Merrymeeting News

Fall 2024 Vol. XXXIV No. 4

The Newsletter of Friends of Merrymeeting Bay • PO Box 233 • Richmond Maine 04357 • 207-666-1118 • www.fomb.org

Friends of Merrymeeting Bay (FOMB) is a 501(c)(3) nonprofit organization. Our mission is to preserve, protect, and improve the unique ecosystems of the Bay through:

Education

Conservation & Stewardship

Research & Advocacy

Member Events

Support comes from members' tax-deductible donations and gifts.

Merrymeeting News is published seasonally and is sent to FOMB members and other friends of the Bay. Article hyperlinks and color images are available in our online edition at www.fomb.org

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No Excuses

At approximately 5:15 am on August 19, the fire suppression system in Hangar 4 at the former Brunswick Naval Air Station (BNAS) accidently deployed about 51,000 gallons of PFAS-contaminated firefighting foam. Shortly thereafter the entire 90,000 square feet of hangar floor was filled with the aqueous film forming foam (AFFF) 4–5' high or 405,000 cubic feet! This is said to be the sixth largest PFAS release in US history and was a mix of 1,450 gallons of PFAS-laden firefighting concentrate plus 50,000 gallons of water (automatically mixed in when sprayed from the pressurized system).

Within hours, the AFFF had entered surface waters that largely drain southeast through a chain of ponds to Merriconeag Stream, which flows into Mare Brook and out to Harpswell Cove, home to a thriving shellfish industry. The AFFF also entered the sewer system from whence it flowed to the Brunswick Sewer District (BSD) Plant and, untreated for PFAS, directly into the tidal Androscoggin River and Merrymeeting Bay. PFAS foam was all over the Hangar 4 and Pond A vicinity, coming up through the sewer manholes and being vacuumed up on the tarmac by Clean Harbors under DEP supervision.

Clean Harbors vacuums the tarmac.

FOMB volunteers were on site by midday, photographing both spill areas we could see and response efforts. Besides cleanup, a focus of the DEP was rapid testing to establish baseline data. *Thanks to member support*, FOMB could contribute in a major way, since on our own and in cooperation with the Brunswick Sewer District, Brunswick Area Citizens for a Safe Environment

PFAS upwelling through the sewer manhole covers

Sucking foam from sewer

All photos: Ed Friedman

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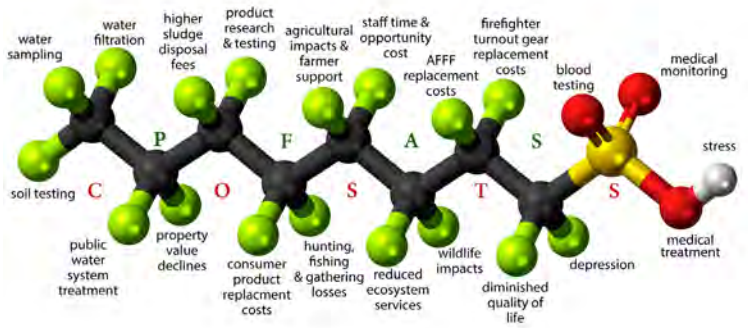
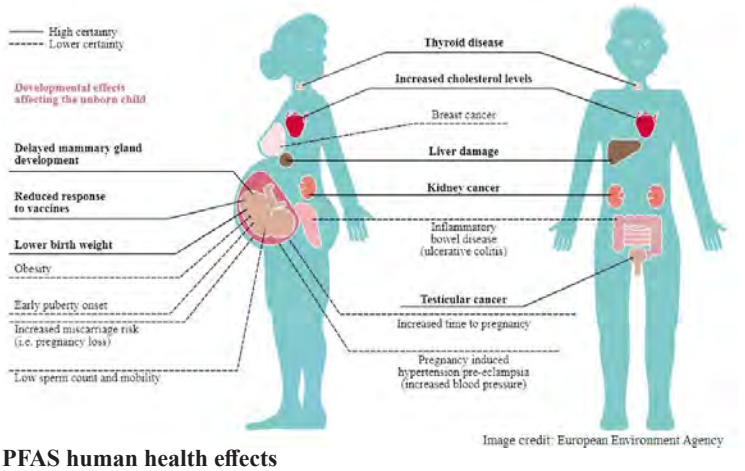
No Excuses, continued from page 1

(BACSE), and the Military Poisons Project, we have been monitoring PFAS in and around the former base and in the broader lower watershed for several years. We met with Chris Hooper, DEP's Director of Spill Response, and helped familiarize him with the lay of the land in and around the base and then emailed him extensive baseline data. His response was appreciative: *"It was great to talk with you yesterday. Thanks so much for these results; I'll forward them on to our Tech Services people who manage our testing and results right away this morning. This will be very helpful."*

Per- and polyfluoroalkyl substances (PFAS) are a large, complex group of synthetic chemicals used in consumer products around the world since about the 1950s. They are ingredients in various everyday products. For example, PFAS keep food from sticking to packaging or cookware, make clothes and carpets resistant to stains, and create firefighting foam that is more effective. PFAS molecules have a chain of linked carbon and fluorine atoms. Because the carbon-fluorine bond is one of the strongest, these chemicals do not degrade easily in the environment. (National Institute of Environmental Health Sciences).* These rugged carbon-fluorine chains have earned the name "forever chemicals" and have long half-lives. I like to call them "everywhere chemicals" because of their worldwide presence.



PFAS costs



PFAS human health effects

There are somewhere between 14,000–16,000 PFAS chemicals in use and only a very few have been regulated by the Environmental Protection Agency (EPA) or Maine Department of Environmental Protection (DEP). Only six for drinking water and none for surface waters. Human health effects that we know of include thyroid disease, kidney, breast, and testicular cancers, liver damage, increased cholesterol levels, and delayed mammary gland development. PFAS chemicals are considered persistent organic pollutants (POPS) and endocrine disrupters.

The Navy still owns Hangar 4 but has already transferred Hangar 6 (closest to the now-contaminated Jordan Avenue Brunswick well field and site of ongoing PFAS leakage) to the Midcoast Regional Redevelopment Authority (MRRA), a legislative-chartered quasi-governmental entity. Since the Hangar 4 spill, the Navy has removed remnant legacy AFFF from Hangar 4. Hangar 6, under MRRA's authority, remains a ticking, leaking time bomb. Located at the north end of the former base, it will most likely continue to influence Brunswick's water supply and the Androscoggin River.

Fire suppression room, PFAS concentrate piping—a ticking time bomb
Photo: Ed Friedman

For PFOA and PFOS, two of the many compounds, EPA has set **non-enforceable** health-based goals for drinking water of zero. This reflects the latest science showing there is no level of exposure to these two PFAS without risk of health impacts. This is called a Maximum Contaminant Level Goal (MCLG). For PFNA, PFHxS, and HFPO-DA (GenX Chemicals), EPA is setting MCLGs of 10 parts per trillion (ppt). **Enforceable** Maximum Contaminant Levels (MCLs) have now been set by the EPA at 4.0 ppt for PFOA and PFOS, individually.

In Maine, the six regulated PFAS contaminants are: perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorohexane sulfonic acid (PFHxS), perfluorononanoic acid (PFNA),

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FOMB samples mussels for PFAS in the Androscoggin. Photo: Ed Friedman

perfluoroheptanoic acid (PFHpA), and perfluorodecanoic acid (PFDA). An interim standard of 20 ppt for the six PFAS (alone or in combination) is immediately in effect. A rule-making process is currently taking place to establish PFAS Maximum Contaminant Levels in Maine.

For comparison, our July 29 sampling results from Hangar 6 BSD pump station for these chemicals were:
PFOA—303 ppt; PFOS—20,600 ppt; PFHxS—57 ppt; PFNA—49 ppt; PFHpA—89 ppt; and PFDA—82 ppt for a total of 21,180 ppt.

This said, PFAS levels dilute very quickly in water, so ambient water testing, other than for screening or known hot spots, is of limited value compared to testing in organisms to document real-world bioaccumulations in the environmental food chains.

Why with minimal air traffic and storage at the current Brunswick Executive Airport is there still PFAS fire suppression foam? In 2021(updated in 2022), the Department of Air Force issued a memo calling for the change from AFFF to water dispersal systems in all but special circumstances. The Sunset Order for AFFF was based on study results from Army, Navy, Air Force, and Defense Logistics Agency facilities and was shocking (emphasis added below):

> The Assistant Secretary of the Air Force for Energy, Installations, and Environment led a joint effort across the Departments of the Air Force (DAF), Army, and Navy along with the Defense Logistics Agency to assess risks with respect to replacing fluorinated Aqueous Film Forming Foam (AFFF) fire suppression systems (FSS) in Department of Defense Facilities (DoD) facilities. *After reviewing 32 years of historical data and 15 years of safety mishap data, the assessment team did not find a single instance where a hangar fuel related fire resulted in the loss of an aircraft or life. The only aircraft fuel related fire in the past 32 years in the DoD was suppressed by a water deluge system.*
>
> In contrast, the historical data shows a trend of *inadvertent activations of foam systems across the DoD of one in every two months (84 mishaps over past 15 years). The mishap cost associated with these events was in excess of 24.5 million dollars and contact with chemicals in the foam have caused one death, injured 21 people and damaged more than 120 aircraft.* Considering the findings of this risk-informed analysis and the high cost of converting, maintaining, and clean-up of accidental discharges of foam systems, effective immediately, all DAF hangars and similar facilities equipped with foam FSS will be categorized as Tier 2 Fire Protection Facilities unless specifically approved for Tier 1 designation. *Tier 2 facilities will use an automatic water sprinkler system consistent with the attached guidance in lieu of foam FSS.*

With even the military now changed from PFAS-based foam suppression systems, there is simply no excuse for its presence on the former BNAS (or any other former military installation transferred to civilian use). MRRA and the Navy must be held accountable for PFAS and other legacy contamination at Brunswick Landing/Brunswick Executive Airport/BNAS, much of which remains a Superfund site, a fact many tenants are probably not aware of.

"Every American deserves to be able to turn on their water tap or faucet and be able to drink clean water." —President Joe Biden

Ed Friedman

* NIEHS offers a publicly available, searchable database of published scientific papers about PFAS. Filters enable specific queries of this database: NIEHS-supported Publications on Per-and Polyfluoroalkyl Substance.

The Turtle Brakes

Stocking river herring is one of the many projects we perform at the department every spring. We use stocking trucks to do this. One of the oldest trucks in our fleet we affectionately call the *Turtle*, a 1987 Chevrolet C-60 medium-duty regular cab standard transmission 4-speed with a wooden flatbed on the back. Mounted to the bed is a 750-gallon circular tank. The tank has a gas-powered Honda pump that circulates the tank water. On the suction side of the pump is a venturi that can be opened while the pump is running so the pump will suck some air and inject it into the tank discharge ports to augment the oxygen content in the tank. The truck is also fitted with an oxygen tank and additional oxygen is added to the tank through a bubbler stone. Nearly all the employees in the past 30 years have some memory of driving the Turtle.

Once filled with water, with the circulator pump running and supplemental oxygen bubbling away, the truck can be loaded with fish. The Turtle is capable of hauling quite a few adult river herring. In theory the truck can carry between 1,000 and 1,500 adult river herring. The further you drive, the less fish you should haul. Getting caught and placed in a dark tank is highly stressful to the fish. The noise of the pump, the handling, the rumbling and swaying of the truck, and then getting dumped out again is rugged on them. The rule in the field is: if you go far, load light. Short trips you can load heavy.

The granite retaining walls are not curbs, they're set at ground level. In other words, you can roll merrily right over them into 12 feet of water and your doom!

The Turtle gets its affectionate name because it is slow. The truck wasn't even a dedicated stocking truck. It was a hand me down from the Boothbay offices where it was used in multiple roles before we inherited the truck and converted it full time to stocking. Unloaded, the truck gets around pretty good. Many an employee learned to drive a standard transmission in that truck. But when the truck gets loaded with water and fish, this totally changes the truck. Now it is heavy; even the steering is harder. The brakes, while powerful with an electric boost pump, are still hard pressed to slow down the additional 6,000 pounds of water and fish.

Each of us on the stocking crew drove that truck a lot. While Edwards Dam was still in at head tide on the Kennebec River we used the truck for short hauls—Pattee Pond in Winslow, Lovejoy Pond in Albion. We have bigger trucks with bigger tanks for the longer trips. Because the Turtle is slow, it made sense to keep it closer. Load light, drive like a turtle, dump the load, and return to load again.

While at Edwards, I was running loads with the Turtle from the receiving tank to the top of the power canal. While the other stocking trucks were gone, I'd load up the Turtle, take a quick run up, dump the load, and repeat until another stocking truck returned. That way we could saturate the 17 miles of habitat above Edwards Dam between Augusta and Waterville.

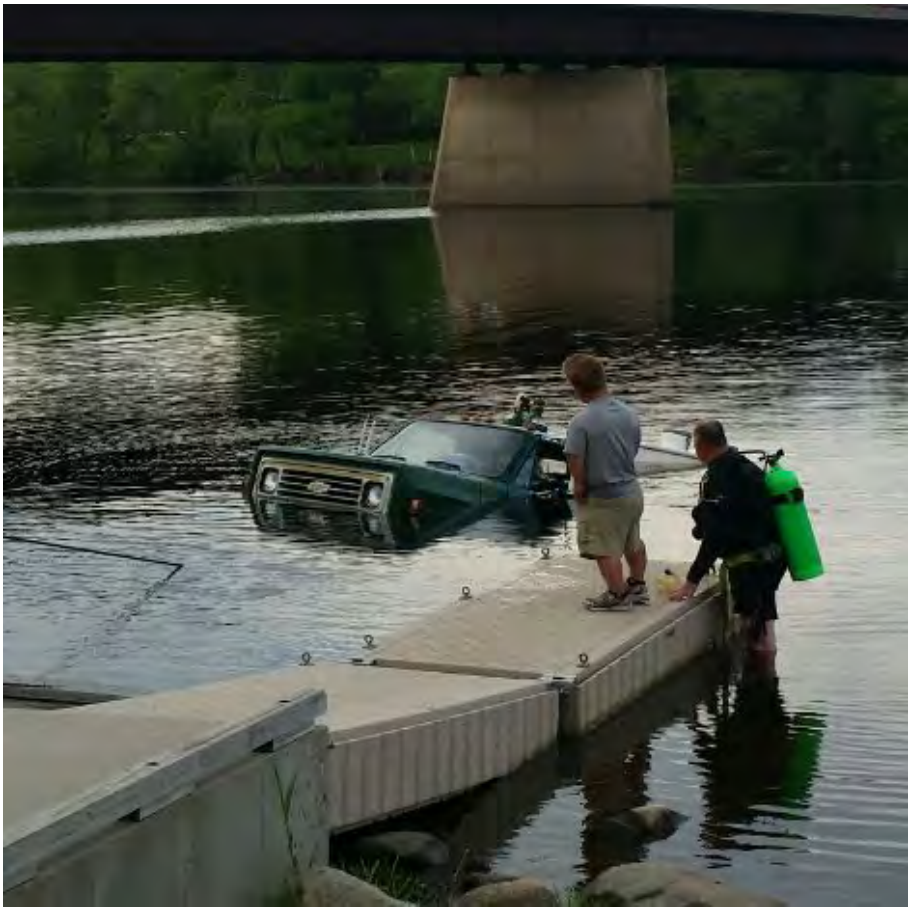
I'd been doing this run for several days when it happened. I was backing the truck down to the dump point above the gatehouse on the power canal when the motor stalled. Well, when the motor stalls, you lose the vacuum boost to the brake master cylinder. Suddenly you have half the braking power with the same amount of effort. No problem on flat ground—but this isn't flat ground. It's a steady slope right to the granite retaining walls for the gatehouse. The granite retaining walls are not curbs, they're set at ground level. In other words, you can roll merrily right over them into 12 feet of water and your doom! I swear the steering wheel of the truck was bent from me gripping it with both feet on the brake pedal pushing as hard as I could to stop that truck. The outcome is obvious. I'm writing this story. The truck stopped. I lived. Just writing this makes my heart rate go up. From that point forward it was decided that no one goes alone. I was lucky that day.

Years passed and we got newer trucks. Bigger trucks. Stronger trucks. Big trucks with automatic transmissions which significantly reduced training time. The program was successful, and we continued stocking multiple historical river herring habitats. The Turtle soldiered on. It continued to reliably deliver loads of fish in the Kennebec and Sebasticook River basins. It was a badge of honor to run the Turtle. You were the one that could run the standard tranny. All those fancy whiz-bang goodies on the new trucks took some of the sport out of stocking.

Continued on next page

The Turtle Brakes, continued from page 4

Stocking operations had moved upriver 17 miles with the removal of Edwards Dam in 1998. Edwards was the first working hydroelectric dam in the United States to be removed. Now we got our broodstock from Ft. Halifax dam in Winslow at the mouth of the Sebasticook River. Ft. Halifax dam was removed in 2008. Then we moved to get our fish from the now operational fish lift at Lockwood dam in Waterville. This site put us close to the Shawmut impoundment that has a lot of great blueback herring habitat. The Turtle continued to serve admirably. Fill with water and fish at Lockwood and then drive up to the Shawmut boat launch. Dump your load and drive back to Lockwood.



The Turtle's last gasp
Photo: Nate Gray

One day I was driving back from another job site while the crew was stocking out of Lockwood to the Shawmut impoundment. My cell phone rang, and I saw it was one of the crew. "Hey what's happening?" I answered.

There was a garbled mumble from the other end of the call. Then I heard "The Turtle just rolled back into the pond and sank!" I was horrified. "Is the driver out?" I shouted. "No, what should I do?" came the shout back. "Dial 911 and get the driver hurry!" I hung up and drove like hell. I was still 30 minutes out. I hit the hazards on the dash and pushed the car as fast as I dared.

When I showed up, rescue services were there. I jumped out and was counting heads. The driver was standing on the dock—thank God—and I could see the ghostly tannin brown aura of the white fish tank below the surface of the river. I went to the driver who was visibly shaken looking at the river. "What happened?" I asked. "The truck stalled and rolled back. I couldn't stop it. It just kept going! It went right in and I went with it." I didn't say anything for a while. "You OK?" I asked. "Yeah. That was scary."

We discussed the finer points of driving the Turtle. One of the things I'd learned driving that truck was that it liked to "catch its breath" after a haul. If you went to idle too soon after a long hard pull, there was so much latent heat in the motor that the gasoline in the carburetor would begin to boil because there was no demand for fuel. Once this happened, the motor would essentially "vapor lock" and stall. With no engine vacuum, the brakes would lose 50% of their effectiveness, and you'd roll back into the dark wet abyss.

You might try to bail out of the cab, but it happens fast and then you find yourself unable to open the truck doors because of water pressure. Then you watch in horror as the cab floods and the bright spring sunshine fades to murk. As the cab fills, you plan your escape. Seatbelt, seatbelt, seatbelt—get it off! Door won't budge, too much pressure, take deep breath and roll down the window. Last air gone, it's now or……out the window! Meanwhile one of your coworkers saw it happen and was running down the dock full tilt knowing the truck was going in. Knowing the driver was going in. As the truck slips below the surface, they dive in and swim to the submerged truck.

An hour later a diver from IF&W attached the tow hook from the wrecker to the Turtle. The truck emerged from the pond with water pouring from the cab. When the truck was nearly clear of the water we had the driver stop and we dumped the fish from the tank into the headpond. They all survived. The Turtle didn't.

Nate Gray

Fall Bay Day

On a brilliant Tuesday, September 24, hordes of 4th graders (145 to be exact) from Pittston/Randolph, Bowdoin, Woolwich, Bowdoinham, and North Yarmouth schools, along with about 35 volunteer FOMB guides (presenters) and chaperones, descended on the Maine Inland Fisheries & Wildlife (IF&W) Merrymeeting Bay Wildlife Management Area (WMA) in Bowdoinham for a rousing and successful Fall Bay Day. After excavating in a real archaeology site at least one young student declared she wanted to become an archaeologist (but not a scientist!)!

Who wants to try working the retriever?
Photo: Ed Friedman

Students attended three sessions each and enjoyed a picnic lunch. Our chaperones ensured student groups made it from one session to the next in a timely fashion and guides ensured students left with a memorable experience of the day and more knowledge about the Bay than they arrived with. Students also headed back to school dirtier than they arrived, more tired, and with bigger smiles!

Sessions for the day were: Anadromous Fish Printing, Fly Casting, Conservation K-9s, Where's the Poop Go?, Watershed Modeling, Beach Seining, Archaeology, Macroinvertebrates, Nest Building, Fish Migration, Raptors, and Caring for Critters.

Many thanks to guides and helpers:

Nate Gray, Bonnie Turek, Bert Singer, Ray Minchak, Jane Cleaves McKenna, Roy Morejon, Bill Chapman, Ernie Bergeron, Aaron Temple, Bonnie Shippen, Eric Ham, Kent Cooper, Julia Kemnitz, Jason Bartlett, Fred Koerber, Becca Peixotto, Lucy Poole, Betsy Steen, Elizabeth Walker, Kim Lato, Kathi McCue, Jamie Rea, and Susan Chase.

And chaperones:

Phil Brzozowski, Karen Mayo, Mike Curran, Becky Bowes, Linda Hornbeck, Ann Hartzler, Martha Spiess, Elise Straus-Bowers, Tina Phillips, Dan Smith, Rob Pontau, Pam Hanson, and Dana Cary.

Special thanks to:

Wild Oats for the excellent lunch wraps, Keel Kemper of IF&W for use of the property, USFWS, MDMR, MDEP, MDOT, DoD, Biodiversity Research Institute, Merrymeeting Bay Trout Unlimited, The Picture Framer, Wilderness Miracles, and the Brunswick Sewer District.

It takes many dedicated volunteers to pull Bay Day off and the energy at these events is wonderful. If you'd like to be a part of this, please give Ed Friedman a call at **666-3372**. And **mark your calendars for Spring Bay Day on May 13** at Chop Point School in Woolwich.

A predatory big fish chases smaller migrant alewives.
Photo: Ed Friedman

Screening for artifacts...
Photos: Becky Bowes

...while others dig

Continued on next page

Fall Bay Day, continued from page 6

It's raining in the watershed.
Photo: Becky Bowes

Inspecting the haul
Photo: Ed Friedman

We Need You! Please Support Our Important Work

FOMB Leadership

Our accomplishments are due to the hard work of dedicated volunteers, especially those who serve on our committees. If you want to get involved and serve, please contact the committee chair or Ed Friedman. We always welcome member input and we'd love for you to join us!

Steering Committee
Ed Friedman, Chair (Bowdoinham)
Vance Stephenson, Treasurer (Beavercreek, OH)
Tom Walling, Secretary (Bowdoinham)
Simon Beirne (Gardiner)
Becky Bowes (Brunswick)
Phil Brzozowski (Brunswick)
Nate Gray (Vassalboro)

Education Committee
Betsy Steen, Co-Chair, 666-3468
Tom Walling, Co-Chair, 666-5837

Conservation and Stewardship Committee
Chair Vacancy

Membership and Fundraising Committee
Nate Gray, Chair, 446-8870

Research and Advocacy Committee
Ed Friedman, Chair, 666-3372

Friends of Merrymeeting Bay · PO Box 233 · Richmond, Maine 04357

Membership Levels

☐ $1,000+ Sturgeon
☐ $750 American Eel
☐ $500 Wild Salmon
☐ $250 Striped Bass
☐ $100 Shad
☐ $50 Alewife
☐ $20 Smelt
☐ Other

☐ $7 Enclosed (optional) for a copy of Conservation Options: A Guide for Maine Land Owners [$5 for book, $2 for postage].

_____
Name

_____
Address

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Town/State/Zip

_____
Phone Email

☐ Renewal
☐ New Member
☐ Send information about volunteer opportunities
☐ I would like a sticker

Thanks to Rebecca Bowes for newsletter layout.

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Lunch break by the Bay
Photo: Christine Egan

Fall Bay Day 2024

Fourth-graders enjoy hands-on learning about the Bay.

See page 6 for details and photos.

Ed Friedman
Bowdoinham
LD 222

Friends of Merrymeeting Bay with five exhibits.