



Unified Water Study – Monitoring Water Quality in Long Island Sound Embayments

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Save the Sound





Discussion Overview

1. Unified Water Study (UWS)
 - Study Development
 - Boots on the Water
 - Next Steps
2. Questions/Comments



New England Science & Sailing Foundation UWS Sampler



Long Island Sound Report Card



- Significant Overall Water Quality Improvements
- Bays and Harbors Next



Unified Water Study (UWS): Filling in the Gap

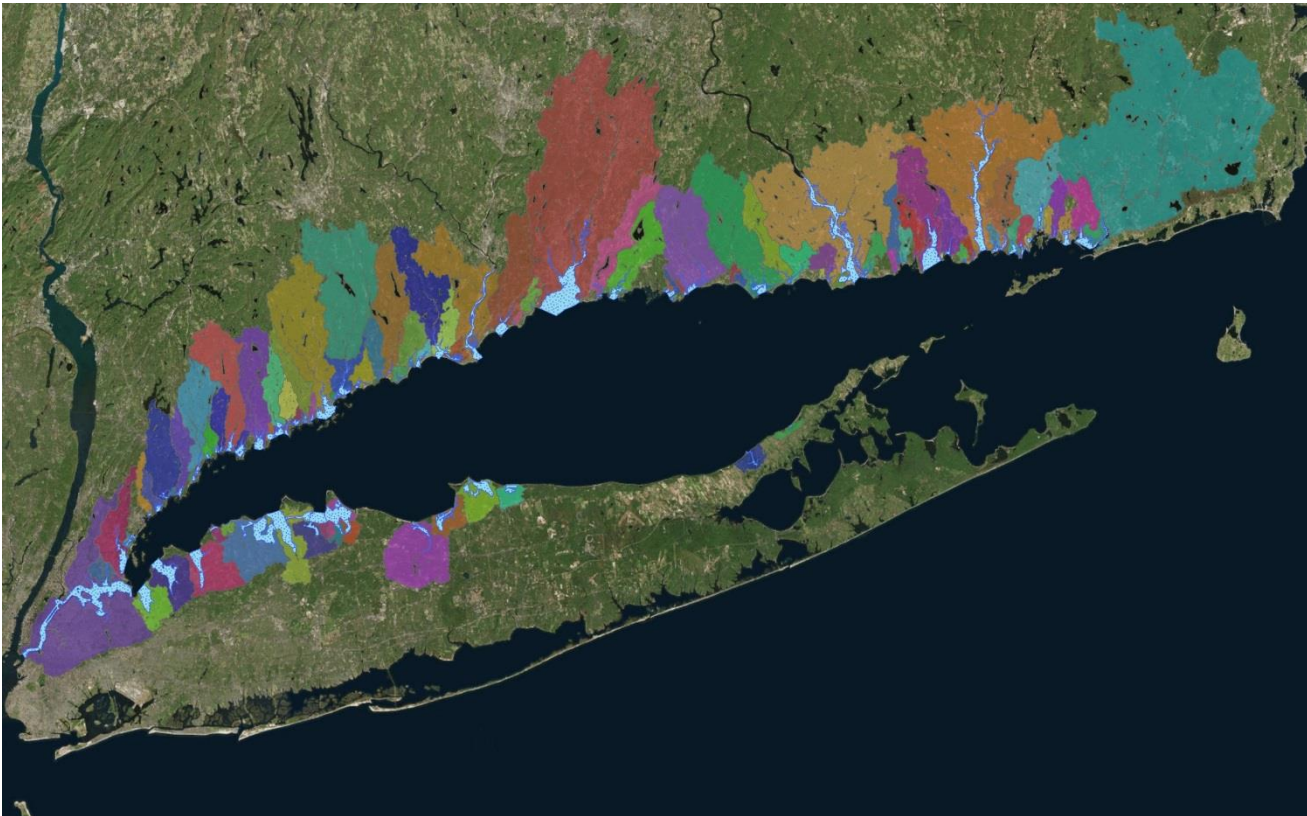
- Ample Water Quality Data Exist for LIS Open Waters
- UWS Fills the Margins





What is the UWS?

- Study Designed to Assess the Ecological Health of Long Island Sound Bays and Harbors
- Achievable for Community Water Monitoring Groups



Source: Save the Sound & Dr. Jamie Vaudrey



UWS Study Design: Parameters and Procedures

Arrive on Parameter and Procedure Consensus with Stakeholders

- Agency Representatives
- Academics
- Community Sampling Groups
- Funders

A Collaborative Process! Numerous Webinars & Meetings





UWS Study Design: Parameters

Tier 1

- Dissolved Oxygen
- Turbidity
- Chlorophyll *a*
- Qualitative Macrophytes
- Temp. & Salinity

Tier 2

- Continuous Dissolved Oxygen
- Quantitative Macrophytes
- Nutrients

6 Month Monitoring Season: May - October





UWS Study Design: Data Quality



UWS Tier I & II Quality Assurance Project Plan (QAPP)

Participating Groups included in EPA-Approved QAPP
Administered by Save the Sound



A Partnership to Restore and Protect the Sound



Long Island Sound Embayments Water Quality Monitoring QAPP

*For monitoring activities conducted in the
Unified Water Study: Long Island Sound Embayment Research.*

Monitoring Organizations

Ash Creek Conservation Association, Bronx River Alliance, Clean up Sound and Harbors (CUSH), Coalition to Save Hempstead Harbor, Connecticut River Conservancy, Cornell Cooperative Extension of Suffolk County Marine Program, Derecktor Shipyards, Friends of the Bay, Friends of the Farm River Estuary, Group for the East End, Earthplace, Inc. (Harbor Watch), NEIWPCC – Interstate Environmental Commission District, New England Science & Sailing Foundation, Salonga Wetland Advocates Network, Save the River – Save the Hills, Inc., Save the Sound – Connecticut Fund for the Environment, Setauket Harbor Task Force, SoundWaters, The Maritime Aquarium at Norwalk, Town of Darien, Town of Fairfield – Conservation Department, Town of Stratford – Conservation Department

Coordinating Organization

Save the Sound – Connecticut Fund for the Environment

Funded By

The United States Environmental Protection Agency – Long Island Sound Study

Version Date (yyyy.mm.dd)

2019.03.08

Date Approved

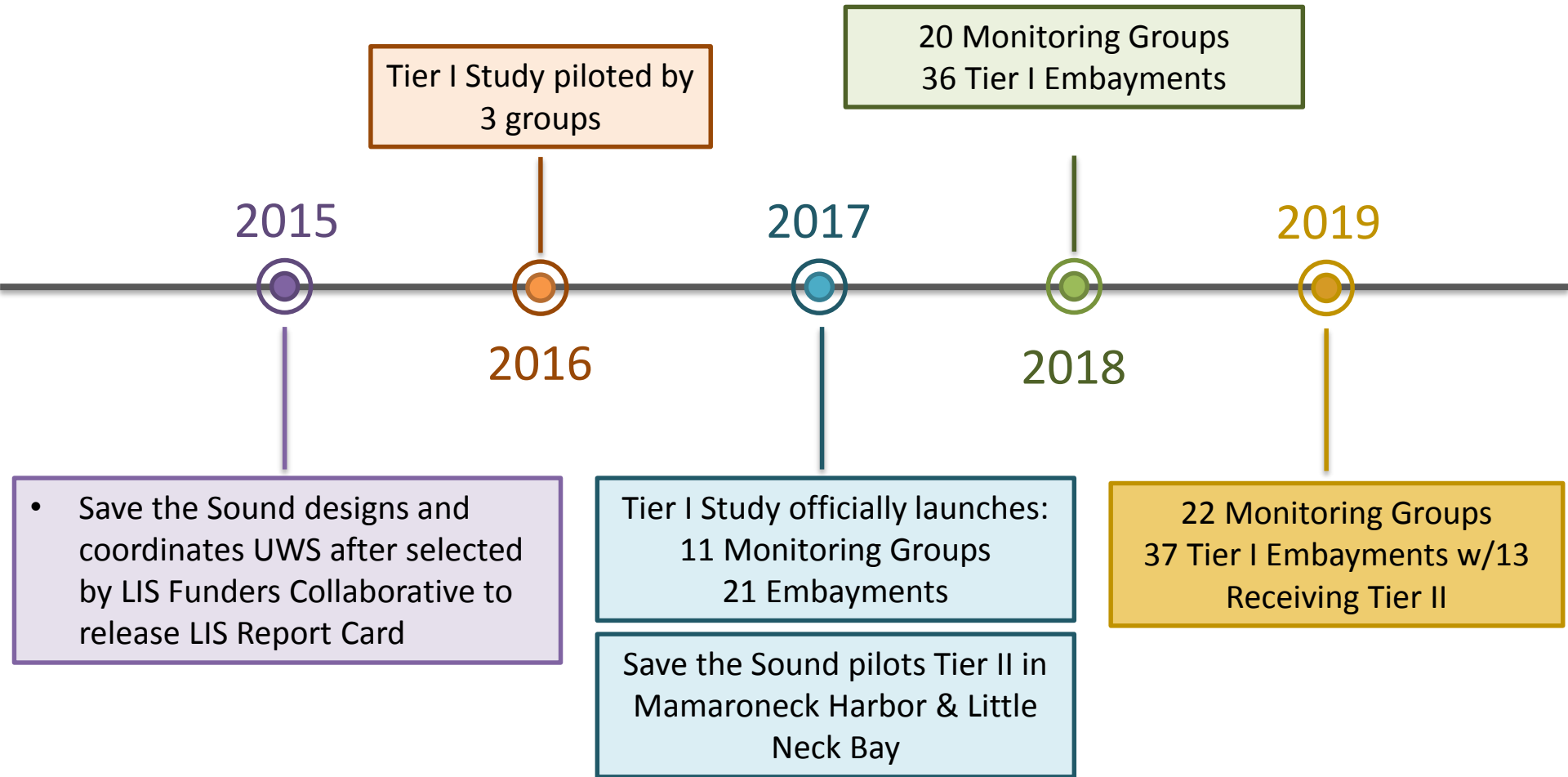
2019.05.02

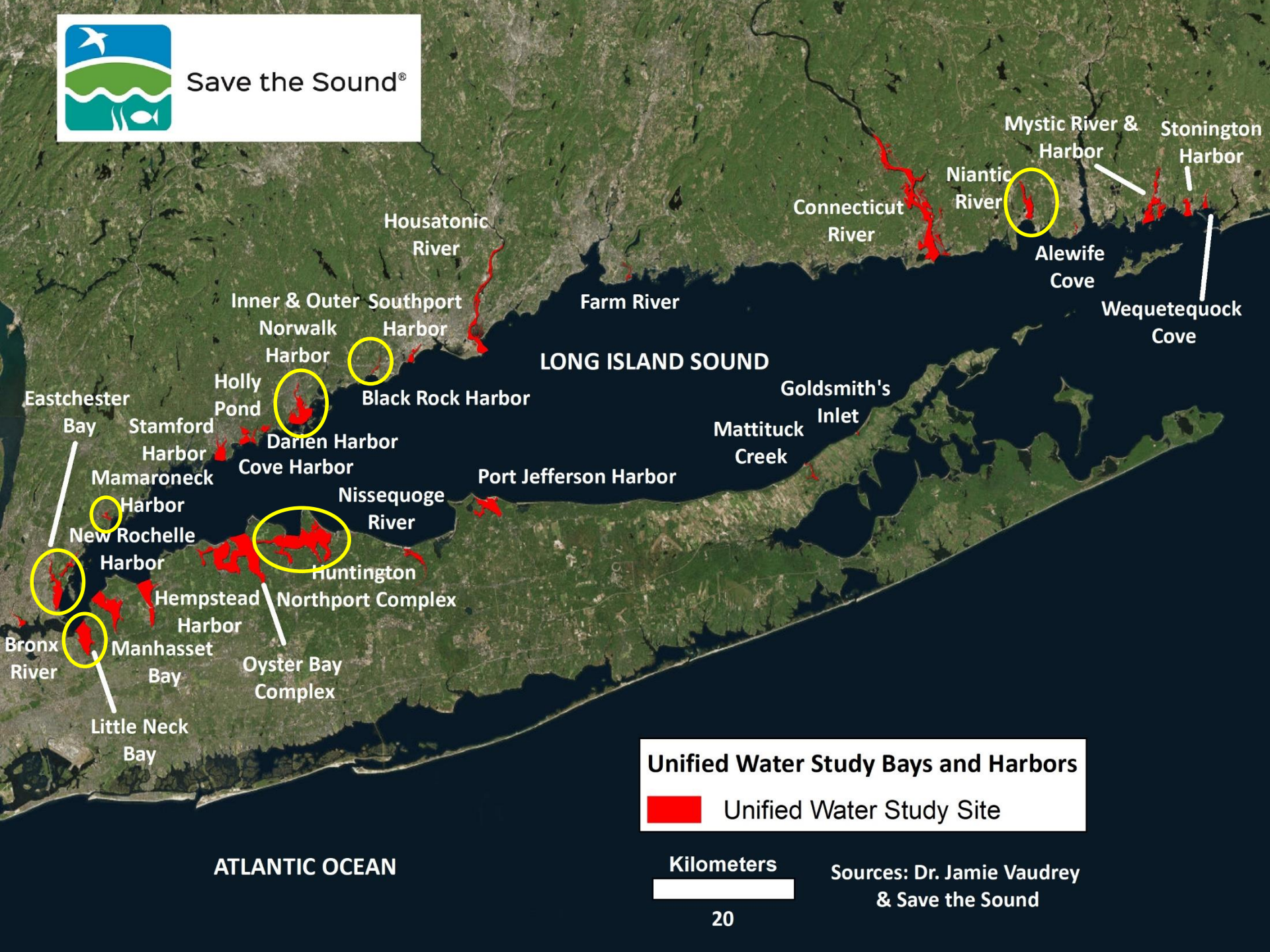
Prior Associated Approved QAPP:

Mamaroneck Harbor and Little Neck Bay, NY, UWS Water Quality Monitoring QAPP
Approved by Kathryn DiSico, Quality Assurance Officer, EPA, Region 2, 8/3/2017
NFWF grant S3526, Connecticut Fund for the Environment, Water Quality Monitoring Initiative for Long Island Sound Embayments (NY), EPA Cooperative Agreement LI-00A00129-0 (FC.R278). Long Island Sound Embayments Water Quality Monitoring QAPP. For monitoring activities conducted as part of the Long Island Sound Tier 1 Unified Water Study (UWS). Approved by Esther Nielson, Quality Assurance Officer, EPA, Region 2, 6/5/2018. National Fish and Wildlife Foundation (NFWF), US EPA recipient via Cooperative Agreement LI 00A00382 (NFWF FC.R334).



UWS Study Design: Growth





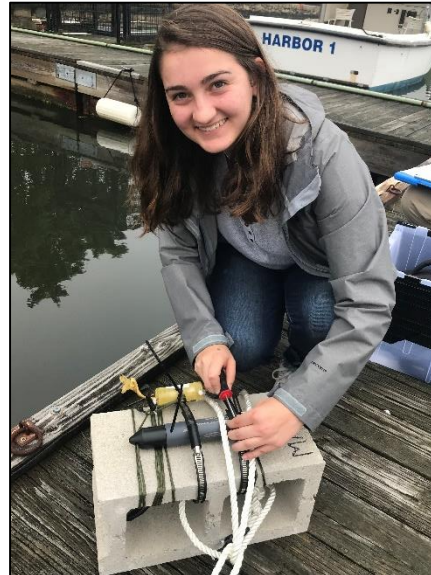


2019 UWS Participating Groups (22)

Organization	Embayment(s)	Organization	Embayment(s)
Ash Creek Conservation Association (CT)	Black Rock Harbor	Interstate Environmental Commission (NY)	Little Neck Bay, Manhasset Bay
Bronx River Alliance (NY)	Bronx River	New England Science & Sailing Foundation (CT)	Stonington Harbor, Alewife Cove
Clean Up Sound & Harbors, Inc. (CT)	Mystic Harbor, Mystic River, Wequetequock Cove	Salonga Wetland Advocates Network Inc. (NY)	Nissequogue River
Coalition to Save Hempstead Harbor (NY)	Hempstead Harbor	Save the River - Save the Hills (CT)	Niantic River
Connecticut River Conservancy (CT)	Connecticut River	Save the Sound (NY)	Eastchester Bay, New Rochelle Harbor, Hunter Island Bay
Cornell Cooperative Extension of Suffolk County Marine Program (NY)	Huntington-Northport Complex	Setauket Harbor Task Force (NY)	Port Jefferson Harbor
Derecktor Shipyards (NY)	Mamaroneck Harbor, NY	SoundWaters (CT)	Stamford Harbor, Holly Pond
Friends of the Bay (NY)	Cold Spring Harbor, Mill Neck Creek, Oyster Bay	The Maritime Aquarium at Norwalk (CT)	Outer Norwalk Harbor
Friends of the Farm River Estuary	Farm River	Town of Darien (CT)	Darien River, Cove Harbor
Group for the East End (NY)	Mattituck Creek, Goldsmiths Inlet	Town of Fairfield - Conservation Department (CT)	Mill River (Southport Harbor)
Harbor Watch - Earthplace, Inc. (CT)	Inner Norwalk Harbor	Town of Stratford - Conservation Department (CT)	Housatonic River



UWS Execution





UWS Execution: Achievability

Tier I DO Time Criteria is within 3 Hours of Sunrise

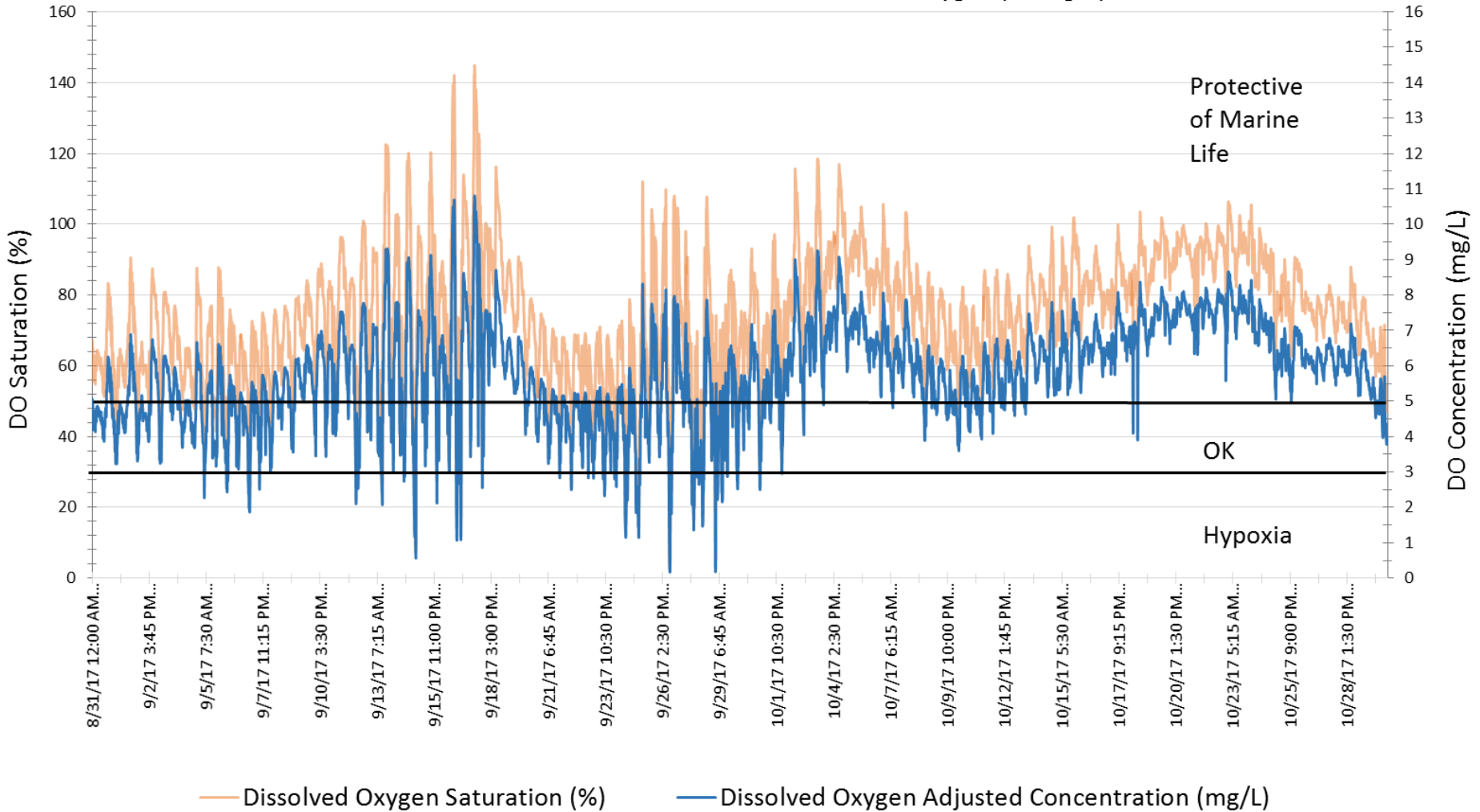
No, we are not Trying to Impede on Anyone's Beauty Rest!





UWS Execution: Achievability

Mamaroneck Harbor Continuous Dissolved Oxygen (% , mg/L)





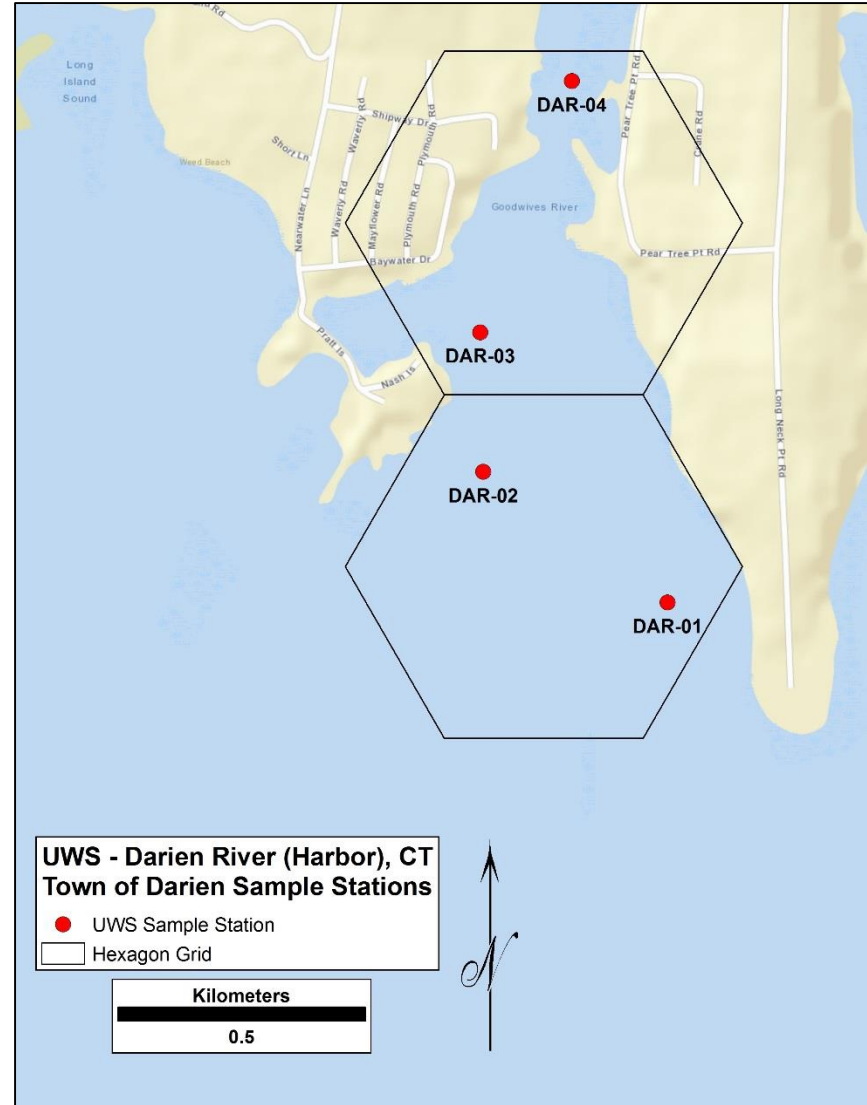
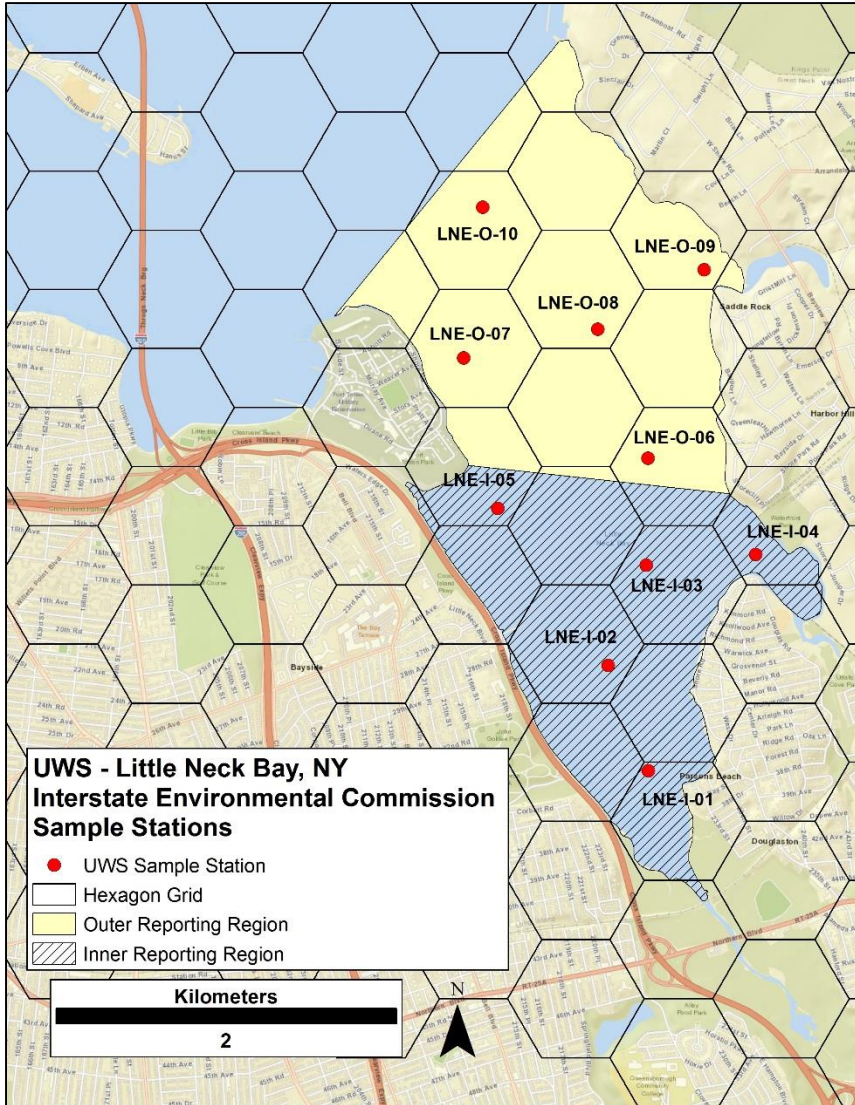
UWS Execution: Tier I Achievability

MAY							JUNE						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7	29	30	31	1	2	3	4
8	9	10	11	12	13	14	5	6	7	8	9	10	11
15	16	17	18	19	20	21	12	13	14	15	16	17	18
22	23	24	25	26	27	28	19	20	21	22	23	24	25
29	30	31	1	2	3	4	26	27	28	29	30	1	2
5	6	7	8	9	10	11	3	4	5	6	7	8	9
JULY							AUGUST						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
26	27	28	29	30	1	2	31	1	2	3	4	5	6
3	4	5	6	7	8	9	7	8	9	10	11	12	13
10	11	12	13	14	15	16	14	15	16	17	18	19	20
17	18	19	20	21	22	23	21	22	23	24	25	26	27
24	25	26	27	28	29	30	28	29	30	31	1	2	3
31	1	2	3	4	5	6	4	5	6	7	8	9	10
SEPTEMBER							OCTOBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
28	29	30	31	1	2	3	25	26	27	28	29	30	1
4	5	6	7	8	9	10	2	3	4	5	6	7	8
11	12	13	14	15	16	17	9	10	11	12	13	14	15
18	19	20	21	22	23	24	16	17	18	19	20	21	22
25	26	27	28	29	30	1	23	24	25	26	27	28	29
2	3	4	5	6	7	8	30	31	1	2	3	4	5



UWS Execution: Station Selection

Station Selection with UWS Team

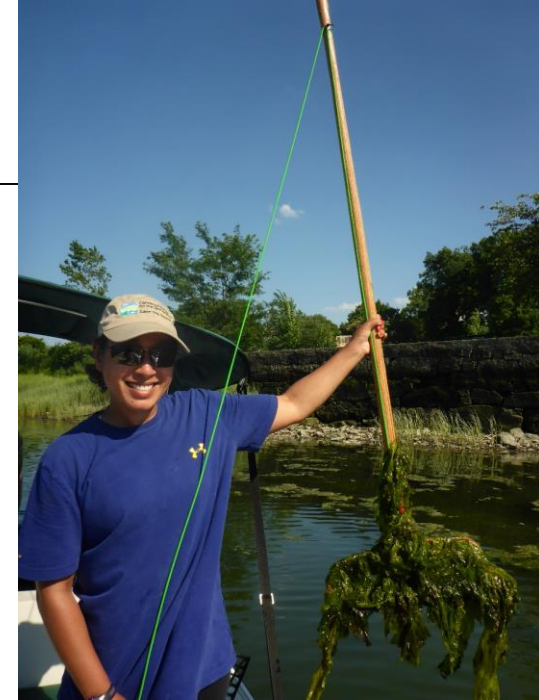




UWS Execution: Training

Annual Field and Procedures Training

- 5 Trainings held in 2019
 - Field Audits during First Two Months of Season
- Mandatory, Ensures QAPP Compliance (and Good Rake Toss Form!)





UWS Execution: Training

UWS Equipment Loan Program

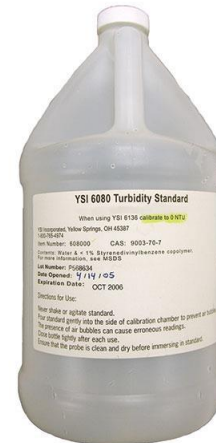
- Equipment & Supplies
- Lowers Study Expenses
- Eases Group Entry Process
- Enhances Data Comparability



<http://www.geoscientific.com/dataloggers/manta2-sensors.jpg>



<https://assets.fishersci.com/TFS-Assets/CCG/product-images/F1763-01~p.eps-650.jpg>



[https://www.ysi.com/ProductImages/23186652-7e2e-4cce-ac52-5d7a7913cdd8/images/YSI-6080-Turbidity-Standard-600x600\(2\).jpg](https://www.ysi.com/ProductImages/23186652-7e2e-4cce-ac52-5d7a7913cdd8/images/YSI-6080-Turbidity-Standard-600x600(2).jpg)



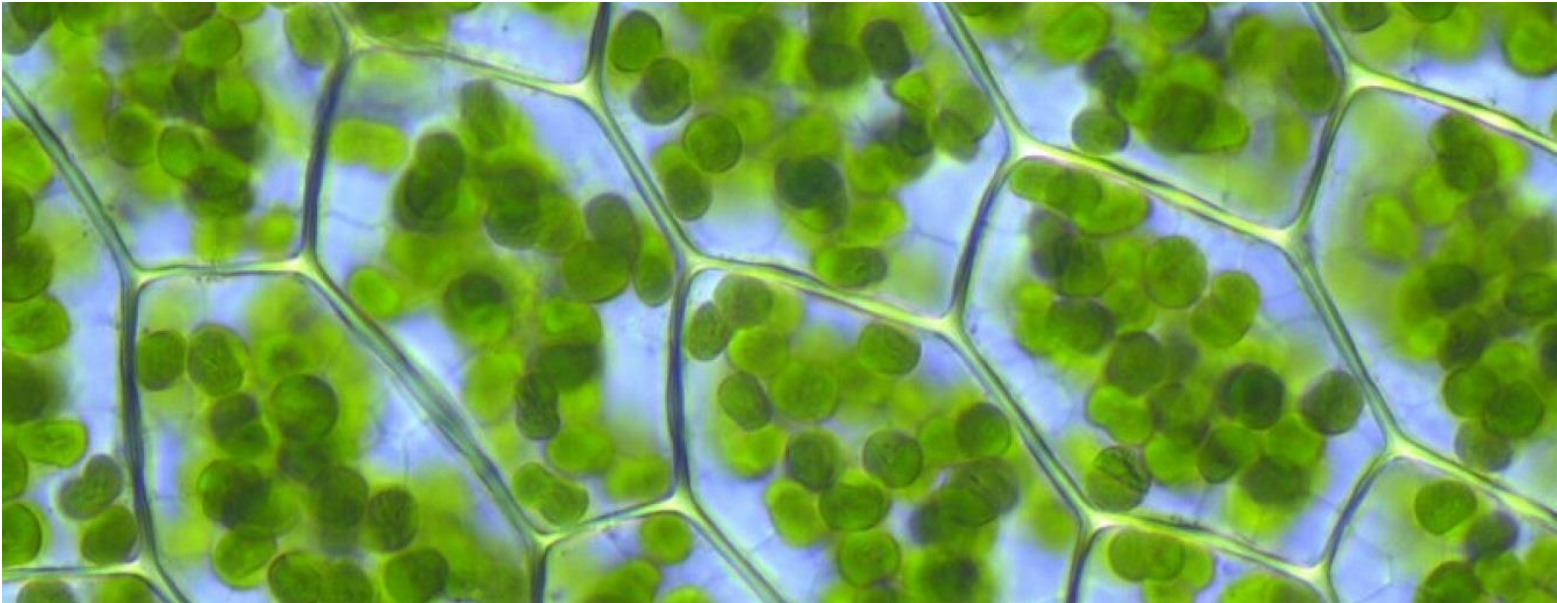
<https://www.masterflex.com/i/masterflex-e-s-portable-sampler-115-vac/0757100>



UWS Execution: Project Laboratory

UWS Tier I & II Lab Analyses

- 2019 Project Laboratory: Interstate Environmental Commission
- Eases Group Entry Process
- Lowers Study Expenses
- Strengthened Data Comparisons and NY Management Applications





UWS Execution: Data Management

UWS Data Entry Template

- Uniform Data Entry Template
- Consistent and Streamlined Data Retrieval

The screenshot displays a web interface titled "Dataset Details". At the top, there are three buttons: "Return", "Delete", and "Export & Submit to CDX". Below the buttons, the "Dataset Information:" section lists the following details:

- Type: Results & Activities
- Import Configuration: [WQX Web NEW Template REGULAR Results w/o Data Logger Line \(Template\)](#)
- Organization ID: CFE-STIS
- Status: Completed at CDX

To the right of the information, a green notification banner with a checkmark icon reads "Submission to CDX Successful!". Below the banner, a message states: "The final step in this process has completed and the WQX database has been updated. It may take up to four days for this data to be published and become available from the STORET Data Warehouse." At the bottom left, there is a section for "Export Event" with a timestamp: "01-01-2010-02-28-2011".

22,744 rows of data imported!!

EPA Water Quality Portal

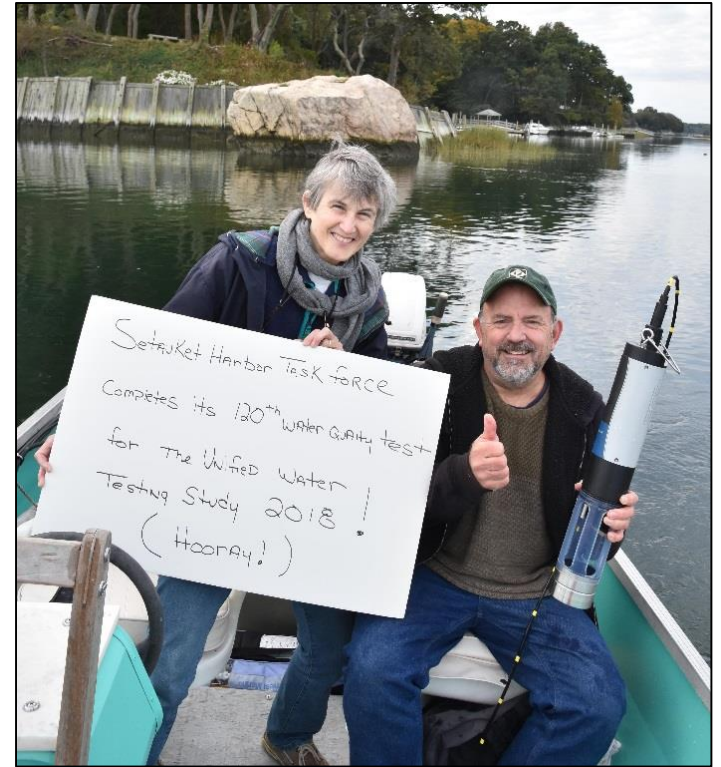
Also on CFE/STS Website:

<https://www.ctenvironment.org/unified-water-study>



UWS Next Steps: Putting Data Into Action

- Support EPA Nitrogen Strategy, NYSDEC LINAP, CTDEEP IWRM
 - Inclusion in a “roadmap” to prioritize restoration actions
- 2020 Report Card with grades to inform and engage the public
- Public Workshops to support local groups and government in taking action
- Expand and continue monitoring!





Thank you! Questions/Comments?
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