

Raritan Sentinel Climate Stations

Kristi MacDonald and Melissa Mitchell Thomas, Raritan Headwaters Association

PO Box 273, Gladstone, NJ 07934, (908)234-1852 x322, kmacdonald@raritanheadwaters.org, www.raritanheadwaters.org



Climate Change in New Jersey

- Warmer temperatures ($\uparrow 3^{\circ}F$ over last century)
- Hotter summers, more heat waves
- **More precipitation (8% above avg. over past 10 years)**
- **Increased frequency of extreme weather events – storms and droughts**
- Spring arriving earlier
- Coastal communities: 16 in. rise in sea level since 1911 and 1 to 4 ft. rise by 2100
- What are the impacts on our streams and aquifers?



Raritan Sentinel Climate Stations



RHA's Raritan Sentinel Climate Stations project aims to address the deficit in science focused on the impacts of climate change on freshwater, headwaters stream systems, which rely on cold, oxygen-rich conditions to supply clean water to much of the planet's population.

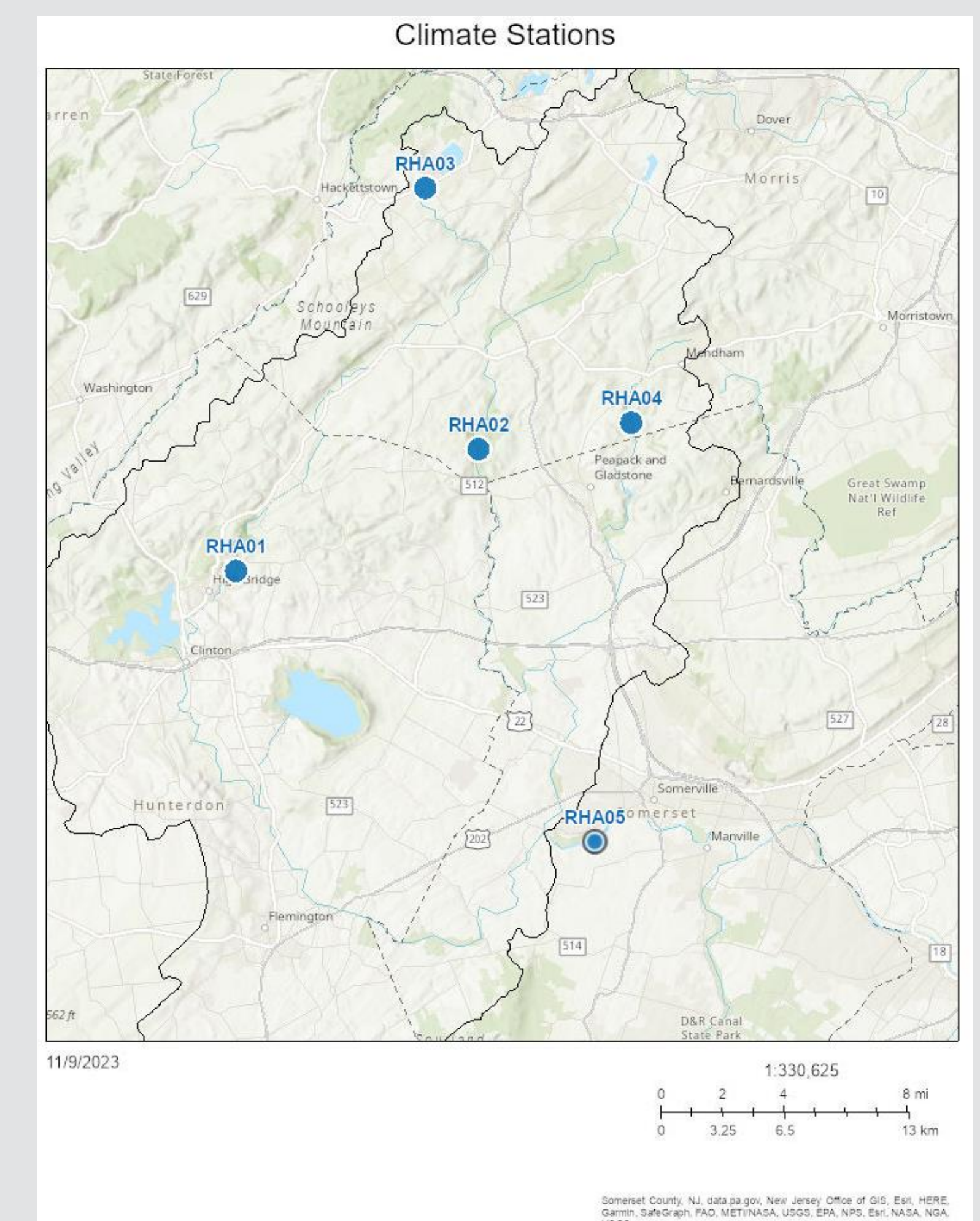
RHA's innovative project utilizes state-of-the-art Mayfly-DIY climate stations which are deployed at 5 locations in the Upper Raritan River region and in the Lower Raritan River. Data are collected on conductivity, depth and temperature every 15 minutes and transmitted in real-time via cellular technology. The QR code below links to the climate station dashboard and the data for each station.



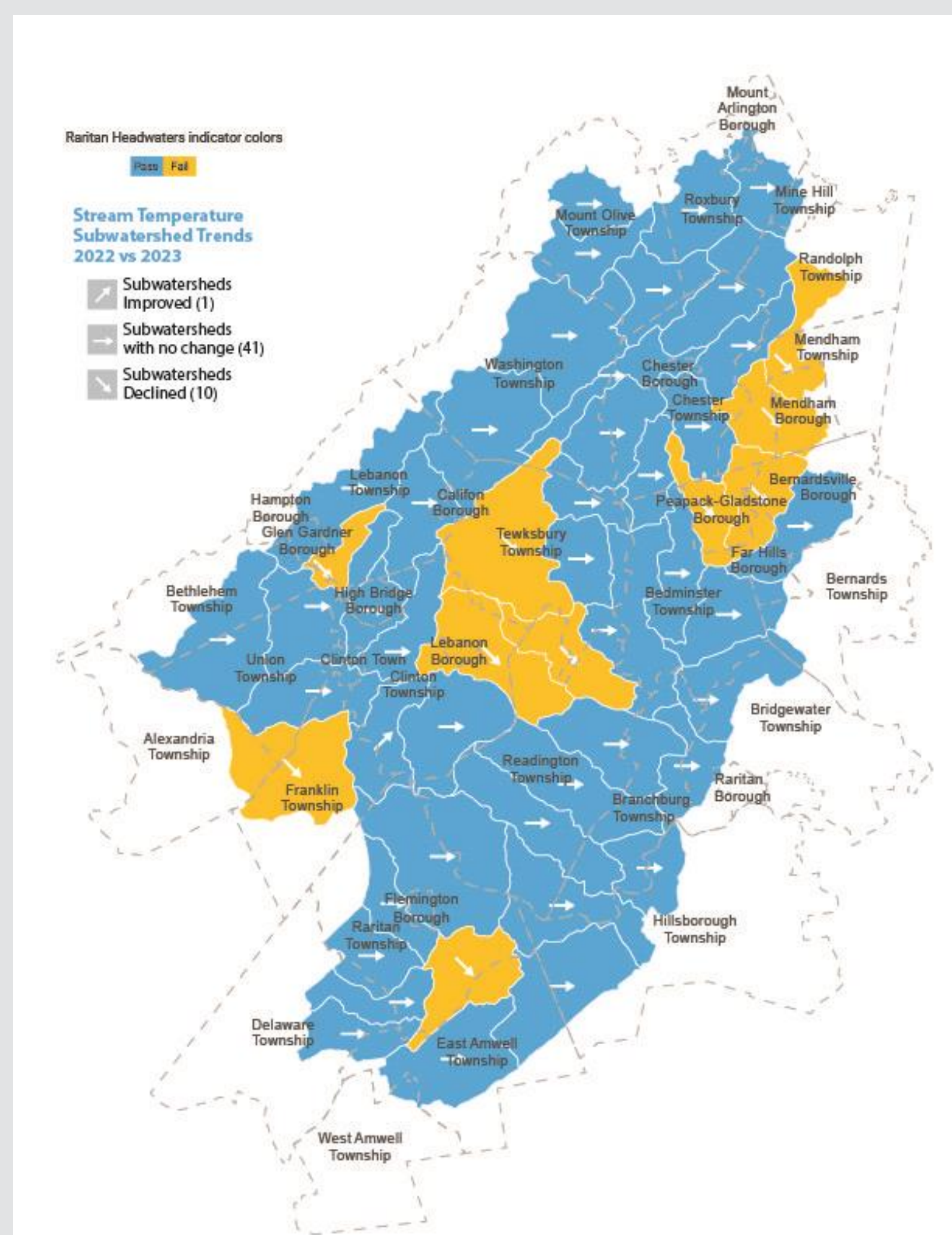
Goals of the Project

- Establishing baseline conditions
- Monitoring long-term trends- better to say: Generating data for longitudinal trend analysis
- Demonstrating impacts of restoration projects and watershed management implementation
- Contributing to regulatory monitoring
- Providing a tool for municipal, county and state decision-makers
- Assess impacts of climate change policies
- Identify sources of impairment so they may be addressed

Location of Climate Stations



Summer Stream Temperatures in the Upper Raritan (RHA)



Access Raritan Climate Station Data



Raritan Headwaters Projects to Address Climate Change Impacts

- Annual biological, habitat monitoring at 72 sites in the Upper Raritan
- Riparian Buffer Restoration, dam removals, and stream connectivity projects
- Watershed Restoration and Protection Planning; green infrastructure projects
- Watershed Tools for Local Leaders
- Policy program focused on state-level rules and regulations
- River Friendly Programs for residents, businesses, schools and golf courses
- Learn more about our work at www.raritanheadwaters.org

Impact of Climate Change and Land Use on Streams

- Erosion o topsoil
- Scouring of streams: Damage to streambanks
- Increased sedimentation
- Flooding
- Loss of habitat
- Impaired aquatic biodiversity
- Decreased water quality (due to \uparrow nutrients which leads to higher bacteria counts; harmful algal blooms)

Acknowledgements

- Raritan Headwaters is a 501(c)3 non-profit conservation organization based in Bedminster, NJ.
- Partners include: Rutgers Cooperative Extension, Water Resources Program, Duke Farms, NY/NJ Baykeeper, Raritan Valley Community College, Land Conservancy of New Jersey, Lake Solitude Fishing Club, Black River Fish and Game Club, and Raritan Associates
- Over 20 trained volunteers are assisting with maintenance of the stations
- Funding provided by the Royal Bank of Canada