Municipality/Organization: **Town of Sandown**

EPA NPDES Permit Number: **NHR041032**

MaDEP Transmittal Number: **W-**

Annual Report Number & Reporting Period: **No. 1: March 2014-March 2015**

NPDES PII Small MS4 General Permit Annual Report

Part I. General Information

Contact Person: Arthur Genualdo Title: DPW Director

Telephone #: (603) 887-3484 Email: Townofsandown@sandown.us

Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:

Printed Name: Arthur Genualdo

Title: Public Works Director

Date: 4/30/15

Part II. Self-Assessment

The Town of Sandown, NH has completed the self assessment and determined that our municipality is in compliance with all permit conditions except the following provisions:

Part III. Summary of Minimum Control Measures

1. Public Education and Outreach

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
PE-1	Public Awareness – Video	Health Officer/ Ed Mencis	12 showings/yr	Continue to show video	Will Show "After the Storm" video on a regular basis. New DVD received from EPA and the Weather Channel.
Revised					
PE-2	Educational Flyer	DPW Director/ Arthur Genualdo	# Flyers Distributed (2600/yr)	Flyer posted on website and distributed by transfer station attendants	Safe Drinking Water Flyer distributed by transfer station attendants – flyer attached which outlines safe handling and disposal of gasoline .
Revised					
PE-3	Web Page Linked to Main Page	Town Administrator/ Lynne Blaisdell	10% of main page visitors	Continue to update web page with more information and links	Updated website with Angle Pond, Seeley Beach/Phillips Pond water sampling information – attached.
Revised					
PE-4	Elementary School Programs	Selectman Hans Nicolaisen	1 project/yr	Continue to highlight and provide information at Town Library	Sample Flyers on display at the Sandown Public Library. Copies attached Library hosted a workshop presented by UNH Coop Extension on Storm Proof Your Home – 2/12/14 attended by 6 residents
Revised	Town Library Information Kiosk	Selectman Jim Devine			
Revised					
Revised					

1a. Additions

2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
PP-1	Town Board Coordination	Selectman Hans Nicolaisen	# Participants/ # Meetings	W ells Village Road culvert was delayed due to abutter notifications – culvert scheduled for 2014	Wells Village Road culvert completed in 2014. This will significantly help stormwater control and solve flooding in that area.
Revised		Selectman Jim Devine			
PP-2	Town Deliberative Session	DPW Director/ Arthur Genualdo	Discuss & Pass Warrant Article	Voters did not pass 2014 Road Improvement Plan - only serious road hazards can be addressed this year	Warrant article for Road Improvements for 2015 passed - Fremont Rd segment will be reconstructed and drainage issues addressed and corrected
Revised			Costs allocated via the yearly budget		
PP-3	Coordinate w/State Hwy Dept.	DPW Director/ Arthur Genualdo	# Participants/ # Meetings	W ells Village Road culvert was delayed due to abutter notifications – culvert scheduled for 2014	No scheduled projects that include the State Highway Dept.
Revised			Routine meetings		
PP-4	Coordinate w/Adjacent Towns	DPW Director/ Arthur Genualdo		No current projects with adjacent towns	Investigate working with Rockingham Planning Commission and the Town of Hampstead regarding the water quality of Showell Pond. Investigate the possibility of a 319 grant.
Revised					
PP-5	Waste Oil Disposal	DPW Director/ Arthur Genualdo	Annual Volume – 5%/yr. incr.	Continued use of waste oil heater	Continued use of waste oil heater Continue to collect used waste oil
Revised					

Revised					

2a. Additions

PP-6	Exotic Species Program	Selectman Hans Nicolaisen/ Selectman Jim Devine	# Participants/ # Monitorings Control of Fanwort and milfoil at Phillips Pond	**Progress on Goal(s) Permit Year 12** Through grant funding, Phillips Pond Association with NHDES will treat areas of the pond for exotic weeds	**Enter any revised info here** Phillips Pond Assoc awarded 2 NHDES grants: volunteer monitoring equipment grant and chemical treatment and manual harvesting of exotic weeds grant.
PP-7	Local Water Quality Monitoring for Showell Pond and Phillips Pond	Selectman Hans Nicolaisen/ Selectman Jim Devine	# Participants to monitor pond's cyanobacteria levels # months of absence of Blooms at Showell Pond & Phillips Pond	Continued monitoring and work with NHDES on both ponds	Phillips Pond Association water quality report attached.

3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
ID-1	Update MS4 Plan	DPW Director/ Arthur Genualdo	Confirm Outfalls/ Update plan	All catch basins cleaned and updated GPS info on new basins from subdivisions in 2013	All catch basins cleaned on 4/20 & 4/21and will receive updated GPS information on new basins from subdivisions in 2014
Revised					
ID-2	Identify Illicit Connections/Discharge	DPW Director/Arthur Genualdo Health Officer /Ed Mencis	# inspections & repairs/ yr	No illicit connections or discharges found during 2013	No illicit connections or discharges
Revised					
ID-3	Failing Septic Systems	Health Officer/ Ed Mencis	# inspections & repairs/yr	Continue inspection of all repairs and replacements	12 Failed systems recorded in 2014 Continued inspection of all repairs and replacements
Revised					
ID-4	Illegal Dumping	DPW Director/ Arthur Genualdo	# Dumps reported & cleaned	No violations reported for 2013	6 violations of illegal dumping - Police investigations and fines if proven
Revised					
ID-5	Community Outreach	DPW Director/ Arthur Genualdo	# pamphlets distributed	Continue to provide brochures at Town Hall and Town Library on what homeowners can do to mitigate stormwater damage.	Continue to provide brochures at Town Hall and Town Library on what homeowners can do to mitigate stormwater damage.
Revised					
Revised					

3a. Additions

4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
CS-1	Sediment Control	Conservation Comm/ Paul Carey	# Sites/Methods implemented	Conservation Commission works with the Planning Board to enforce the erosion control ordinance	Conservation Commission works with the Planning Board to enforce the erosion control ordinance
Revised					
CS-2	Erosion Control	Conservation Comm/ Paul Carey	# Sites/Methods implemented	Conservation Commission works with the Planning Board to enforce the erosion control ordinance	Conservation Commission works with the Planning Board to enforce the erosion control ordinance
Revised					
CS-3	SWPP Review	Planning Board/ Mark Traeger	# Plans Reviewed	Town requires submission of SWPP at preconstruction conference, together with proof of notice of intent filing	No plans reviewed in 2014. Town still requires submission of SWPP at preconstruction conference, together with proof of notice of intent filing
Revised		Planning Board/Ernie Brown			
CS-4	Construction Runoff Regs for Runoff Control	Planning Board/ Mark Traeger	Subdivision Regulations Updated	No new actions were taken in 2014	No new actions were taken in 2014
Revised		Planning Board/Ernie Brown			
Revised					
Revised					

4a. Additions

5. Post-Construction Stormwater Management in New Development and Redevelopment

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
PC-1	Runoff Control in Site Plan Regs.	Planning Board/ Mark Traeger	Annual Review/Reduction in loopholes	No new actions were taken in 2014	No new actions were taken in 2014
Revised		Planning Board/Ernie Brown			
PC-2	Buffer Zone	Conservation Commission/ Paul Carey	Establish new BMPs	No new actions taken in 2014	No new actions were taken in 2014
Revised					
PC-3	Inspection Program in Site Plan	Planning Board/ Mark Traeger	# inspections/problems fixed	The Planning Board is working with the town's building inspector and health officer to enforce the erosion control ordinance.	The Planning Board is working with the town's building inspector and health officer to enforce the erosion control ordinance.
Revised		Planning Board/Ernie Brown			
PC-4	Catch Basins	DPW Director/ Arthur Genualdo	Inventory & clean out Basins	All catch basins cleaned, 100% tracking and identification with GPS	All catch basins cleaned, 100% tracking and identification with GPS
Revised					
Revised					

Revised					

5a. Additions

6. Pollution Prevention and Good Housekeeping in Municipal Operations

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
MG-1	Road Salt Reduction	DPW Director/ Arthur Genualdo	Total Salt volume/yr	Continued use of molasses as an additive to reduce salt & sand amounts during plowing	Continued use of molasses as an additive to reduce salt & sand amounts during plowing
Revised					
MG-2	Spill Control & Reduction	Fire Dept/ Chief Wilfred Tapley	# Vehicle & non-vehicle releases	Continue to review procedures for spill control & reduction; update if necessary	Continue to review procedures for spill control & reduction; update if necessary
Revised					
MG-3	Fertilizer/Pesticide Reduction	Conservation Commission/ Paul Carey	Lawn care Specialist Training	Continue to highlight and provide information at Town Library and Town Hall	Town Hall used environmentally safe fertilizer on the town grounds.
Revised					
MG-4	Employee Training	DPW Director/ Arthur Genualdo	Workshops Attended	Employees attend 2 day NRRA conference yearly which covers hazardous waste, recycling and BMP's of waste management	Employees attend 2 day NRRA conference yearly which covers hazardous waste, recycling and BMP's of waste management
Revised					
Revised					
Revised					

6a. Additions

7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA) *<<if applicable>>*

BMP ID #	**BMP Description**	**Responsible Dept./Person Name**	**Measurable Goal(s)**	**Progress on Goal(s) – Permit Year 12** (Reliance on non-municipal partners indicated, if any)	**Enter any revised info here**
QI-1	E.Coli Monitoring	Health Officer/ Ed Mencis	Tracking Philips Lake Outfall	Continue monitoring State testing of Phillips Pond bathing waters	Continue monitoring State testing of Phillips Pond bathing waters – results attached
Revised					
Revised					
Revised					
Revised					
Revised					
Revised					

7a. Additions

7b. WLA Assessment

N/A

Part IV. Summary of Information Collected and Analyzed

Town beach monitoring is in place and baseline data collected to determine 'normal' & 'worst-case' (e.g., immediately after heavy rains) *e. coli* levels.

Part V. Program Outputs & Accomplishments (OPTIONAL)

Programmatic

Stormwater management position identified (Road Agent)	Yes	Yes

Education, Involvement, and Training

Estimated number of residents reached by education program(s)	2600	2600
Stormwater management committee established	Haz Mit Adopted	Haz Mit Adopted
Stream teams established or supported	yes	yes
Shoreline clean-up participation or quantity of shoreline miles cleaned	yes	yes
Household Hazardous Waste Collection Days		
▪ days sponsored	2	2
▪ community participation	Regional – Sandown included	Regional – Sandown included
▪ material collected	Not known (regional)	Not known (regional)
School curricula implemented		

Legal/Regulatory

	In Place Prior to Phase II	Under Review	Drafted	Adopted
Regulatory Mechanism Status (indicate with "X")				
▪ Illicit Discharge Detection & Elimination		X		
▪ Erosion & Sediment Control				X
▪ Post-Development Stormwater Management				X
Accompanying Regulation Status (indicate with "X")				
▪ Illicit Discharge Detection & Elimination			X	
▪ Erosion & Sediment Control				X
▪ Post-Development Stormwater Management				X

Mapping and Illicit Discharges

Outfall mapping complete	100%	100%
Estimated or actual number of outfalls		
System-Wide mapping complete	100%	100%
Mapping method(s)		
▪ Paper/Mylar	100%	100%
▪ CADD		
▪ GIS	100%	100%
Outfalls inspected/screened	100%	100%
Illicit discharges identified	0	0
Illicit connections removed	N/A	N/A
% of population on sewer	0	0
% of population on septic systems	100	100

Construction

Number of construction starts (>1-acre)	Approx.133	25 SFD 2014
Estimated percentage of construction starts adequately regulated for erosion and sediment control	95%	95%
Site inspections completed (estimated between Planning Board, Engineer, Bldg Insp., Conservation)	100%	100%
Tickets/Stop work orders issued	0	0
Fines collected	0	0
Complaints/concerns received from public	1	0

Post-Development Stormwater Management

Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control	30%	0 *
Site inspections completed		0 *
Estimated volume of stormwater recharged	Not known	Not known
* We do not have post-construction Stormwater control regulations		

Operations and Maintenance

Average frequency of catch basin cleaning (non-commercial/non-arterial streets)	Twice/year	Twice/year
Average frequency of catch basin cleaning (commercial/arterial or other critical streets)	Twice/year	Twice/year
Total number of structures cleaned	162	Update not yet available
Storm drain cleaned	Regularly	Same
Qty. of screenings/debris removed from storm sewer infrastructure	Not known	Not known
Disposal or use of sweepings (landfill, POTW, compost, recycle for sand, beneficial use, etc.)	Compost	Compost
Cost of screenings disposal	No cost	No cost

Average frequency of street sweeping (non-commercial/non-arterial streets)	N/A	N/A

Average frequency of street sweeping (commercial/arterial or other critical streets)	Once/year	Once/year
Qty. of sand/debris collected by sweeping	3 tons	3 tons
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.)	Landfill	Landfill
Cost of sweepings disposal	No cost	No cost
Vacuum street sweepers purchased/leased	N/A	N/A
Vacuum street sweepers specified in contracts	N/A	N/A

Reduction in application on public land of: ("N/A" = never used; "100%" = elimination)		
▪ Fertilizers	N/A	
▪ Herbicides	N/A	
▪ Pesticides	N/A	

Anti-/De-Icing products and ratios	% NaCl % $CaCl_2$ % $MgCl_2$ % CMA % Kac % KCl % Sand	
Pre-wetting techniques utilized	N/A	N/A
Manual control spreaders used	Yes	Yes
Automatic or Zero-velocity spreaders used	No	NO
Estimated net reduction in typical year salt application	5-10%	5-10%
Salt pile(s) covered in storage shed(s)	Yes	Yes
Storage shed(s) in design or under construction	No	No

NH SWIMMING BEACHES AT A GLANCE

Angle Pond Grove Beach

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

To protect the public from possible illness while swimming, each summer the NH Beach Program monitors water from 193 beaches for fecal bacteria. When fecal bacteria levels exceed state standards, harmful organisms are likely growing in the water making the water unsafe for swimming. When fecal bacteria levels are high, DES issues an advisory and performs daily sampling at the beach. Once the bacteria levels no longer exceed state standards, the advisory is removed.

Beaches display green signs to let the public know their water is tested regularly for bacteria. Past results and other details about participating beaches are available online or by contacting the NH Beach Program.

MONITORED

From Memorial Day to Labor Day the water at this beach is routinely tested for the presence of fecal bacteria

THE MOST RECENT SAMPLES ANALYZED MEET STATUTORY BACTERIA STANDARDS FOR BEACHES

When bacteria results exceed standards, yellow signs are displayed at beach entry points and alerts are posted on the DES website. Advisories DO NOT close a beach. The decision to close a beach is left with the beach owner.

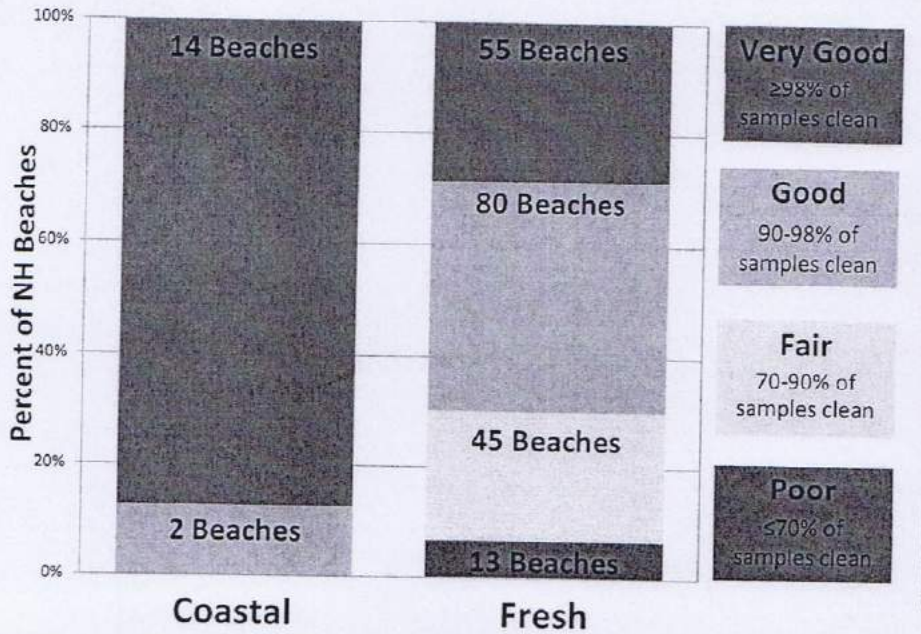
ADVISORY

High levels of BACTERIA have been detected in this WATER.

N.H. Dept. of Environmental Services

WATER CURRENTLY NOT SUITABLE FOR WADING OR SWIMMING!

Assessment of NH beaches: Water Sampling



Very Good ≥98% of samples clean

Good 90-98% of samples clean

Fair 70-90% of samples clean

Poor ≤70% of samples clean

Angle Pond Grove Beach

GOOD
97% of samples clean

Location: Sandown

Visits scheduled each summer: 3

Samples taken since 2003: 71

Unclean Samples: 2

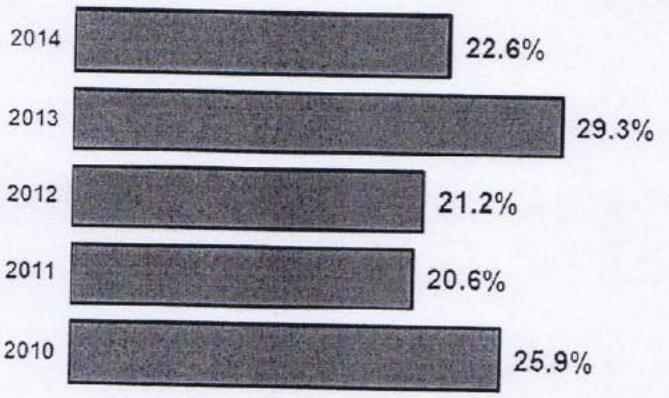
Advisories from 2003-2014:
None

How clean are New Hampshire Beaches? For each beach, the number of clean samples was compared to the total number of samples tested to generate an assessment of beach cleanliness. During the summer, most freshwater beaches are sampled once a month while most coastal beaches are sampled twice a week. All coastal beaches and two-thirds of freshwater beaches fall into the Good or Very Good categories.

NH555855

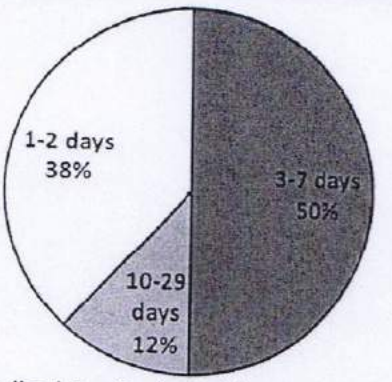
Statewide Beach Results

Beaches with one or more advisories in a summer



During the past 5 years, about one-fourth of all NH beaches have had at least one advisory in the summer months. Although 47 beaches had advisories in 2014, samples from 137 beaches were all clean this past summer.

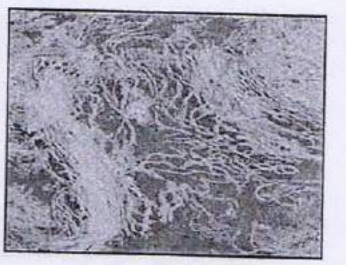
Length of 2014 Beach Advisories



Half of all advisories lasted between 3 days to a week. Only 12% (8 advisories) lasted longer than 10 days. Compared to 2013 when 89 advisories were issued, fewer advisories overall were issued in 2014 (68 advisories).

Avoid SLIME at the beach!

If you see green or blue-green clouds, clumps or slime in the water, stay out! Caused by excess nutrients from fertilizer, stormwater or animal feces, what looks like "slime" could be cyanobacteria. In large amounts, cyanobacteria can produce toxins harmful to animals and humans. The beach program posts advisories to warn swimmers of potential problems. Contact the Beach Program to report a sighting.



Stay connected with the Beach Program

Current advisories posted at **www.des.nh.gov.** At left, click on:

Subscribe to our newsletter. Select "Beach Advisories" at:
http://des.nh.gov/media/enews/index.htm

Follow us on Twitter @NHDES_Beaches
http://twitter.com/NHDES_Beaches

Questions about beaches and sampling can be directed to:
Sonya Carlson, Beach Program Coordinator, (603) 271-0698, beaches@des.nh.gov

NH SWIMMING BEACHES AT A GLANCE

Seeley Beach on Phillips Pond

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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MONITORED

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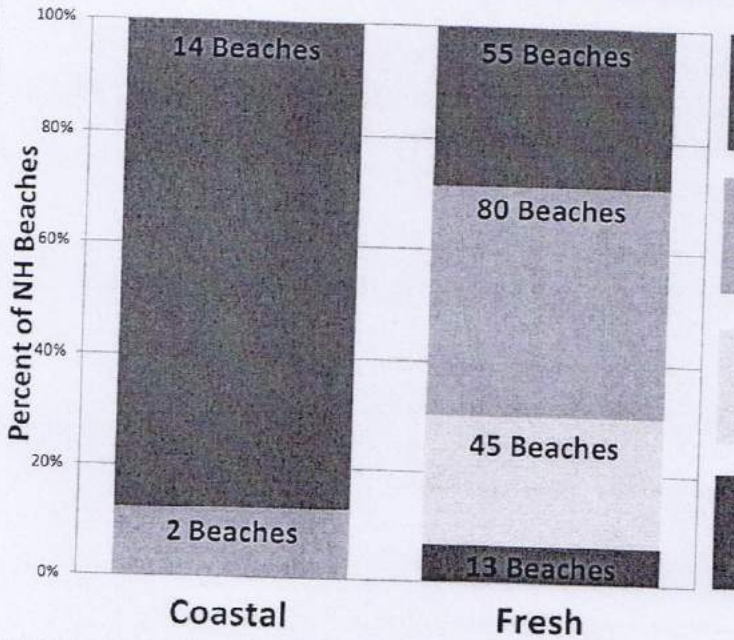


Very Good ≥ 98% of samples clean

Good 90-98% of samples clean

Fair 70-90% of samples clean

Poor ≤ 70% of samples clean

Seeley Town Beach on Phillips Pond

VERY GOOD
99% of samples clean

Location: Sandown

Visits scheduled each summer: 3

Samples taken since 2003: 85
Unclean Samples: 1

Advisories from 2003-2013: 2
Average length of advisory 2003-2013: 7.5 days

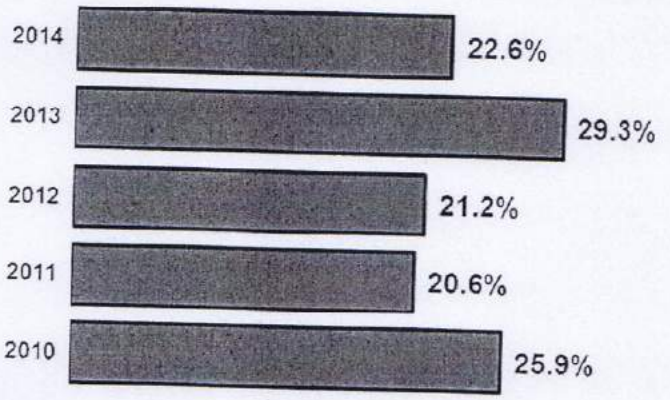
Advisories in 2014: 1
Days per advisory 2014: 7 days

How clean are New Hampshire Beaches? For each beach the number of clean samples was compared to the total number of samples tested to generate an assessment of beach cleanliness. During the summer, most freshwater beaches are sampled once a month while most coastal beaches are sampled twice a week. All coastal beaches and two-thirds of freshwater beaches fall into the Good or Very Good category.

NH548828

Statewide Beach Results

Beaches with one or more advisories in a summer



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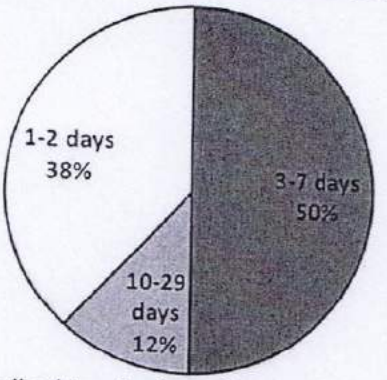

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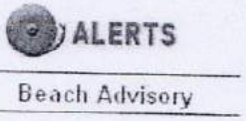

Subscribe to our newsletter. Select "Beach Advisories" at:
http://des.nh.gov/media/enews/index.htm

Follow us on Twitter
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http://twitter.com/NHDES_Beaches

Questions about beaches and sampling can be directed to:
Sonya Carlson, Beach Program Coordinator, (603) 271-0698, beaches@des.nh.gov

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Public Health Services
improving health, preventing disease, reducing costs for all

New Hampshire Public Health Laboratories
Department of Health and Human Services
29 Hazen Dr., Concord NH 03301
Phone: (603) 271-3445
Fax: (603) 271-2997

ANALYTICAL RESULTS

Workorder: A406853 - EPABEACH

Project ID: 8857000 - PHILLIPS POND SEELEY TB - SANDOWN

Lab ID: **A406853001**
Sample ID: **BCHSELSDNLF**
Description:

Matrix: WATER
Sample Type: SAMPLE
Collector : SARAH STOWELL

Parameters	Results	Units	RDL	DF	Prepared	Analyzed	Limit	Qual
Microbiology								
Preparation Method: EPA 1603 Modified mTec								
Analytical Method: EPA 1603 Modified mTec								
E.Coli, CTS	8	CTS/100mL		1	8/20/2014 15:08	8/21/2014 15:05		

Date: 08/26/2014

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New Hampshire Public Health Laboratories
Department of Health and Human Services
29 Hazen Dr., Concord NH 03301
Phone: (603) 271-3445
Fax: (603) 271-2997

ANALYTICAL RESULTS

Workorder: A406853 - EPABEACH
Project ID: 8857000 - PHILLIPS POND SEELEY TB - SANDOWN

Lab ID: A406853002
Sample ID: BCHSELSDNRT
Description:

Matrix: WATER
Sample Type: SAMPLE
Collector : SARAH STOWELL

Parameters	Results	Units	RDL	DF	Prepared	Analyzed	Limit	Qual
Microbiology								
Preparation Method: EPA 1603 Modified mTec								
Analytical Method: EPA 1603 Modified mTec								
E.Coli, CTS	<2	CTS/100mL		1	8/20/2014 15:08	8/21/2014 15:12		

Date: 08/26/2014

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Department of Health and Human Services
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Phone: (603) 271-3445
Fax: (603) 271-2997

ANALYTICAL RESULTS

Workorder: A405591 - EPABEACH
Project ID: 8857000 - PHILLIPS POND SEELEY TB - SANDOWN

Lab ID: A405591001
Sample ID: BCHSELSDNLF
Description:

Matrix: WATER
Sample Type: SAMPLE
Collector : SARAH STOWELL

Parameters	Results	Units	RDL	DF	Prepared	Analyzed	Limit	Qual
Microbiology								
Preparation Method: EPA 1603 Modified mTec								
Analytical Method: EPA 1603 Modified mTec								
E.Coli, CTS	2	CTS/100mL		1	7/28/2014 15:07	7/29/2014 15:28		

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ANALYTICAL RESULTS

Workorder: A405591 - EPABEACH
Project ID: 8857000 - PHILLIPS POND SEELEY TB - SANDOWN

Lab ID: **A405591002**
Sample ID: **BCHSELSDNRT**
Description:

Matrix: WATER
Sample Type: SAMPLE
Collector : SARAH STOWELL

Parameters	Results	Units	RDL	DF	Prepared	Analyzed	Limit	Qual
Microbiology								
Preparation Method: EPA 1603 Modified mTec								
Analytical Method: EPA 1603 Modified mTec								
E.Coli, CTS	6	CTS/100mL		1	7/28/2014 15:07	7/29/2014 15:28		

Date: 07/31/2014

NH DIVISION OF
Public Health Services
Improving health, preventing disease, reducing costs for all

New Hampshire Public Health Laboratories
Department of Health and Human Services
29 Hazen Dr., Concord NH 03301
Phone: (603) 271-3445
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ANALYTICAL RESULTS

Workorder: A404641 - EPABEACH
Project ID: 8857000 - PHILLIPS POND SEELEY TB - SANDOWN

Lab ID: A404641001
Sample ID: BCHSELSDNLF
Description:

Matrix: WATER
Sample Type: SAMPLE
Collector : M CHEESEMAN

Parameters	Results	Units	RDL	DF	Prepared	Analyzed	Limit	Qual
Microbiology								
Preparation Method: EPA 1603 Modified mTec								
Analytical Method: EPA 1603 Modified mTec								
E.Coli, CTS	8	CTS/100mL		1	7/9/2014 14:30	7/10/2014 13:44		

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ANALYTICAL RESULTS

Workorder: A404641 - EPABEACH
Project ID: 8857000 - PHILLIPS POND SEELEY TB - SANDOWN

Lab ID: **A404641002** Matrix: WATER
Sample ID: **BCHSELSDNRT** Sample Type: SAMPLE
Description: Collector : M CHEESEMAN

Parameters	Results	Units	RDL	DF	Prepared	Analyzed	Limit	Qual
Microbiology								
Preparation Method: EPA 1603 Modified mTec								
Analytical Method: EPA 1603 Modified mTec								
E.Coli, CTS	6	CTS/100mL		1	7/9/2014 14:38	7/10/2014 13:44		

NH Department of Environmental Services Volunteer Lake Assessment Program

Current Year Chemical and Biological Data

PHILLIPS POND

SANDOWN

October-10-2014

Stationid	Station Name	Zone	Depth	Startdate	Activityid	Category	Cl	ANC	Chl-a	Cond	PH	Secchi		TP	Turb
												NVS	VS		
PHISDND	PHILLIPS POND - DEEP SPOT	COMP	3M	05/18/2014	2014-268	SAMPLE			4.6						
				06/22/2014	2014-1025	SAMPLE			2.21						
				07/20/2014	2014-2242	SAMPLE			4.06						
				08/17/2014	2014-3576	SAMPLE			3.94						
			5M	09/14/2014	2014-4358	SAMPLE			2.71						
		EPI	2M	05/18/2014	2014-263	SAMPLE	=45	=10.9		=207	=6.02	=1.5	=2.85	0.0113	=3.06
				06/22/2014	2014-1022	SAMPLE	=50	=14.2		=232	=6.88	=1.77	=2.63	0.0154	=2.05
				07/20/2014	2014-2239	SAMPLE	=48	=13.2		=229	=6.81	=1.98	=3.1	0.0125	=2.7
				08/17/2014	2014-3571	SAMPLE	=49	=15.5		=226	=6.71	=2.03	=2.53	0.0156	=2.42
				09/14/2014	2014-4356	SAMPLE	=45	=3.1		=228	=6.89	=2.9	=3.375	0.0141	=0.99
		HYPO	4M	05/18/2014	2014-264	SAMPLE				=201	=6.44			0.0103	=1.33
				06/22/2014	2014-1023	SAMPLE				=218	=6.26			0.0155	=3.19
				07/20/2014	2014-2240	SAMPLE				=224	=6.47			0.0834	=48.5
				08/17/2014	2014-3572	SAMPLE				=172.6	=6.38			0.0299	=8.77
				09/14/2014	2014-4357	SAMPLE				=220	=6.56			0.0287	=4.21
PHISDNI	PHILLIPS POND - INLET			05/18/2014	2014-265	SAMPLE	=38			=215	=6.51			0.0295	=0.88
				06/22/2014	2014-1024	SAMPLE	=43			=246	=6.74			0.0386	=1.07
				07/20/2014	2014-2241	SAMPLE	=33			=190.1	=6.61			0.024	=2.04
				08/17/2014	2014-3574	SAMPLE	=37			=191.8	=6.51			0.0323	=1.55
PHISDNMI	PHILLIPS POND - METACOMET INLET			05/18/2014	2014-266	SAMPLE	=51			=208	=5.91			0.0151	=0.61
				08/17/2014	2014-3573	SAMPLE	=90			=369	=6.35			0.0264	=1.85
PHISDNO	PHILLIPS POND - OUTLET			05/18/2014	2014-267	SAMPLE	=44			=209	=6.38			0.0142	=1.25
				08/17/2014	2014-3575	SAMPLE	=44			=188.5	=6.3			0.0217	=1.04

Please Note: pH (units), TP (mg/L) (ND = < 0.005 mg/L), Cond (UMHOS/cm), Secchi (M), EC = E. coli (cts/100mL), Turbidity (NTU), ANC (mg/L), Chloride (mg/L), Chl-A (mg/M3)

VLAP CHEMICAL PARAMETER EXPLANATIONS

pH

Definition: pH is measured on a logarithmic scale of 0 to 14. Lake pH is important to the survival and reproduction of fish and other aquatic life. A pH below 5.5 severely limits the growth and reproduction of fish.

pH (units)	Category
<5	Acidified
5.0-5.4	Critical
5.5-6.4	Endangered
6.5-8.0	Satisfactory

ACID NEUTRALIZING CAPACITY (ANC)

Definition: Buffering capacity or Acid Neutralizing Capacity (ANC) describes the ability of a solution to resist changes in pH by neutralizing the acidic input to the lake. Historically, the waters of NH have had low ANC because of the prevalence of granite bedrock. The relatively low ANC values mean that NH surface waters are vulnerable to the effects of acid precipitation.

ANC (mg/L as $CaCO_3$)	Category
<0	Acidified
0-2	Extremely Vulnerable
2.1-10	Moderately Vulnerable
10.1-25	Low Vulnerability
>25	Not Vulnerable

TURBIDITY

Definition: Turbidity in the water is caused by suspended matter (such as clay, silt, and algae) that cause light to be scattered and absorbed, not transmitted in straight lines through water. High turbidity readings are often found in water adjacent to construction sites. Also, improper sampling techniques (such as hitting the bottom sediments or sampling streams with little flow) may also cause high turbidity readings. The Class B standard for a water quality violation is 10 NTUs over the lake background level.

Statistical Summary of Turbidity Values for NH Lakes and Ponds:

Turbidity (NTUs)	Category
<0.1	Minimum
22.0	Maximum
1.0	Median

TOTAL PHOSPHORUS

Note: The phosphorus results during the summer are reported by the DES State Chemistry lab with the units "mg/L". To convert to "ug/L", move the decimal point over three places to the right.

Definition: Phosphorus is the most important water quality parameter measured in our lakes. It is the nutrient that limits algae's ability to grow and reproduce. Phosphorus sources around a lake typically include septic systems, animal waste, lawn fertilizer, erosion from roads and construction sites, and natural wetlands.

Total Phosphorus (TP) Ranges for New Hampshire Lakes and Ponds:

TP (ug/L)	Category
1-10	Low (good)
11-20	Average
21-40	High
>40	Excessive

CONDUCTIVITY

Definition: Conductivity is the numerical expression of the ability of water to carry an electrical current. It is determined by the number of ionic particles present. The soft waters of New Hampshire have traditionally had low conductivity values. High conductivity may indicate pollution from such sources as road salting, septic systems, wastewater treatment plants, or agriculture runoff.

Note: Specific categories of good and bad levels can not be constructed for conductivity, because variations in watershed geology can result in natural fluctuations in conductivity. However, values in NH lakes exceeding 100 uMhos/cm generally indicate human disturbance.

CHLORIDE

The chloride ion (Cl^-) is found naturally in some surface ground waters and in high concentrations in seawater. Research has shown that elevated chloride levels can be toxic to freshwater aquatic life. In order to protect freshwater aquatic life in New Hampshire, the state has adopted acute and chronic chloride criteria of 860 and 230 mg/L respectively. The chloride content in New Hampshire lakes is naturally low, generally less than 2 mg/L in surface waters located in remote areas away from habitation. Higher values are generally associated with salted highways and, to a lesser extent, with septic inputs.

VLAP BIOLOGICAL PARAMETER EXPLANATIONS

CHLOROPHYLL-A

Definition: VLAP measures chlorophyll-a, a pigment found in plants, as an indicator of algal abundance. Because algae is a plant and contains chlorophyll-a, the concentration of chlorophyll-a found in the water provides an estimation of the concentration of algae.

Chlorophyll-a	Category
0-5 mg/m^3	Good
5.1 – 15 mg/m^3	More than desirable
>15 mg/m^3	Nuisance Amounts

WATER CLARITY (SECCHI-DISK TRANSPARENCY)

Definition: The Secchi-disk is a 20cm disk with alternating black and white quadrants used to measure water clarity (how far a person can see into the water). Transparency, a measure of water clarity, is affected by the amount of algae, color, and particulate matter within a lake.

Water Clarity	Category
<2 m	Poor
2-4.5 m	Good
>4.5 m	Exceptional

Note: Clarity values may vary depending on the maximum depth of the lake/pond. For example, if the maximum depth of the pond is 3 meters, a good clarity reading would be 2-3 meters.

DEFINITION OF UNITS

cts/100ml = Counts per 100 milliliters. Used to measure *E. coli*.

m = meters. Used to measure Secchi disk depth.

mg/L = milligrams per liter. Used to measure total phosphorus, acid neutralizing capacity, chloride, and dissolved oxygen concentrations. To convert to ug/L (microgram per liter) move the decimal point over three places to the right.

NTUs = Nephelometric turbidity measurement.

mg/m^3 = milligrams per meter cubed. Used to measure chlorophyll-a concentration.

uMhos/cm = micromhos per centimeter. Used to measure conductivity.

BACTERIA (*E. COLI*)

Definition: *E. coli* is a natural component of the intestines in humans and other warm-blooded animals. *E. coli* is used as an indicator organism for bacteriological monitoring because it is easily cultured and its presence in the water in defined amounts indicates that sewage MAY be present. If sewage is present in the water, potentially harmful pathogens may also be present.

The state standards for Class B waters specify no more than 406 *E. coli* cts /100mL in any one sample, or a geometric mean based on at least 3 samples obtained over a 60-day period be greater than 126 *E. coli* cts/100mL. For designated beach areas, more stringent standards apply: 88 *E. coli* cts/100 mL in any one sample, or a geometric mean of 3 samples over 60 days of 47 *E. coli* cts/100 mL.

PHYTOPLANKTON

(Note: Phytoplankton results will be included in the annual VLAP Report)

Definition: Phytoplankton are microscopic algae floating in the water column. The type of phytoplankton present in a lake can be used as an indicator of general lake quality. An abundance of cyanobacteria (such as *Anabaena, Aphanizomenon, Oscillatoria*, or *Microcystis*) may indicate excessive phosphorus concentrations or that the lake ecology is out of balance. Diatoms (such as *Asterionella, Melosira*, and *Tabellaria*) and golden-brown algae (such as *Dinobryon* or *Chrysosphaerella*) are typical of NH's less productive lakes.

DISSOLVED OXYGEN

Definition: Dissolved Oxygen or "DO" refers to the volume of oxygen contained within the water. Much of the DO in lakes comes from the atmosphere, inflowing streams and photosynthesis. Fish and other aquatic life depend on DO to survive. Seasonal changes can affect DO concentrations throughout the year. Warmer temperatures during the summer speed up the rates of photosynthesis and decomposition. When plants and algae die and decompose, oxygen is consumed. This decreases the amount of oxygen, especially in the un-circulated hypolimnion (lower) water layer. In the winter, under ice cover, the DO content can also deplete due to the lack of circulation from the atmosphere.

DO levels above 5.0 mg/L are considered sufficient for most aquatic life, although some cold water fish species require higher DO levels.

New Hampshire Volunteer Lake Assessment Program
2014 Field Data Sheet

Lake Name: Phillips Pond
Town: Sandown
Field Monitors: Al & MARION LAKE
Date Sampled: 9/14/14
Time Sampled: 2:30 pm
Bottom Depth at deep spot: 5.5M m (5.5m)

WEATHER CONDITIONS *(Circle one for each):*

Cloud Cover	Air Temperature	Wind Conditions	Water Surface	Lake Level
(Clear)	<40° cold	Calm	Calm	High
Hazy	(41°-60° cool)	(Breezy)	Ripples	(Normal)
Partly cloudy	61°-80° warm	Strong	(Small waves)	Low
Overcast	>80° hot	Gusty	Moderate waves	
			White caps	

Hj 9/10/14

PRECIPITATION CONDITIONS *(Check off all that apply):*

Rain while sampling: no Rain previous 24 hrs: 0.2 Rain previous 48 hrs: 0.2 Rain previous 72 hrs: 0.2

Indicate how much rain: 0.20 OR No rain for past _____ days

SAMPLING REMINDERS

1. Bring your VLAP Field Manual for reference, and a clipboard to secure field data sheets.
2. Complete the Field Sampling Procedures Checklist
3. Bring your aquatic plant ID references. Compare plants in the lake to the drawings of the plants reference. Submit samples of suspicious looking plants to lab for identification.
4. Notify the lab when you will be returning samples. (DES VLAP Coordinator = 271-2658)

MONITOR TRAINING QUALIFICATIONS:

Did one monitor who sampled today attend the VLAP Refresher Workshop this spring? (YES) NO 2013

If "NO": Did at least one monitor who sampled today already sample with the DES Biologist this year during the annual visit? (circle one) YES NO

If "NO": Were you trained by another experienced volunteer this season? YES NO

If "YES", please list name of volunteer who trained you: VLAP TRAINING

If you answered "NO" to the above three questions, please briefly describe your training:

DEEP SPOT SAMPLES *(One Large White **and** One Small Brown Bottle (with acid) **at each depth**, collected with Kemmerer bottle):*

2014 Sample Depths (**meters**): 2, 4.5, _____

2013 Sample Depths (**meters**): 2, 4.5, _____

CHLOROPHYLL-A SAMPLE *(One Large Brown Bottle, does not contain acid):*

Method: Composite [X] Integrated Tube [ ] Starting Sample Depth: 3 m

Note: In lakes with 3 thermal layers, start at the mid-point of the middle layer & collect sample at each meter up to 1 meter. In other lakes, start at 2/3 of the depth and collect at every meter up to 1m.

SECCHI DISK TRANSPARENCY *(conduct at least two readings and take the average)*

Without Viewscope (required)

*Please take reading on **SHADY** side of boat.*

Reading 1: 2.80 m
Reading 2: 2.90 m
Reading 3: 3.0 m
Reading 4: 3.0 m
Average: 2.90 m

Disk visible on bottom? ____yes X no

With Viewscope (required)

*Please take reading on **SUNNY** side of boat.*

Reading 1: 3.4 m
Reading 2: 3.35 m
Reading 3: 3.2 m
Reading 4: 3.4 m
Average: 3.375 m

Disk visible on bottom? ____yes X no

OVER →

TRIBUTARY SAMPLES COLLECTED *One large white **and** one small brown (contains acid) at each station. **Optional:** one small white (E. coli). List the station name, stream flow and conditions at time of sampling. Check off appropriate column for samples collected.*

Station Name	Stream Flow Conditions and Observations (Dry, Stagnant, Low, Moderate, High)	Large White Bottle (pH, turb., cond., chloride)	Sm. Brown Bottle (phosphorus)	Sm. White Bottle (*E. coli*)
PHiSDNi	STAGNANT	NO Samples		
PHiSDNMi	STAGNANT			
PHiSDNO	STAGNANT			

NEW SAMPLING LOCATION:

Did you sample at a new location this sampling event? (Circle one) **YES** (NO)

If "Yes", provide a map with station location and complete a station identification form for each new sampling station and submit with samples.

Contact the VLAP Coordinator for a station identification form or print out a form from the DES website at: http://des.nh.gov/organization/divisions/water/wmb/sampling.htm

If you do not have a station identification form, provide the following information:

Station Name: _____

Type of Station *(specify in-lake (near shore), tributary)*: _____

Station Location: *(Please provide one of the following):*

1. **Latitude/Longitude Coordinates:** GPS coordinates: _____ °N Lat _____ °W Long

   Specify make and model of GPS: _____

2. **Include a map indicating the approximate location of station and station name.**

FIELD OBSERVATIONS *(Please note any watershed observations, areas of erosion and sedimentation, recent storms/droughts, algal blooms, suspicious looking plants, wildlife observed, sampling problems, equipment problems, and areas of concern):*

☐ Please check and leave phone # if VLAP Coordinator should note immediately.

VLAP VOLUNTEER MONITOR FIELD SAMPLING PROCEDURES CHECKLIST

(TO BE COMPLETED BY THE VOLUNTEER AND TO BE FILED WITH ORIGINAL FIELD DATA SHEET)

Lake Name: Phillips Pond
Town Name: SANDOWN
Volunteer Monitors: Al & Marion Lake

Date: 9/14/14
Time: 2:30 PM

SAMPLING TASK	TASK COMPLETE	COMMENTS
I. PREPARATION FOR SAMPLING		
1. Anchor with enough line to anchor at deep spot	✓	
2. Life vests for everyone on the boat	✓	
II. DEEP SPOT SAMPLING		
Locating the Deep Spot(s):		
1. Indicate method used to locate deep spot: *circle: triangulation, GPS, depth finder, depth measurement with Kemmerer bottle, other (specify):* _____	✓	
2. If using Kemmerer bottle to determine deep spot depth: • Kemmerer bottle set up properly and filled with water used to check the bottom depth (*this is called sounding*)	✓	
3. Depth of deep spot recorded on data sheet	✓	
Sample collection:		
Deep spot samples (in general):		
1. White bottle rinsed with sample before filling	✓	
2. White bottles filled to the neck	✓	
3. Total phosphorus bottles were ***not rinsed***	✓	
4. Total phosphorus bottles were filled from white bottle	✓	
5. Total phosphorus bottles were filled to the neck	✓	
6. Samples collected at the appropriate depths Depths pre-determined by the DES biologist and recorded on data sheet *OR* Depths determined based upon temperature profile and thermal layering	✓	
Bottom (Hypolimnion) samples:		
1. After sounding, bottom sediments allowed to settle out before collecting deepest sample	✓	
2. Bottom (hyoplimnion) sample checked for sediment before filling bottles	✓	
Chlorophyll-a sample:		
1. Indicate method used to collect sample (*composite or integrated sampler*):		
2. Bucket rinsed with lake water and discarded	✓	
Composite method:		
1. Kemmerer bottle lowered to appropriate depth	✓	
2. Water collected at each meter to surface	✓	
3. Brown bottle rinsed with sample before filled	✓	
4. Brown bottle filled to the neck with sample	✓	
Integrated sampler method:		
1. Weighted end & chain lowered to same depth (no slack in tube or chain)		
2. End of tube crimped tightly		
3. Weighted end hauled up by chain only (not tube)	NO CHAIN (used Measured Rope	
4. Weighted end placed in bucket. Crimped end lifted above head and then uncrimped *(open end of tube should always higher than water level in tube)*	✓	
5. Brown bottle rinsed with sample before filled	✓	

SAMPLING TASK	TASK COMPLETE	COMMENTS
Transparency		
1. Non-viewscope readings taken on the **shady** side of boat	✓	
2. Viewscope readings taken on the **sunny** side of the boat	✓	
3. Disk lowered until it just disappears	✓	
4. Disk pulled up until white portion just appears	✓	
5. Chain grabbed at water level and depth estimated to tenths of a meter	✓	
6. One reading taken by at least two monitors	✓ RAM	
III. TRIBUTARY SAMPLING		
1. Sample not collected if tributary is not flowing or is too shallow to avoid disturbance to bottom and noted on data sheet	yes	
2. Sample collected upstream if sediment disturbed		
3. Tributary flow noted and recorded on field data sheet		
3. White bottle was rinsed with sample by scooping into stream flow, discarded downstream, and then bottle refilled		
4. TP bottle was ***not rinsed*** with sample		
5. TP bottle was filled to ***neck*** from white bottle and not over-filled		
6. White bottle was refilled or topped-off to the neck of the bottle		
IV. BACTERIA SAMPLING		
1. Sterile small white bottle used for collection		
2. Cap was removed just prior to sample collection		
3. Care was taken to avoid touching the neck, inside the bottle, or cap		
4. Lake water: sample taken at approx. knee depth		
5. Flowing stream: sample taken midway b/w top & bottom of water, in upstream direction		
6. Mouth of bottle pointed towards water surface, submerged completely, and then used to scoop water in an upward "U-shaped" motion away from the person taking the sample		
7. Bottle was ***not rinsed*** with sample to avoid contamination		
8. Bottle was filled completely allowing some air space at top of bottle.		
9. Efforts made to avoid getting sediment and debris in sample		
V. SAMPLE LABELING		
1. Bottles properly labeled with waterproof pen *lake name, station, date, time, depth (for deep spot)*	✓	
VI. FIELD DATA SHEET		
Data sheet was properly filled out	✓	
One field data sheet per deep spot completed	✓	

Signature (monitors): RK Lee

Marion Lake

VLAP SAMPLE RECEIPT CHECKLIST 2014

(TO BE COMPLETED BY LABORATORY STAFF ONLY
AND THEN TO BE FILED WITH ORIGINAL FIELD DATA SHEET)

Lake Name: Phillips Pond

Town Name: Sandown

Date samples received: 9/15/14
Time samples received: 11:39
Date samples collected: 9/14/14
Time samples collected: 12:30

SAMPLING ISSUE/SAMPLE REJECTION CRITERIA	YES	NO	COMMENTS/SAMPLES AFFECTED/SAMPLES REJECTED
1. HOLDING TIME			
Were samples returned to the lab within 24 hours? *Sample Rejection Criteria: If samples were returned between 24-48 hours after collection, note in the Log-in system and notify VLAP Coordinator. If returned after 48 hours, reject samples for analysis and notify VLAP Coordinator. If E. coli samples – reject after 24 hours.*	X		*If "No" then indicate how many hours since samples were taken:* ____ ***Were samples rejected?*** *Yes ___ No X*
Were samples "cooled" after collection? *Sample Rejection Criteria: If no attempt was made to "cool" samples for the period after collection and until brought into lab, note in Log-in system. If returned after 24 hours and not cooled the samples should be rejected for analysis.*	X		***Temperature:*** ***Specify method for cooling:*** *ice X cold pack ___ refrigerated cooler ___* *nothing ___ other (specify):* ____ ***Were samples rejected?*** *Yes ___ No ___*
2. FIELD DATA SHEET			
Was the data sheet adequately & completely filled out?	X		***Specify problems:***
Were at least two Non Viewscope Secchi Disk readings taken?	X		
Were two With Viewscope Secchi Disk readings taken?	X		
Was one field data sheet submitted per deep spot?	X		
3. COMPLETENESS OF SAMPLE SETS			
How many samples were brought in? # big white bottles: 2 # TP bottles: 2 # plankton bottles: ___ # Chlorophyll bottles: 2 # E. coli bottles: ___ # Chloride bottles: ___			
Were complete sets of samples brought in? *(1 TP sample for every big white bottle and 1 chlorophyll sample per deep station?)*			***Specify problems:***
4. CONDITION OF SAMPLES			
Were the correct bottles used for sample collection? *Sample Rejection Criteria: Samples that were not collected in the proper bottles should be rejected for analysis.*	X		***Were samples rejected?*** *Yes ___ No ___* ***Specify Samples rejected:***
large white bottle = pH, ANC, conductivity, turbidity, chloride	X		
small brown bottle = TP	X		
big brown bottle = chlorophyll-a	X		
sterile small white bottle = E. coli			
small white bottle = chloride			
Were bottles adequately & completely labeled? *(lake name, station, date, time, depth)*	X		***Specify problems:***
Was the condition of samples acceptable? *(leakage?)*	X		***Specify problems:***
. SAMPLE VOLUME			
o the bottles contain the appropriate volume of sample?			
Big white bottles: up to the neck of the bottle?	X		
TP bottles: up to the neck of the bottle?	X		
Do TP bottles appear to have been overfilled?		X	
SAMPLE CLARITY			
e samples free from sediment?	X		
e samples free from organic material (& plants)?	X		
e samples free from color?	X		***If "no", specify samples & color:***
SAMPLE PRESERVATION			
the pH of each TP sample 2 or less?	X		***If "No", preserve samples immediately.***
CORRECTIVE ACTIONS			
d monitors follow all proper sampling procedures?	X		
no", were the monitors contacted about problems?			
Specify who and when contact was conducted:			
Specify how contact was conducted *(in-person, phone, email, mail):*			
icate monitor's response: will re-sample ___ will improve future performance ___ other (specify)			

SAMPLE LOG *(Please fill out at the lab bench and then bring to the computer to assist with sample log in)*

SAMPLE/STATION NAME	Depth (m)	Does Station exist in log-in pull down (Yes or No) *If "No", then free type the name into Log In. When you print out chem. lab sheet, in the second right-most column, write in the free-typed name and in the left most column, cross out the free-typed name and write "WSHEDTBD. Put paperwork on VLAP Coord. desk*	Big White Bottle *(pH, Turb, cond, ANC-epi only)*	Small Brown Bottle *(Total phos.)*	Steril e White Bottle *(E. coli)*	Big Brown Bottle *(Chl-a)*	Small Glass Jar *(Plankt on)*	Small White Bottle *(Cl-)*	Other *Please Specify*
Non View Scope Secchi Disk Depth Ave =	2.9								
~~With View Scope Secchi Disk Depth Ave=~~	3.375								
Epilimnion	2		X	X					
Hypolimnion	4.5		X	X					
Composite	5					X			

Volunteer Lake Assessment Program Individual Lake Reports

PHILLIPS POND, SANDOWN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,006	Max. Depth (m):	5.8	Flushing Rate (yr^{-1}):	3.7
Surface Area (Ac.):	85	Mean Depth (m):	3.1	P Retention Coef:	0.54
Shore Length (m):	2,600	Volume (m^3):	1,058,500	Elevation (ft):	212

TROPHIC CLASSIFICATION

Year	Trophic class
1977	MESOTROPHIC
1990	MESOTROPHIC

KNOWN EXOTIC SPECIES

Fanwort

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

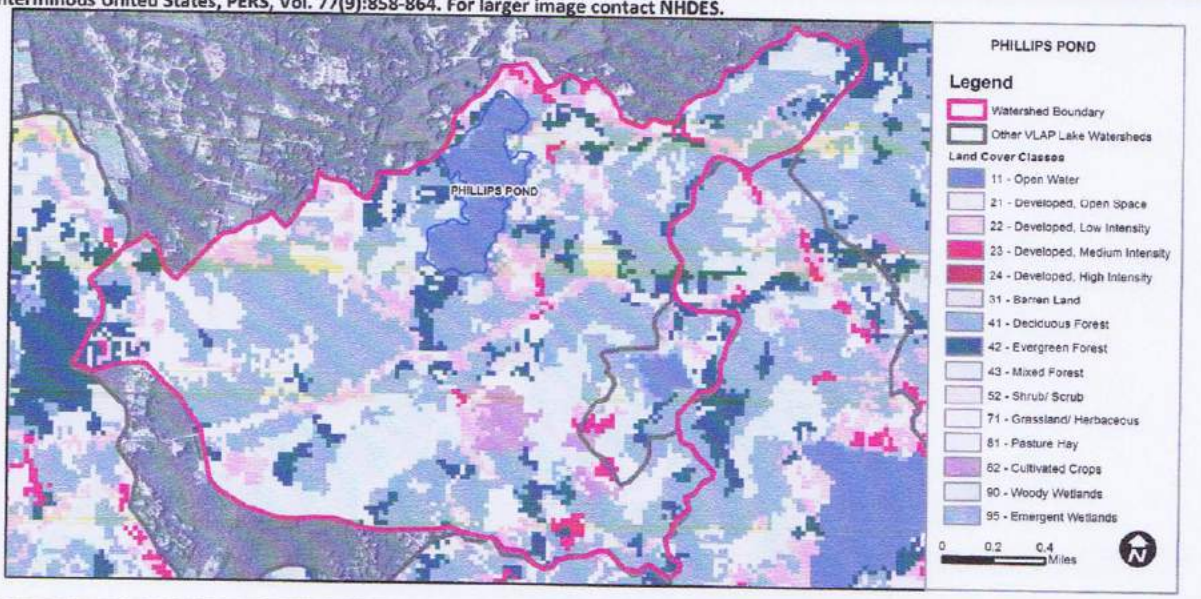
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Good	At least 10 samples with 1 sample but < 10% of samples exceeding criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

PHILLIPS POND - SEELEY TOWN BEACH	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
PHILLIPS POND - SEELEY TOWN BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.

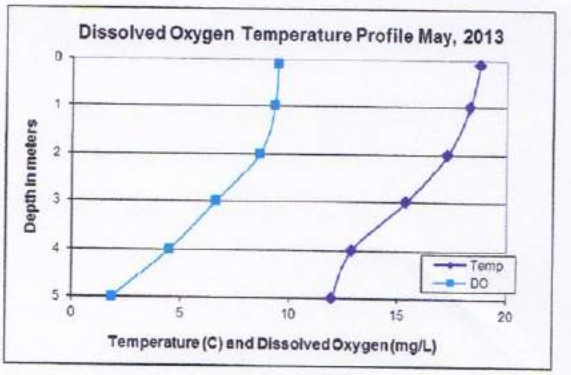


Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	5.42	Barren Land	0.36	Grassland/Herbaceous	0.98
Developed-Open Space	7.18	Deciduous Forest	38.38	Pasture Hay	6.56
Developed-Low Intensity	9.29	Evergreen Forest	9.97	Cultivated Crops	1.91
Developed-Medium Intensity	1.39	Mixed Forest	1.97	Woody Wetlands	13.57
Developed-High Intensity	0	Shrub-Scrub	0.97	Emergent Wetlands	2.13

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
PHILLIPS POND, SANDOWN, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS *(Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were elevated in May and June and much greater than the state median; however chlorophyll decreased to normal levels July through September. Significant early summer stormwater runoff from above average rainfall may have contributed nutrients necessary to cause the elevated algal growth. Visual inspection of historical data indicates stable chlorophyll levels since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride were elevated and much greater than the state medians. Visual inspection of historical data indicates stable epilimnetic conductivity since monitoring began.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus was slightly elevated throughout the summer and greater than the state median. Visual inspection of historical data indicates relatively stable epilimnetic phosphorus since monitoring began. Hypolimnetic phosphorus was elevated in July and August when turbidity levels were elevated. Inlet and Metacomet Inlet phosphorus levels were elevated July through September when tributary flows were lower.
- **TRANSPARENCY:** Transparency was lower in 2013 and much less than the state median; likely due to the higher chlorophyll levels. Visual inspection of historical data indicates relatively stable transparency since monitoring began.
- **TURBIDITY:** Hypolimnetic turbidity was elevated in July and August potentially due to bottom sediment and/or the release of organic compounds from bottom sediments when dissolved oxygen levels deplete below 1.0 mg/L. Inlet turbidity was elevated in July, tributary flow was good and no recent rain events had occurred.
- **PH:** Epilimnetic pH was sufficient to support aquatic life, however hypolimnetic pH dipped below critical levels May through July. Visual inspection of historical data indicates relatively stable epilimnetic pH since monitoring began.
- **RECOMMENDED ACTIONS:** Phosphorus and chlorophyll levels are higher than desirable likely due to various non-point sources of pollution entering the pond through stormwater runoff. Educate watershed residents on ways to reduce stormwater runoff from their properties utilizing DES' "NH Homeowner's Guide to Stormwater Management". Educate residents on reducing fertilizer usage and using no phosphate fertilizers. Conductivity and chloride levels are elevated likely due to road salting practices. Encourage local road agents to obtain a Voluntary NH Salt Applicator license through the UNH Technology Transfer Center's (T2) Green SnowPro Certification Program.



NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

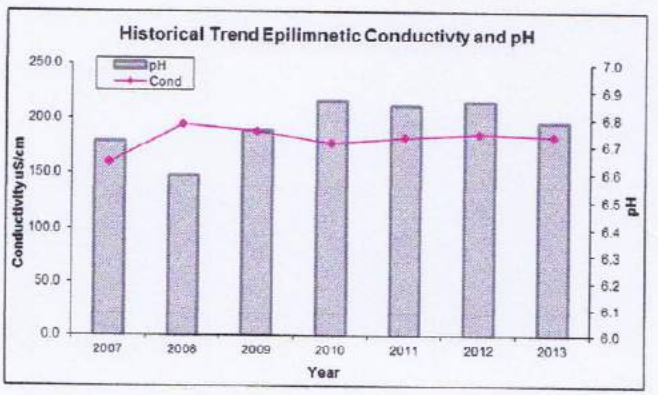
NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

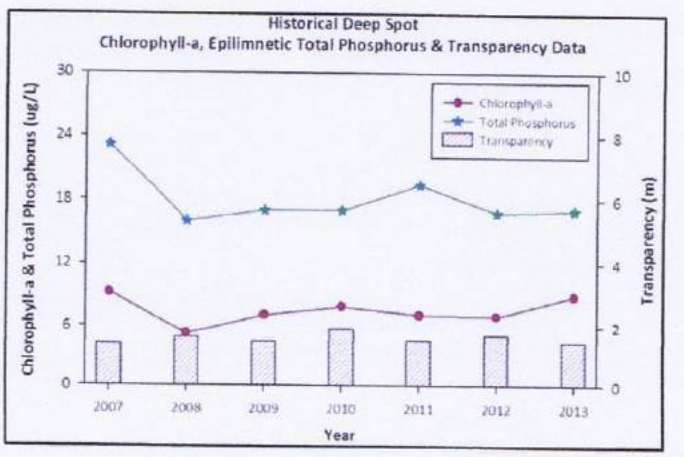
Table 1. 2013 Average Water Quality Data for PHILLIPS POND

Station Name	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu	
						NVS	VS		
Epilimnion	14.3	8.92	40	183.8	17	1.47	1.68	1.03	6.79
Hypolimnion				187.9	21			3.64	6.46
Inlet			31	193.5	28			1.26	6.58
Metacomet Inlet			37	170.6	21			0.53	6.04
Outlet			39	201.2	18			0.87	6.36

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	N/A	Ten consecutive years of data necessary.	Chlorophyll-a	N/A	Ten consecutive years of data necessary.
Conductivity	N/A	Ten consecutive years of data necessary.	Transparency	N/A	Ten consecutive years of data necessary.
			Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary.





Volunteer Lake Assessment Program Individual Lake Reports

SHOWELL POND, SANDOWN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	154	Max. Depth (m):	8	Flushing Rate (yr^{1})	1.2
Surface Area (Ac.):	20	Mean Depth (m):	3.1	P Retention Coef:	0.7
Shore Length (m):	1,000	Volume (m^{3}):	235,500	Elevation (ft):	229

TROPHIC CLASSIFICATION

Year	Trophic class
1997	EUTROPHIC
2006	EUTROPHIC

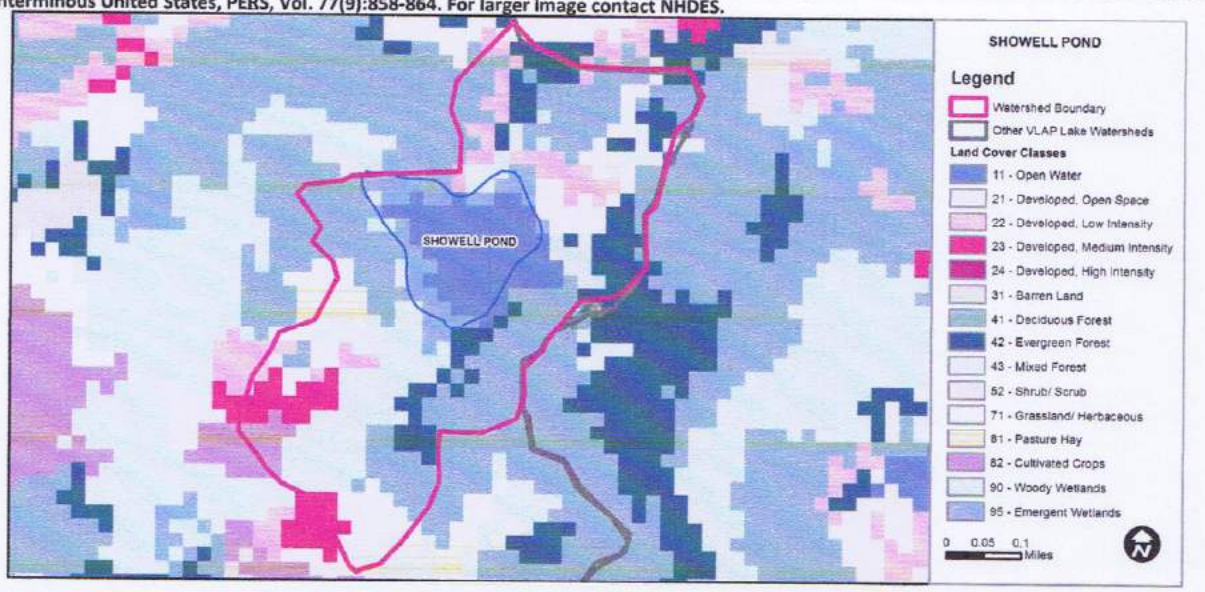
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Bad	>/=5 samples and median is >2x threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Bad	>/=5 samples and median is >2x threshold.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



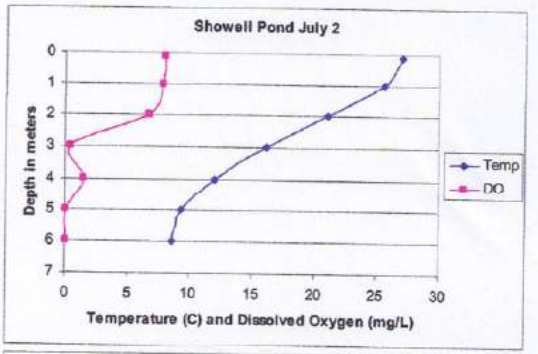
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	11.6	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	7.42	Deciduous Forest	29.19	Pasture Hay	4.35
Developed-Low Intensity	6.45	Evergreen Forest	11.13	Cultivated Crops	2.1
Developed-Medium Intensity	4.35	Mixed Forest	2.9	Woody Wetlands	15
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	5.81

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
SHOWELL POND, SANDOWN, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic*)

- **CHLOROPHYLL-A:** Chlorophyll levels were greatly elevated in July and September and cyanobacteria blooms occurred throughout the summer and fall. Historical trend analysis indicates a relatively stable chlorophyll level since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Conductivity was elevated at all stations and chloride was slightly greater than the NH lake median.
- **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) phosphorus levels were stable in July and September and much greater than the NH lake median. Hypolimnetic (lower water layer) phosphorus levels were elevated due to the release of phosphorus from lake sediments under conditions of oxygen depletion. Inlet and Outlet phosphorus levels were also elevated.
- **TRANSPARENCY:** Transparency decreased greatly from July to September due to the cyanobacteria bloom. Historical trend analysis indicates a relatively stable transparency since monitoring began.
- **TURBIDITY:** Epilimnetic and hypolimnetic turbidity was elevated due to algal and cyanobacteria growth, particularly in September. Inlet and Outlet turbidity was average for those stations.
- **pH:** Hypolimnetic pH tends to drop below desirable levels.
- **RECOMMENDED ACTIONS:** Utilize the TMDL report to apply for a Watershed Assistance Grant to assist with implementing BMPs to reduce phosphorus loading. Monitor nitrogen levels at the deep spot to help assess whether nitrogen is triggering the cyanobacteria blooms and not phosphorus.

Dissolved Oxygen & Temperature Profile



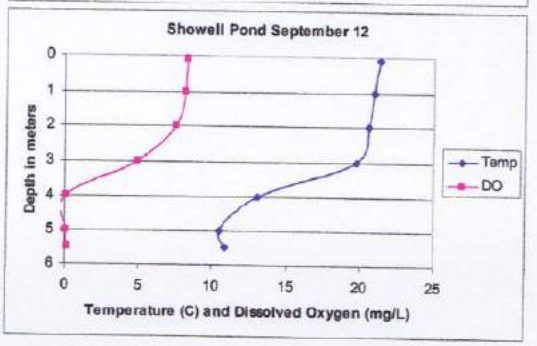
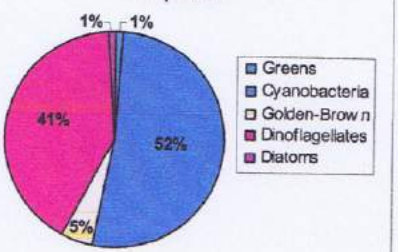


Table 1. 2012 Average Water Quality Data for SHOWELL POND

Station Name	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu	
						NVS	VS		
Deep Epilimnion	15.0	33.6	19	129.5	24	1.34	1.58	6.90	7.01
Deep Hypolimnion				142.2	50			9.58	6.39
Inlet				181.4	43			1.50	7.01
Little Mill Road Outlet				195.0	56			1.82	6.75

Showell Pond Phytoplankton Population

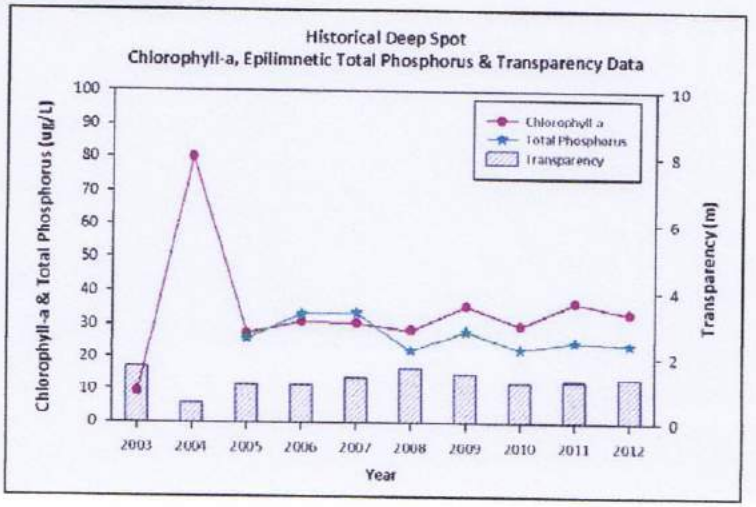


NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Stable	Data not significantly increasing or decreasing.
Transparency	Stable	Data not significantly increasing or decreasing.
Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary for trend analysis.



This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:
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Conserving Water at Home

Clean Waters

Water is a precious natural resource that benefits all living things. It provides nourishment for people, animals and plants, and serves as the living environment for aquatic life. Maintaining a safe and adequate water supply is everyone's responsibility. The daily actions of individuals and communities directly impact water supplies. By making sensible choices, people can preserve and protect household water.

Water conservation has personal and economic impacts. Especially during drought conditions, homeowners can extend their water supply by practicing conservation year round. An extended water supply provides an added measure of safety, protects lawns and gardens, and enables people to enjoy modern conveniences which often are taken for granted, such as a consistent water supply and plumbing that operates as designed. Water consuming appliances may not produce the expected results during drought conditions (e.g., laundry may appear discolored). Municipal customers save money on water, sewer, energy and potential tax bills by practicing conservation. Municipalities that consume substantial amounts of water typically increase taxes in order to construct sewage treatment plants that can adequately handle the volume and lessen the load on existing systems. It is preferable for communities to improve water treatment technology, rather than build additional treatment plants. Both municipal and household sewage treatment systems require water in order to function. As water consumption increases, costs increase. For homeowners on private septic systems, the tank must be pumped more frequently with increased water use. As septic systems experience greater stress, they are likely to require replacement more frequently, costing thousands of dollars.

Modify your household water usage patterns by involving every person in your home. Children can get really excited if you make it a game and are a source of inspiration for the entire family!

In the bathroom...

- Shorten shower time (use a minute timer) and install low-flow-showerheads (that deliver 1.5 gallons of water per minute) with shut-off valves (for turning water off temporarily while soaping or shampooing) and aerators (screens that introduce bubbles, producing a feeling of greater water pressure). These devices are easily installed and very cost effective.
- Run hot water very briefly before getting in the shower. When taking a bath, close the stopper from the start and then let the water rise in temperature in the bathtub.
- Install low-flow faucet fixtures and repair leaks promptly. A leaky faucet can result in a daily loss of fifteen gallons of water. Encourage family members to turn faucets off tightly when not in use; turn the water on and off while brushing your teeth or partially fill the basin while shaving to save up to ten gallons of water daily. Continuously running water is very wasteful.
- Toilets are the major water consumers in most homes. Consider replacing older toilets with ultra-low-flush (ULF) models. Traditional toilets use about 3.5 to 7 gallons of water per flush, depending upon their age. ULF models use about 1.6 gallons per flush and are characterized by efficient bowl and discharge designs, compatible with existing plumbing fixtures. If toilet replacement is not feasible, be sure to check all household toilets for leaks by placing three

drops of food coloring inside the tank. If the food coloring appears in the bowl without flushing, a leak is present. The trip mechanism may not be attached properly; or the flushball/flapper may be old and distorted in shape or may not be making the right contact with the ball seat and needs to be replaced. If the valve is not shutting off, the float ball may either need to be adjusted or repaired/replaced if defective. Occasionally, the ball seat may be the source of the problem that can be solved by cleaning, repairing or replacing the seat. Installing a dual flush mechanism on an existing toilet is another option until the toilet can be replaced. With this mechanism the user can choose between two different water settings.

• Remind family members to dispose of kitty litter, tissues, paper towels, cigarettes and other litter in wastebaskets... not the toilet!

In the kitchen...

• Run the sink for the minimum amount of time necessary to clean dishes, food, pots and pans and other items. Soak dishes in a dishpan, if necessary. Rinse all vegetables at once. Avoid running water continuously when performing kitchen tasks!

• Replace faucets with water-saving devices and check valves for leaks.

• Use the minimum amount of detergent (low-sudsing) to avoid excessive rinsing of dishes and countertops.

• Apply elbow grease and a sponge or scrubber to clean sinks. Do not use lots of water to remove debris from sinks.

• Store a pitcher of cold water in the refrigerator so you will avoid running water until it gets cold.

• Research has shown that automatic dishwashers use less water than hand dishwashing. Measure detergent, select water and energy conserving cycles, run only full loads and avoid excessive pre-rinsing.

• Boil only as much water as you need in a tea kettle or covered pot (with a lid) and turn it off as soon as it boils to reduce evaporation and waste.

• Dispose of vegetable scraps in a compost pile; the garbage disposal wastes water.

In the laundry...

• Sort clothing, pretreat stains, select the load size which corresponds to the quantity of clothing you are washing, measure detergent, and use the recommended water temperature.

• When purchasing a washing machine, consider new front-loading models that consume only 30 percent of the water of traditional top-loading models.

In the household...

• Inspect your water meter for leaks by reading the meter (number) at night (after family members have stopped using water). The next morning, before anyone uses water, check the number on the meter again. If the number has changed, there is a leak in the system. Assuming leaks in household faucets/appliances have already been corrected, have the piping system inspected to determine the source.

• It is preferable to select household cleaners that do not require rinsing with water. For cleaners requiring hydration, measure and make the minimum amount needed.

Do Your Part, Be SepticSmart:

The Do's and Don'ts of Your Septic System

Learn these simple steps to protect your home, health, environment and property value:

septicsmart
U.S. Environmental Protection Agency

Protect It and Inspect It:

Do:

- Have your system inspected (in general) every three years by a licensed contractor and have the tank pumped, when necessary, generally every three to five years.

Think at the Sink:

Don't:

- Pour cooking grease or oil down the sink or toilet.
- Rinse coffee grounds into the sink.
- Pour household chemicals down the sink or flush them.

Do:

- Eliminate or limit the use of a garbage disposal.
- Properly dispose of coffee grounds & food.
- Put grease in a container to harden before discarding in the trash.

Don't Overload the Commode:

Don't:

- Flush non-degradable products or chemicals, such as feminine hygiene products, condoms, dental floss, diapers, cigarette butts, cat litter, paper towels, pharmaceuticals.

Do:

- Dispose of these items in the trash can!

Shield Your Field:

Don't:

- Park or drive on your drainfield. The weight can damage the drain lines.
- Plant trees or shrubs too close to your drainfield, roots can grow into your system and clog it.

Do:

- Consult a septic service professional to advise you of the proper distance for planting trees and shrubs, depending on your septic tank location.

Don't Strain Your Drain:

Don't

- Concentrate your water use by using your dishwasher, shower, washing machine, and toilet at the same time. All that extra water can really strain your septic system.

Do:

- Stagger the use of water-generating appliances. This can be helpful especially if your system has not been pumped in a long time.
- Become more water efficient by fixing plumbing leaks and consider installing bathroom and kitchen faucet aerators and water-efficient products.

For more SepticSmart tips, visit: **www.epa.gov/septicsmart**

EPA 832-R-13-002 • September 2013

Keep Gasoline From Your Drinking Water

Gasoline is one of the most dangerous products commonly found around the home, yet people sometimes use it and store it with little care. Some of the more toxic chemicals in gasoline that have been found in drinking water include benzene, toluene, and MtBE. Even very small gasoline spills can contaminate your drinking water wells or a public water supply.

How to Protect Your Drinking Water from Gasoline

Avoid spilling gasoline on the ground, especially near wells

- Don't top off your fuel tank when filling your lawn mower, snow blower, etc.
- Keep refueling and engine work away from water supply wells. Do the work over a concrete floor or similar barrier, and immediately clean up any gas or oil spills.
- Don't drain gasoline from these machines onto the ground.
- Don't ever use gasoline to burn brush.

Avoid spilling gasoline in lakes, ponds, and rivers

- Fill portable tanks from outboard boat engines on shore, not near water. If you own a larger boat, make sure it has no-spill tank vents.
- Keep special gasoline-absorbing pads on your gas-powered boat; know how to use them.
- Refuel snowmobiles and ice augers onshore; do not take gasoline storage tanks onto ice-covered ponds.

Store gasoline properly

- Use a clearly-labelled container made for gasoline, with a spout to avoid spills.
- Keep gasoline containers in a dry, well-ventilated shed or detached garage away from water supply wells. Don't keep metal gasoline cans on a dirt floor for extended periods.

Dispose of waste gasoline properly

- Handle old or dirty gasoline as hazardous waste. Bring it to a household hazardous waste collection site in a proper gasoline container.

What To Do If A Petroleum Spill Occurs

First, stop the discharge and prevent any further spillage. Then contact your local fire department. If the spill impacts any surface or groundwater, or if the spill is greater than 25 gallons, you must also notify the N.H. Department of Environmental Services at 271-3644, or the N.H. State Police at 1-800-346-4009.

NHDES

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