# THE IPA NEWSLETTER

**Mystic Lake, Middle Pond and Hamblin Pond in Marstons Mills, MA**

**Fall 2018 A quarterly publication of the Indian Ponds Association, Inc. Vol. 18 No.4**


**IN THIS ISSUE**



## STATUS OF INDIAN PONDS WATER QUALITY

The annual testing of water quality of the three Indian Ponds was completed on October 19, concluding the routine testing done at roughly two-week intervals that began in early-to-mid May. This testing included several measurements of water quality: (i) dissolved oxygen and temperature at 1-meter intervals from the surface to the bottom and (ii) water clarity as determined using a Secchi disk. In addition to these routine measurements, water samples were collected at various depths on August 23 (Mystic Lake and Middle Pond) and September 6 (Hamblin Pond) for subsequent analysis for nitrogen, phosphorus, alkalinity, chlorophyll *a*, and pH at UMass Dartmouth's SMAST laboratory as part of the Cape Cod Commission's Pond and Lake Stewardship (PALS) program. Volunteers who assisted with the testing in 2018 include Bob Derderian, Greg Fearn, Peter Atkinson, Bill Hearn, Greg Cronin, Butch Roberts, Emory Anderson, Geri Anderson, and Ron Anderson.

With a full season of testing data in hand, it seems appropriate to provide a quick overview of conditions in the three ponds by briefly summarizing our observations on temperature, dissolved oxygen, and clarity, and also comparing results from the PALS testing over the past six years (2013–2018).

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## UPDATE ON RECONSTRUCTION OF MIDDLE POND HERRING RUN

We last reported on the status of the Middle Pond herring run reconstruction project in our spring 2018 newsletter. Since that time, Amanda Ruggiero, Assistant Town Engineer for Barnstable DPW, has provided the IPA with two updates. In early September, she reported that (i) the US Dept. of Agriculture's Natural Resources Conservation Service (NRCS) had approved the design of Part 1 (fishway) and Part 2 (Marstons Mills River Concrete Weir), which was finalized, just pending a few minor comments; (ii) in early summer, NRCS wanted to do another archeological study for this impact area, which was scheduled to occur in mid-September; (iii) a Town legal review determined that easements would be required on the north side of the fishrun; and (iv) bidding would be this fall, construction would start next spring/summer for Part 1 and next fall for Part 2.

In her most recent status report in mid-November, Ruggiero reported that (i) the archeological study was completed in early September and would require follow-up with test pits along the run; (ii) easement plans were being drafted this month and next and would go to the Town's legal department, after which property owners would be approached; and (iii) an extension request to the Conservation Commission is scheduled for November 27 as the permit expires in December 2018 and the Town needs to extend for three more years, an amended Order of Conditions will be submitted to the Conservation Commission in January as the Town needs to acquire signatures from the abutters, bidding will be done in spring 2019 as long as easements are in place, and construction will start in summer 2019.

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# SUCCESSFUL DERELICT DEBRIS CLEANUP

On the weekend of September 21–23, IPA volunteers successfully completed the collection of some derelict items from Mystic Lake and Middle Pond. As mentioned in the summer issue of this newsletter, a survey of the two ponds in June had indicated the presence of various boats and wooden floats/docks that appeared to be abandoned. Photos of some of those items were posted in that issue of the newsletter with the warning that a cleanup effort would be done by about mid-September to collect and remove any such items not claimed.

The first collection of items was done on Friday September 21 as a result of Louis and Maureen Jankauskas, who live on Wheeler Road, reporting that a derelict wooden float had come to rest against their waterfront dock. They assisted Emory Anderson in towing the float up to the Town beach at the north end of Mystic Lake.

**Jim McGuire, Emory Anderson, and Peter Atkinson surveying some of the items deposited on the Mystic Lake Town beach. Photo by Greg Fearn.**

The second effort on Saturday September 22 involved the efforts of Greg Fearn, Peter Atkinson, Jim McGuire, Alex Bally, and Emory Anderson, with boats operated by Emory and Greg used for towing. Four abandoned boats of various types plus one large wooden platform were collected and towed to the Mystic Lake Town beach. In addition, a boat and two floats found elsewhere on the Town beach were deposited with the other items.

**Another view of the items brought to the Mystic Lake Town beach for disposal. Photo by Greg Fearn.**

The third and last endeavor on Sunday September 23 involved collecting another abandoned floating dock that had been retrieved from Middle Pond by Louis and Maureen Jankauskas. Volunteers who assisted with this included Louis Jankauskas and his son, Betsey and John Godley, and Emory and Geri Anderson.

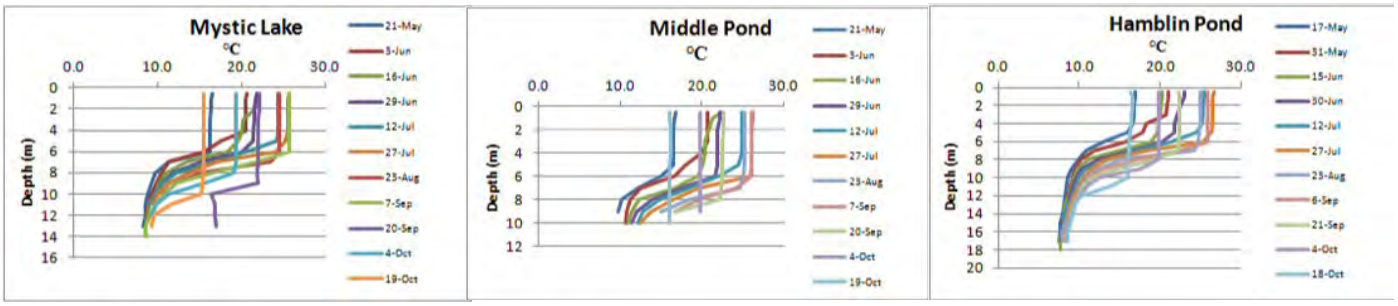
The following week, Town DPW personnel picked up and hauled away all of the debris that had been collected. The IPA expresses its sincere thanks to the Town for its cooperation in helping to keep our ponds free of abandoned items such as these.

# STATUS OF INDIAN PONDS WATER QUALITY

*(Continued from page 1)*

## Temperature

Surface temperatures in late May in each pond were about 16.5–17°C (62–63°F), gradually warmed to about 26.3–26.7°C (79–80°F) in late July/early August, before dropping to 15.5–16.4°C (60–62°F) in mid October. In all three ponds, water is always coolest at the deepest depth, averaging around 8.6°C (47°F) in Mystic Lake, 12°C (53°F) in Middle Pond, and 8°C (46°F) in Hamblin Pond. As the season progresses, thermoclines develop in all three ponds at around 6–7 m (20–23 ft), with temperatures becoming progressively cooler with increasing depth. This is more pronounced in Mystic and Hamblin because of their greater depth (48 and 63 ft, respectively) and less so in Middle where the majority of the water column is mixed by wind action because of its shallower depth (maximum 33 ft).




## Dissolved oxygen

Fish and other organisms in the ponds require oxygen to live. Oxygen is produced by photosynthesis and is consumed by respiration and decomposition of organic material. Oxygen in the ponds comes both from the air (where it is much more concentrated than in the water) and from the water itself (aquatic vegetation and algae). We tend to see dissolved oxygen in all three ponds at concentrations of 7.5–10 mg/l (parts per million) most of the time from the surface down to about the thermocline (6–7 m or 20–23 ft), below which it declines to nearly zero at or near the bottom. This is because below the thermocline, there is no way for oxygen to be replenished after it is used up by bacteria that eat dead organic material that falls to the bottom. We also observed a fairly consistent pattern of increases in dissolved oxygen at around the depth of the thermocline; these "bulges" are caused by photosynthesis from large amounts of algae at those depths resulting in supersaturation (i.e. more oxygen than would be expected based on temperature alone). Water samples were taken in Mystic Lake on August 8 to determine what kind of algae might be causing this. Analysis by Dr. Ken Wagner indicated that it was *Synura*, a flagellated golden alga known for forming layers near the thermocline, but which is not toxic. Of concern in Mystic Lake is that, beginning in late June, there began an abrupt drop in oxygen to near zero at a depth of 8 m (26 ft), which persisted into October. This absence of oxygen tends to encourage the release of phosphorus from the lake's sediments, which fuels the growth of algae.

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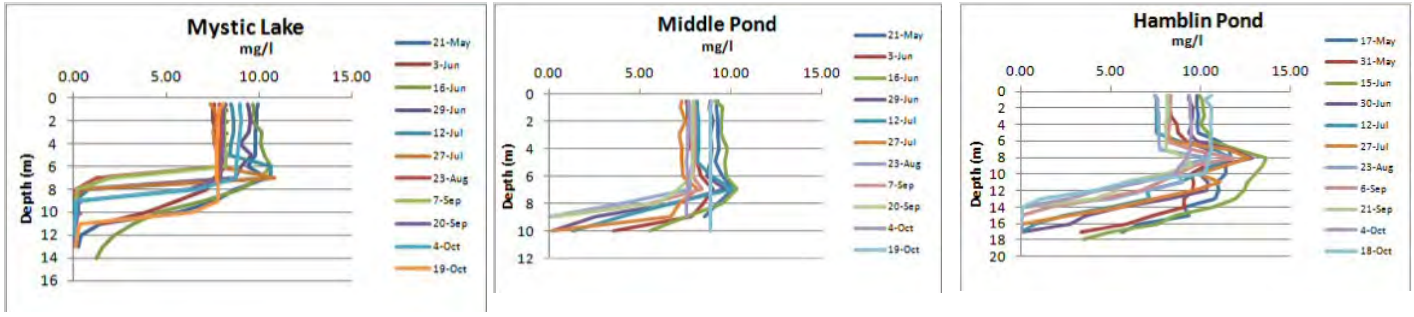

## SCIENTISTS TO EXAMINE HEALTH IMPACTS ON CHILDREN EXPOSED TO CONTAMINATED DRINKING WATER

Silent Spring Institute was awarded a $2.6 million federal grant to investigate highly fluorinated chemicals called PFASs and their impacts on children's health. PFASs are a class of hazardous substances that have been detected in drinking water supplies across the country, affecting millions of Americans, and raising health concerns. Findings from the study could lead to stronger drinking water protections and help communities reduce their exposures.

"These chemicals are ubiquitous and persist in the environment for a long time. So it's important that we fully understand their effects on human health, especially the health of young children whose bodies are more vulnerable to chemical exposures," says Laurel Schaider, PhD, an environmental chemist at Silent Spring Institute. Schaider is leading the five-year project called **PFAS-REACH (Research, Education, and Action for Community Health)** in collaboration with researchers at Northeastern University and Michigan State University. The project is funded by the National Institute of Environmental Health Sciences, part of the National Institutes of Health.

Starting next spring, Schaider and her colleagues will collect blood samples from children (ages 4–6) in two communities that have been exposed to drinking water contaminated with PFASs: Hyannis on Cape Cod and the Pease International Tradeport in Portsmouth, NH. The researchers will measure PFASs and antibody levels in samples taken shortly after the children receive their final diphtheria and tetanus vaccines. The team will also look for markers of other physiological effects, such as metabolites or small molecules linked with inflammation. "Because PFASs can depress the immune system, our hypothesis is that vaccines are less effective in children with high exposures," says Schaider.

The project team will also document the experiences of affected communities by conducting in-depth interviews and ethnographic research. "Environmental contamination not only impacts people's health, it also exacts a toll on the community's social, psychological, and economic well-being," says co-principal investigator Phil Brown, PhD, Director of the Social Science Environmental Health Research Institute at Northeastern University. "By documenting this impact, communities can gain a better understanding of their circumstances that will allow them to advocate for themselves," he says.

PFASs (also known as per- and polyfluoroalkyl substances) are used by manufacturers to make products non-stick, waterproof, and stain-resistant. The toxic chemicals can be found in a wide range of consumer products including food packaging, non-stick cookware, waterproof clothing, and stain-resistant carpets.
The chemicals are also used in firefighting foams for putting out fuel fires. During firefighting training exercises, large amounts of the hazardous chemicals can seep into the groundwater and end up in drinking water. In fact, the primary source of drinking water contamination in Hyannis and at Pease has been traced to firefighting foams used at nearby fire training sites.

Exposure to PFASs has been linked with numerous health effects including cancer, thyroid disease, and high cholesterol. Previous studies have also linked PFASs with decreased immune response to vaccines in children, however, in these studies the main source of exposure was diet. "This will be the first study to evaluate immune systems effects in children exposed to the chemicals through drinking water, specifically to PFASs from firefighting foams," says co-investigator Courtney Carignan, PhD, an environmental epidemiologist at Michigan State.

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## HAMBLIN POND TROUT

The Sandwich Hatchery, operated by the Massachusetts Division of Fisheries and Wildlife (MassWildlife), stocks many different kinds of trout in 31 of the Cape's ponds including Hamblin Pond. The Sandwich facility is one of five hatcheries throughout the state that delivered 500,000 fish this spring from the Cape to North Adams. Hamblin, along with 16 other Cape ponds, received a second fall delivery of some 64,000 rainbow and brown trout. The availability of non-native trout to Hamblin makes the pond an exciting attraction for both tourists and locals and is convenient with the easy accessibility of the boat ramp and parking at the Town beach. A large area of waterfront where Burgess Park meets the pond provides ample space for anglers to enjoy their sport.

Even though the stocking of trout in Hamblin appears to have started in the late 1800s and early 1900s, MassWildlife records indicate that the first official stocking took place in 1961 several years after the closure of the Clear Lake Duck Farm that had operated from about 1920 until 1955 raising thousands of Muscovy ducks. After the duck farm closure, the pond was reclaimed for trout management by treating it with toxaphene in October 1960 to eliminate existing native fish species. Toxaphene was once a widely used insecticide, but has been banned since 1990. The 1961 stocking included brook, brown, and rainbow trout fingerlings from state trout hatcheries. It has been annually stocked since then in both spring and fall with catchable-sized trout. The pond was originally stocked with 6–9" trout, but the vast majority in recent years have been 12–14" in length. Since 2001, Hamblin has been stocked in spring with an average of 3,000 trout and in fall with an average of 600. Since the first alum treatment of Hamblin Pond in 1995 (and the second treatment in 2015), it has gained a reputation as one of the better ponds for holdover trout (I.e. fish that survive from year to year and grow to a larger size).

According to MassWildlife records, surveys of Hamblin in 1948 and 1960 (before the treatment with toxaphene) revealed that the pond contained banded killifish, white suckers, yellow perch, pumpkinseed sunfish, white perch, golden shiner, brown bullhead, and a few alewives (that may have entered through a cranberry bog connection from Middle Pond near the end of Hollidge Hill Lane or were purposely transferred by people). The white perch were apparently introduced between 1948 and 1960, and it seems that they dominated the pond's fish population at that time. Subsequent surveys in 1962 and 1963 revealed only trout in the pond. Smallmouth bass were stocked in 1979 (which established a reproducing population) and hybrid tiger muskies in 1988 (without much success). Yellow perch, banded killifish, golden shiner have now reappeared in Hamblin, probably having been introduced from adjacent ponds, and appear to successfully coexist with the trout and smallmouth bass.

The decision by the State to introduce trout to Hamblin Pond must have been based on angler preference. The pond must have appeared ideal for this purpose in that it offered a promising environment for trout, given its maximum depth of about 63 ft. and cool, well-oxygenated water, and the larger existing fish species prior to the toxaphene treatment were deemed unpopular with anglers. It is unclear whether there may have been any public concern at the time about introducing non-native species to the pond, but today, such a decision would most likely have been preceded by a thorough examination of impacts, both intended and unintended, and by public comment.

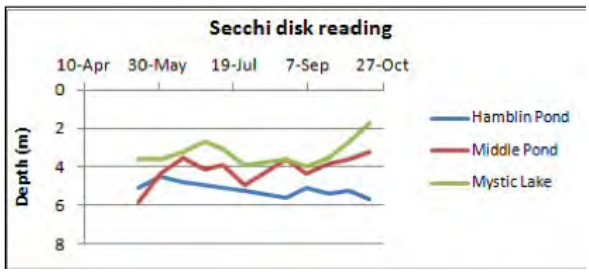
As noted above, both the trout and smallmouth bass have apparently done well in Hamblin. Both feed on a variety of prey items ranging from small aquatic and terrestrial insects and invertebrates to small fish, frogs, and amphibians. It is unclear what small fish species have become reestablished in the pond and serve as a food source for the trout and bass, but some must have, based on the fact that many of the trout, not caught in the year they are stocked, survive from year to year and grow to a larger size. In addition, the tadpoles, frogs, and especially some bullfrogs, seem to be doing fine with the trout.

*Aaron Fishman and Emory Anderson*

*Note: much of the above information about stocking was provided by Steve Hurley, Southeast District Fisheries Manager, Massachusetts Division of Fisheries & Wildlife, Buzzards Bay.*

## STATUS OF INDIAN PONDS WATER QUALITY

*(Continued from page 3)*




### Clarity

Water clarity, as measured by a Secchi disk, provides a general measure of pond condition. Clarity is influenced by suspended or dissolved material in the water column generally due to phytoplankton (algae). The graph shows the readings for the ponds throughout the testing season. Although readings can be influenced by weather conditions (wind, clouds, etc.), Hamblin Pond consistently exhibited the greatest clarity averaging 5.2 m (17 ft), with Middle Pond next averaging 4.1 m (13.5 ft), and Mystic Lake lowest averaging 3.2 m (10.6 ft).

### PALS results

Two of the water quality measurements taken during the annual PALS testing that are of particular interest for our three ponds are total phosphorus (P) and chlorophyll *a* (Chl*a*). These measurements provide indications of the amount of nutrients (P) that fuel algal production and the algal production itself (Chl*a*). The highest values of both measures in each pond during 2013–2018 are shown in the table. During those years, the values of both are lowest in Middle Pond, owing to its shallower depth (33 ft maximum) and continual mixing of the entire water column. In Hamblin Pond, values were highest prior to the 2015 alum treatment and have generally decreased since 2016. However, in Mystic Lake, values of both measures have generally been higher than in either of the other two ponds. The high values of total phosphorus are particularly of concern because it suggests that the 2010 alum treatment, which was intended to suppress the availability of phosphorus, has not been as successful as hoped. In my president's report at the 2018 IPA annual meeting (summarized in the summer issue of this newsletter), I drew attention to this problem, citing several deficiencies in the 2010 alum treatment: (i) dosage of alum authorized by the MA Natural Heritage and Endangered Species Program was less than recommended by the experts, (ii) not all areas of the lake were treated, and (iii) the treatment was done in late summer – early fall rather than spring, when all the phosphorus would have been on the bottom and could have been captured by the alum. Needless to say, the IPA will be keeping a careful eye on the Mystic Lake situation in the coming year.

**Highest values of total phosphorus (μM) and chlorophyll *a* (ppb)**

| Pond | Year | Total P[1] | Chla[2] |
|---|---|---|---|
| Mystic Lake | 2013 | 5.01 | 12.01 |
| | 2014 | 12.07 | 44.05 |
| | 2015 | 2.49 | 36.11 |
| | 2016 | 1.17 | 25.93 |
| | 2017 | 4.80 | 26.28 |
| | 2018 | 18.70 | 13.71 |
| Middle Pond | 2013 | 1.08 | 4.64 |
| | 2014 | 1.34 | 15.70 |
| | 2015 | 0.76 | 5.18 |
| | 2016 | 0.79 | 2.51 |
| | 2017 | 0.79 | 9.52 |
| | 2018 | 0.87 | 9.97 |
| Hamblin Pond | 2013 | 1.76 | 3.40 |
| | 2014 | 10.08 | 37.94 |
| | 2015 | 0.66 | 1.02 |
| | 2016 | 0.32 | 22.85 |
| | 2017 | 0.94 | 17.73 |
| | 2018 | ND | 13.03 |

**TO SEE NEWSLETTER PHOTOS IN FULL COLOR GO TO THE IPA WEBSITE: www.indianponds.org**

## EAGLES ON THE PONDS

A request, finally. The hardest part of writing one of these epistles is thinking about the topic. It's much nicer when it comes as a request. I wrote about eagles back in 2011 so I'll try not to repeat too much.

The next hard part is trying to get started in an attention-grabbing way, but this time that was handled for me also. We lost one. Someone put out some rodenticide to get rid of his population of mice. A mouse consumed some of the poison and died. An eagle, doing his scavenging duty, ate the mouse carcass and got so sick that there was no saving him. He was either going to die horribly or be put down quickly and quietly. Fortunately, he had been taken to Cape Cod's wild animal care facility and was euthanized. I'm not sure how many eagles we started with locally. I think we started with two on Mystic Lake. Then I heard that there might be two others on Hamblin Pond, but they might have been the same pair. Anyway, we lost one.

The eagle is the largest raptor in North America. In North America, we have two types of eagles who are resident and two others who visit regularly. The bald eagle and the golden eagle are residents of the continent. Both share the same areas in the country. They are found in the north in the warmer seasons and in the southern states and Mexico in the colder months. Just like a lot of us. Two other types visit North America from Asia by coming over through the Aleutian Islands. They are the Stellar's sea eagle and the white-tailed eagle, also called the gray sea eagle. These two have been known to nest in Alaska.

The bald eagle dwarfs most other raptors. It has a heavy body, large head, broad, flat wings, and a long, hooked beak and is not really bald. It has white feathers on its head and tail, giving the appearance of being bald. Young birds attain adult plumage at about five years.

Bald eagles scavenge many meals by harassing other birds and stealing their catch or by eating carrion or garbage. They eat mainly fish, but also hunt small mammals, gulls, and waterfowl.

The eagle usually begins to breed at 4 or 5 years of age and may mate for life. Nest sites are usually in very tall trees, but can be on the ground in northern islands. Nests are built by both sexes and are usually a mound of sticks lined with finer materials. Nests may be reused and added to over the years and may become huge. The female may lay 1–3 eggs. Both parents participate in the incubation of the eggs. Incubation period is between 34 and 36 days. At least one parent remains with the chicks constantly for the first two weeks. Both parents catch and bring prey to the nest. Anything brought in will be ripped into small pieces and fed directly to the young. After 3–4 weeks, the young will begin pecking at food brought in and dropped in the nest. When prey is scarce, only the largest of the young may survive.

I'm beginning to sound like I'm lecturing instead of having a conversation, so I think it's time to quit. I hope I have given you a fair look at eagles.

*Dave Reid*

## NEWEST MEMBER OF IPA BOARD OF DIRECTORS

At its last meeting, the IPA board of directors appointed Sandra Leo-Clark to fill an unexpired term as director brought about by Holly Robillard having to step down because of increasing time demands associated with children and family activities.

Sandy is a nursing supervisor at Cape Cod Hospital and an educator at the Center for Corporate and Professional Education at Cape Cod Community College. She and her husband Jeffrey live on Whistleberry Drive adjacent to the cranberry bogs; she loves to swim and paddle in the ponds and hike the surrounding areas. As a long-term member of the IPA for many years, Sandy has participated in pond testing and has attended many annual meetings. Their two children are grown, but also love and respect the ponds. Their son Jeffrey was a 2013 recipient of a Edward Schwarm Memorial Scholarship, and their daughter Angela was highlighted in a spring 2016 IPA newsletter article by Greg Cronin about stand up paddleboarding (SUPing), a sport that Sandy also enjoys.

Sandy loves and respects this unique and beautiful ecosystem and owes a great deal of her knowledge about the ponds to former IPA director and president Holly Hobart, who she misses very much. The IPA is fortunate to have such an exuberant supporter of the ponds on the board. Welcome!

## THANK YOU TAMAR HASPEL

The IPA extends a hearty “thank you” to Tamar Haspel who served as our webmaster for nearly eight years (2011–2018) and recently stepped down. She and her husband Kevin Flaherty moved to Marstons Mills in 2008 from Manhattan, and it didn’t take her long to get involved in the IPA. She served on the board of directors for six years (2009–2014).

Readers should know that Tamar is a journalist who’s been on the food and science beat for the best part of two decades. She writes a monthly column “Unearthed” for *The Washington Post* which covers food supply issues: biotech, pesticides, food additives, antibiotics, organics, nutrition, and food policy. The column has earned her two James Beard award nominations, and she took home the award in 2015 — the same year one of her columns was selected for Best Food Writing 2015. Many of us on the Cape are familiar with her column “Starving off the land” (https://starvingoffthe land.com/) where she tells humorous stories about the various adventures she and Kevin have had raising animals of all kinds, fishing and hunting for food, and growing oysters in Barnstable harbor. Even though she has dropped out of active involvement in IPA activities, she remains a member, and we hope she and Kevin stay around for a long time.

## UPDATE ON RECONSTRUCTION OF MIDDLE POND HERRING RUN

(*Continued from page 1)*

The original report in the spring 2018 newsletter indicated that construction would begin in summer 2018 and be completed in summer 2019. As is evident from the above reports, delays have occurred and construction is now not expected to begin until summer 2019, with completion possibly in 2020.

*Emory Anderson*

## SCIENTISTS TO EXAMINE HEALTH IMPACTS ON CHILDREN EXPOSED TO CONTAMINATED DRINKING WATER

*(Continued from page 3)*

Andrea Amico, a founding member of the group Testing for Pease, one of the project's community partners, says health studies like these are critical. "My family drank the water for a long time before we learned it was contaminated," she says. "My hope in participating in this study is that we can take this unfortunate situation and turn it into something positive by contributing to science so we can better protect our communities going forward."

The project's other community partners include the Massachusetts Breast Cancer Coalition and Toxics Action Center. The Silent Spring-led study will complement a national health study on PFASs led by the Agency for Toxic Substances and Disease Registry (ATSDR) with Pease as its first site.

To further support these groups and others, the researchers will develop a "PFAS Exchange"—an online resource center for the public as well as medical professionals. The website will include a variety of educational materials, web-based tools to help residents visualize and interpret their blood and water test results, and resources for connecting affected communities nationwide.

The project will also offer water testing to communities across the US where their water is being treated for two types of PFASs: PFOS and PFOA. Researchers will test the samples for a variety of other PFASs to assess the effectiveness of existing treatment systems at removing newer alternatives. The team will also provide guidance to communities who are seeking information about getting their water tested and interpreting their results.

Schaider and her colleagues hope the findings from their study will lead to new drinking water guidelines for PFASs that are more health protective. "And by educating the public, we hope to empower them to reduce their own exposures to protect their families, especially their young ones, from these hazardous chemicals."

For more information about PFAS-REACH and to receive notifications about participating in the study, contact: PFAS-REACH@silentspring.org.

*Emory Anderson*

*"To preserve and protect the natural environment and ecological systems of the Indian Ponds and surrounding parcels of land and watershed and to participate in studies and work with other agencies, individuals, and groups to educate the public, serve the community, and promote and preserve the Indian Ponds and surrounding areas." IPA Mission Statement*

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FORWARDING SERVICE REQUESTED