The Future of Our Coastal Lakes Toward a Regional Approach to Coastal Lake Restoration



2023 Coastal Lake Summit Looking Forward: Restoration and Resilience

John A. Tiedemann, Director Monmouth University Marine and Environmental Biology and Policy Program

Monmouth's Coastal Lake Initiative 2005 - 2008

- Purpose of the Coastal Lake Initiative:
 - Provide municipal officials, community organizations, and local watershed management groups with information and tools necessary to develop cost-effective strategies to restore, protect, and maintain coastal lake ecosystems
 - Watershed Bioassessments: Whale Pond Brook; Shippee's Pond

Microbial Source Tracking: Deal Lake, Wreck Pond

First Coastal Lake Summit 2008

- We reviewed the status of Monmouth County's coastal lakes, our preliminary assessment of lake impairments and problems, and discussed issues impacting lake management efforts
- Participants agreed that:
 - The lakes suffer from a number of common problems along with some lake-specific problems
 - Attempts to manage or restore the lakes have tended to follow a fragmented path
 - The success and sustainability of lake restoration efforts has been hampered by the fact that, with few exceptions, no agency, organization, or governing body has taken lead responsibility for stewardship of these waterbodies

Coastal Lake Desirable Uses

Use	Ranking
Aquatic Life Support	1
Fishing	2
Contact Recreation	3
Boating, Sailing, Waterskiing	4
Fish Consumption	5
Other	Public access Aesthetics
	Sense of community/history

Ranked by participants at the 2008 Coastal Lake Summit

Coastal Lake Use Impairment Ratings

Use	Good	Impaired	Severely Impaired
Swimming	0 %	33 %	67 %
Fishing	10 %	80 %	10 %
Fish Consumption	10 %	70 %	20 %
Aquatic Life	10 %	50 %	40 %
Boating, Sailing	0 %	67%	33 %

- Good = fully supporting the use
- > Impaired = partially supporting the use
- Severely Impaired = not supporting the use

Ranked by participants at the 2008 Coastal Lake Summit

Coastal Lake Problems

Coastal Lake Problems	Percent of Lakes Affected
Stormwater runoff	100%
Degraded fish habitat	100%
Excessive algae	100%
Debris & Garbage	100%
Pathogen contamination	83%
Excess sediment & decreasing depth	83%
Aquatic plant overgrowth	83%
Degraded shoreline conditions	83%

Problems identified by participants at the 2008 Summit

The Future of Coastal Lakes in Monmouth County 2009

Our 2009 report outlined restoration techniques and best management practices that could achieve cost-effective, sustainable improvements in water quality, habitat quality, and overall health of the coastal lakes

Recommendations included development and implementation of a regional coastal lakes management strategy that streamlined permit processing and allocated State, County, and municipal resources to address issues facing the lakes

The Coastal Monmouth Plan 2010

The Monmouth County Planning Board released a revised *Coastal Monmouth Plan* in 2010

In the plan, it was noted that because many of the lakes are affected by similar impacts, the development and implementation of a Regional Comprehensive Management Plan for the county's coastal lakes and ponds would provide for a coordinate solution to problems common to each of the lakes and ponds in the county Moving Toward Development of a Restoration and Management Plan for Coastal Lakes of Monmouth County

At the 2013 Coastal Lakes Summit we identified key components that should be addressed in a comprehensive, regional restoration and management plan for Monmouth County's coastal lakes:

- A regional stormwater management strategy, including addressing aging infrastructure and maintenance problems
- A sediment reduction strategy, including addressing dredging and dredged material disposal needs
- ✓ A nutrient reduction strategy
- ✓A pathogen reduction strategy
- ✓An aquatic weed control strategy

Coastal Lakes Summit of 2019

Creation of a regional coastal lakes management and restoration strategy remains a priority to move our coastal lakes into a healthier and more resilient future

A comprehensive water quality data collection effort needs to be established for our coastal lakes in order to inform the planning and management process

Enter CLONET; Your efforts now allow us to better understand the nature of the problems needing attention and will provide the information necessary to develop effective restoration strategies

Key to Successful Lake Restoration

111 Don't Just Treat The Symptom Correct the Cause

FALL 2023 CLONet data update: monitoring to restoration!

Jason E. Adolf^{1,2}, Tom Herrington^{1,2}, Erin Conlon^{1,2}

- 1. Monmouth University, Biology Dept., West Long Branch, NJ
- 2. Monmouth University Urban Coast Institute, West Long Branch, NJ
- 3. NJ Department of Environmental Protection

Contributing: Eric Ernst³, Geoffrey Fouad¹, Bill Heddendorf³, Sydney Lucas¹, Robert Newby³, Robert Schuster³, Ariel Zavala¹







APP

 A <u>community-based</u>, <u>participatory</u> research and restoration group that will allow communities to address coastal lake issues based on their own knowledge and use of the underlying scientific data.



4+ years of citizen data have taught us a lot about these lakes and engaged the community



Sampling Map

- Community site
 - PHAB site

PHAB & community sites have some overlap in space, time and parameters measured





Research questions:

1. How do coastal lakes differ from each other in terms of water quality, including HABs

5 km

3 mi

- 2. What environmental factors drive spatial / temporal variability in water quality, including HABs
- 3. How does coastal lake WQ impact adjacent ocean beaches?
- 4. Can we predict HABs in coastal (or other NJ) lakes?

Leaflet | CopenStreetMap contributors, CC-BY-SA

Water Quality Parameters (PHAB & Citizen scientists) <u>Community Science</u>







- Secchi Depth (ft)
- (μ S) Conductivity (μ S/cm)
 - Temperature (Celsius)
- Dissolved Oxygen (mg/L)
 - Phycocyanin (PC rfu)



Water Quality Parameters – PHAB and NJDEP

Ν

• Nutrients

"Dissolved inorganic (NO₃, NH₄, PO₄) – 'plant food Total N & Total P – 'Everything'"

Phytoplankton biomass

'Chl a (NJDEP), Cyanobacterial cell counts (PHAB)

• Genetic analyses

'Cyanobacterial abundance and toxin genes. eDNA microbial community composition.'

• Turbidity 'particulates in water'

Watershed characteristics



NJDEP Environmental Specialist Bri Morgan preserving samples (left) and the Seal AA3 analyzer (right)

WATERSHED





Monmouth University Community Science Coordinator Erin Conlon counting cells but dreaming of being out in the field!

<a href="https://www.freepik.com/free-vector/dna-helix-symbol-isolated-white-

background_24786115.htm#query=dna&position=6&from_view=keyword&track=sph">Image by brgfx on Freepik

Data inventory – PHAB and community projects

				PHABLab data									
	S	tot	al_cyano_cells -	387	26	25	26	26	25	99	26	26	26
	ias		pcchl -	649	162	171	161	162	162	228	162	162	161
	μο	\neg	pcrfu -	649	162	171	162	162	162	228	162	162	161
	įġ		chlrfu -	673	162	171	161	162	162	228	162	162	161
			Fluorosense -	533	91	101	90	91	91	143	91	91	91
			chladep -	549	145	154	145	146	144	209	146	146	144
			domgl -	677	162	172	161	162	162	228	162	162	161
	လိ	ity	doper -	677	162	172	162	162	162	228	162	162	161
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	Ę	Na.	secchi -	366	155	16	51	91	88	179	33	148	32
	ara	-	ph -	572	140	150	143	140	139	189	140	140	139
			turb -	615	126	134	127	125	125	187	125	126	125
	Δ	S	nh3 -	516	124	132	124	122	122	185	121	124	123
		int	po4 -	520	124	132	121	124	124	186	124	124	123
		- irie	- no3 -	512	122	131	124	122	122	182	122	124	121
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				Dea	-letche	Lake	Lak	Silve	Spring	Sunse	Sylvar	Wesley	Wreck
					ш			La	ke				

Count								
	600							
	400							
	200							
	0							

0
Rainfall data -
https://njdep.rutgers.ed
/rainfall/ NWS
Multisensor Precip.
Estimator

Watershed data – Area, Pop. Density, Land use / Land Cover

Community data

				J			Lake										
		Deal Lake -	Fletcher Lake -	ackson Woods -	Lake Como -	Lake Tak	Shadow Lake -	Silver Lake -	Spring Lake -	Sunset Lake -	Sylvan Lake -	Wesley Lake -	Wreck Pond -				
	ph -	381	15	0	247	115	7	134	103	98	128	165	18				
ī	secchi -	407	15	17	243	108	7	193	101	99	112	214	60				
<u>م</u>	tempc -	501	15	61	251	115	7	212	103	114	128	218	66				
aramete	cond -	498	15	60	248	113	7	211	103	114	127	216	35				
jr	doper -	477	15	60	242	107	7	206	103	95	127	214	34				
	domgl -	480	15	61	245	109	7	207	103	95	128	216	64				
	pcfluor -	73	0	0	65	7	0	64	37	4	64	54	36				

What does CLONet data tell us about lake status?



On each of the series of slides that follow, the parameter in question is described at the top. The map on the left shows the geographic position of each lake and the symbol is color-coded (scale at far left) for the summertime median value of the parameter being shown. The 'lollipop plot' at right shows each lake in descending rank order (based on summertime median value) for the parameter, with the number of samples (as of Dec 12, 2023) taken at that location. On the far right are some outcomes from these measurements.

Water temperature

A key environmental variable dictating biology. Critical parameter for tracking effects of global climate change.



CLONet Community data has shown:

- Small but meaningful differences among lakes
- Evidence that lakes are warmer now than in the 1970's
- Regular exceedance of temperature thresholds that favor HABs in summer

Conductivity

A measure of electrical current conduction by water related to total dissolved solids (including but not only 'salt') and a rapid way to detect pollutant inputs. Waterbodies tend to have a 'typical' level, and we monitor for deviations over time.



CLONet Community data has shown:

- Coastal lakes conductivity reflects ocean connection in some cases
- Road salt intrusion events
- Stormwater effects on certain lakes

Dissolved Oxygen

A measurement of the amount of oxygen in the water. Animals start to die at < 2 mg/L. Lake chemistry changes under low D.O. conditions. Values typically show high day / night variability (e.g. lower D.O. at night).



- CLONet Community data has shown:
- Mostly OK values
- Continuous monitoring has shown low D.O. events in Deal Lake associated with HAB die-off
- Other low D.O. events observed occasionally

HAB biomass index

A measurement of fluorescence from phycocyanin, a characteristic pigment found in cyanobacteria including those that cause harmful algal blooms (HABs).



CLONet Community data has shown:

- HABs are currently a problem affecting some lakes more than others
- Summer is the main HAB season, but not exclusively
- Strong relationships with cyanobacterial cell counts

Secchi depth

A simple measurement of water clarity that has a history of being used as a broad and integrative ecological indicator across lakes globally. Global Secchi depths range $\sim 0 - 100$ ft. In general, higher numbers are 'better'.



CLONet Community data has shown:

- All coastal lakes have low Secchi depths
- Coastal lake trophic status based on Secchi depths would be 'eutrophic' to 'hypereutrophic'
- No big 'trends' over time

The NJDEP nutrient dataset is incredible valuable:

Chl a (phytoplankton biomass)

A measurement of the pigment (Chl *a*) shared by all phytoplankton. High Chl *a* is an indication of eutrophication caused by nutrient over-enrichment.



PHAB / NJDEP data has shown:

- A wide range among lakes
- Trophic status based on Chl *a* is more variable than based on Secchi
- May be a better target for restoration

Total Nitrogen

A chemical measurement of all the N in the lake, includes dissolved and particulate fractions. TN is a common indicator of eutrophic conditions (along with Total Phosphorus).



PHAB / NJDEP data has shown:

- Coastal lakes have relatively high TN compared to other NJ lakes
- HABs and TN tend to go together
- In summer, lakes can be N-limited (e.g. more N, more algae)

Total Phosphorus

A chemical measurement of all the P in the lake, includes dissolved and particulate fractions. TP is a common indicator of eutrophic conditions (along with Total Nitrogen).



PHAB / NJDEP data has shown:

- TP tends to track TN in coastal lakes, except in Lake Takanassee where TN:TP is higher than in other lakes
- In summer, lakes appear to generate excess P from sediments during HABs

Let's put it in context... Trophic State Indices

- Key parameters can be used to calculate 'Trophic State Indices' that have been developed based on a wide range of lakes and conditions throughout the country / world
- Carlson (1977) is one of the earliest such indices, but still relevant

Carlson's TSI based on Chl, Secchi, or total P measured by CLONet scientists.

These indices give us a way to look at our lakes in the context of other lakes throughout the country...

What do you see?



Conclusions

- Coastal lakes show a range of conditions but share in common conditions that indicate degraded / eutrophic conditions that can and should be improved.
- Community and PHAB / NJDEP data both show strong relationships between stormwater runoff and lake conditions – Watershed Management!
- The community dataset demonstrates strong commitment to stewardship and restoration that funders should appreciate!
- Community / PHAB / NJDEP data points to specific problems and provides important baselines from which improvements can be tracked as restoration activities proceed.

Thank you for your attention

• Questions?

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MONMOUTH UNIVERSITY SCHOOL of SCIENCE







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https://jadolf.wixsite.com/phytoplankton



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Robert Schuster, Bill Heddendorf,

Eric Ernst, Bri Morgan, Dawn Thompson, Sherri Shifrin, Rob

Newby

Other parameters measured by PHAB / NJDEP

Conductivity

A measure of electrical current conduction by water related to total dissolved solids (including but not only 'salt') and a rapid way to detect pollutant inputs. Waterbodies tend to have a 'typical' level, and we monitor for deviations over time.



Water temperature

A key environmental variable dictating biology. Critical parameter for tracking effects of global climate change.



Dissolved Oxygen

A measurement of the amount of oxygen in the water. Animals start to die at < 2 mg/L. Lake chemistry changes under low D.O. conditions. Values typically show high day / night variability (e.g. lower D.O. at night).

shown:



A measure of how acidic or basic the water is, and an important habitat parameter for animals.



PHAB data has shown:

- A narrow range of pH
- Day / night differences in pH are likely large, important, but are not measured

Turbidity

A measure of 'cloudiness' or water based on light scattering. Similar to Secchi depth, but different because dissolved 'color' will not affect turbidity but will affect Secchi.



PHAB data has shown:

- A broad range among lakes
- Negative relationship to salinity?
Dissolved Inorganic Nitrogen (DIN)

The sum of nitrate + nitrite + ammonium – this is the N that enters the lake and potentially feeds algal growth



Phosphate

A chemical measurement of the dissolved, inorganic form of phosphate that is potential food for algae growth



PHAB data has shown:

- A broad range among lakes
- High values in top lakes tend to reflect release of 'internal pools' of phosphate from sediments

TN:TP

The ratio of total N : total P.



HAB biomass index

A measurement of fluorescence from phycocyanin, a characteristic pigment found in cyanobacteria including those that cause harmful algal blooms (HABs)

shown:



Secchi depth

A simple measurement of water clarity that has a history of being used as a broad and integrative ecological indicator across lakes globally. Global Secchi depths range $\sim 0 - 100$ ft. In general, higher numbers are 'better'.



Take Advantage of 319(h) Funding CLONet Fall 2023 Meeting

Stephen J. Souza, Ph.D.

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First Things First... What's 319?

- Federal money administered by the USEPA under Section 319 of the Clean Water Act.
- The USEPA's Nonpoint Source Management Program provides funding to states, territories and tribes to support various activities aimed at reducing nonpoint source pollution (NPSP).
- NPSP originates from diffuse sources (as opposed to a sewage or industrial discharge) and is largely mobilized and transported into streams, rivers and lakes by stormwater runoff.



NJDEP 319(h) Grants

- NJDEP uses USEPA's "pass-through" 319 money to annually award Water Quality Restoration Grants, which are part of their Statewide Nonpoint Source Management Program.
- The goal of the grants is to support projects capable of reducing NPSP whether to restore currently impaired waters or to protect and enhance the quality of all of the State's water resources.
- Annually the amount of 319 money made available via an RFP process is in the range of \$9-10 million dollars.



Projects of Interest

- Projects that promote stewardship to reduce NPSP and maximize the effective use of funds to achieve measurable water quality improvements.
- Projects that leverage local and State resources (cash or in-kind) to increase funded project activities.
- Pollution reduction strategies to reduce or eliminate combined sewer overflows (CSOs)
- Increase resilience to climate change flooding and water quality impairmentsthink Green Infrastructure SWM.
- Nutrient management to prevent or minimize the occurrence, severity and longevity of HABs.



"Fundable" Projects
(as per last grant round)

- Preparation a of Watershed Plans
- Preparation and implementation of Lake Protection Plans and/or Watershed Plans including updates to existing approved plans to lessen HABs
- Preparation and implementation of Lake Protection Plans and/or Watershed Plans in support of a TMDL.
- Implementation of approved Watershed Based Plans addressing current designated use Impairments and TMDL allocations (including phosphorus impairments related to HABs).



"Fundable" Projects
(as per last grant round)

- Projects in a specific NJDEP <u>targeted watershed</u> that address one or more 303d listed waterbodies.
- Green Infrastructure (GI) Projects in Environmental Justice Communities to maintain and/or restore natural hydrology and reduce runoff by infiltration, evapotranspiration, and harvesting of stormwater.
- GI stormwater projects in combined sewer overflow (CSO) communities to lessen CSO occurrences
- Animal waste management projects
- Climate resilience projects



Examples of What's Not Eligible

- Dredging
- Chemical weed control
- Chemical algae control
- Bulkhead / Riprap of shoreline





Elements of Successful Application

Consistent with NJDEP and 319(h) goals

- Decreases impairment of 303(d) water or restores
 303(d) listed water, or
- Addresses TMDL, or
- Progresses objectives and goals of approved NJDEP Watershed Protection Plan, or
- Progresses objectives and goals of NJDEP approved Nine-Element USEPA plan



Additional Guidance

- Read the RFP carefully... NJDEP identifies in RFP features and requirements of acceptable projects as based on federal award criteria and state environmental priorities.
 - Specific administrative, procedural, and programmatic requirements for applicants.
 - Timetables and deadlines for the grant application
 - Project evaluation criteria... structure your proposal to meet these criteria.



Examples of 319 Funded DLC Projects

- Watershed Protection and Implementation Plan
- Various GI SWM Bioinfiltration basins, bioretention basin and rain gardens
- Shoreline revegetation / restoration
- Manufactured Treatment Devices
- Floating Wetland Islands
- Community Education and Engagement



WPP – Watershed Protection Plan



Need an approved plan to qualify for implementation \$\$

If you don't have a plan... develop plan following USEPA 9-Element guidance

www.epa.gov/sites/default/files/2015-09/documents/2008_04_18_nps_watershed_handbook_handbook-2.pdf

2024 Is Our Year!!



In 2024 NJDEP will prioritize projects proposed with the Atlantic Coastal region

THAT'S US!! Due Date, Etc. Not Yet Known

https://dep.nj.gov/wlm/watershed/319-grants/

Learn More About the 319(h) Program

- Visit https://dep.nj.gov/wlm/watershed/319-grants/
- Use link to track 2024 RFP info, including due dates
- Check out previously approved projects...
 - Confirm types of projects funded thru 319(h)
 - Helps in evaluating how your project may stack up for funding
- Search for NJDEP/USEPA Success Stories... provides concise overview of completed projects



Beyond 319

- Section 314 funding... original source of funding for lakes and reservoirs
- Available through 1990s...money appropriated at Federal level via Section 314 of Clean Water Act
- North American Lake Management Society meeting with congress to restart program... for more info https://www.nalms.org/nalms-positionpapers/enhanced-314-clean-lakes-program-positionstatement/



Thank You Stephen J. Souza, Ph.D.

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CWC

Who are we?

An association of volunteers from the five towns (Tinton Falls, Ocean, Eatontown, W. Long Branch, Long Branch) that surround the watershed and other interested volunteers.

Our Vision:

Restore the eroded banks and water quality in the watershed







Whale Pond Brook Watershed

- Extends from Tinton Falls to its outlet at the Atlantic Ocean
- 59% suburban residential, 14% commercial and 24% forested and wetlands areas
- Biological resources include Bluegill, Large Mouth Bass, Common Carp, Pumpkinseed Sunfish, Mockingbird, Red-tailed Hawk and Herring Gull among many others.*
- * John Tiedemann watershed study, Monmouth University

Challenges and Concerns-Dumping and littering - everywher

45 clean-ups so far



Challenges and Concerns-Sediment infilling





Challenges and Concerns: Stormwater runoff





Projects to educate and restore

- Watershed towns meet and get informed(2015)
- Two completed Rain Gardens with 3 waiting to be implemented
- Watershed training for All Sixth graders in Ocean township (2016)
- Long Branch Tree Inventory NJDEP grant
- DPW training How to Build a Rain Garden

•Ross Lake Park

- All-native botanical garden
- Master Gardener certified for work hours
- So many wonderful volunteers spread the word about watersheds





Stop Sedimentation It all winds up in Long Branch **Residential Rain Garden tax rebate** Ban driveway drainpipes Codify aerators for pool backwash Enforce pervious surface requirements Encourage towns to strengthen Tree Ordinances residential tree removal permits Adopt The Watershed Institute enhanced storm water ordinance by July 2024

What is stopping us?

Finding effective ways to educate

- public officials
- residents

Even the tiniest creatures thank you for your attention to their habitat



Deal Lake State of the Lake Report CLONet Fall 2023 Meeting

Stephen J. Souza, Ph.D. Clean Waters Consulting, LLC

Jeannie Toher Asbury Park Deal Lake Commission Commissioner

Deal Lake & Its Watershed

Surface Area	143 acres
Mean Depth	5.25 feet
Maximum Depth	8.85 feet
Total Volume at Capacity	245 x 10 ⁶ gallons
Watershed Area	5.9 mi ²
Hydraulic Retention Time	0.84 yrs.
Mean Population Density	10,700/mi²

Land Use Within Deal Lake Watershed



A Lake is a Reflection of Its Watershed NALMS...2008

Development Has Altered Water Quality, Hydrology and Hydraulics of Deal Lake and Its Tributaries



Flooding



Erosion







Turbidity/Infilling

Weeds





Algae Blooms



Inadequate stormwater management leading cause of Deal Lake's impairments

 Comprehensive stormwater management foundation of lake's restoration

- WPP is Deal Lake's "restoration and management blueprint".
- Control and reduce stormwater runoff rate and volume.
- Decrease associated phosphorus, sediment and floatable loading.



The Deal Lake Watershed Protection Plan Milestone 5 Report Grant #RP04-082

Grantee and Lead Planning Agency:

Deal Lake Commission John Everson, Chairman c/o Village of Loch Arbour Municipal Offices 550 Main Street Loch Arbour, NJ 07711 732-531-4740 <u>locharbour@comcast.net</u> <u>http://www.deallake.org/</u>

Prepared by:

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January 2011
Primary Goals of DLC's Pollutant Load Reduction Efforts

- Less phosphorus = less productivity = less harmful algae blooms.
- Less sediment loading = less in-filling and loss of water depth.
- Less floatables = better aesthetics and recreation.





Green / Green-Gray Approach

- A "hybrid" green and green-gray stormwater management approach enables the DLC to:
 - Make use of available open space to implement "conventional" Green Infrastructure SWM practices
 - Make full use of existing stormwater collection system thereby saving money
 - Decrease sediment and nutrient loading
 - Intercept and trap floatables
 - Increase recharge and decrease runoff volume
 - Engage municipal officials and community

Example Stormwater Improvement Projects

- 1. Colonial Terrace (W. F. Larkin) Golf Course
- 2. Deal Lake Boat Launch Shoreline Restoration
- 3. Asbury Park Bioretention Basin
- 4. Ocean Grove Rain Gardens
- 5. Sunset and Wesley Lake Floating Wetland Islands
- 6. Sunset Lake Curb-Side Small-Scale MTD
- 7. Wickapecko Ave. Street-Side Bioretention (DLWA)
- 8. Comstock St. and Memorial Drive Large-Scale MTDs
- 9. Various riparian area revegetation projects

Green Infrastructure



Asbury Park Rain Garden

DLWA Curbside Bio-detention



Where space available... bioretention and bio-infiltration basins and raingardens.

Green Infrastructure



W. F. Larkin Golf Course Bio-infiltration Basins

The Colonial Terrace Golf Club Deal Lake Watershed Enhancement Projects



Stormwater runoff is a leading cause of pollution in our streams.

lakes and oceans. Lawns often become compacted, preventing

groundwater recharge and sending polluted runoff, especially



Floating Wetland Islands



Great community engagement projects

Shoreline Restoration



Aquascaping and shoreline revegetation used to restore eroded shorelines... DLC promotes residential aquascaping

Manufactured Treatment Devices



Due to limited open space use both large and small subsurface MTDs to treat stormwater runoff... effective means of controlling floatables, sediment, particulate pollutants and nutrients... inspected quarterly and cleaned out

Community Engagement and Activism

- Breakfast stormwater workshops w DPW staff
- Informational workshops w public officials and members of land use boards
- Eagle Scout projects
- Informational brochures
- Lake cleanups
- Goose management



A Guide for Deal Lake Property Owners



Community Engagement

Asbury Park High School Students Were Engaged in the Project

Class worked Closely With Project Engineer Following Progress from Design Through Installation



Community Involvement

DLC has supported several Eagle Scout projects

Most recent was the Fishing Line Recycling Project with Ryan Burke



DLC Goose Control Initiatives





4 geese produce as much phosphorus per day as 1 septic system !!!

Goose egg addling Habitat alteration, shoreline buffers Treatment of grass Do not feed education and signs

Goose Control Initiatives

Geese Control



Controlling Canada Geese 10/21/21 Presentation by USDA Wildlife Biologist Nicole Rein (PDF) 10/21/21 Presentation by USDA Wildlife Biologist Nicole Rein (PDE)





Canada Goose Management in NJ Watch on Voilube tion by USDA Wildlife Services

Goose lighting controls:

https://www.awaywithgccsc.com/ This lighting system is now being tested successfully at our sister lake (Wesley) between Asbury and Ocean Grove. Will discuss further this winter weather we install in our western storm water ponds.

A major problem with Canadian Geese is their prodigious droppings. Each and every day, a Canadian goose residing in New Jersey eats 2-3 pounds of grass and deposits approximately 1-2 pounds of droppings on your lawn or your neighbors. This is unhealthy for you and family as well as our Lake. How can you help? Hire a contractor to spray an application to grass to rid your lawn of geese. Bad tasting grass chases geese away and does not harm any other animals.

Geese Deterrence:

The DLC contracted with Goose Stoppers to deter geese from remaining in the following areas:

Ocean: Park areas by Bimbler Ave and Wickapecko, Firemans Pond, Lolly Pop Pond

Asbury Park: The AP Boat ramp and Deal Lake Drive from Norwood ave to the Flume building

Allenhurst: Park area north of Corlies and west of the walking path to the end of the Grassy are

Our website has informative videos on managing Canada geese https://deallake.org/geese-control/

Clearing of Riparian Areas

- Working with building departments and land use boards
- "Work conducted on Lake waterfront may require additional permits from the NJDEP. Contact the NJDEP before proceeding with any work along the lake front".



1.NJDEP Permits: https://dep.nj.gov/wlm/lrp/permitapplicability/

2. NJDEP Contact : https://dep.nj.gov/wlm/contact-us/







DEAL LAKE, ITS TRIBUTARIES AND WATERSHED ARE REGULATED BY FEDERAL AND STATE AGENCIES.

Stormwater Management for Homeowners



Participation in CLONet and Use of Data to Guide Decision Making



Summing Up....DLC's Management Approach

Don't Just Treat The Symptom...

Correct the Cause!

Thank You

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Jeannie Toher Asbury Park Deal Lake Commission Commissioner spiritj9@aol.com





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BEAUTIFUL SEA

REVITALIZING SILVER LAKE BELMAR, NJ



WHAT WEKNOW

Silver Lake used to be brackish- but isn't anymore.

1

Consistently high nutritent levels and HABs

2



Two choices for how to revitalize and restore the lake.

Silver Lake was traditionally a brackish lake that could be used for fishing, skating and other activities.



Silver Lake was home to: • Anadromous fish species • American eel • Blue claws



And then Sandy happened.



18 (!) OUTFALL PIPES



CLONET DATA

Residents collected data on the north and south sides of the lake throughout the year. Consistently, sacchi depth was low, while levels of nitrogen, phosphate and other minerals were high.



DISSOLVED OXYGEN MG/L








• CONDUCTIVITY



• PCFLUOR



PHRAGMITES



Phragmites cover certain areas of the lake and will be difficult to remove.

HABs



Silver Lake experienced HABs this summer and late October.

The lake's geese population has exploded, with residents reporting over 100 at a time.

GEESE

INFRASTRUCTUR



Belmar's infrastructure must be updated - and much of this deteriorating infrastructure leads to the lake.

ANY PLAN NEEDS



Treat stormwater runoff via green infrastructure practices

2



TWO PATHS FORWARD



DO WE RESTORE THE OCEAN PIPE?



STEPS FORWARD









Secure funding





THANK YOU!





Sylvan Lake Habitat Restoration and Resiliency Planning Project

Avon by the Sea











Sylvan Lake Project Overview

- REPI Program
- Why Sylvan Lake?
- Existing Conditions 7 Challenges
- Current Design Ideas
- Next steps

Partners

- American Littoral Society
- Avon by the Sea
- Bradley Beach
- Martin McHugh of GES
- Matrix New World Engineering
- Monmouth University
- Sylvan Lake Commission
- Funding provided by the US Navy

What is REPI?

- Department of Defense's (DOD) Readiness and Environmental Protection Integration (REPI)Program
- Preserves military missions
- Addresses environmental restrictions that limit military activities
- Increases resilience to climate change for communities that support military members





The Department of Defense's (DOD) Readiness and Environmental Protection Integration (REPI) Program preserves military missions by supporting cost-sharing agreements between the Military Services, other federal agencies, state and local governments, and private conservation organizations to avoid land use conflicts near military installations, address environmental restrictions that limit military activities, and increase resilience to climate change. The REPI Program is administered by the Office of the Secretary of Defense (OSD). Read more in the REPI Frequently Asked Questions.

Visit the Interactive REPI 101 Primer and REPI Resilience Primer.



Naval Weapons Station Earle Military Influence Area and Adjacent Communities

Project Goals

- Design
 - Habitat
 - Public access
 - Resiliency/Reduce flood risk
 - Natural elements
 - Water quality
 - Passive recreation
 - Beneficial use
- Permits
- Get funds for implementation

Sylvan Lake Existing Conditions



Exiting Conditions Western End During Drawdown For Repairs To Ocean On Eastern End



Exiting Conditions Bradley Shoreline During Drawdown at Mid-Lake



Exiting Conditions Bradley Shoreline During Drawdown On Eastern Third







Living Shorelines - A Natural Strategy

- A living shoreline is a method of land stabilization that protects the shoreline from erosion while also preserving, enhancing, or creating habitat.
- Living shorelines maintain the connectivity between land and water, and recreate the natural functions of a shoreline ecosystem.
- There are many different living shorelines techniques, yet they all generally employ natural or biodegradable materials such as stone, sand, oyster shells, or coconut fiber (coir) logs that are used in conjunction with the planting of native species.





Advantages of Living Shorelines

Additional Benefits:

- Habitat creation/enhancement
 - Increased abundance of fish, invertebrates and waterfowl
- Improved water quality filtration of storm water runoff
- Flood mitigation and reduction of flood risk
- Decreased maintenance
- Aesthetics
- Passive recreation

Not Just Shoreline Stabilization and Erosion Control!

Eastern End Living Shoreline -Early Construction



Avon – Eastern End Living Shoreline Installation Summer-Fall 2019







Avon – Eastern End Living Shoreline – Stormwater Treatment Swales Into First Fall



Avon – Eastern End Living Shoreline Spring 2020



The Concept



Floodway Dredging



MASTER PLAN

Existing Side Bank along Bradley Beach Shoreline



Proposed Softening of the Edge





A