

Hydrologic Monitoring in the Central Pine Barrens

CENTRAL PINE BARREN COMMISSION – ANNUAL PROJECT UPDATE

MARCH 16, 2022

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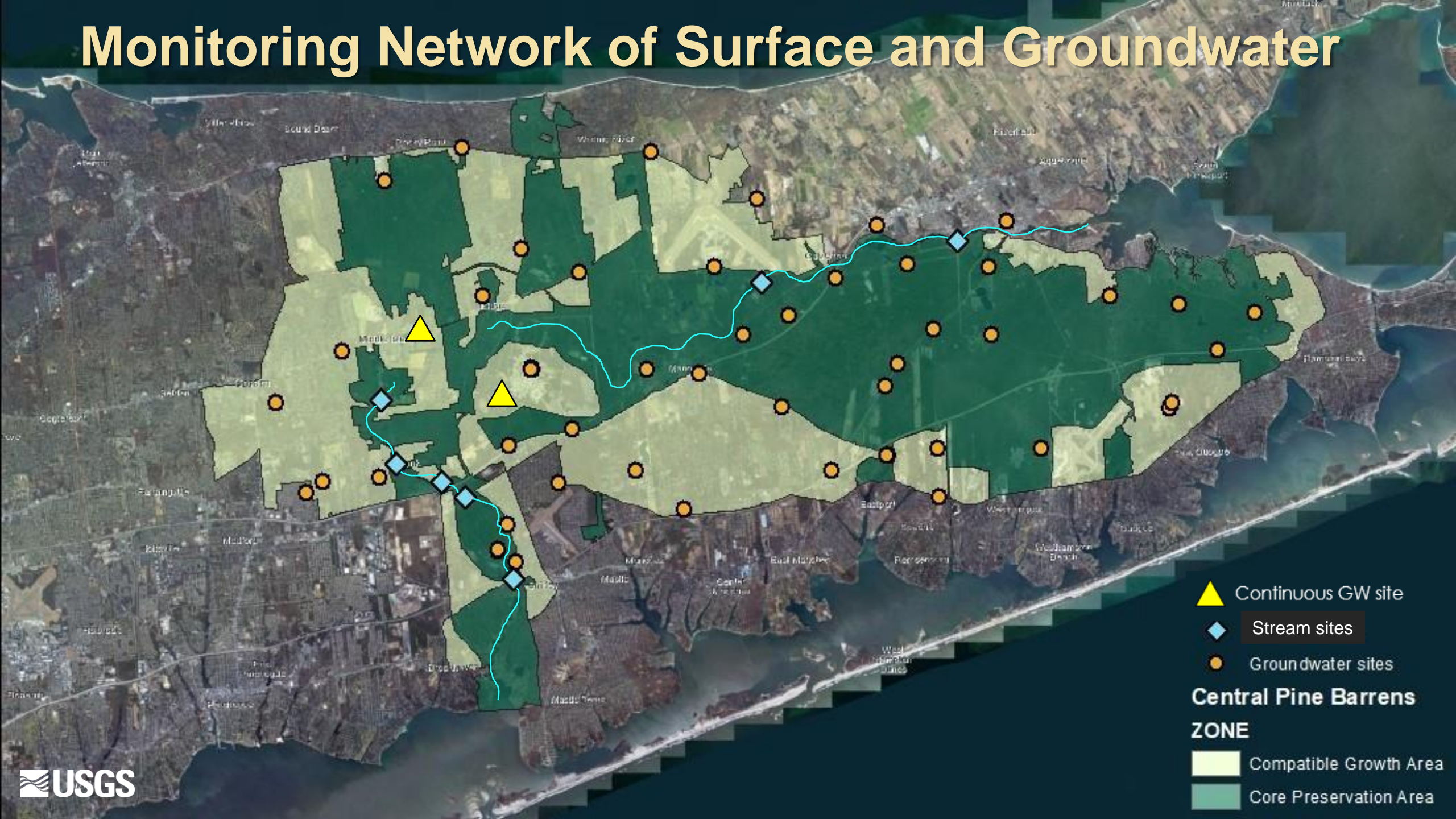
Objective: 5-year monitoring program

Expand and operate a comprehensive water-resources monitoring program for the Central Pine Barrens region



- ▶ Publicly accessible database of hydrologic conditions
- ▶ Baseline of water-resources conditions to assess hydrologic changes and trends
- ▶ Provide a data resource to monitor ecohydrologic stress

Monitoring Network of Surface and Groundwater



- ▲ Continuous GW site
- ◆ Stream sites
- Groundwater sites

Central Pine Barrens ZONE

- Compatible Growth Area
- Core Preservation Area

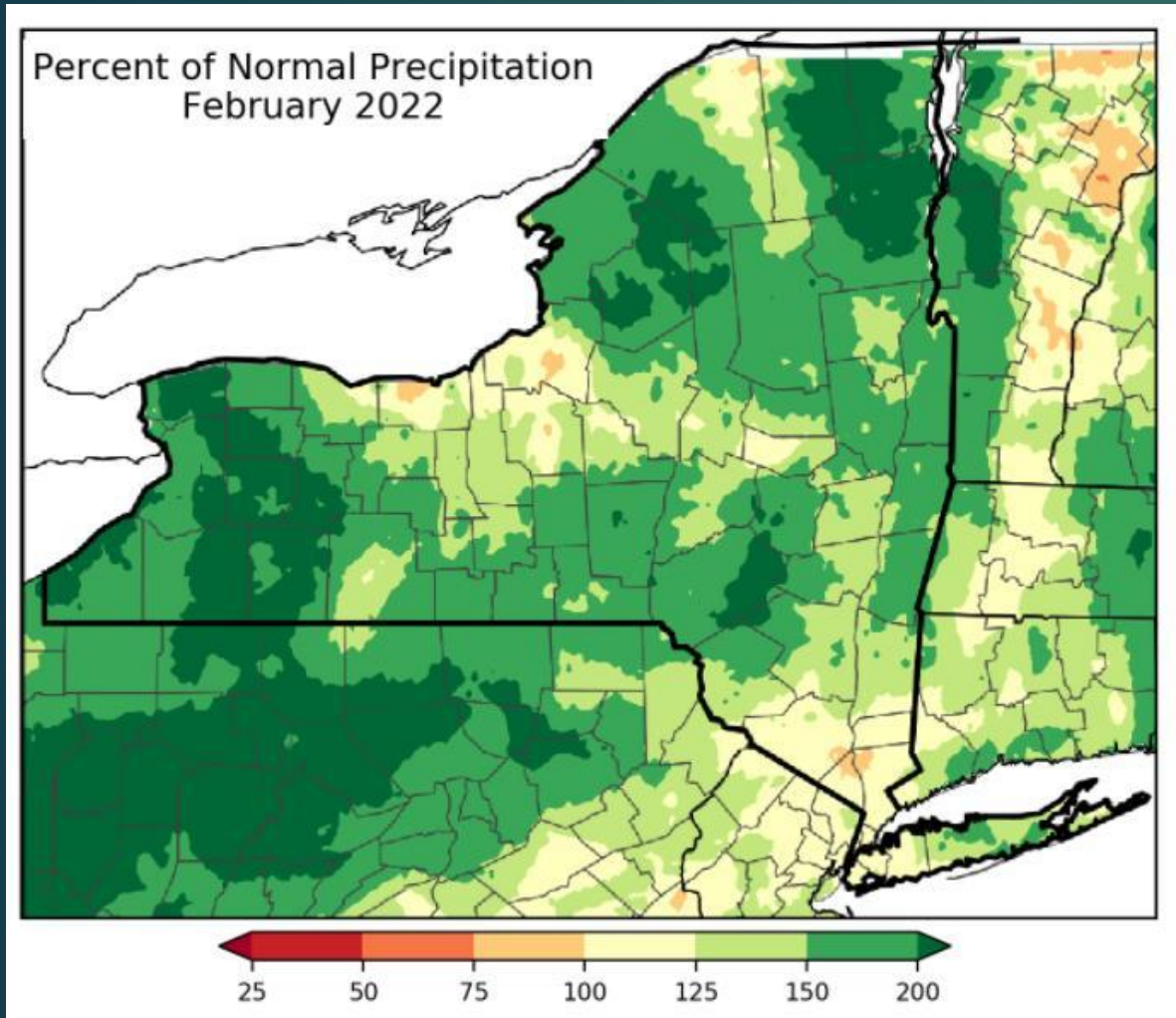
Project Timeline:

- ▶ Data collection Oct 2017 through *Sept 2022*
 - ▶ 3 Carmans River locations Aug 2018 through Jun 2023
- ▶ Publication of annual data summaries
 - ▶ 2021 data release – in review, available in summer 2022
- ▶ Interpretative report: *Winter 2024* (after 5th year of data year collection)

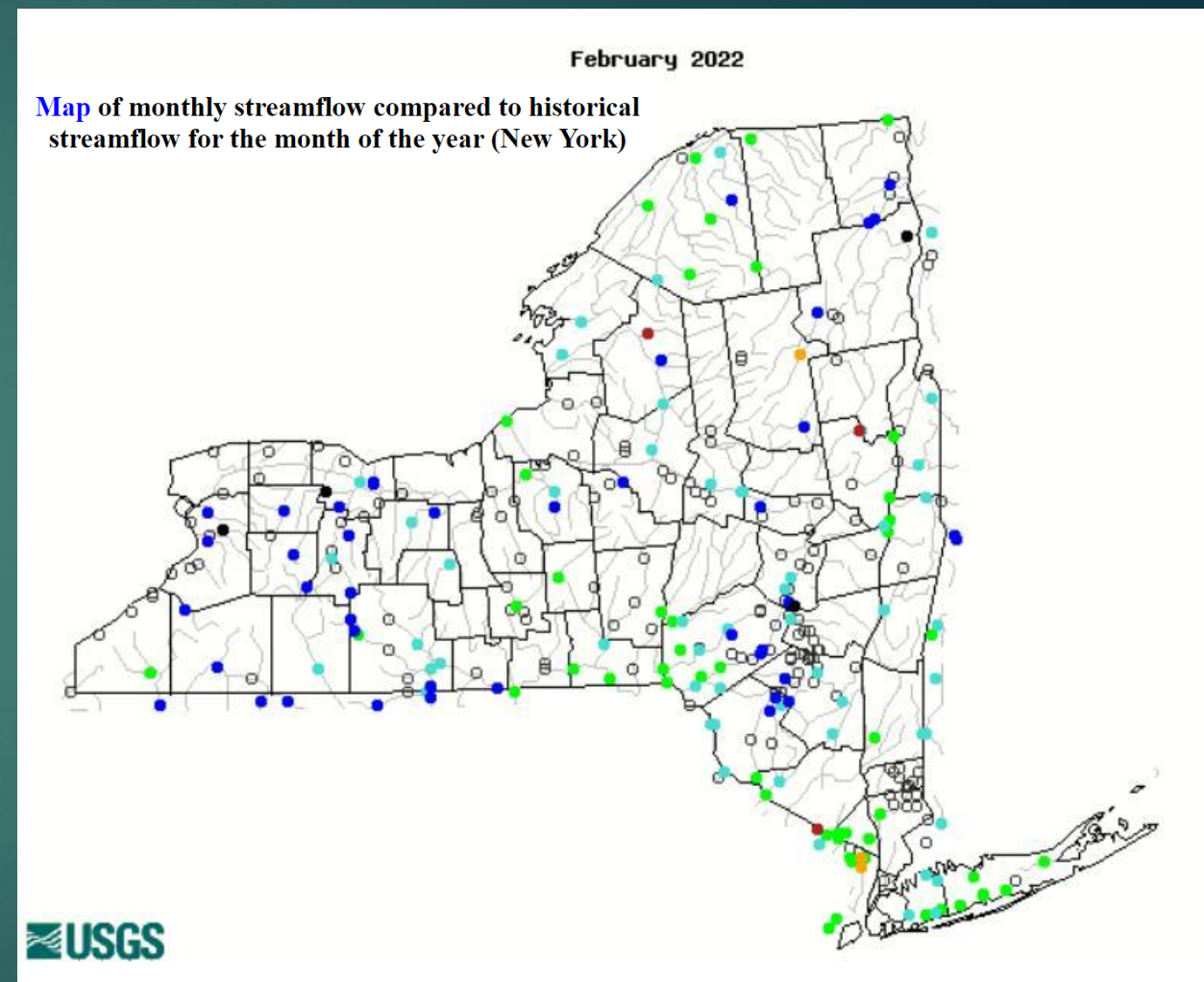


Northside of Carmans River Bartlett site

Precipitation & Streamflow, February 2022



<https://www.nrcc.cornell.edu>

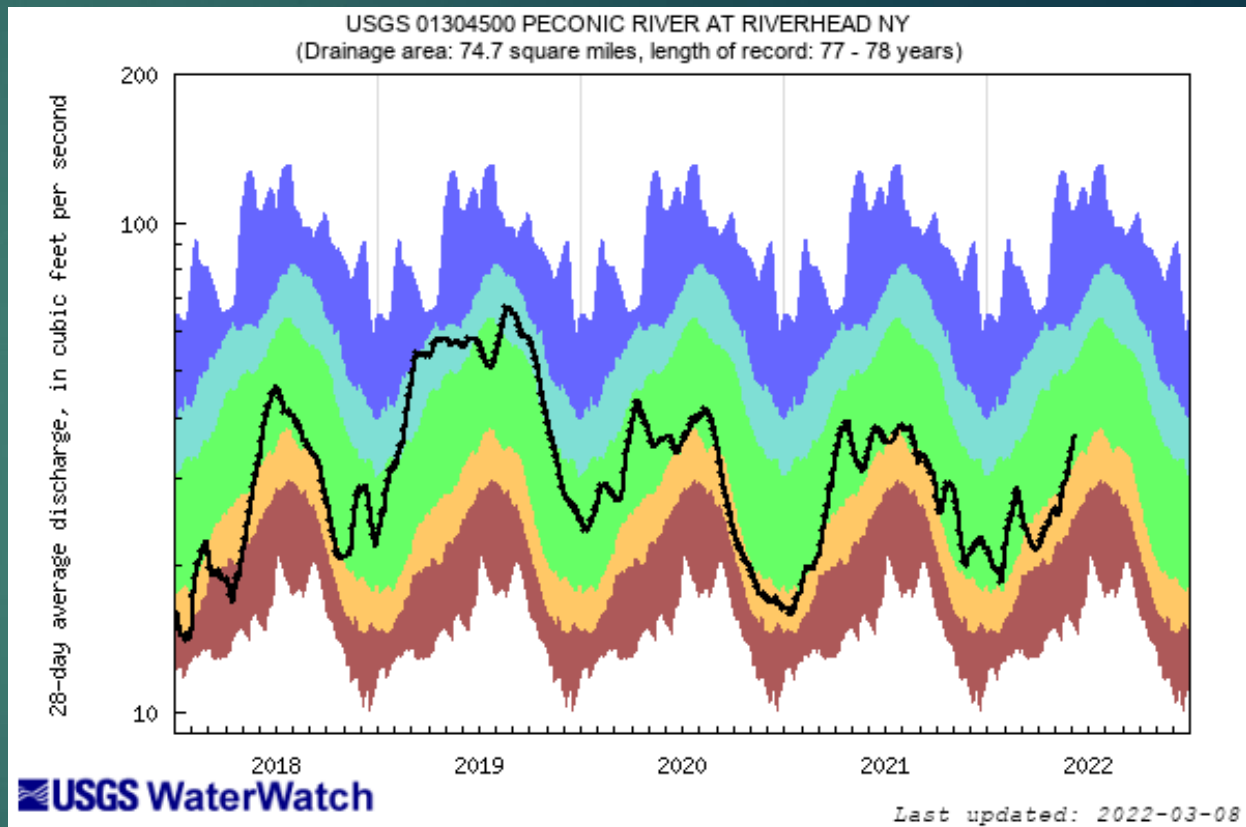
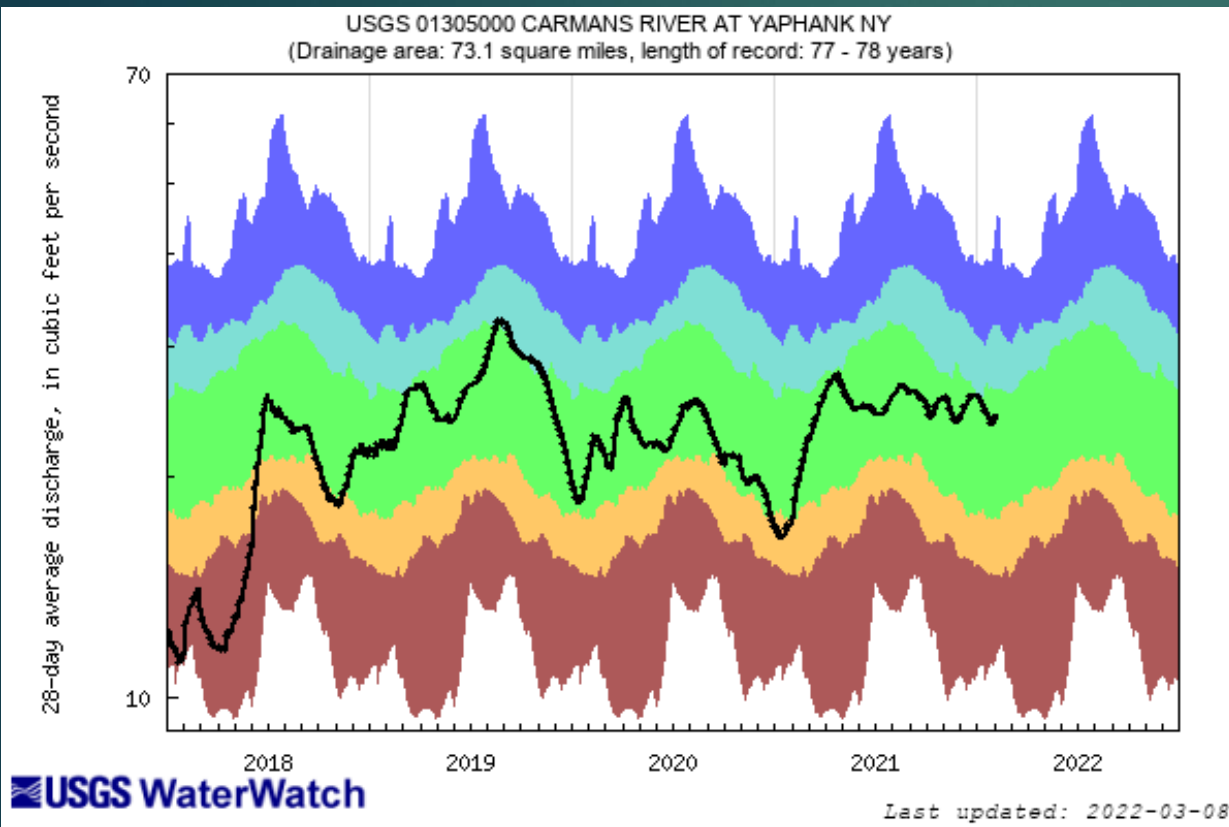



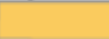




<https://waterwatch.usgs.gov/>

2017-2022 Duration Hydrographs

Carmans River (01305000)

Peconic River (01304500)

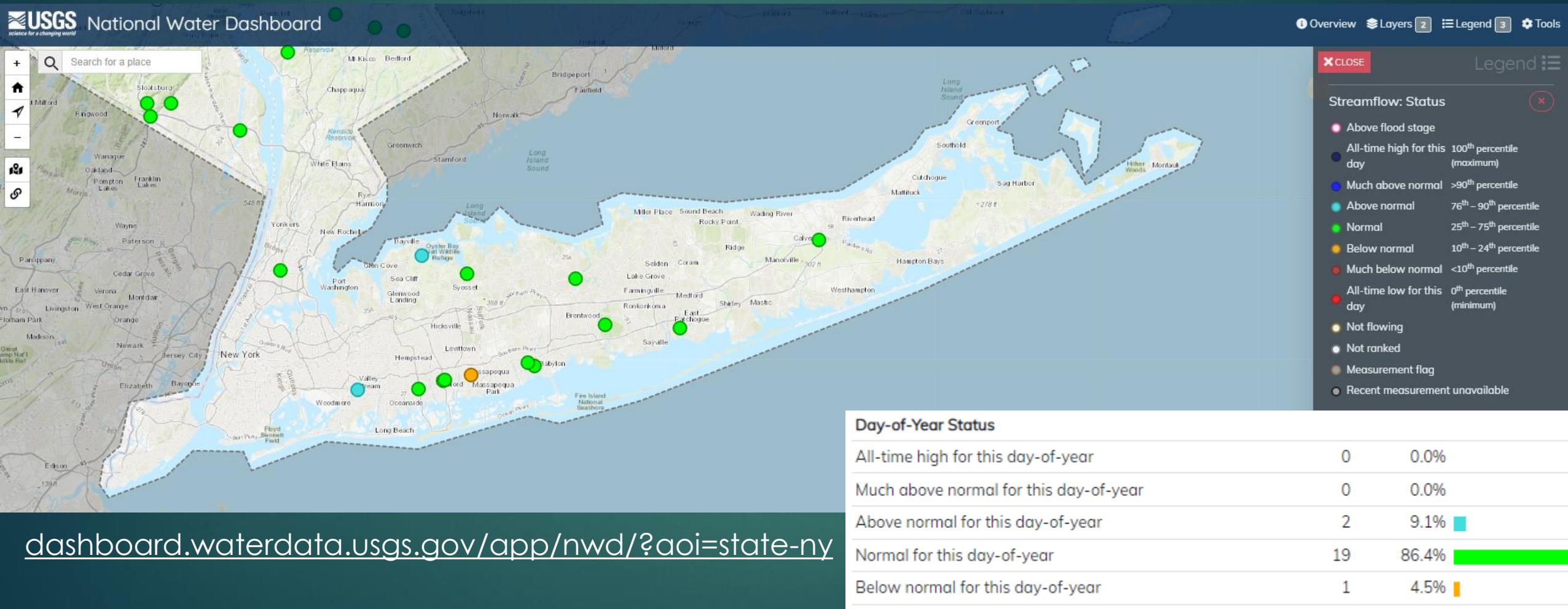


Explanation - Percentile classes					
					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

<https://waterwatch.usgs.gov/>

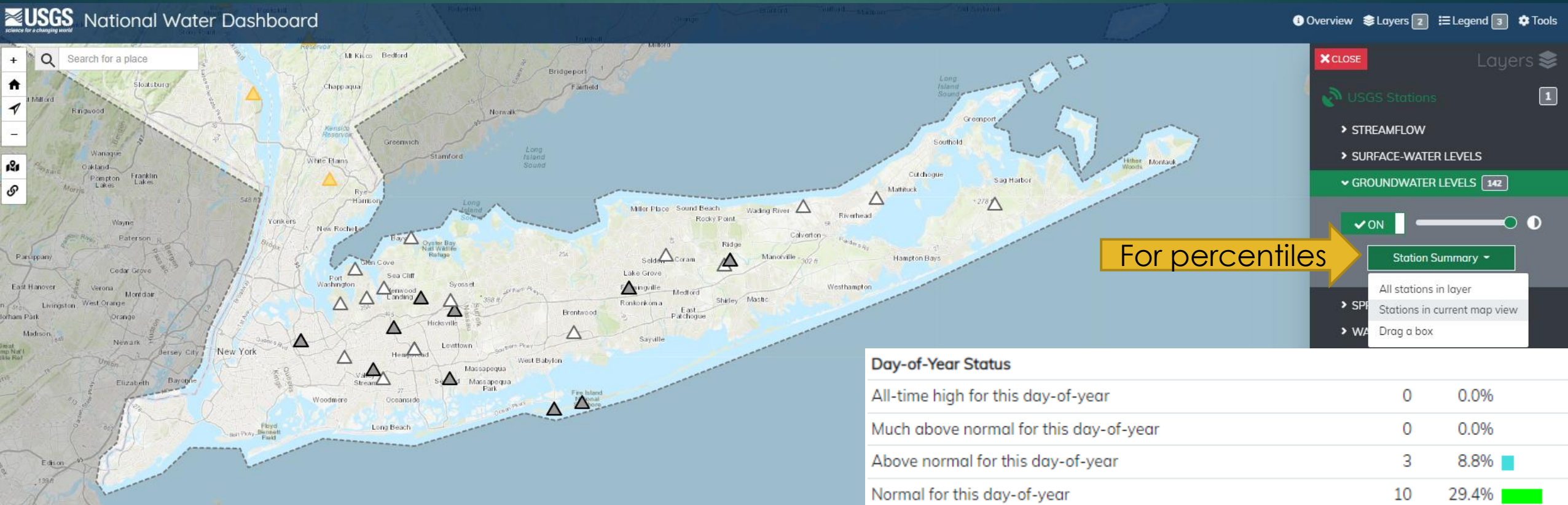
National Water Dashboard, Streamflow

Not “experimental” anymore – replacement for Real-Time Water Data delivery



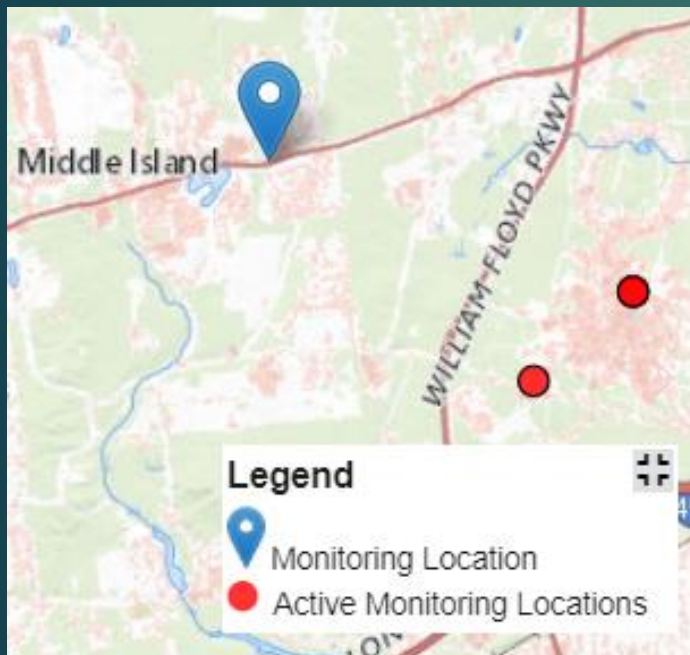
National Water Dashboard, Groundwater

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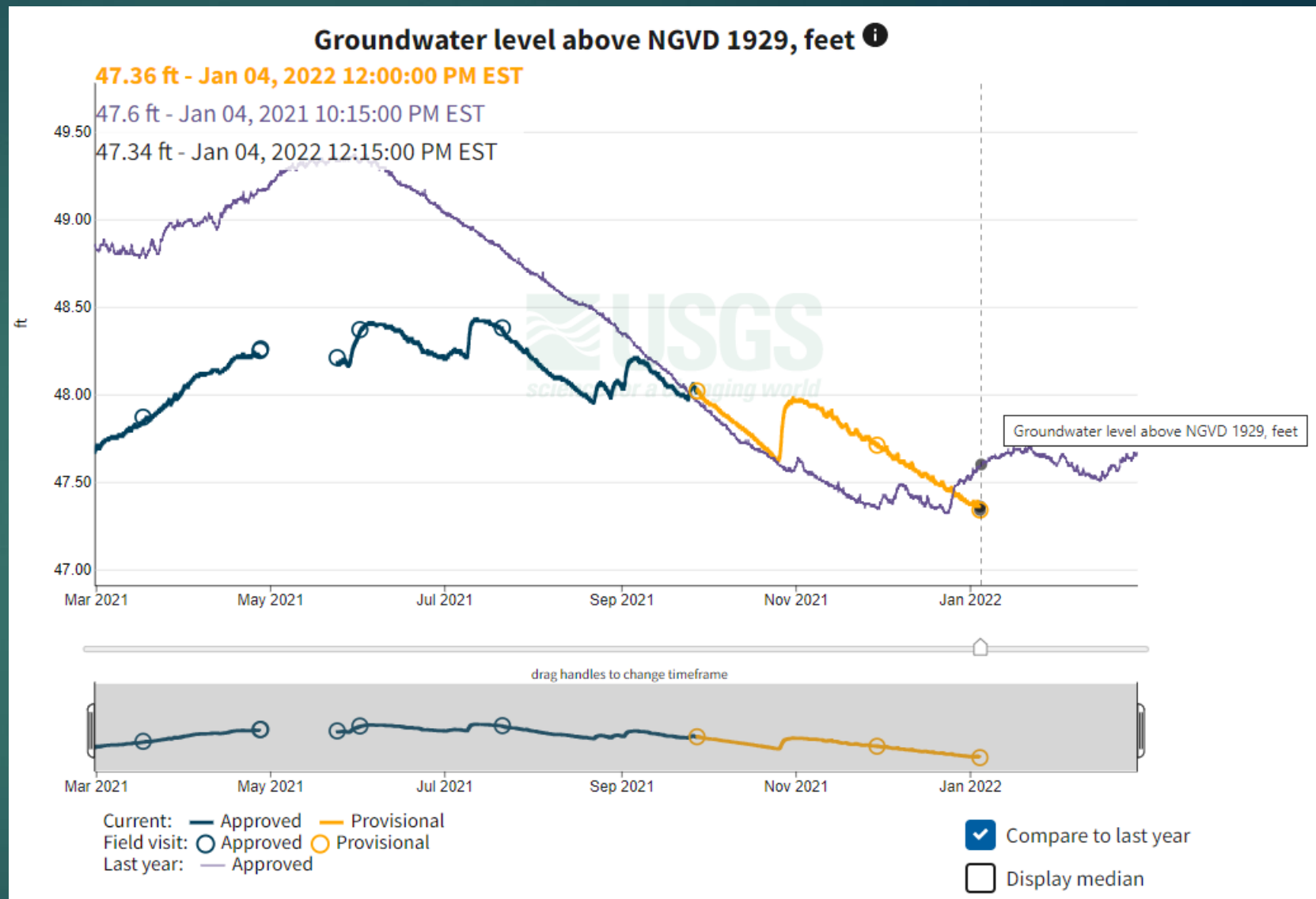


dashboard.waterdata.usgs.gov/app/nwd/?aoi=state-ny

“BETA” Hydrograph 6413.2

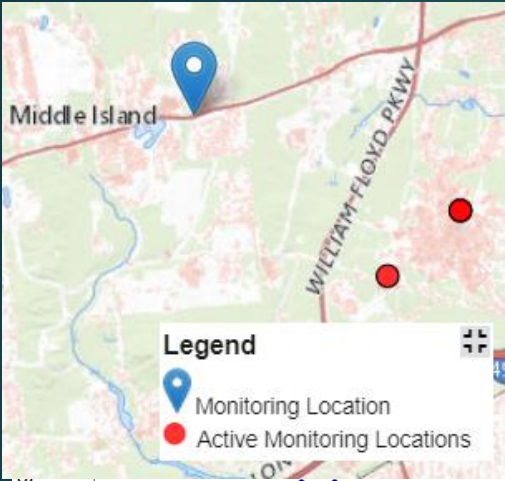


<https://waterdata.usgs.gov/blog/how-to-use-nextgen-pages/>

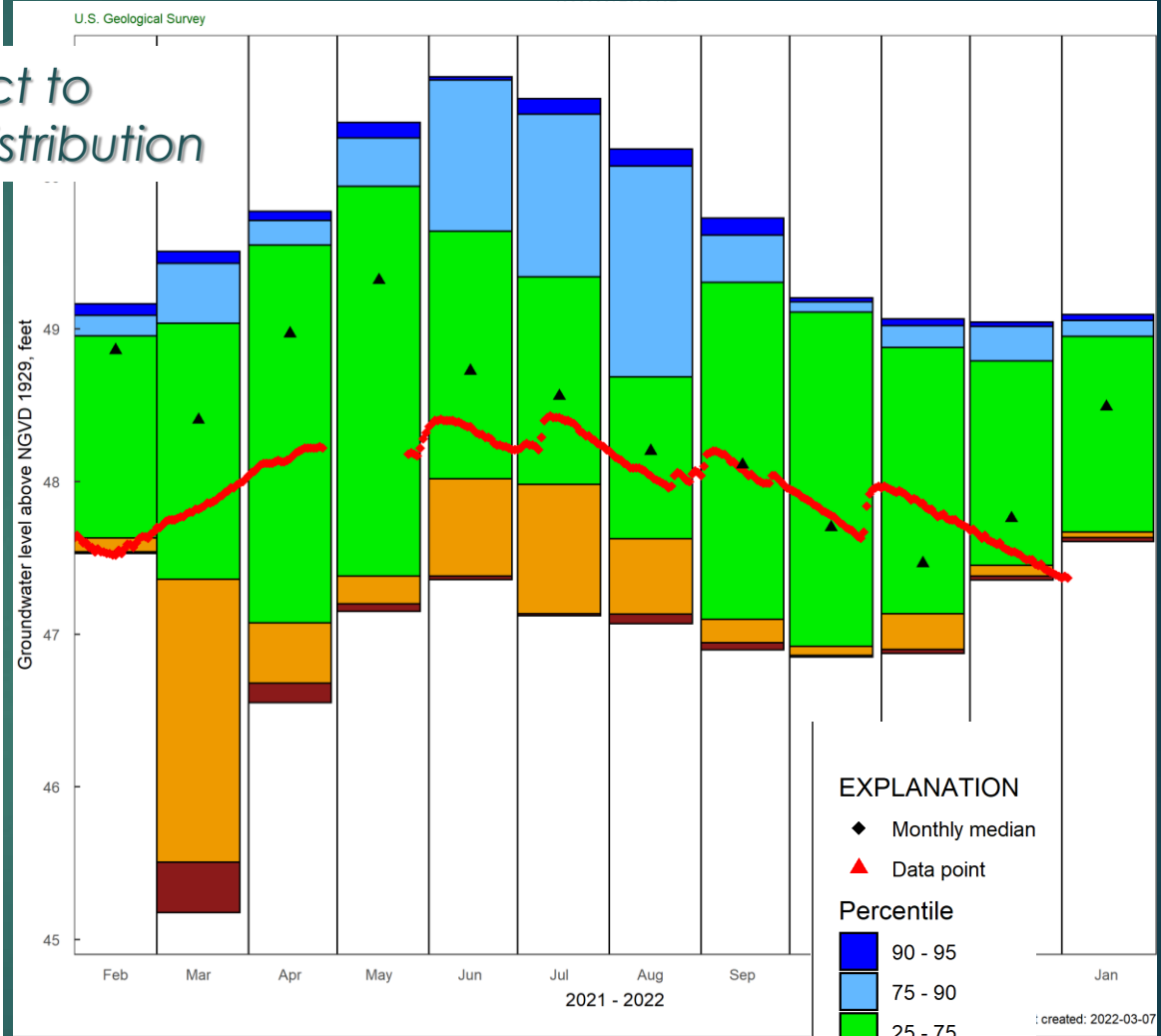
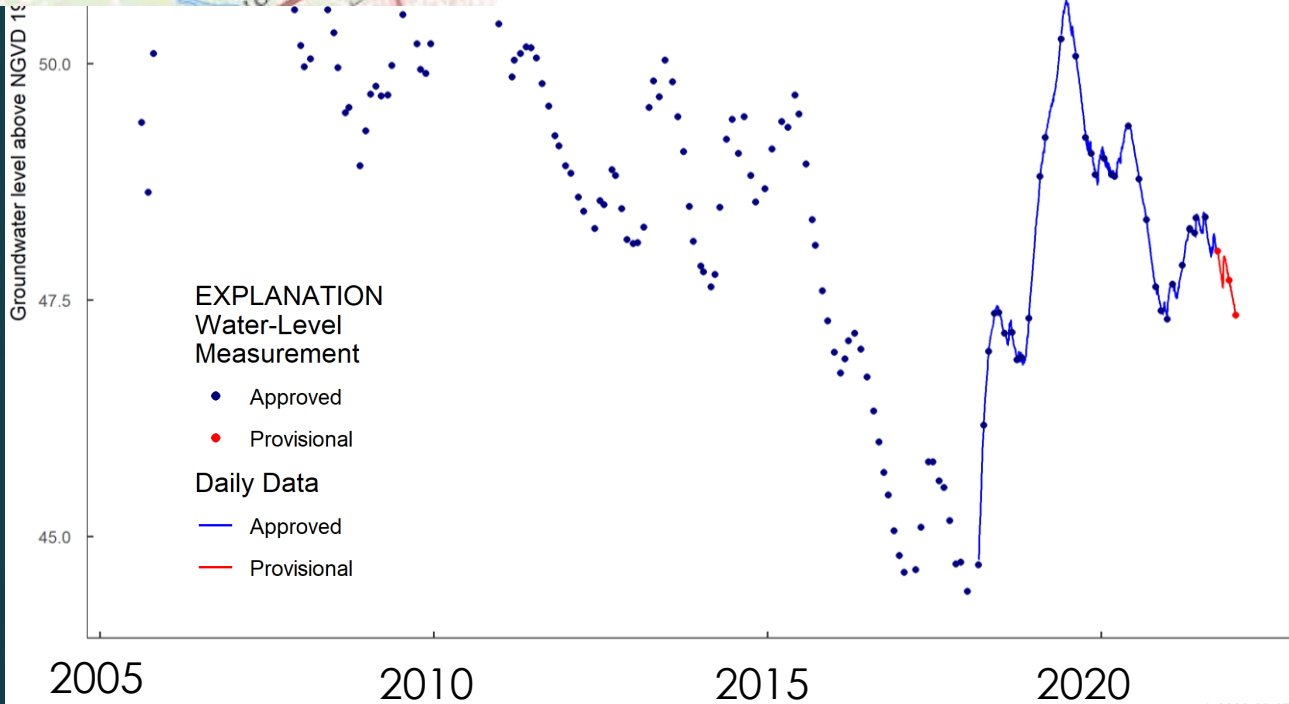


<https://waterdata.usgs.gov/monitoring-location/405308072553102/>

S 6413.2 – Groundwater Measurements



Preliminary Information-Subject to Revision. Not for Citation or Distribution



<https://github.com/USGS-R/HASP>



Water Quality

Water year 2022 water-quality sampling within the Pine Barrens

▶ Carmans River:

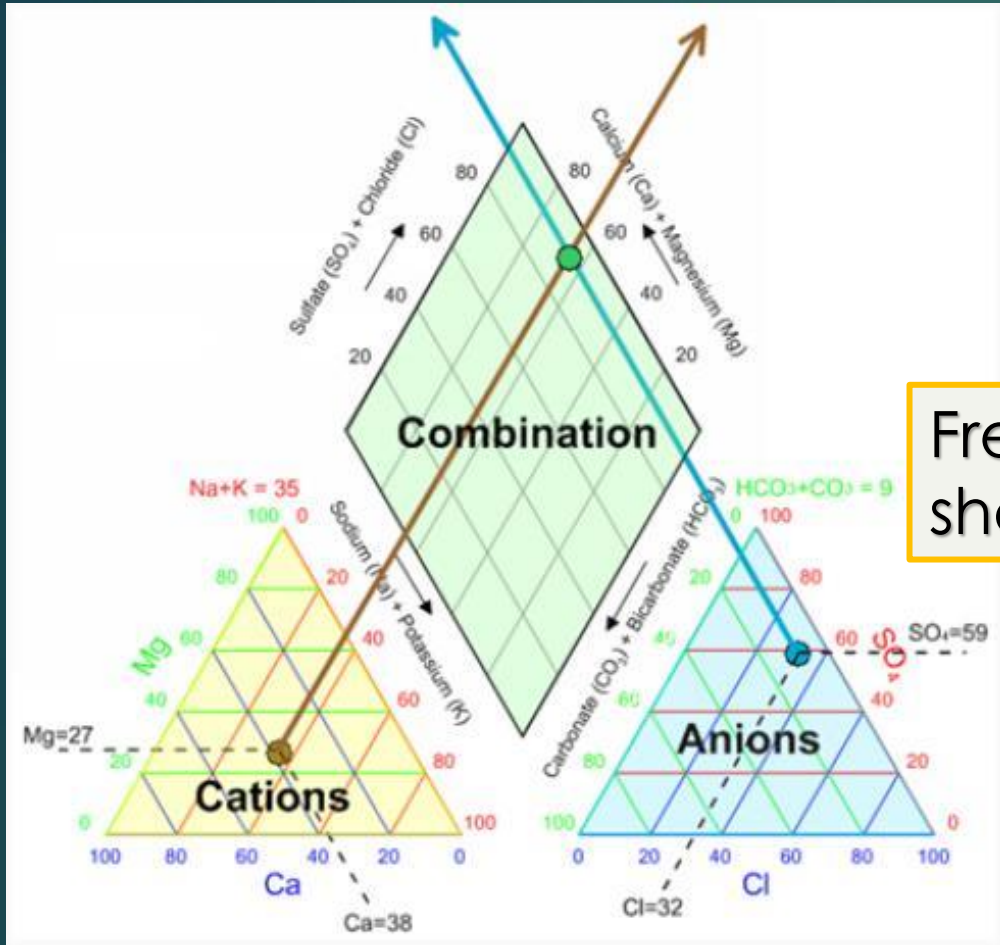
- ✓ Fall* – Nov 2021
- ✓ Winter – Feb 2022
- ▶ Spring - May 2022
- ▶ Summer - Aug/Sept 2022

▶ Peconic River:

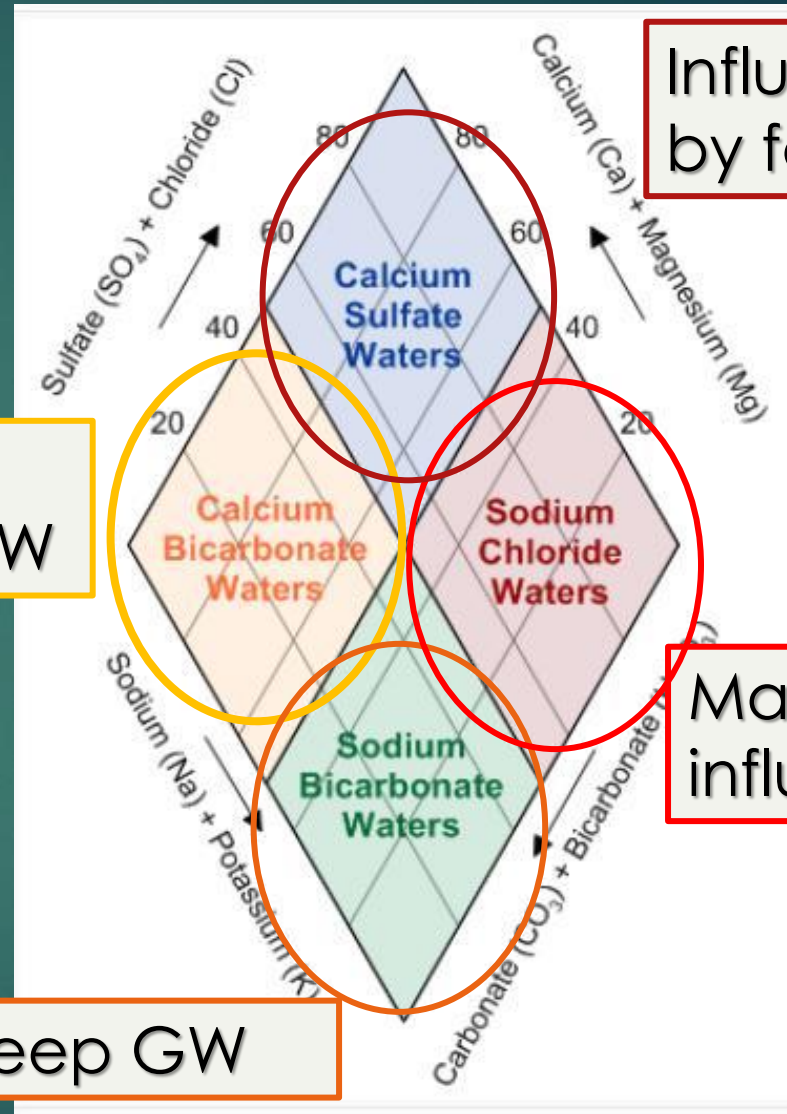
- ✓ Fall* – Nov 2021
- ▶ Spring - May 2022

* Pharmaceutical and pesticide analysis included

Piper Plot – visualizing stream chemistry



Fresh,
shallow GW



Influenced
by fertilizer?

Marine
influence

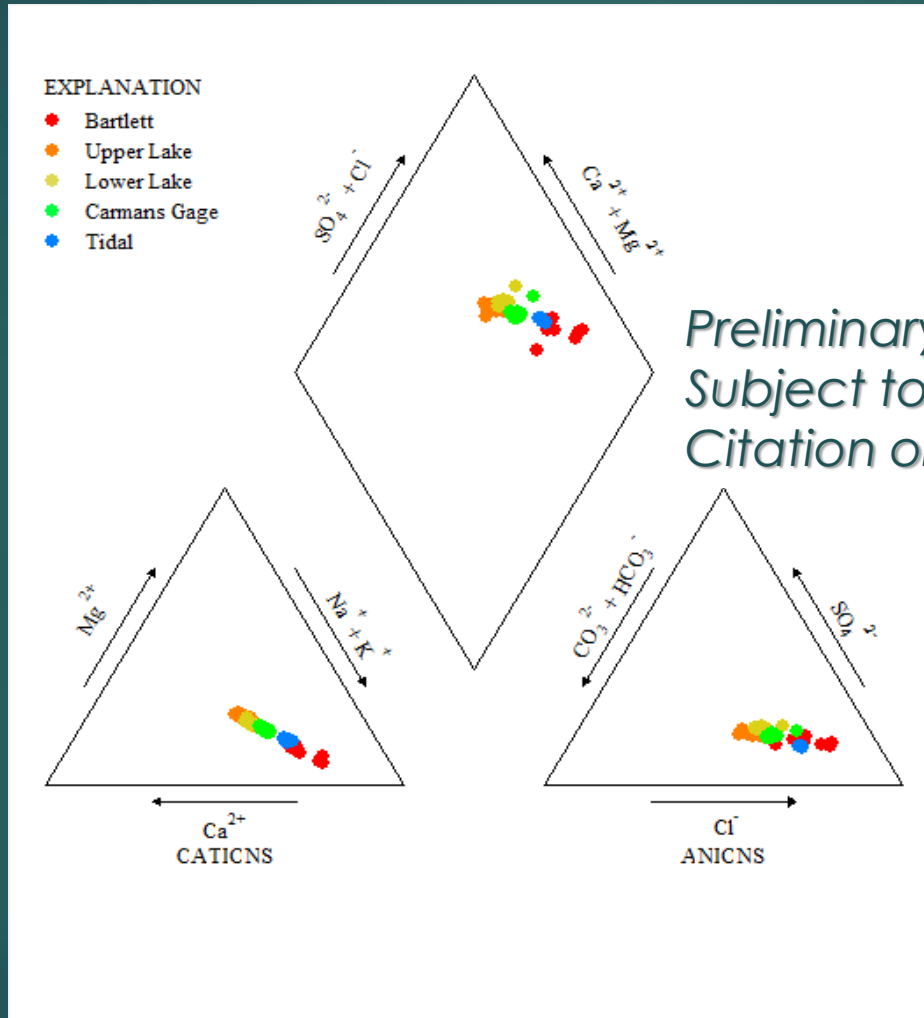
Deep GW

Piper, 1944

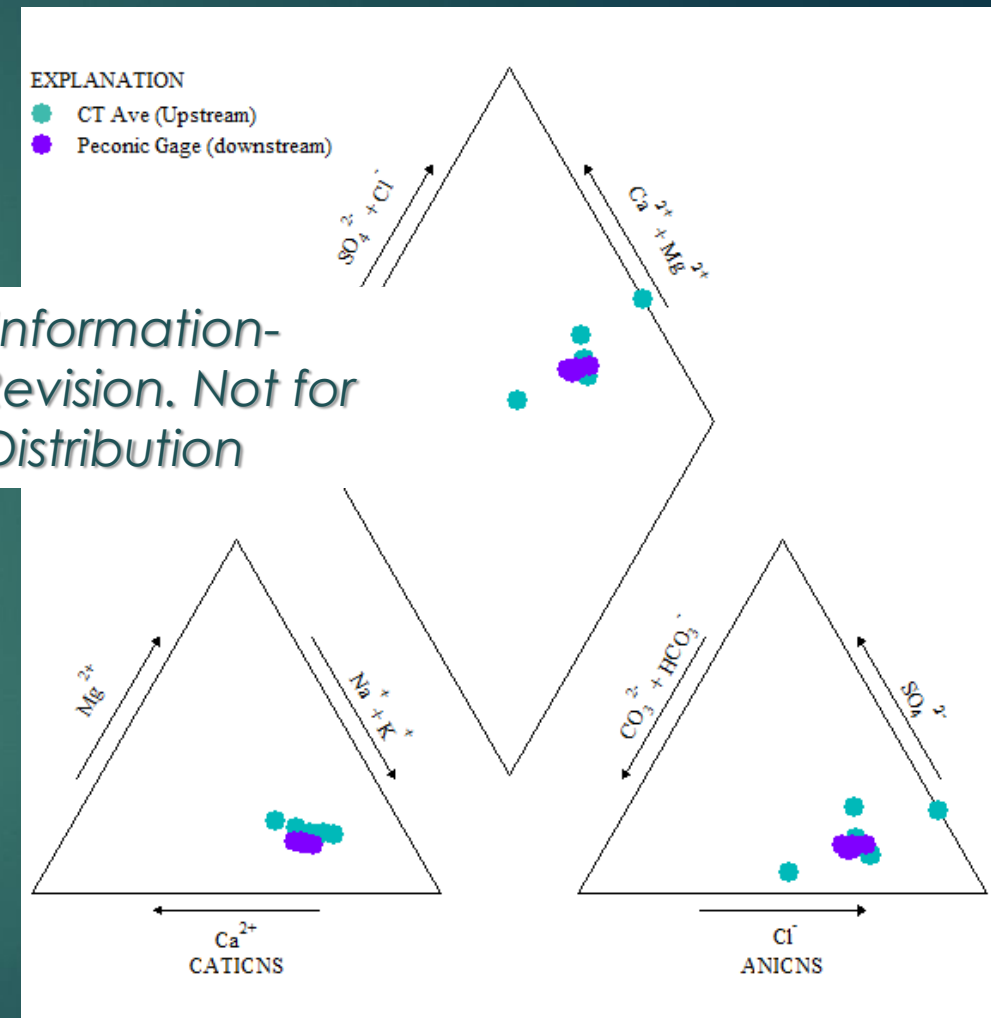
Figures modified from [What is a piper plot \(trilinear diagram\)? – Golden Software Support](#)

Piper Plot – visualizing stream chemistry

- ▶ Sodium Chloride dominant/ Mixed type waters
- ▶ Note changes in ion dominance downstream in the Carmans River



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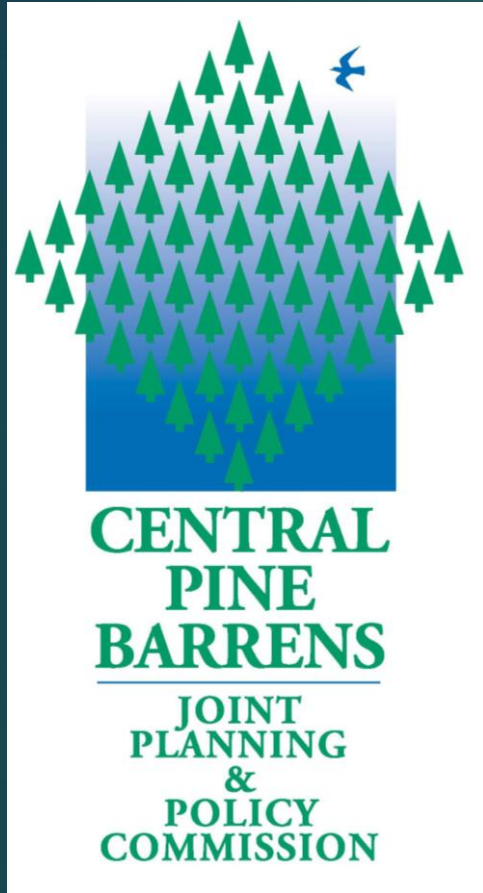
NYSDEC Peconic River *Ludwigia* Control Project

- ▶ *Ludwigia peploides* – creeping water primrose; invasive
- ▶ Pilot project began June 1, 2021 in Brown's Bog, adjacent to DEC Edwards Ave boat launch (Calverton)
- ▶ Application of herbicides Clearcast (imazamox) and ProcellaCOR (florpyrauxifen-benzyl)
- ▶ USGS pesticide monitoring includes analysis for imazamox. No detection for the herbicide in Long Island.
- ▶ Peconic River pesticide sample collection: Nov 2021
- ▶ More information on NYSDEC webpage: [Peconic River Ludwigia Control Project - NYS Dept. of Environmental Conservation](https://www.dec.ny.gov/animals/122333.html) (<https://www.dec.ny.gov/animals/122333.html>)



Photo by Graves Lovell, Alabama Dept of Conservation and Natural Resources, Bugwood.org

Partners





Visit the project page at [USGS.gov/Lipinebarrens](https://www.usgs.gov/lipinebarrens)

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