Updates from the PEP Natural Resources Subcommittee on PEP Habitat Restoration Plan

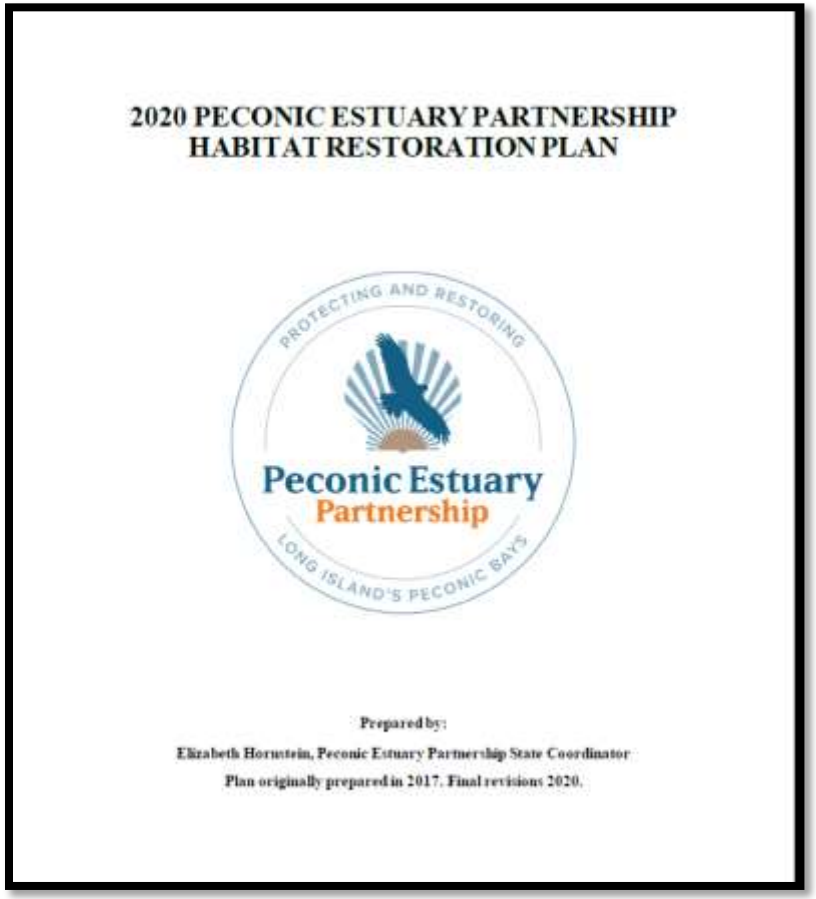
Peconic Estuary Partnership

PROTECTING AND RESTORING LONG ISLAND'S PECONIC BAYS

2020 Habitat Restoration Plan

- 5 new projects added to the plan and 2 projects updated. 46 total projects in the Plan.
  - Under review for official EPA approval
  - Interactive GIS Map of Habitat Restoration Projects to be updated soon

https://www.peconicestuary.org/news-and-events/maps-gis/habitat-restoration/

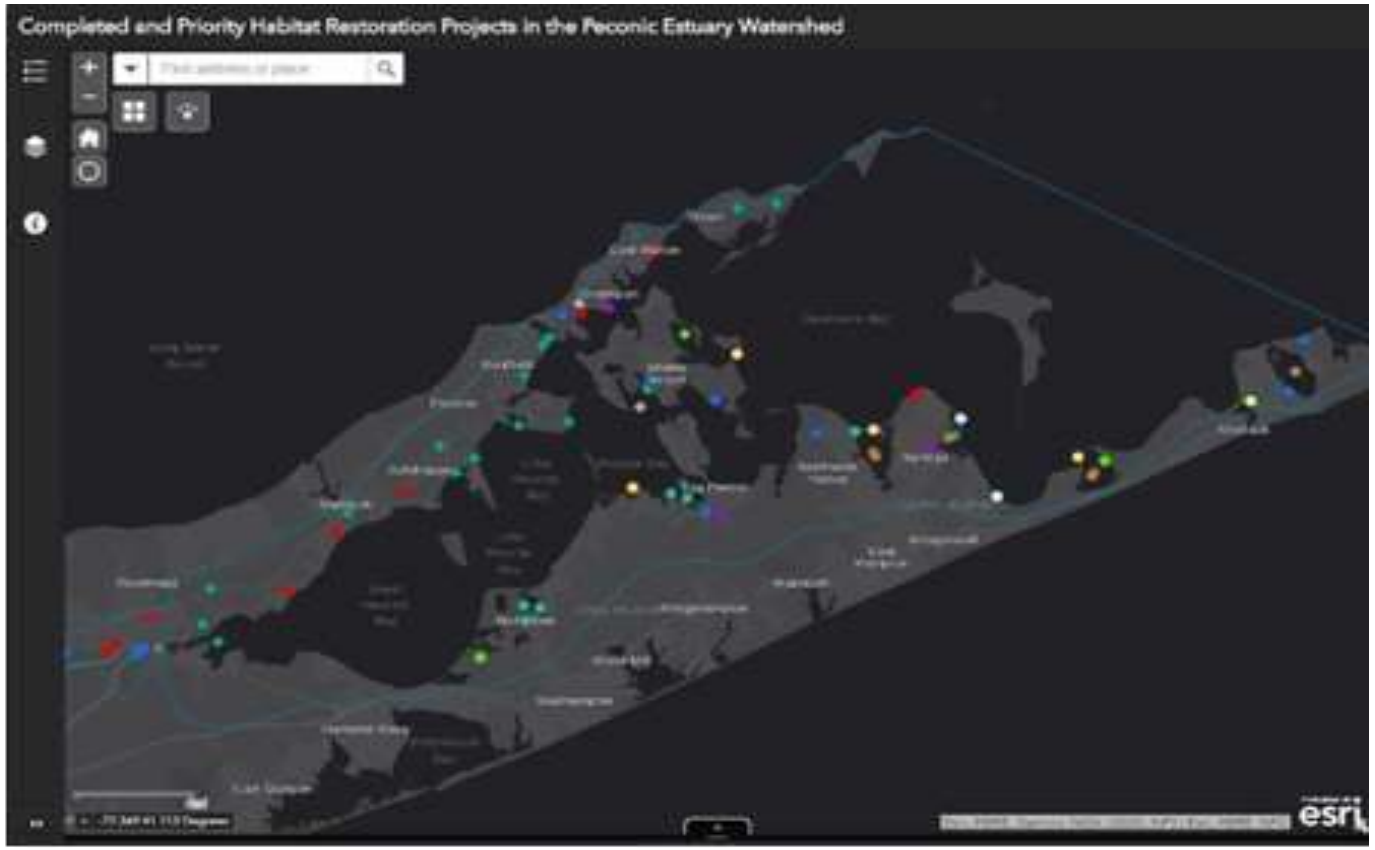

2020 PECONIC ESTUARY PARTNERSHIP
HABITAT RESTORATION PLAN

PROTECTING AND RESTORING
Peconic Estuary
Partnership
LONG ISLAND'S PECONIC BAYS

Prepared by:

Elizabeth Hornstein, Peconic Estuary Partnership State Coordinator

Plan originally prepared in 2017. Final revisions 2020.



Prioritization of PEP Habitat Restoration Projects

- The HRP classifies projects into three tiers:

Tier 1: Priority habitat (wetland, SAV, diadromous fish), good/proven methods, and supported by land owners/stakeholders

Tier 2: Priority habitat, but some concerns with the methods OR additional baseline info is needed OR still need to get support of owners/stakeholders.

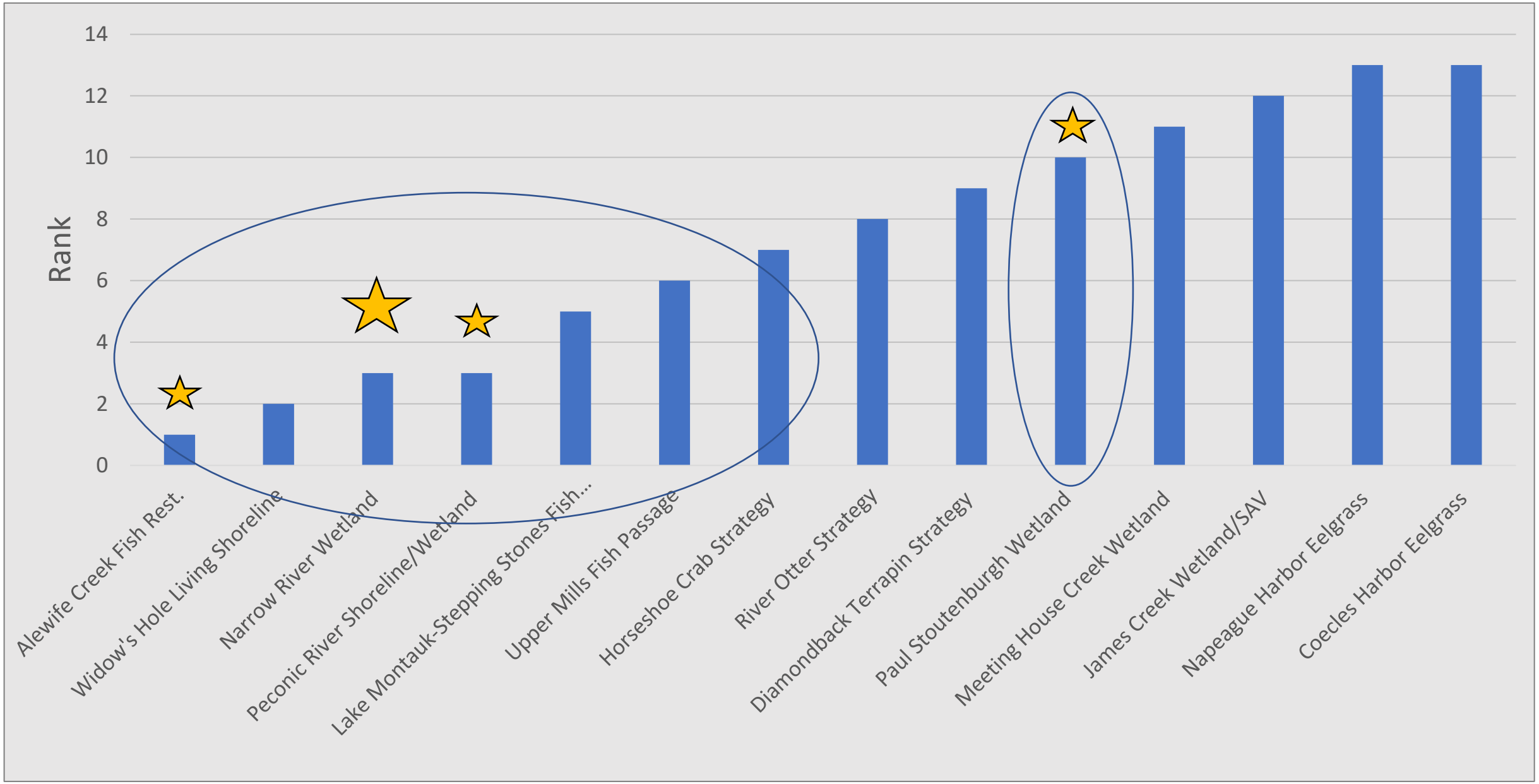
Tier 3: Not a high priority habitat but still aligns with overall habitat restoration goals described in this plan. Phragmites control projects that do not include a wetland restoration component are also included in this tier.

- NRS and TAC members rank Tier 1 and Tier 2 projects to further prioritize them

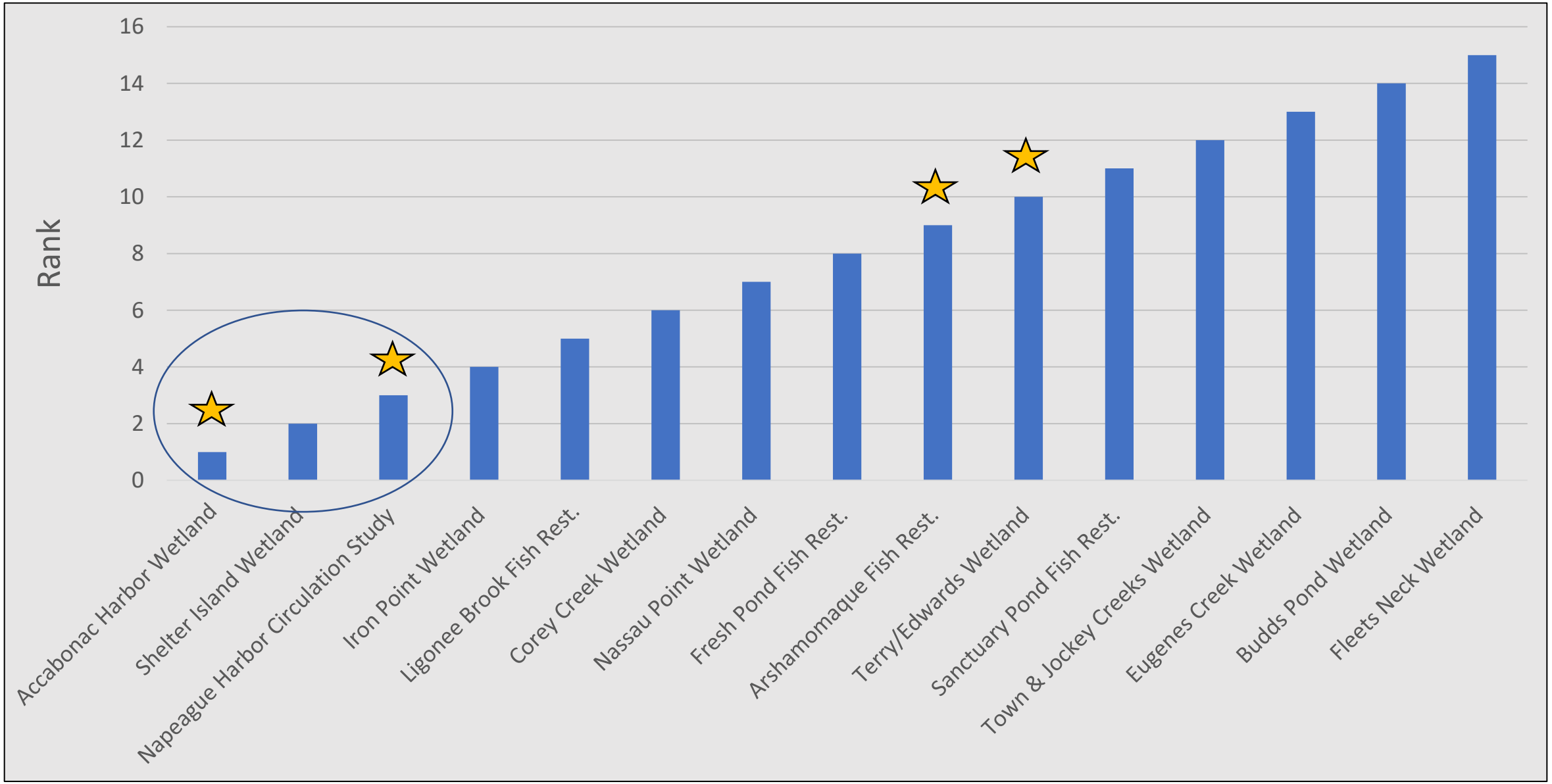
Prioritization of PEP Habitat Restoration Projects
Existing Prioritization Tools & Ecological Criteria

- 2019 Critical Lands Protection Strategy *(wetland/shoreline projects)*
- Salt Marsh Sparrow Prioritization Tool (*wetlands*)
- New USGS Wetland Synthesis Products (*wetlands*)
- TNC Road Stream and Tidal Crossing Prioritization Tool (*fish passage and wetland-tidal exchange)*
- Restoration Size *(all)*
- Eelgrass Bio-optical and Habitat Suitability Model *(seagrass)*

Partner Rankings & Ecological Prioritization : Tier 1 Habitat Projects



Partner Rankings & Ecological Prioritization : Tier 2 Habitat Projects



Next Steps

- The following in-progress project should continue to be prioritized: **Alewife Creek Habitat Enhancement, Narrow River Wetland Restoration, Widow's Hole Living Shoreline Phase II, Peconic River Shoreline/Wetland Restoration, Lake Montauk Alewife Access, Upper Mills Dam Fish Passage Project, and Meetinghouse Creek Wetland Creation/Restoration* (*important for stormwater management)**
- The following projects that have not yet been initiated should be prioritized: **Horseshoe Crab Protection and Restoration Strategy, Paul Stoutenburgh Wetland Restoration, Accabonac Harbor Wetland Restoration, Shelter Island Wetland Restoration and Napeauge Harbor Hydrodynamic Study**
  - Presentation and discussion on horseshoe crabs in March 2021
- PEP will convene a small seagrass work group to determine next steps for seagrass management and protection.

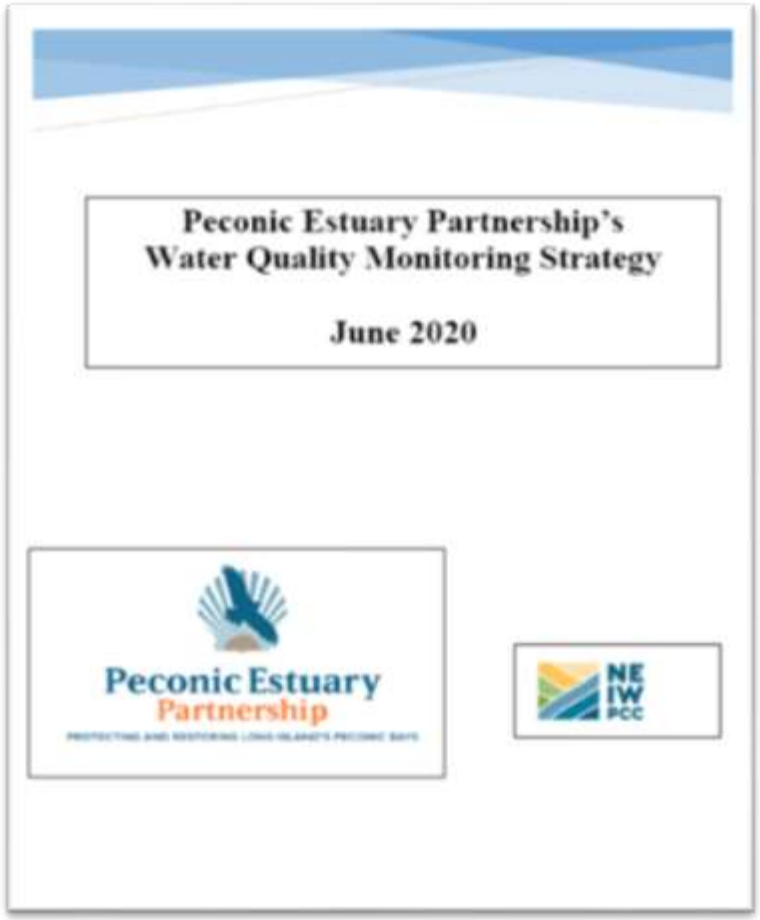
Updates from the Peconic Estuary Water Quality Monitoring Collaborative

Peconic Estuary Partnership

PROTECTING AND RESTORING LONG ISLAND'S PECONIC BAYS

The Peconic Estuary Partnership's Water Quality Monitoring Strategy

https://www.peconicestuary.org/final-pep-water-quality-monitoring-strategy-2020/



Goals for the PE Monitoring Collaborative

Committee will function as a sub-committee of the Technical Advisory Committee (TAC) to help advise the completion of the Next Steps outlined in the Strategy through 2023.

Next Steps, organized by year:
2020

- ✓ The PEP Program Office will facilitate the formation of the Peconic Estuary Monitoring Collaborative, consisting of the Peconic Estuary monitoring partners. The Collaborative will be supported by a Suffolk County water quality analyst beginning in October 2020.

- ✓ The Monitoring Collaborative will initiate work with the New York State Ocean Acidification Task Force to define how to enhance existing monitoring networks to include parameters specific to ocean acidification.

- ✓ The Collaborative and the TAC will evaluate priority statistical issues and finalize and adopt PEP water quality targets for pathogens, water clarity (Secchi depth), and chlorophyll-a and dissolved oxygen concentrations, in time for the 2021 PEP Conference.

- ✓ Interested members of the TAC and other PEP partners will evaluate the use of the Peconic R-based open science package to report annual water quality reports.

Adopted Targets

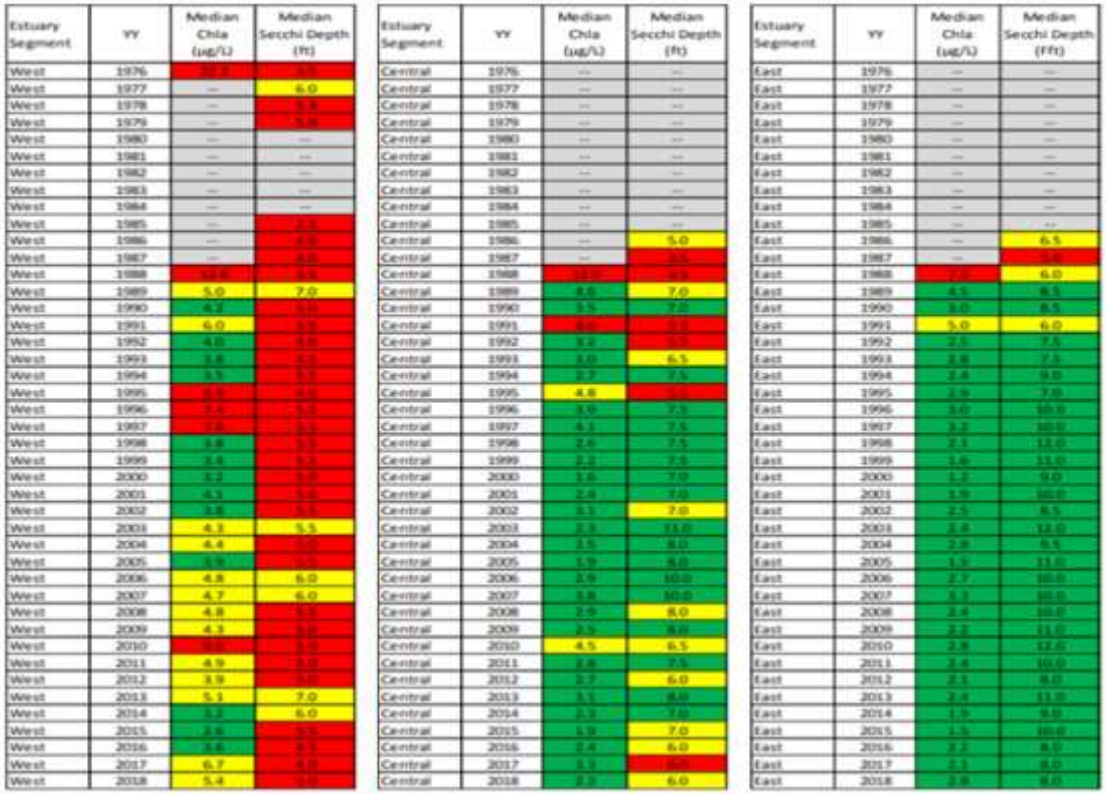
- Targets for water clarity (Secchi disk depth), chlorophyll-a, and dissolved oxygen (DO) as proposed in the Suffolk County Subwatersheds Wastewater Plan (SWP):
  - Median Secchi disk depths should be 2 meters (m) or greater during the April 1 through October 31 growing season
  - Median chlorophyll-a concentrations should be no greater than 5.5 ug/l during the April 1 through October 31 growing season
  - Dissolved oxygen concentrations should comply with New York State's acute (never less than 3 mg/l) and chronic (> 4.8 mg/l as daily average in 90% of samples) dissolved oxygen criteria.
- Enterococcus counts at estuarine/marine swimming beaches should not exceed 104 colony forming units per 100 milliliter water sample (104 cfu/100ml). New Enterococcus standards are currently in review. Once these standards are in place, revise the target to reflect the new standards going forward.

Approved Decisions

- Adopt three estuary segments—west, central and east illustrated in Figure—as the reporting/management units, based on chlorophyll-a concentrations and Secchi depths observed at Suffolk County Department of Health Services monitoring stations in each segment.

Approved Decisions

- Use ‘stoplight graphics’—green = target met; red = target not met—for public-facing documents, collating data by estuary segment. Update annually as soon as monitoring data are available from the previous year. Where possible, also include a yellow (intermediate) category in each stoplight graphic to reflect small-magnitude and/or short-duration failures to meet targets.
- Track and report water temperature, salinity, pH and harmful algal blooms on an annual basis as the adoption of numerical targets are not currently anticipated for these parameters.
- Finalize and adopt PEP water quality targets for pathogens, water clarity (Secchi depth), and chlorophyll-a and dissolved oxygen concentrations in time for the 2021 PEP Conference.



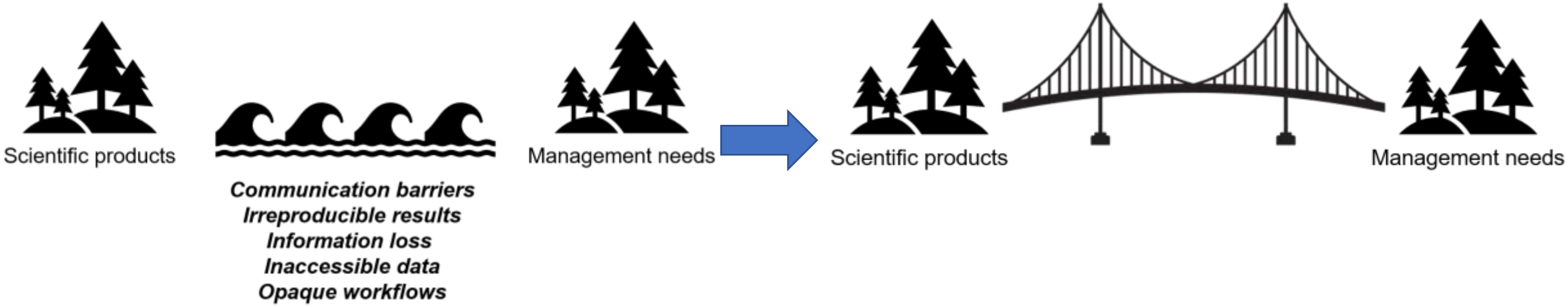
Estuary Segment	YY	Median Chla (ug/L)	Median Secchi Depth (ft)
West	1976	22.8	3.5
West	1977	…	6.0
West	1978	…	3.5
West	1979	…	3.5
West	1980	…	…
West	1981	…	…
West	1982	…	…
West	1983	…	…
West	1984	…	…
West	1985	…	3.5
West	1986	…	4.0
West	1987	…	3.0
West	1988	13.8	3.5
West	1989	5.0	7.0
West	1990	4.2	3.5
West	1991	6.0	3.5
West	1992	4.0	3.5
West	1993	3.8	3.5
West	1994	3.5	3.5
West	1995	4.6	4.0
West	1996	3.4	3.5
West	1997	3.8	3.5
West	1998	3.8	3.5
West	1999	3.4	3.5
West	2000	3.2	3.5
West	2001	3.1	3.5
West	2002	3.8	3.5
West	2003	4.3	5.5
West	2004	4.4	3.5
West	2005	3.9	3.5
West	2006	4.8	6.0
West	2007	4.7	6.0
West	2008	4.8	3.5
West	2009	4.3	3.0
West	2010	9.0	3.5
West	2011	4.9	3.0
West	2012	3.9	3.0
West	2013	5.1	7.0
West	2014	3.2	6.0
West	2015	3.6	3.5
West	2016	3.6	3.5
West	2017	6.7	3.5
West	2018	5.4	3.5

Estuary Segment	YY	Median Chla (ug/L)	Median Secchi Depth (ft)
Central	1976	…	…
Central	1977	…	…
Central	1978	…	…
Central	1979	…	…
Central	1980	…	…
Central	1981	…	…
Central	1982	…	…
Central	1983	…	…
Central	1984	…	…
Central	1985	…	…
Central	1986	…	5.0
Central	1987	…	3.5
Central	1988	3.0	3.5
Central	1989	4.5	7.0
Central	1990	3.5	7.0
Central	1991	4.0	3.5
Central	1992	3.2	3.5
Central	1993	3.0	6.5
Central	1994	2.7	7.5
Central	1995	4.8	3.5
Central	1996	3.9	7.5
Central	1997	4.1	7.5
Central	1998	2.6	7.5
Central	1999	2.2	7.5
Central	2000	1.6	7.0
Central	2001	2.6	7.0
Central	2002	3.1	7.0
Central	2003	2.3	11.0
Central	2004	3.5	8.0
Central	2005	3.9	8.0
Central	2006	2.9	10.0
Central	2007	3.8	10.0
Central	2008	2.9	8.0
Central	2009	2.5	9.0
Central	2010	4.5	6.5
Central	2011	2.8	7.5
Central	2012	2.7	6.0
Central	2013	3.1	8.0
Central	2014	2.3	7.0
Central	2015	3.9	7.0
Central	2016	2.4	6.0
Central	2017	3.1	3.5
Central	2018	2.3	6.0

Estuary Segment	YY	Median Chla (ug/L)	Median Secchi Depth (Ft)
East	1976	…	…
East	1977	…	…
East	1978	…	…
East	1979	…	…
East	1980	…	…
East	1981	…	…
East	1982	…	…
East	1983	…	…
East	1984	…	…
East	1985	…	…
East	1986	…	6.5
East	1987	…	3.5
East	1988	7.0	6.0
East	1989	4.5	8.5
East	1990	3.0	8.5
East	1991	5.0	6.0
East	1992	2.5	7.5
East	1993	2.8	7.5
East	1994	2.4	9.0
East	1995	2.6	7.0
East	1996	3.0	10.0
East	1997	2.2	10.0
East	1998	2.1	12.0
East	1999	1.6	11.0
East	2000	1.2	9.0
East	2001	1.9	10.0
East	2002	2.5	8.5
East	2003	2.4	12.0
East	2004	2.8	8.5
East	2005	1.5	11.0
East	2006	2.7	10.0
East	2007	2.3	10.0
East	2008	2.4	10.0
East	2009	2.2	11.0
East	2010	2.8	12.0
East	2011	2.4	10.0
East	2012	2.1	8.0
East	2013	2.4	11.0
East	2014	1.9	9.0
East	2015	1.5	10.0
East	2016	2.2	8.0
East	2017	2.1	8.0
East	2018	2.8	8.0

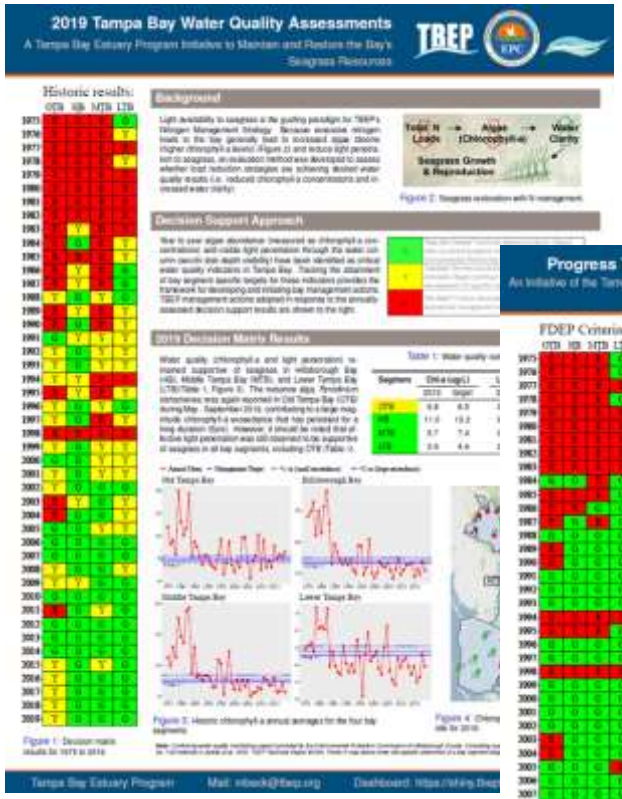
Peconic Estuary Monitoring Collaborative

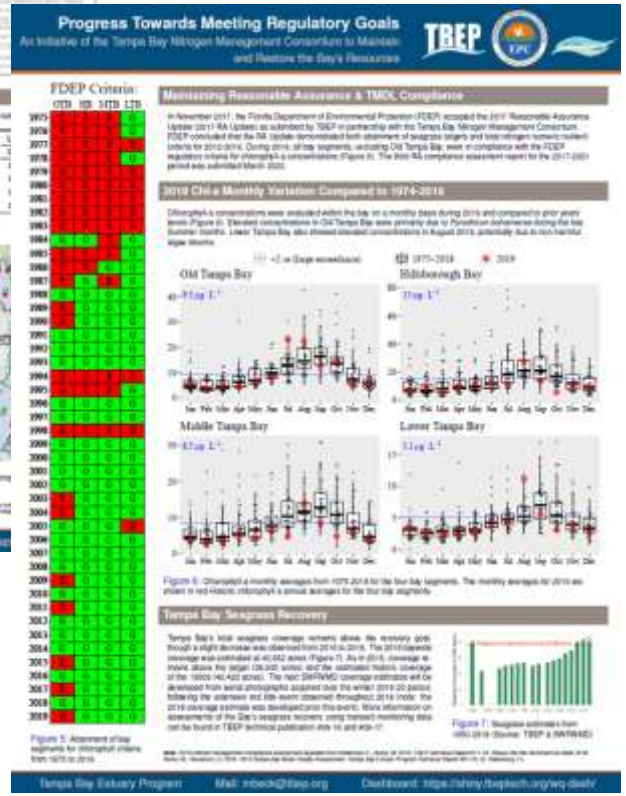
A goal for 2020 is to use open science tools to track and report progress toward water quality goals- bridge the divide between scientific products and management needs.



Courtesy: Marcus Beck (TBEP)

Tech Transfer





TBEPTools R Package → Increase collaboration among NEPs and leverage existing methods and tools → A pepreporting R Package for the Peconic Estuary Partnership

- Import raw data, estimate indicators, and report outcomes.
- Foundational methods for indicator reporting.
- Freely available on GitHub for anyone to view source code, download for use, and make requests for additions.

pepreporting R PACKAGE

pepreporting 0.0.0.9000 | Reference | Articles

Introduction

Installing pepreporting

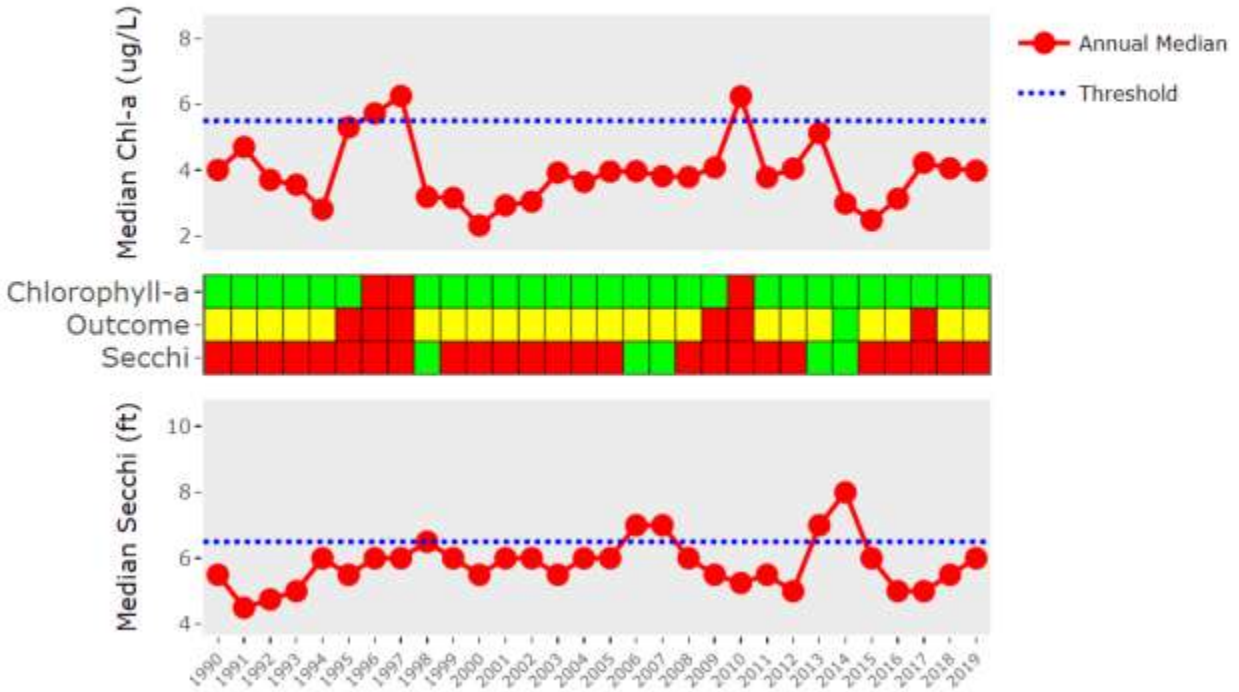
Begin by installing the package from GitHub. The source code is available on the tbep-tech GitHub group web page: https://github.com/tbep-tech/pepreporting.

First, install the devtools package, load devtools, then install and load pepreporting. Note that pepreporting only needs to be installed once, but it needs to be loaded every new R session (i.e., `library(pepreporting)`).

```
install.packages('devtools')
library(devtools)
install_github('tbep-tech/pepreporting')
library(pepreporting)
```

Reporting and Next Steps

```
show_plotlypep(rawdat, bay_segment = 'Western')
```



Chlorophyll outcomes	Light attenuation outcomes			
	0	1	2	3
0	Green	Yellow	Yellow	Yellow
1	Yellow	Yellow	Yellow	Red
2	Yellow	Yellow	Red	Red
3	Yellow	Red	Red	Red

- Graphs and figures from existing water quality data sets.
- Analyze spatial divisions/segments and application of targets in Estuary.
- Develop Stoplight graphic for public-facing documents, update annually.
- Jointly consider chlorophyll-a and water clarity endpoints, duration and magnitude of exceedance.
- Annual water quality reporting.
- Pliable foundation to adjust thresholds, data and reporting methods.

Courtesy: Marcus Beck (TBEP)

Reporting and Next Steps

Track progress towards CCMP goals and inform management efforts for 2020 and beyond.

Next Meeting of the Monitoring Collaborative in January 2021.

```
show_matrixpep(dat, asreact = TRUE, nrows = 8)
```

Year	Western	Central	Eastern
1990	yellow	green	green
1991	yellow	yellow	yellow
1992	yellow	yellow	green
1993	yellow	green	green
1994	yellow	green	green
1995	red	yellow	green
1996	red	green	green
1997	red	green	green

1–8 of 30 rows Previous 1 2 3 4 Next

Year	Western	Central	Eastern
1998	yellow	green	green
1999	yellow	green	green
2000	yellow	green	green
2001	yellow	green	green
2002	yellow	green	green
2003	yellow	green	green
2004	yellow	green	green
2005	yellow	green	green

9–16 of 30 rows Previous 1 2 3 4 Next

```
show_matrixpep(dat, asreact = TRUE, nrows = 8)
```

Year	Western	Central	Eastern
2006	yellow	green	green
2007	yellow	green	green
2008	yellow	green	green
2009	red	green	green
2010	red	yellow	green
2011	yellow	green	green
2012	yellow	yellow	green
2013	yellow	green	green

17–24 of 30 rows Previous 1 2 3 4 Next

Year	Western	Central	Eastern
2014	green	green	green
2015	yellow	green	green
2016	yellow	yellow	green
2017	red	yellow	green
2018	yellow	yellow	green
2019	yellow	green	green

25–30 of 30 rows Previous 1 2 3 4 Next