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Great South Bay, Long Island, New York Summer Water Quality Monitoring Program

CERCOM, Molloy University

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Center for Environmental Research and Coastal Oceans Monitoring

(CERCOM)

Molloy College

Great South Bay, Long Island, New York

Summer Water Quality Monitoring Program

2019

FINAL REPORT

Director; **Dr. John T. Tanacredi**

Scientific Research Technical Assistant; **Mr. Kyle F. Maurelli**

Administrative Coordinator; **Ms. Regina Gorney**

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2019

Student Intern

Participation:

Drew O'Connor	Earth & Environmental Studies	Molloy College
Thomas Nadraus	Biology	Molloy College
Brian Ford	Biology	Molloy College
Ryan Mehryari	Biology	Molloy College
Daman Kaur	Nursing	Molloy College
Nick Buscemi	Earth & Environmental Studies/ Philosophy	Boston University
Desmond Smith	Earth & Environmental Studies	Molloy College
Erin Tudryn	Earth & Environmental Studies/ ART	Molloy College
Caroline Kane	Earth & Environmental Studies	Molloy College
Mark Maurelli	Biomedical Engineering	Stevens Institute for Technology

The Center for Environmental Research and Coastal Oceans Monitoring (CERCOM) visits 11 locations in the Great South Bay from Memorial Day – Labor Day to monitor for dissolved oxygen (DO), pH, salinity, clarity and temperature. Students are trained and assist in CERCOM's water quality data collection by research assistant Mr. Kyle Maurelli. This monitoring program has been conducted for the past 16 years. These parameters are critical in determining long term water quality conditions in Long Island estuaries.

Water Quality Parameter Methodologies

Salinity, Dissolved Oxygen, Temperature Methodology

YSI Pro 2030 Professional Series; Probe

Clarity Methodology

8 inch Secchi Disk

pH Methodology

Orion Star model A121 pH Meter with low maintenance pH probe

Depth Methodology

Recorded from vessel's navigation GPS automatic system

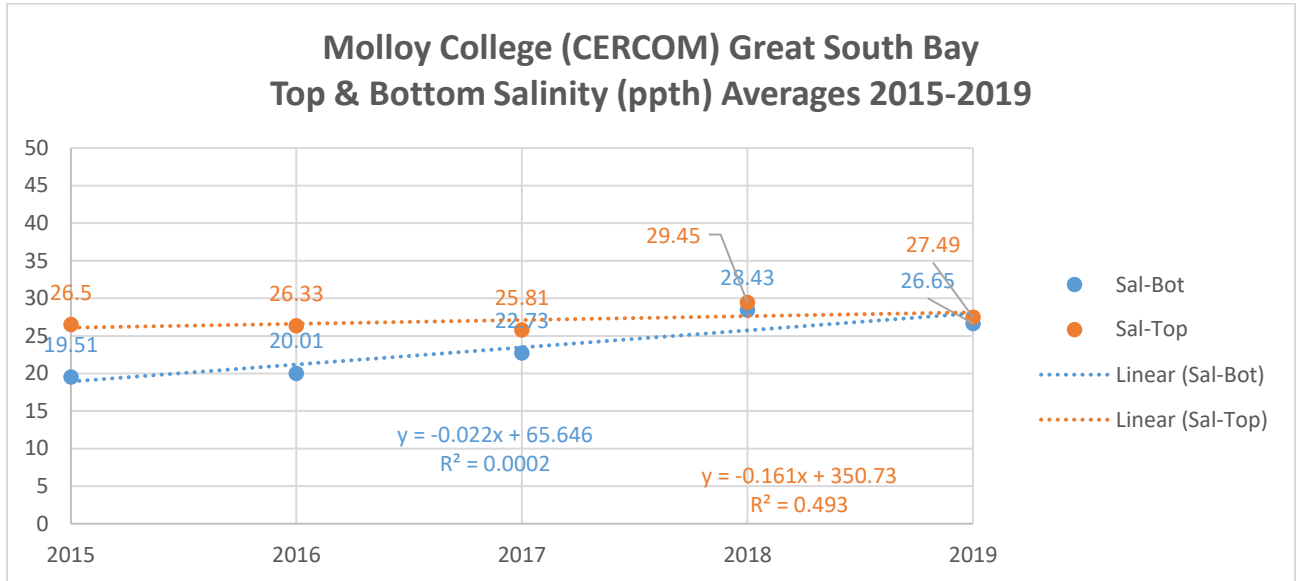
Figure 1.
2019
WQ Averages:

2019

Parameter/Site	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis Park	Watch Hill	Patchogue Bay	Nicoll Bay	Yearly Average
Depth (ft)	16.5	13.8	18.6	8.8	10.8	9.8	7.6	11.4	7.8	8.6	10	11.3
Clarity (in)	6.5	5	5	4.4	5	5.4	4.4	4	4.1	4	5	4.8
Sal-Bot (ppt)	25.78	27.79	27.33	27.34	27.12	27.08	25.16	26.90	26.46	25.64	26.57	26.65
Sal-Top (ppt)	28.57	28.42	28.15	27.40	26.69	27.07	27.13	27.03	26.69	29.19	26.02	27.49
Temp-Bot (oC)	22.81	22.93	23.10	23.18	23.34	23.08	23.34	22.80	23.40	23.74	23.63	23.21
Temp-Top (oC)	23.16	23.44	23.46	23.74	23.63	23.51	22.25	23.49	20.63	23.88	22.23	23.04
pH	7.93	7.74	7.71	7.91	7.83	7.27	8.11	7.42	7.78	7.84	8.05	7.78
DO-Bot (mg/L)	6.50	6.21	5.91	6.68	6.13	5.66	5.64	5.70	6.16	5.72	6.19	6.05
DO-Top (mg/L)	6.72	6.45	6.48	6.65	6.56	5.41	6.64	6.54	6.70	6.80	6.99	6.54

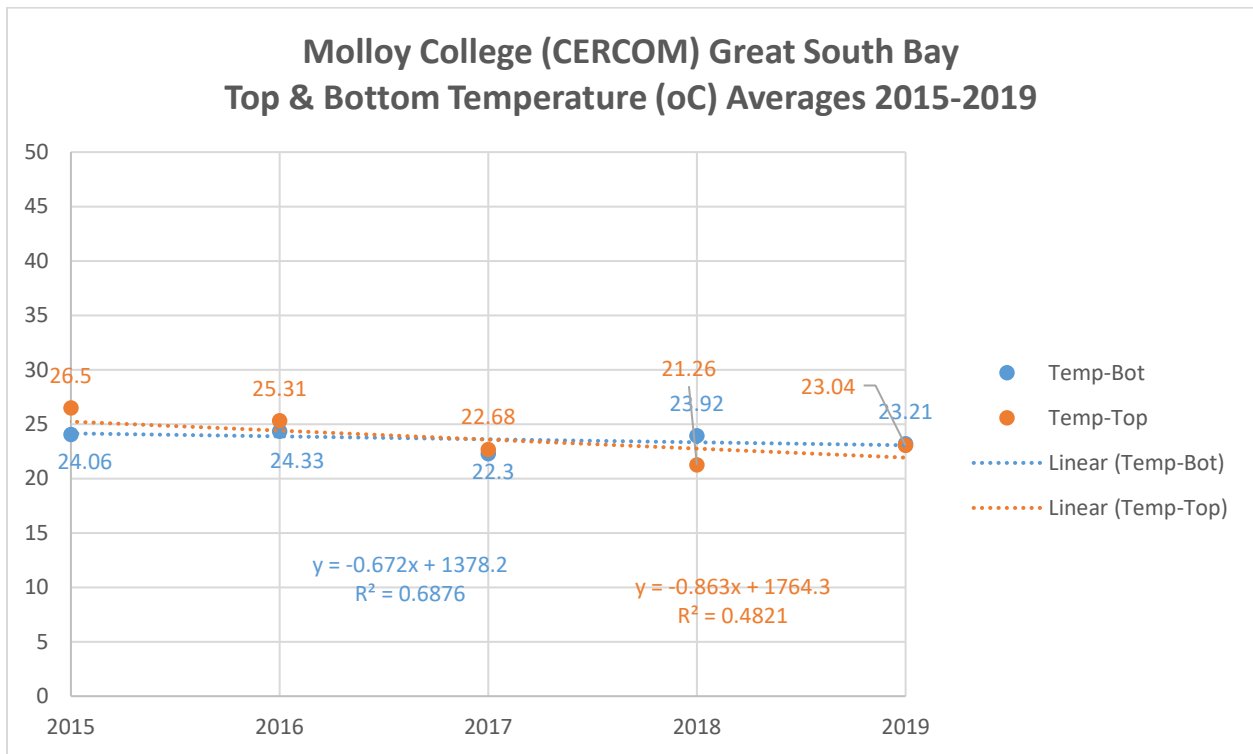
*All raw data is available upon request, held in reserve at CERCOM.

Figure 2. 5 year trend of the Great South Bay top and bottom salinity values:



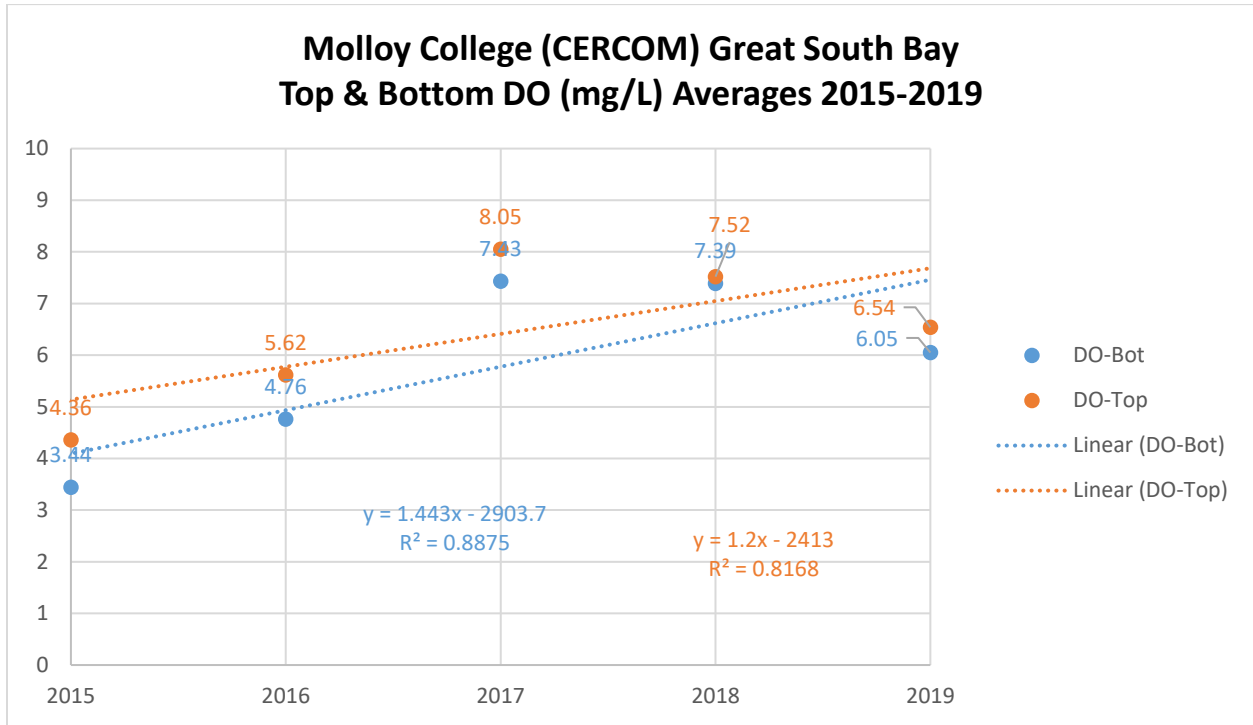
*All raw data is available upon request, held in reserve at CERCOM.

Figure 3. 5 year trend of the Great South Bay top and bottom temperature values:



*All raw data is available upon request, held in reserve at CERCOM.

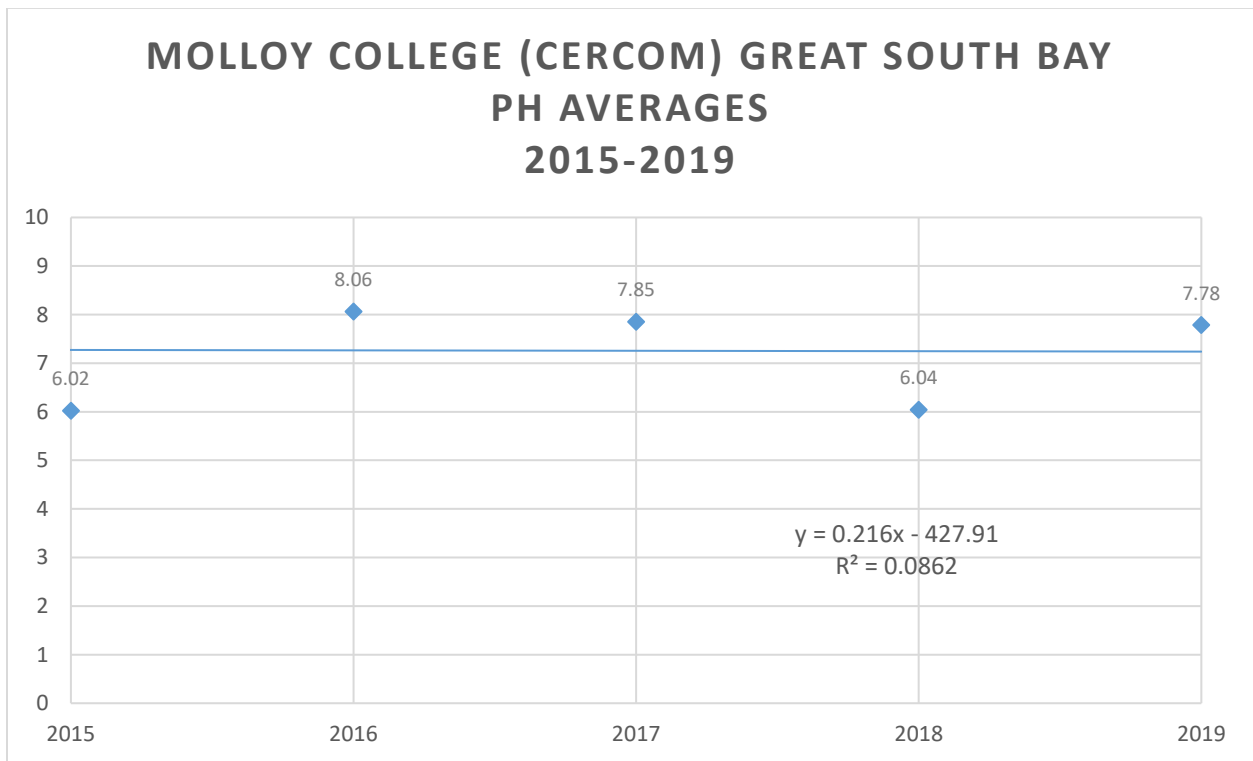
Figure 4. 5 year trend of the Great South Bay top and bottom Dissolved Oxygen values:



*All raw data is available upon request, held in reserve at CERCOM.

Ocean Acidification monitoring; Great South Bay 2019
pH (Potential Hydrogen)

Figure 5. 5 year trend of the Great South Bay pH values:



*All raw data is available upon request, held in reserve at CERCOM.

2004										
Site/ Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average
Depth (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Clarity (in)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sal-Bot (ppth)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sal-Top (ppth)	25.9	27.7	25.6	25.9	25.6	24.5	24.7	24.1	24.5	25.4
Temp-Bot (oC)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temp-Top (oC)	25.3	23.3	23.0	23.7	23.2	23.2	22.8	22.7	22.6	23.3
pH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DO-Bot (mg/L)	10.64	6.42	5.7	7.42	7.22	5.61	7.71	7.08	7.1	7.2
DO-Top (mg/L)	10.64	6.59	6.1	7.1	7.15	5.56	8.03	7.3	7.2	7.3
Total Nitrates mg/L	.05	.15	.25	.25	.15	.25	.75	.25	.14	.25
2005										
Site/ Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average
Depth (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Clarity (in)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sal-Bot (ppth)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sal-Top (ppth)	28.21	27.80	26.01	26.06	25.81	25.27	25.67	25.31	25.06	26.1
Temp-Bot (oC)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temp-Top (oC)	24.67	25.07	24.96	25.43	25.24	25.30	24.94	25.34	25.07	25.1
pH	7.42	7.40	7.24	7.48	7.41	7.15	7.34	7.23	7.33	7.33
DO-Bot (mg/L)	7.20	7.02	5.49	6.90	6.95	4.29	6.65	5.54	6.38	6.27
DO-Top (mg/L)	7.30	7.20	5.67	7.08	7.04	4.45	6.63	5.61	6.43	6.38
2006										
Site/ Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average
Depth (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Clarity (in)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sal-Bot (ppth)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sal-Top (ppth)	27.33	27.09	25.66	24.77	24.87	24.04	24.17	23.67	23.69	25.03
Temp-Bot (oC)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temp-Top (oC)	25.47	25.49	24.70	25.54	25.59	25.49	25.29	25.36	25.39	25.37
pH	8.16	8.12	8.12	8.22	8.23	7.97	8.17	8.06	8.02	8.12
DO-Bot (mg/L)	7.00	6.96	6.20	7.16	6.88	4.90	6.82	5.38	6.80	6.50
DO-Top (mg/L)	7.06	7.08	6.10	7.32	7.34	5.14	7.04	5.90	6.97	6.70
2007										

Sal-Top (ppth)	29.30	28.90	27.60	27.20	27.10	26.60	26.70	26.30	26.30	27.33	
Temp-Bot (oC)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Temp-Top (oC)	25.10	25.50	25.50	25.80	25.80	25.40	26.10	25.40	25.90	25.61	
pH	8.10	8.07	8.10	8.19	8.18	8.00	8.07	7.92	8.19	8.09	
DO-Bot (mg/L)	6.80	6.00	5.20	7.30	7.00	4.90	6.00	4.00	7.20	6.04	
DO-Top (mg/L)	6.90	6.70	6.0	7.30	7.20	5.30	7.20	6.10	7.10	6.64	
2011											
Site/Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average	
Depth (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Clarity (in)	86	67	58	84	93	54	72	72	77	73.70	
Sal-Bot (ppth)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Sal-Top (ppth)	27.30	27.00	26.20	25.80	25.60	25.00	25.30	24.70	24.70	25.73	
Temp-Bot (oC)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Temp-Top (oC)	24.20	24.80	24.80	25.00	25.00	25.00	25.20	25.00	25.10	24.90	
pH	7.81	7.85	7.92	7.98	7.76	7.57	7.72	7.60	7.67	7.76	
DO-Bot (mg/L)	8.30	6.30	4.50	7.70	7.30	4.60	6.40	3.50	7.60	6.24	
DO-Top (mg/L)	7.10	7.20	5.80	7.70	7.70	5.20	7.40	6.30	7.70	6.90	
2012											
Site/Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average	
Depth (ft)	14.70	6.70	8.20	8.00	11.50	10.10	9.10	9.90	4.70	9.20	
Clarity (in)	67	40	41	54	52	41	44	42	45	42.33	
Sal-Bot (ppth)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Sal-Top (ppth)	28.70	28.10	26.80	26.90	26.70	26.20	26.20	26.10	24.80	26.72	
Temp-Bot (oC)	24.10	24.50	24.10	24.60	24.40	24.40	24.20	23.80	24.80	24.32	
Temp-Top (oC)	24.30	24.70	24.60	24.70	24.70	24.50	24.80	24.40	24.70	24.60	
pH	8.12	8.12	8.21	8.32	8.24	8.15	8.3	8.19	8.26	8.21	
DO-Bot (mg/L)	6.70	7.00	6.61	7.40	7.20	6.10	7.40	6.60	8.00	6.94	
DO-Top (mg/L)	6.70	4.80	3.00	7.30	6.80	4.40	6.20	2.20	8.20	5.50	
2013											
Site/Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average	
Depth (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Clarity (in)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Sal-Bot (ppth)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Sal-Top (ppth)	28.21	27.80	26.01	26.06	25.81	25.27	25.67	25.31	25.06	26.1	
Temp-Bot (oC)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Temp-Top (oC)	24.67	25.07	24.96	25.43	25.24	25.30	24.94	25.34	25.07	25.1	
pH	7.42	7.40	7.24	7.48	7.41	7.15	7.34	7.23	7.33	7.33	

Site/ Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average		
Depth (ft)	13.1	10.1	15.84	8.06	9.18	5.82	5.68	8.83	7.46	X		
Clarity (in)	29.33	27.2	25.12	35.05	33.86	29.35	34.35	36.06	37.18	31.94		
Sal-Bot (ppth)	23.33	22.33	24.19	21.65	22.04	22.91	23.31	22.86	21.96	22.73		
Sal-Top (ppth)	26.23	25.83	25.78	24.64	25.73	25.91	26.03	26.13	26.05	25.81		
Temp-Bot (oC)	22.26	22.71	22.48	23.66	22.09	20.25	22.15	22.91	22.2	22.3		
Temp-Top (oC)	22.67	24.3	22.75	22.95	22.44	21.81	22.45	22.3	22.49	22.68		
pH	7.75	7.72	7.36	7.67	8.00	8.11	8.05	8.00	7.96	7.85		
DO-Bot (mg/L)	8.79	8.50	6.28	6.37	6.21	8.31	7.34	7.33	7.73	7.43		
DO-Top (mg/L)	8.57	8.27	7.74	8.18	7.63	8.11	7.86	7.96	8.11	8.05		
2018												
Site/ Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Average		
Depth (ft)	14.41	11.99	17.06	4.5	7.1	4.45	5.5	6.81	5.93	X		
Clarity (ft)	4.46	4.05	4.75	4.38	4.5	4.04	4.59	4.34	4.55	4.41		
Sal-Bot (ppth)	28.5	29.15	29.36	28.37	28.22	27.65	28.85	28.14	27.63	28.43		
Sal-Top (ppth)	34.80	29.25	29.31	29.03	28.58	28.29	28.78	28.47	28.57	29.45		
Temp-Bot (oC)	23.67	23.79	23.86	24.13	24.03	24.22	24.16	23.42	24.02	23.92		
Temp-Top (oC)	24.05	24.19	24.09	24.23	24.27	24.42	24.31	23.95	22.27	21.26		
pH	7.78	7.75	7.80	7.79	7.82	7.83	7.81	7.69	7.69	6.04		
DO-Bot (mg/L)	6.97	6.78	6.47	7.67	7.51	9.60	7.37	6.95	7.17	7.39		
DO-Top (mg/L)	7.20	6.90	6.92	7.62	7.60	9.12	7.73	7.35	7.23	7.52		
2019												
Site/ Parameter	Sexton	Ocean Beach	Ocean Bay Park	Sailor Haven	Cherry Grove	Pines	Barrett Beach	Davis park	Watch Hill	Patchogue Bay	Nicoll Bay	Average
Depth (ft)	16.5	13.8	18.6	8.8	10.8	9.8	7.6	11.4	7.8	8.6	10	11.3
Clarity (ft)	6.5	5	5	4.4	5	5.4	4.4	4	4.1	4	5	4.8
Sal-Bot (ppth)	25.78	27.79	27.33	27.34	27.12	27.08	25.16	26.90	26.46	25.64	26.57	26.65
Sal-Top (ppth)	28.57	28.42	28.15	27.40	26.69	27.07	27.13	27.03	26.69	29.19	26.02	27.49
Temp-Bot (oC)	22.81	22.93	23.10	23.18	23.34	23.08	23.34	22.80	23.40	23.74	23.63	23.21
Temp-Top (oC)	23.16	23.44	23.46	23.74	23.63	23.51	22.25	23.49	20.63	23.88	22.23	23.04
pH	7.93	7.74	7.71	7.91	7.83	7.27	8.11	7.42	7.78	7.84	8.05	7.78
DO-Bot (mg/L)	6.50	6.21	5.91	6.68	6.13	5.66	5.64	5.70	6.16	5.72	6.19	6.05
DO-Top (mg/L)	6.72	6.45	6.48	6.65	6.56	5.41	6.64	6.54	6.70	6.80	6.99	6.54