

Municipality/Organization: Town of Sandown

EPA NPDES Permit Number: NHR041032

MaDEP Transmittal Number: W-

Annual Report Number

& Reporting Period: No. 1: March 2016-March 2017

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

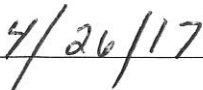
Certification:

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: 

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 14 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
PE-1 Revised	Public Awareness – Video	Health Officer/ Ed Mencis	12 showings/yr	2 DVD's (Reduce runoff and After the Storm) showing regularly on local cable TV channel. Link to view videos on town website.	2 Video's – After the Storm and In Small Doses – Arsenic are on town website and available to public at any time
PE-2 Revised	Educational Flyer	DPW Director/ Arthur Genualdo	# Flyers Distributed (2600/yr)	Keep Gasoline from your Drinking Water and Homeowner Septic System Checklist flyers distributed to residents by transfer station attendants.	Keep Gasoline from your Drinking Water and When it Rains flyers distributed to residents by transfer station attendants. Copies attached.
PE-3 Revised	Web Page Linked to Main Page	Town Administrator/ Lynne Blaisdell	10% of main page visitors	Continue to update website with Angle Pond, Seeley Beach/Philips Pond water sampling information – attached.	Continue to update website with Angle Pond, Seeley Beach/Philips Pond water sampling information. Reports attached.
PE-4 Revised	Town Library Information Kiosk	Selectman Jon Goldman	1 project/yr	Sample flyers on display at the Sandown Public Library Copies attached	Sample flyers on display at the Sandown Public Library
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 14 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
PP-1 Revised	Town Board Coordination	Selectman Jon Goldman	# Participants/ # Meetings	Meetings with Julie Labranche from RPC to prepare for new MS4 permit. Planning, Conservation, Building, Health, Public Works, Town Administrator all represented at meetings. 3-4 meetings held during 2015	Preparation for new permit – information relayed to key department heads Conservation Commission works with the Planning Board to enforce the erosion control ordinance
PP-2 Revised	Town Deliberative Session	DPW Director/ Arthur Genualdo	Discuss & Pass Warrant Article Costs allocated via the yearly budget	Voters passed a Bridge Capital Reserve Fund for repair and maintenance of local bridges. Voters passed Road Improvements for 2016 which will address rest of Fremont Road and drainage issues.	Voters added funds to existing Bridge Capital Reserve Fund Fremont Rd Bridge is scheduled for repairs in 2017 to correct scouring issue
PP-3 Revised	Coordinate w/State Hwy Dept.	DPW Director/ Arthur Genualdo	# Participants/ # Meetings Routine meetings	Paving scheduled for Route 121A in north end of town near Chester line.	Paving of Fremont Road to intersection of Rte 121A with coordination on resolving drainage issue
PP-4 Revised	Coordinate w/Adjacent Towns	DPW Director/ Arthur Genualdo		Applied for 319 grant but it was not accepted.	Nothing this year with adjacent towns
PP-5 Revised	Waste Oil Disposal	DPW Director/ Arthur Genualdo	Annual Volume – 5%/yr. incr.	Continued use of waste oil heater Continue to collect used waste oil	Continued use of waste oil heater Continue to collect used waste oil
Revised					

2a. Additions

PP-6	Exotic Species Program	Selectman Jon Goldman	# Participants/ # Monitorings Control of Fanwort and milfoil at Phillips Pond	Progress on Goal(s) Permit Year 14 Phillips Pond Lake Association will cover the cost above a grant to perform 6 days of manual harvesting on the pond and summer testing. Current Phillips Pond Association water quality report attached.	Enter any revised info here Phillips Pond Lake Association continue monthly testing. Installation of a 'beaver deceiver' in an outlet under the recreational trail Current Phillips Pond Association water quality report attached.
PP-7	Local Water Quality Monitoring for Showell Pond and Phillips Pond	Selectman Jon Goldman	# Participants to monitor pond's cyanobacteria levels # months of absence of Blooms at Showell Pond & Phillips Pond		

3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (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 at the end of March and will receive updated GPS information from new subdivisions in 2015 Ditching done in 3 areas to help with runoff and drainage	All catch basins cleaned at the end of March and will receive updated GPS information from new subdivisions in 2016
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 2015	No illicit connections or discharges found during 2016
Revised					
ID-3	Failing Septic Systems	Health Officer/ Ed Mencis	# inspections & repairs/yr	10 failed systems recorded in 2015 Continued inspection of all repairs and replacements	8 failed systems recorded in 2016 Continued inspection of all repairs and replacements
Revised					
ID-4	Illegal Dumping	DPW Director/ Arthur Genualdo	# Dumps reported & cleaned	7 violations of illegal dumping – Police investigations and fines if proven	5 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 14 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
CS-1 Revised	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
CS-2 Revised	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
CS-3 Revised	SWPP Review	Planning Board/Ernie Brown	# Plans Reviewed One	Town still requires submission of SWPP at preconstruction conference, together with proof of notice of intent filing	Town still requires submission of SWPP at preconstruction conference, together with proof of notice of intent filing
CS-4 Revised	Construction Runoff Regs for Runoff Control	Planning Board/Ernie Brown	Subdivision Regulations Updated	No new actions were taken in 2015	No new actions were taken in 2016
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 Revised	Runoff Control in Site Plan Regs.	Planning Board/Ernie Brown	Annual Review/Reduction in loopholes	No new actions were taken in 2015	Working with Rockingham Planning Commission /management to implement stormwater into site plan regulations
PC-2 Revised	Buffer Zone	Conservation Commission/ Paul Carey	Establish new BMPs	No new actions taken in 2015	No new actions taken in 2016
PC-3 Revised	Inspection Program in Site Plan	Planning Board/Ernie Brown	# 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.
PC-4 Revised	Catch Basins	DPW Director/ Arthur Genuardo	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						

5a. Additions

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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 Revised	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
MG-2 Revised	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
MG-3 Revised	Fertilizer/Pesticide Reduction	Conservation Commission/ Paul Carey	Lawn care Specialist Training	Town Hall used environmentally safe fertilizer on the town grounds	Town Hall used environmentally safe fertilizer on the town grounds
MG-4 Revised	Employee Training	DPW Director/ Arthur Genualdo	Workshops Attended	Employees attend NRRRA conference yearly which covers hazardous waste, recycling and BMP's of waste management	Employees attend NRRRA conference yearly which covers hazardous waste, recycling and BMP's of waste management Several employees attended workshops in anticipation of new permit

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
Q1-1	E.Coli Monitoring	Health Officer/ Ed Mencis	Tracking Philips Lake Outfall	Continue monitoring State testing of Philips Pond bathing waters – results attached	Continue monitoring State testing of Philips Pond bathing waters – lake report attached
Revised					
Revised					
Revised					
Revised					
Revised					

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	1
▪ community participation	Regional – Sandown included	Regional – Sandown included
▪ material collected	Not known (regional)	Not known (regional)
School curricula implemented		

Legal/Regulatory

Regulatory Mechanism Status (indicate with “X”)	In Place			
	Prior to Phase II	Under Review	Drafted	Adopted
▪ 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)	8 SFD 2015	17 SFD 2016
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	165
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



Volunteer Lake Assessment Program Individual Lake Reports

ANGLE POND, SANDOWN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,511	Max. Depth (m):	11.6	Flushing Rate (yr ⁻¹):	1.6
Surface Area (Ac.):	150	Mean Depth (m):	3	P Retention Coef:	
Shore Length (m):	4,000	Volume (m ³):	1,849,000	Elevation (ft):	220

TROPIC CLASSIFICATION

Year	Trophic class
1984	EUTROPHIC
2002	MESOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

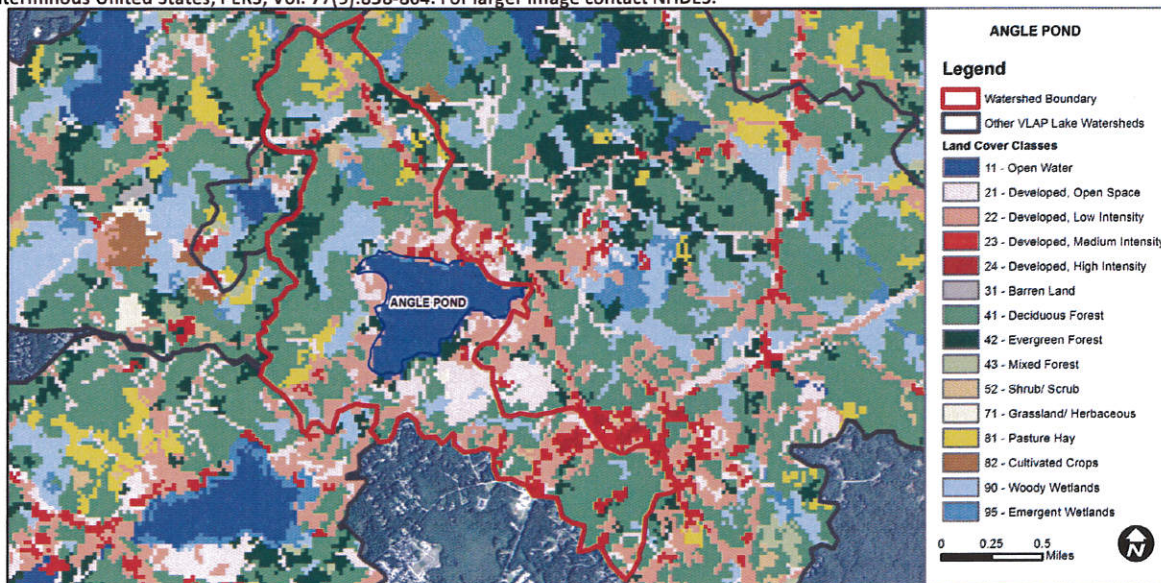
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Oxygen, Dissolved	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Dissolved oxygen saturation	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Chlorophyll-a	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
Primary Contact Recreation	Escherichia coli	No Data	No data for this parameter.
	Cyanobacteria hepatotoxin	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

ANGLE POND - ANGLE POND GROVE BEACH	Escherichia coli	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.
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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	11.9	Barren Land	0	Grassland/Herbaceous	0.17
Developed-Open Space	8.55	Deciduous Forest	38.36	Pasture Hay	3.27
Developed-Low Intensity	15.6	Evergreen Forest	7.11	Cultivated Crops	0
Developed-Medium Intensity	4.03	Mixed Forest	0.64	Woody Wetlands	7.93
Developed-High Intensity	0.45	Shrub-Scrub	0.75	Emergent Wetlands	0.86



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

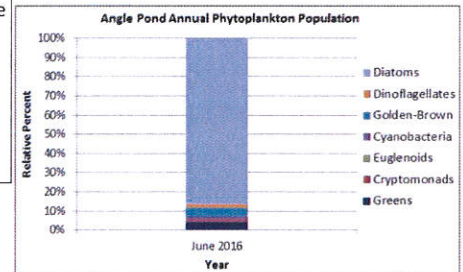
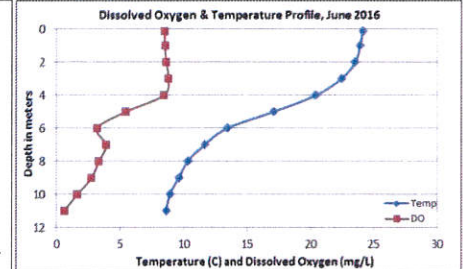
ANGLE POND, SANDOWN

2016 DATA SUMMARY

RECOMMENDED ACTIONS: Water quality was good in 2016. The drought conditions and lack of stormwater runoff likely contributed to the slightly lower levels of phosphorus and algal growth and good water clarity. The improving water clarity is a great sign and we hope to see this continue! This highlights the importance of managing stormwater runoff in the watershed and maintaining vegetative buffers along the shoreline. Educate residents to identify and reduce stormwater runoff from their properties utilizing DES' "NH Homeowner's Guide to Stormwater Management", and maintain vegetated buffers utilizing UNH Cooperative Extension's "Landscaping at the Water's Edge". Encourage local road agents to obtain a NH Voluntary Salt Applicator License through UNH Technology Transfer Center's Green SnowPro Certification program to help reduce chloride and conductivity levels. Keep up the great work!

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels were within an average range in June, decreased to low levels in July and then increased to slightly elevated levels in August. The 2016 average chlorophyll level increased from 2015 and was approximately equal to the state median. Historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Metalimnetic (middle water layer) and Hypolimnetic (lower water layer) conductivity and chloride levels remained elevated and greater than the state medians. Epilimnetic conductivity and chloride levels were the highest measured since monitoring began. Historical trend analysis indicates relatively stable epilimnetic conductivity with moderate variability between years.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic and Metalimnetic phosphorus levels were stable and within a low to average range from June through August. Average epilimnetic phosphorus decreased slightly from 2015 and was less than the state median. Historical trend analysis indicates stable epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus was low in June and increased to slightly elevated levels as the summer progressed and dissolved oxygen levels decreased.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was high (good) from June through August. Average NVS transparency increased (improved) from 2015, was higher (better) than the state median and was the best transparency measured since monitoring began. Historical trend analysis indicates significantly increasing (improving) transparency since monitoring began. We hope to see this continue!
- ◆ **TURBIDITY:** Epilimnetic turbidity was within a low range and increased slightly from June through August. Metalimnetic turbidity was higher in June likely due to algal growth and then decreased to low levels through August. Hypolimnetic turbidity was low in June and increased to slightly elevated levels in August likely due to the accumulation of organic compounds as dissolved oxygen levels decreased in the hypolimnion.
- ◆ **PH:** Epilimnetic, Metalimnetic and Hypolimnetic pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable epilimnetic pH since monitoring began.



Station Name	Table 1. 2016 Average Water Quality Data for ANGLE POND-SANDOWN								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	19.2	4.32	47	263.7	10	4.50	4.50	0.75	7.25
Metalimnion				255.0	13			1.08	6.83
Hypolimnion				243.5	17			2.19	6.52

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m³

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

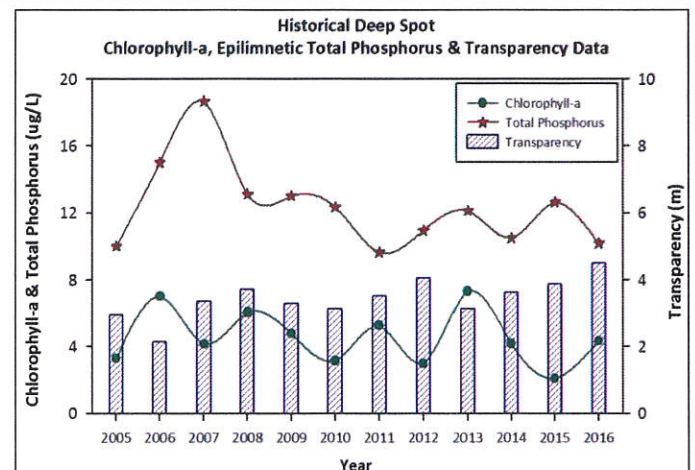
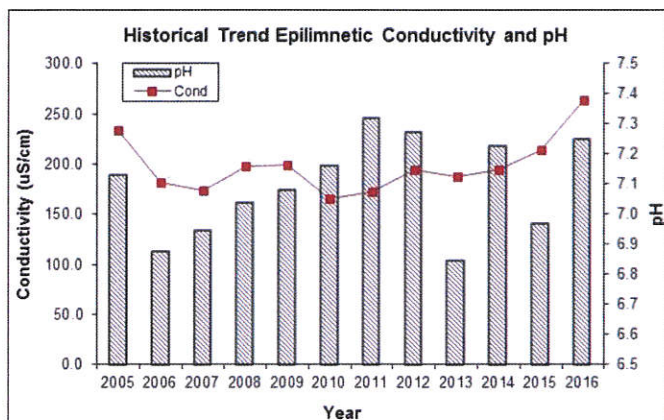
E. coli: > 406 cts/100 mL – surface waters

Turbidity: > 10 NTU above natural level

pH: between 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	d not significant; data show low variability.	Transparency	Improving	Data significantly increasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.



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



To protect the public from possible illness while swimming, the NH Beach Program monitors water for fecal bacteria and cyanobacteria from nearly 200 beaches each summer. Towns and other agencies also monitor and report results to NHDES. Bacterial results higher than the state criteria indicate contact with the water could put swimmers at risk of getting sick from harmful microscopic organisms in the water. When fecal bacteria levels are high, NHDES issues an advisory and immediately resamples the beach. Once the bacteria levels no longer exceed the state criteria, the advisory is removed. Advisories DO NOT close a beach. The decision to close a beach is left with the beach owner.

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**

Green signs are posted to let the public know the beach is tested regularly for fecal bacteria. Details on participating beaches are available online. www.des.nh.gov

ADVISORY

High levels of BACTERIA have been detected in this WATER.
N.H. Dept. of Environmental Services

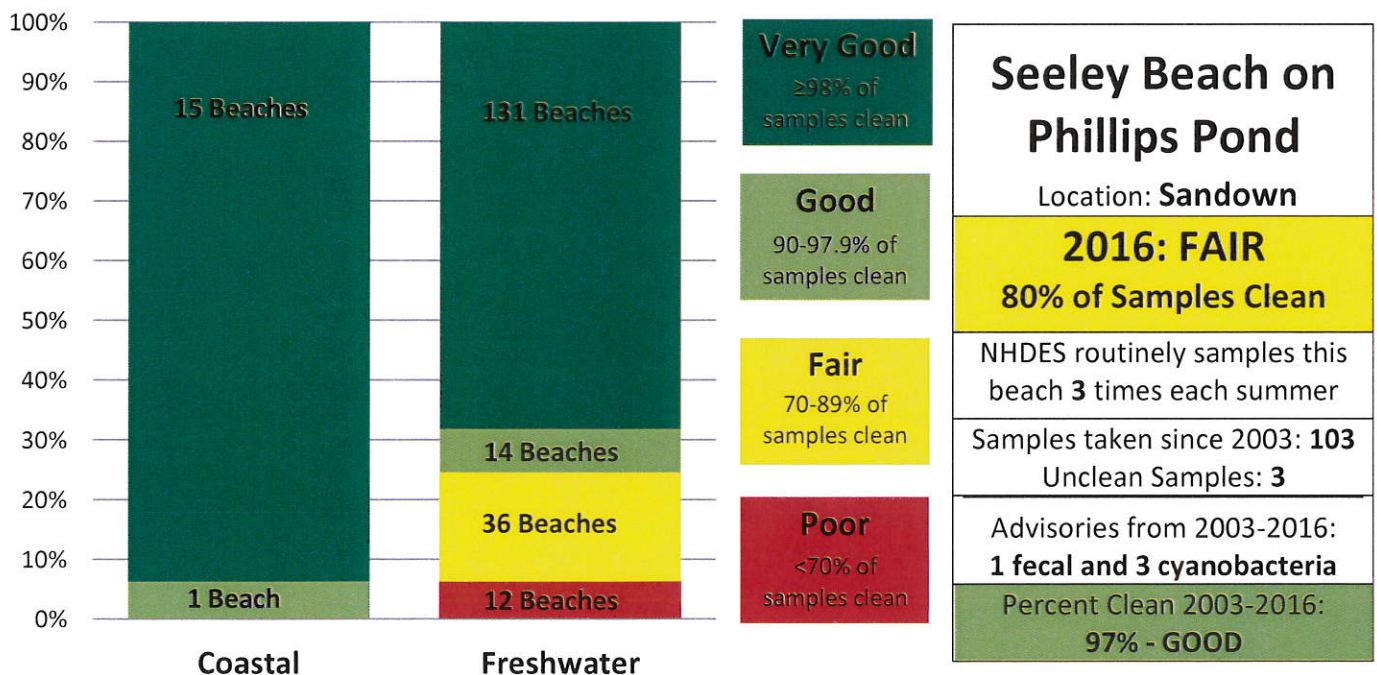
**WATER CURRENTLY NOT
SUITABLE FOR WADING
OR SWIMMING!**

Yellow signs are displayed at beach entry points when bacteria advisories are issued. Alerts and results are posted online.



Beach Advisory

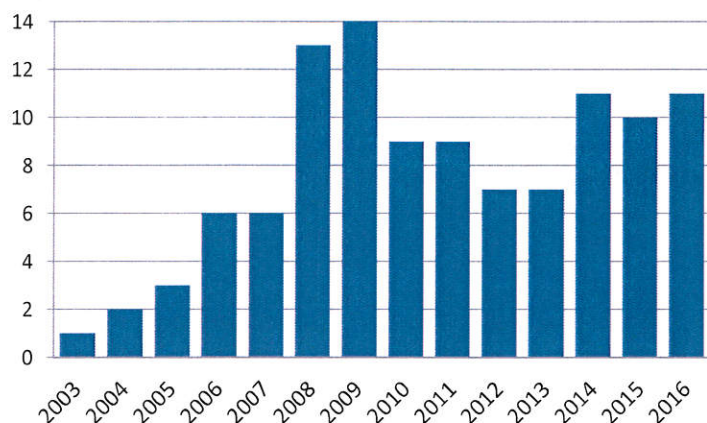
2016 Summary of NH Beach Bacteria Results



How Clean are New Hampshire Beaches? To generate a summary of beach cleanliness over time, the number of clean samples was compared to the total number of samples tested for each beach (2003-current). During the summer, freshwater beaches are typically sampled once a month and most of the coastal beaches are sampled twice a week. All coastal beaches and most freshwater beaches in the New Hampshire assessment fall into the "Good" or "Very Good" categories, where beaches are clean > 90% of the time.

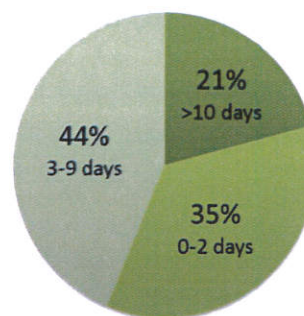
Advisories for Cyanobacteria and Fecal Bacteria

Reported Cyanobacteria Blooms and Advisories



Since 2003, nearly 40 freshwater beaches have reported a cyanobacteria bloom event occurring at least once in a summer. There were 11 cyanobacteria advisories recorded by NHDES in 2016. Increased public awareness has likely caused more sightings to occur over time.

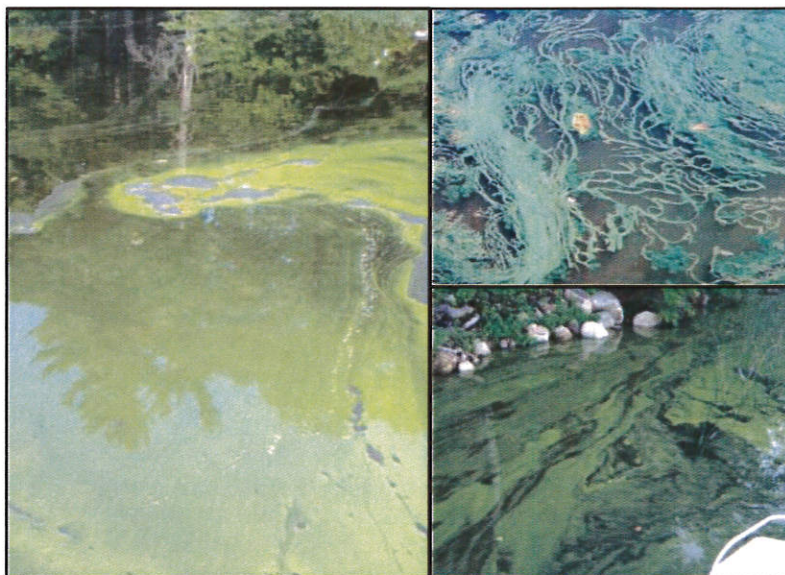
Length of 2016 Fecal Beach Advisories



There were 79 fecal bacteria advisories from 48 out of 193 freshwater beaches sampled in 2016. Only one of 16 coastal beaches had an advisory in 2016. Most advisories only lasted 0 to 2 days (35%) or no longer than 9 days (44%).

Avoid Cyanobacteria at the beach!

If you see “slimy or scummy” water with green, blue-green or red clouds, it could be cyanobacteria. Cyanobacteria blooms are caused by excess nutrients from fertilizer, storm water, and runoff that facilitate their growth. In large quantities, cyanobacteria can be harmful as they may produce toxins. NHDES advises humans and animals to avoid all contact and report a suspected bloom. The beach program posts advisories to warn swimmers when blooms are confirmed at a beach or within a lake or pond in NH. Contact the Beach Program to report a sighting or harmful cyanobacteria bloom.



Stay Connected with the Beach Program

Current advisories posted at

www.des.nh.gov.

At left, click on:



Beach Advisory

Subscribe to our newsletter.

Select “Beach Advisories” at:

<http://des.nh.gov/media/enews/index.htm>



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Questions about beaches and sampling can be directed to:

Amanda Murby McQuaid, Beach Program Coordinator, (603) 271-0698, (603) 848-8094, beaches@des.nh.gov



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

TROPIC CLASSIFICATION

Year	Trophic class
1977	MESOTROPHIC
1990	MESOTROPHIC

KNOWN EXOTIC SPECIES

Fanwort

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

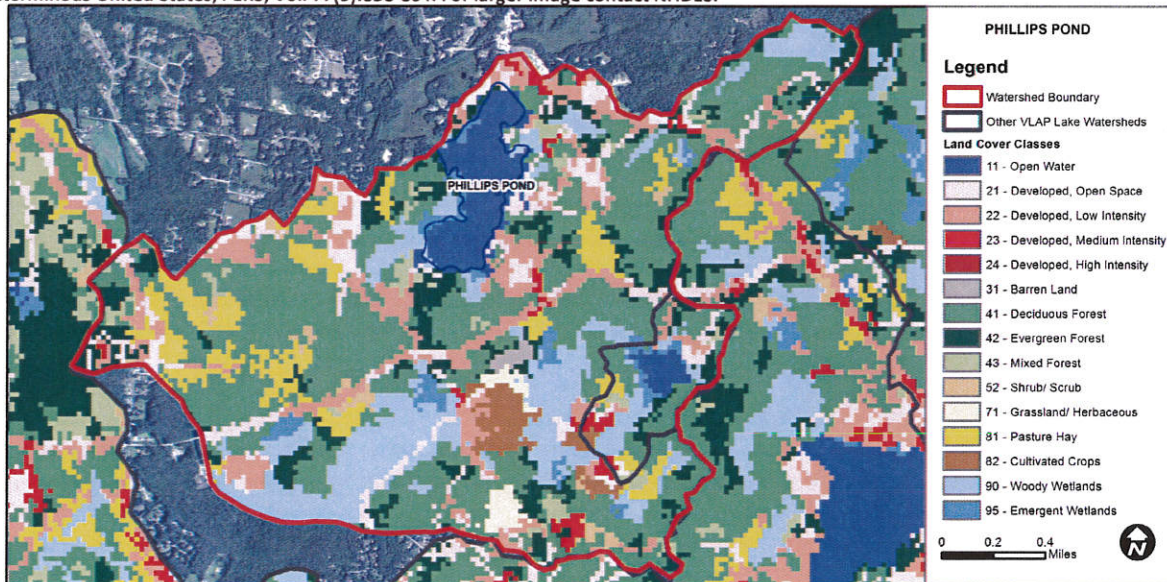
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Oxygen, Dissolved	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Dissolved oxygen saturation	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter.
	Chlorophyll-a	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
Primary Contact Recreation	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Cyanobacteria hepatotoxin	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

PHILLIPS POND - SEELEY TOWN BEACH	Escherichia coli	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.
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

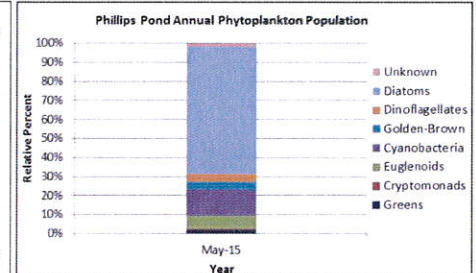
PHILLIPS POND, SANDOWN

2016 DATA SUMMARY

RECOMMENDED ACTIONS: Deep spot conductivity levels were the highest recorded since monitoring began, and chloride levels are elevated for NH surface waters and indicate the impacts of winter de-icing materials applied to local roads, parking lots, driveways and walkways. Encourage local road agents and winter maintenance companies to obtain a NH Voluntary Salt Applicator license through UNH Technology Transfer Center's Green SnowPro Certification program to help reduce conductivity and chloride levels. Hypolimnetic phosphorus levels were indicative of internal loading from bottom sediments and/or milfoil management activities disturbing bottom sediments and releasing phosphorus into the water column. This provides an internal source of phosphorus to fuel algal and/or cyanobacteria growth which highlights the importance of minimizing external sources of phosphorus from the watershed. DES' "NH Homeowner's Guide to Stormwater Management" is a great resource to help manage stormwater runoff and reduce nutrient (phosphorus) loading to the pond. The improved clarity (transparency) in 2016 was likely due to drought conditions and decreased tributary flow from wetland systems rich in dissolved organic matter that imparts a "tea" color to the water. Apparent color analyses conducted in 2016 indicate a tea colored waterbody and we encourage continued color analyses to evaluate the relationship between water color and pond clarity. Keep up the great work!

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels were slightly elevated in June and July, decreased to a low in August, and increased to slightly elevated levels again in September. The 2016 average chlorophyll level decreased slightly from 2015 but remained slightly greater than the state median. Historical trend analysis indicates stable chlorophyll levels with moderate variability since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (top water layer), Hypolimnetic (bottom water layer), Inlet, Metacomet Inlet, and Outlet conductivity and chloride levels were elevated throughout the sample season and were much greater than the state medians; however chloride levels were less than the state chronic chloride standard. Average epilimnetic conductivity was the highest measured since monitoring began and historical trend analysis indicates epilimnetic conductivity has significantly increased (worsened) since monitoring began.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were elevated in May and then decreased to slightly above average levels from June through September. Average epilimnetic phosphorus increased from 2015 and was greater than the state median. Historical trend analysis indicates stable epilimnetic phosphorus levels since monitoring began. In contrast, hypolimnetic phosphorus levels increased were slightly elevated in May and increased to greatly elevated levels August, and then decreased slightly in September. The elevated levels were likely caused by internal phosphorus loading that occurs when dissolved oxygen levels are depleted as the summer progresses, with the decrease in September phosphorus levels caused by fall turnover. Inlet phosphorus levels were elevated in May. Metacomet and Outlet phosphorus levels were within average ranges for those stations.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope (NVS) was lower in May and then increased (improved) as the summer progressed. Average NVS transparency increased (improved) from 2015 and was the highest (best) measured since monitoring began. Historical trend analysis indicates significantly increasing (improving) transparency since monitoring began. VS transparency was much better than NVS transparency and likely a better measure of actual conditions.
- ◆ **TURBIDITY:** Epilimnetic turbidity levels were slightly elevated from May to July when chlorophyll levels were slightly elevated. Hypolimnetic turbidity levels were low in May, increased to greatly elevated levels in August, and then decreased to average levels in September. This was likely associated with the internal phosphorus loading and/or milfoil management. Inlet turbidity levels were slightly elevated following a storm event and during low flows. Metacomet Inlet and Outlet turbidities were within low to average ranges for those stations.
- ◆ **PH:** Epilimnetic pH levels fluctuated below the desirable range 6.5-8.0 units in May and September. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began. Hypolimnetic, Metacomet Inlet and Outlet pH levels were slightly less than the desirable range, and Inlet pH levels were within the desirable range.



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: between 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/m³

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

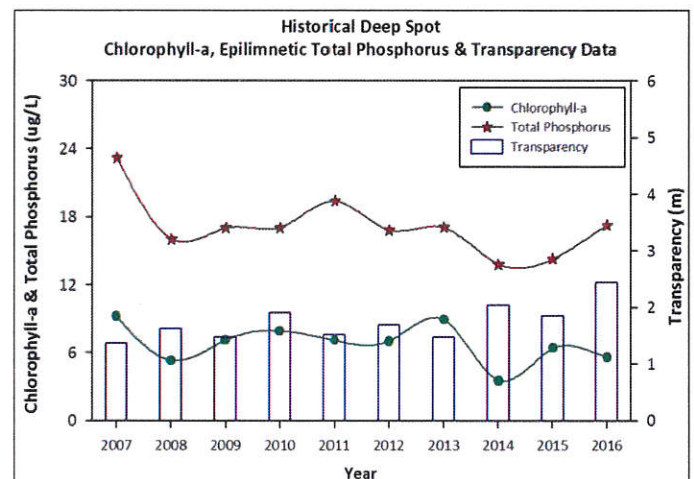
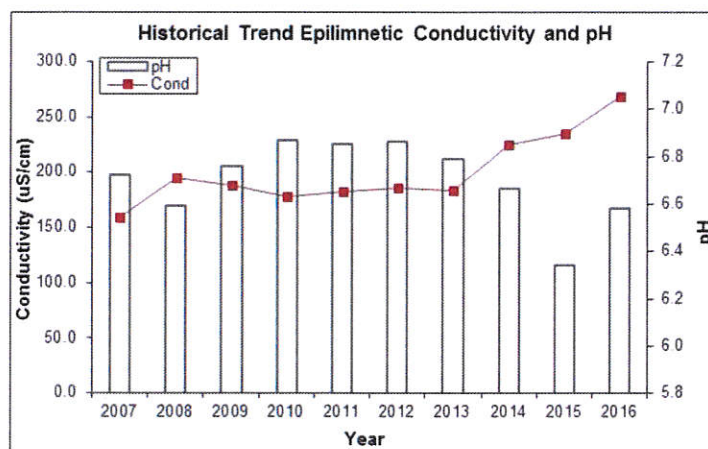
Transparency: 3.2 m

pH: 6.6

Station Name	Table 1. 2016 Average Water Quality Data for PHILLIPS POND-SANDOWN									
	Alk. mg/l	Chlor-a ug/l	Color PCU	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	14.9	5.56	55	57	268.8	17	2.44	3.14	1.26	6.58
Hypolimnion					261.6	38			6.89	6.43
Inlet				42	249.0	28			2.26	6.85
Metacomet Inlet				63	274.0	19			0.83	6.43
Outlet				54	267.0	19			1.52	6.38

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data show low variability.	Transparency	Improving	Data significantly increasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.



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.



When it Rains.... It Drains.

You are the answer to storm water pollution!

Storm Water Tips

Here are ten simple things every homeowner can do to help reduce the amount of pollutants that are carried into our wells, streams, lakes and rivers.

1. Never dump anything into a catch basin or drainage ditch. Pollutants can find their way into a well, creek or stream.
2. Properly dispose of all trash, rubbish and garbage. Trash that is left in your yard or on the street may eventually end up in the closest creek or stream.
3. Place your cigarette butts in the proper receptacle. Don't throw them on the ground.
4. Recycle used motor oil. The Transfer Station will accept used motor oil, so please dispose of your used motor oil there. Whatever you do, never dump motor oil, gasoline, or solvents on your lawn, in a catch basin or into any body of water!
5. Wash your car in the grass, or take to a commercial car wash. Your car has oils and greases that wash off and then could flow into the catch basins, wells and may end up polluting the nearby water body. Commercial car washes have special procedures for treating the water that washes off your car.
6. Clean up after your pet. Place pet waste in a trash receptacle or flush down the toilet. Pet waste contains harmful bacteria that will wash into our streams and rivers when it rains.
7. Use fertilizers and pesticides only when needed. Fertilizers promote algae growth in our waterways. When using fertilizers, follow application instructions and do not apply if rain is forecasted.
8. Compost yard & grass clippings. Don't allow your grass clippings to blow into the street, or curb.
9. Check your vehicles for leaks and repair them!
10. Tell a friend or neighbor about how to prevent storm water pollution. Get involved in a local community watershed organization.

**The pollution you prevent today
will protect your drinking water supply tomorrow.**