthic macroinvertebrates tell us about the condition of water?

Evaluating the abundance and variety of benthic macroinvertebrates in a water body gives us an indication of the biological condition of that water body. Generally, water bodies in healthy biological condition support a wide variety and high number of macroinvertebrates, including many that are intolerant of pollution. Samples yielding only pollution–tolerant species or very little diversity or abundance may indicate a less healthy water body. Biological condition is the most comprehensive indicator of water body health. When the biology of a water body is healthy, the chemical and physical components of the water body are also typically in good condition.

Conclusions

Much was learned from our 2020/2021 monitoring season. As mentioned earlier, the Covid 19 pandemic presented many challenges to the implementation of the program and extended it way past the Watershed Institute grant cycle, which they were graciously willing to extend. Participation in Stream School, both virtual and in-person, was exceptional, and although we had some drop off in attendance over the course of the season, about 15 people wound up completing the course and passing the Macro ID test.

Erin Stretz with Future Stream Team Members

It was great fun connecting with people from around the watershed for Stream School training and stream side assessments. Bonds were forged and relationships strengthened. This project required input and participation from various individuals in a host of organizations and government agencies. The Watershed Institute provided much needed support. In addition to Stream School, we updated the RRWA ArcGis map, adding new monitoring locations and updated our StoryMap. We are looking forward to continue our work in order to identify trends and locate possible problem areas along the river.

The RRWA is looking forward to growing our Stream Team and continuing to expand the program into 2022 and beyond. If you are interested in participating, please contact Executive Director Clea Carchia at 908-472-6152 or email cleacarchia@outlook.com

For more information on the Rahway River Watershed Association, visit our website at RahwayRiver.org, or our facebook page.

RRWA Rahway River WATERSHED ASSOCIATION Stream Team

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