Friends of Casco Bay
Casco BAYKEEPER

Consent Agenda Items for Review

for Tuesday, January 16, 2024 Board Meeting

Friends of Casco Bay Board Meeting Minutes
November 21, 2023
Gulf of Maine Research Institute, Commercial Street, Portland and via Zoom

Present: Deb Debiegun, Ellen Grant, Pat Ianni, Sandy Marsters, Anthony Moffa, Malcolm Poole, Janna Rearick

Staff: Will Everitt, Sara Freshley, Ivy Frignoca, Heather Kenyon (online), Sarah Lyman,
Welcome – *President Sandy Marsters*
Sandy asked those attending, in the spirit of the advocacy conversation we are having tonight, what is your favorite issue that we work on? He also asked for a "Minute for the Bay", for someone to *share a reflection about the Bay, about the watershed, or about our work.*

***Action Item*:** *Acceptance of Consent Agenda*
Malcolm suggested modifying the minutes of the board meeting: he asked to put a perion at the end of the sentence after the words "executive session" and removing the language that assume what we did in the executive session. With that change, Malcolm moved, Ellen seconded. PASSED.

Community Engagement Committee Update: Film Fest Debrief, Sandy Marsters
Kirsten is absent tonight so Sandy shared the committee update and then asked board members to debrief the film festival.

Board members had many positives to say about the event. The "Film Fest was spectacular. The energy was amazing and it felt proud to be part of the organization." The messages were right and we did a good job connecting our mission with the films: a syncing around values. Logistically it was flawless. Board members shared that their friends at the event gave us positive reviews. Attendees loved having the filmmaker there. Having a live component is a big draw. Will handled that discussion well. The raffle, oysters, drinks all contributed to an energizing afternoon. We were excited about the ticket sales (400+), and like everything since the pandemic, people don't commit until really late.

In terms of things to improve, there was agreement that it was too long. We would like to see broader diversity of demographics. There was a suggestion that maybe we can get the word out at local outdoorsy shops. We did offer free tickets to our college student contacts. Another area of improvement is the parking situation. One person commented that we did not suggest alternative ways to get there such as by bike or bus. We have long looked at the Film Fest as a fundraiser and a friend-raiser. We need to encourage more corporate sponsors because it's such a feel good event.

Environmental Justice, Diversity, Equity, and Inclusion Committee update, *Committee Chair Pat Ianni*
Mark your calendars for April 30 for training with Cross Cultural Community Services. As a committee we are looking to make sure we can track our progress to make sure we are

accomplishing the actions listed in our statements. We are creating a chart to help us with that. Anybody on the board is welcome to join this committee. Our effort to include more diversity needs to include more mentoring or invitation of new members to participate wholly.

Governance: How our officer slate looks like at this point, *President Sandy Marsters and Ellen Grant*
Ellen updated the board that we are making nice headway on recruiting. We met with two of the four that we asked the board to vet. They have been fun meetings. Folks are excited about Friends of Casco Bay. We approach them explaining that we are in the process of expanding our board and we want to chat with you about where we are at in our strategic plan and our five-year vision. We want to guage people's interest and if they know anyone else who may be interested. We finish the meetings by explaining that we are in a process talking with many folks and we are looking for who is the best fit for now. The goal is to bring new prospects in January who would be approved then to get us back to the number we want to get to. Going forward we would want to be on an annual process in May/June/July. Both folks we met with so far would make great board members but not sure they match our priorities at this time. With two more board members we will be at a total of 15 which is in our target range 15-18. But we need to keep the pipeline open and keep talking to people.

Sandy explained the development of the slate of officers for the 2024 meeting. Malcolm is treasurer and terms off in 2026, Pat as clerk terms off in 2025 and Sandy as president terms off in 2027. The slate this summer (perhaps voted on in May) will be Kirsten as president and we do not have an automatic step up to vice president. Malcolm will need an understudy at some point. Pat has agreed to serve out clerk until she terms off. At some point we need to consider a new clerk and an understudy of Malcolm. The big gap is Vice President. At-large Executive Committee members are: Seb, David, Ellen, Steve.

Ivy suggested Marti Blair of Casco Bay Estuary Partnership as an understudy to Malcolm because she is retiring soon. Pat reminded us to keep DEI in your purview at all times. Ellen confirmed that they have made outgoing calls to folks letting them know that a goal is greater diversity and looking for help finding us. She hopes that one of the three that we recommend in January is a person of color who will bring a lot of other skills, talents, interests, and benefits.

Baykeeping: The Year Ahead (Stormwater and Climate Change) – *Casco Baykeeper Ivy Frignoca*
Ivy shared that a lot of what we do in Baykeeping is similar to chess or another equivalent strategic game: you have to do it in incremental steps and you don't know what the reactions will be. You have to use the best data you have to make decisions. The best data is often projections. Our approach is to be as nuanced, adaptive and humbling as we can possibly be.

Our strategic plan identifies the priorities of focusing on the impact of climate change and reducing pollution.

Ivy shared that the Program Team on staff now consists of four people: Heather, Sarah, Mike, and Ivy. The team started a grid or matrix to mesh our science, advocacy, and community engagement efforts. They had a team retreat as they and Will spent a whole morning looking at our data and stormwater and the big picture, what do we know and what do we not know. They spent the afternoon creating a draft matrix that identified all of the issues that we are working on and what issues are emerging, such as PFAs and eelgrass. Science: how do we track change? Advocacy: how to implement change? Community engagement: how do we connect to the community about change?

The "Sensor Squad" is looking at how to best track ocean acidification in coastal waters in Maine. If you have two of four ocean acidification parameters you can calculate the other two. We had been tracking partial pressure of carbon dioxide and pH as our two key parameters. But the logger on the PCO2 sensor is being discontinued and we have learned that it is not accurate in the field. Mike and the Sensor Squad are double checking our pH data, working on quality assurance, and are now collecting total alkalinity water samples. The pH and total alkalinity samples will likely be our "new" two parameters. Our learning will become a part of the Climate Council so its a model to be used for the entire State. NOAA has invited the Sensor Squad to their meetings. Our observation networks and data through Water Reporter really help complete this picture. What are we doing with this data? This ties into Ivy's work on the Coastal Marine Working Group of the Maine Climate Council.

The new thing that we are delving into is looking up into the watershed using the mapping tools that exist and our databases to reach into new communities that we have not worked with before to engage in our work. We are in more meetings with clammers and lobstermen and going out into the municipalities to attend meetings. We are trying to engage and weave this outreach together. We are working with Friends of the Presupmscot River and Presumpscot Regional Land Trust. Will Sedlack, who was Ivy's first extern will be the Land Trust's new Executive Director and they are an important partner of ours. We are going to meetings to listen and learn. We are trying to get grounding, credibility, and presence.

What programs are we missing or need to develop? We are expecting to be very involved in the blue carbon strategy and the monitoring strategy of the Maine Climate Council's work. As that process starts Sara and Ivy will give presentations because we want the public to be engaged in the Climate Council process. We are part of a network that works on climate change. There are other organizations that we turn to for guidance. There are very few people taking the lead on advocacy, especially on marine water. We need more people to take all the data and experiment and make things happen. Heather and Ivy are doing research on how to evaluate water quality standards so we can lobby the state to change the regulations. Climate change underlies everything we do.

Stormwater is also going to be a big piece of work in the coming months. Staff compared our data to the river flow data. Sara was looking at the fact that there were no nuisance algal blooms this year despite all of this rain water this year. We have a lot of questions. We don't have our nitrogen data back yet. Our working hypothesis is that we have been sunlight limited all

summer. We had low productivity in the Bay. Meanwhile, the flows coming out of the combined sewer overflows were off the charts this summer.

Because of our expertise on stormwater policy and implementation of the MS4 permit, Ivy was asked to be part of the state's steering committee process to revise the Chapter 500 stormwater rules. Ivy shared that our MS4 work and appeals have elevated the respect for us instead of creating enemies. This fall, the DEP wanted to go out on the boat with us and they are changing what they are doing in their permits because of the boat trip. We have maintained an open dialogue. The Chapter 500 steering committee will meet the first week in December. Under the steering committee, there is a stakeholder group and a technical advisory committee. The technical advisory committee includes engineers who will help with the technical side of the recommendations the steering committee comes up with.

In part, a goal of our stormwater pollution advocacy is to undue harm from past development. It is clear that we need to develop more because we need new houses and more housing in general in Maine; we need to do this in ways that prevent future harm. This is complicated by the fact that we have more people, more storms, more precipitation.

Malcolm shared that until 1980, engineering-wise, the goal was how fast can you get storm water to the ocean? Now we are talking about retention, time delays, and filtration.

Ivy shared that our stormwater laws need to use of low impact development. Right now, most of the state's rules only apply to developments of an acre or more. It should apply to smaller lots. Ivy encouraged the board to stay tuned when it comes to stormwater. We are shaping a public outreach campaign around education and public involvement. The goal is that by June there are recommended revisions and a draft rule. The new rules will then go to the Board of Environmental Protection with a public comment period. Sara will be tracking the process through Heather and Ivy to help build public support. Our stormwater work is linked to our environmental justice work. Sara is using new Environmental Justice mapping tools to look at what neighborhoods are most impacted by stormwater and will be working to get more people involved in public process of the stormwater rulemaking.

The board asked about the chances the deadlines slip? Ivy is optimistic about these deadlines because the State hired an excellent outside facilitator, Forest Bell. This will help keep it on track.

Ellen asked if we did this a massive amount of work, is it enough work? Is it going to get us the results we want in the time line proposed? Is the body of work enough to ultimately meet our five year goals?

Ivy reflected that the issues we work on build upon each other and these things were implemented now are built on successes we made two or three years ago, including the Maine Climate Council's four-year plan. There are very few advocates on the marine impacts of the plan. We are picking our battles as far as moving the biggest boulders as far as we can get them.

Executive Director Update – *Executive Director Will Everitt*
We have a lease on 65 West Commercial Street, Suite 301 in the historic Star Match building. We have a signed contract with our contractor, Duke Carpentry. Right now, they are scheduled to begin working our our lab build-out, updating our flooring, fresh paint, and a few smaller improvements starting in January. We are shooting to move in in February or March. We want the space to have a welcoming vibe and a space that staff are happy working in.

We are in transition with our Water Reporter program. We are still in due diligence mode as we work on the path forward for replacing the Water Reporter app. The good news is that everything seems to be checking out with moving forward with the Commons, a nonprofit app developer. Our goal is to have an app that is much easier for our volunteers to use and much more useful for our staff on the backend to organize and use the observational data. We have a check in meeting on November 30 with the app developer after which we may give the green light on that project.

Between our new office space, the build-out of the lab, our potential update to Water Reporter, we are paying for more "big ticket" items than we would normally pay for at this time of year. This is not a problem for us at this time. These items are in the budget one way or another and our budget recognizes this is a stretch year for us. In the case of the office, we padded the budget to include a build out and move. In the case of Water Reporter, this is an unplanned expense, but we have technology funds that are in the budget to cover that.

Sarah Lyman and Will are looking at the move and Water Reporter as fundraising opportunities. The more we can raise toward these efforts on top of our "normal" fundraising, the stronger we will be. We received a $25k gift toward the move from one of our top donors, on top of the $25k we normally receive from the donor. Sarah has set up a handful of meetings with other donors in the coming weeks.

Our collaborative approach plays out in advocacy as you heard, but it also plays out in Fundraising. I just found out today that Casco Bay Estuary Partnership (CBEP) approved a $4k increase in supporting our Water Quality Monitoring work for next year, bringing their support to $44k a year. This is a relationship we have worked hard to maintain and improve. CBEP today is our closest partner. You will hear more at future board meetings, but we also found out this month that a joint fundraising proposal with CBEP, Manomet, Team Zostera, was funded. As part of that grant, we will be receiving an additional $15k in each of the next two years to help monitor water quality near eelgrass beds as we work to better understand why we have lost 54% of our eelgrass over the past 5 years.

This is the time of year that brings our income budget into clearer focus. Much of our individual, corporate, and foundation income comes in November, December and January. So when we meet in January, we will have a much clearer picture of our finances. Depending on the strength of year-end giving, or not, we may have to watch our cash flow more closely in the next fiscal year. Know that we are watching income and expenses closely--not because we are

worried about this year, but because we want a good idea of what fiscal year 2025 will look like.

We had 48 applicants to our Communications Coordinator position, approximately 20 of which were applicants “in the ballpark.” We have narrowed down those to 7 first round interviews, which begin after Thanksgiving. We hope to have good news on this in early 2024.

If you plan on going to the Donor Appreciation Event let Sarah Lyman know (including anyone you are bringing!). It's one of my favorites of the year. Two hours of relationship building!

Questions, clarifications, concerns, comments
Sarah reminded the board that we still need your 10 gift membership recommendations! Let Sarah Lyman know by the end of the month.

Adjournment
Pat moved, Ellen seconded adjournment, passed unanimously. Adjourned at 7:31 p.m.

Friends of Casco Bay Community Engagement Committee
Minutes for Tuesday, January 2, 5:30-6:30 p.m.
In person at GMRI Conference Room and via online Zoom

Attendees:
Board: Kirsten Piacentini, Seb Milardo, Sandy Marsters, Pat Ianni, Stephen Bushey, Ellen Grant
Staff: Will Everitt, Sarah Lyman, Sara Freshley

1. Welcome and check-in question (5 minutes)
What is a favorite bird that you have seen?

2. Update on Water Reporter, Sara Freshley and Will Everitt
We have signed a contract with The Commons, a team of nonprofit developers, to build a new Water Reporter platform. The timeline is 5 months, so we should have a new app up and running by the end of May. The Water Reporter app as it exists now goes away at the end of March. We will have a two-month gap between apps.
The five month timeline is because they are building it in stages. They work for two weeks and then we have a week to review it and give it back to them. The stage of work is the type of data that we will be collecting. Part of the staff's work is to review their work every three weeks. The cost is going to be $7,000 to develop the app and then about $1,000/year for software subscriptions used for the app. As part of due diligence we talked to friends who are app developers. After looking at the Scope of Work, one said they would have charged us $20,000 for this work. This work aligns with The Commons's nonprofit mission which is a reason they can provide it at a lower cost. As part of this work, they will be transferring all of our current Water Reporter data to the new platform. The next steps are for staff are to plan a timeline for roll out and decide how we want folks to submit photos during the gap without any app, which will likely be by email Sara photos and information. We have received a $12,000 grant from Morton Kelly Charitable Trust to fund this transition, we are seeking additional support to cover the staff time and other transition costs. Volunteers will be able to test and have input around our soft launch. The new app will be built to be flexible, allowing Friends of Casco Bay staff to change layout and some other changes. We won't need to go to the developer if we want to change small things. The Commons is shutting down the original Water Reporter app because they do not have the capacity to keep it updated to meet the requirements of the Apple and Android App Store while also meeting all of the competing needs of the various organizations who were using it. This new app is going to be based on the user's mobile device's primary browser (Safari, Chrome, etc.) but you will be able to have an icon on your home screen. It won't be reliant on the Apple App store or Google Play store.

3. Update on updating our website, Sarah Lyman
We are also under contract for updating our website. We are working with Fisher Green

Creative (a Cape Elizabeth-based company). It is exciting because need new tech and a facelift as our website is becoming incompatible with the new version of the platform our website is built on. The update will be in two phases. First they will be redesigning the home page and the menu. The second phase is moving our stories and other content from the current website to the new design. We should have a template homepage to look at in January and or February. Our website is hosted by Maine Hosting. This will stay the same.

Could this revamp boost our website visits? Right now we are in the low thousands of hits per month. We did not contract out to get search engine optimization but as a result of this work it will be easier for us to implement similar tools to that moving forward. Having an easier to navigate website will help with this. We know that we drive a lot of our website traffic through emails and events. We should wrap up the announcement of the website into our 35th anniversary!

4. How are we celebrating our 35th anniversary? A brainstorm. . . Friends of Casco Bay turns 35 in 2024. What we've done for previous anniversary years: we have updated our logo in some way to let folks know that it is our anniversary. We also have made it a theme of most of our events for the year, including Annual Meeting, Donor Appreciation Event, and House Party. We have done some special messaging thematically as part of our emails. For the 30th we put a special timeline on our website that we continue to update.

Board Members had a generative/brainstorming discussion on ideas to celebrate this auspicious year.

- A clarifiying question was asked: in the past you had no separate party? It seemed more efficient to tack it onto existing events because we already have these events carved out.
- Let's wait until the 50th anniversary to do a big party focused on it!
- One idea is to have an event on Casco Bay Lines and do a big cruise. Ellen has been to a party on CBL and it was great. Having Annual Meeting on a boat may draw more people.
- We could have the 35 most impressive things the group has done this year, 35 species in Casco Bay. 35 people who have had an impact. We could make a lot of "35" lists.
- Could we use this occasion to get the word out in different ways about Friends of Casco Bay? Casco Bay Lines promotions? Fourth of July Fireworks dedicated to Casco Bay?
- What is the low hanging fruit of large groups of people already gathered and looking out at the Bay. Has Friends of Casco Bay ever been the beneficiary of Beach to Beacon? No, it is usually focused on children. A PSO event at Fort Williams that could be dedicated to us? Or even just a shout out.

- Maine Audubon has done a couple of parties at Kip Moore's place (son and wife own it now that Kip has passed), the old coastguard station on Little Diamond. The ferry lands right there. Seb pointed out that it is dangerous, there is no fencing around the dock, its open and it can be scary. Also a concern about how many people you could host there. Sandy pointed out that doing things on islands can present an inclusivity problem and may not be consistent with our values.
- Someone during the strategic planning process suggested "35 years of Protecting Casco Bay and counting" magnetic bumper stickers and we never did it! We could explore this again in regards to the anniversary.
- It could be an opportunity to fundraise. In years past we have asked donors to bump up their giving in honor of the anniversary. Ask folks to give $35 gift memberships to people that love the Bay? Something around $35 and gift memberships. for $35 donation to attend the Annual Meeting.
- We could do a gathering of original members and board before we lose too many of them, it might be nice to have a discussion on how and why they started this group. Would some kind of panel discussion of our history be of any interest? We could have Don Perkins, Joe Payne, Nini, Joanie, Mary Cerullo, etc. At SMCC Spring Point or Bug Light? We could certainly get some folks to this but we may be able to get more people (lots more) if we offer a boat ride. The panel does not need to be instead of the boat.

As folks have ideas let Will, Sarah, or Sandy know! We have a whole year to celebrate this.

5. Hosting our Film Fest for Casco Bay at L.L.Bean this year?

Kirsten shared that a few weeks ago Sarah and Will came to L.L.Bean HQ to check out the Leon Gorman Conference room to scope it for Film Fest 2024. It's big enough and parking is free! There may not be a cost, except for a cleaning cost potentially.
There is a cost at USM which covers the rental, the bar, clean up which adds up to over $3,000. Kirsten has submitted a request to L.L.Bean and we have not heard back yet. We gave them two dates and we meet their criteria. If YES, what do we think about shifting Film Fest to LL Bean? Comments included:

- I love tradition and the Abromson Center but the parking issue is really compelling.
- Do we know where Film Fest goers live? It would be valuable to know if they are primarily from Portland. We don't have the exact answer but we do get folks from a variety of locations including outside of the Casco Bay watershed but concentrated among the coast. We dont think its primarily Portland residents.
- Curiosity about L.L.Bean would likely be an attraction. Not overly concerned about leaving USM.
- Is that space going to be used regularly by lots of groups? It was built with that idea in mind. L.L.Bean is consistent with our mission and it's a great company.
- Geographically, it is more central within Casco Bay.

Overall consensus seemed to be that there are no particular concerns about using L.L.Bean.

6. **Donor Appreciation Event debrief**

What worked well about our first donor appreciation event since 2019? Should we do this event in 2024? What should we do differently? Debrief comments included:

- It was great, and Board Members made connections with new folks. Staff did a great job. Can't think of a way to improve.
- Liked how they came out with trays of wine because it was efficient.
- A friend left even more committed to the organization than she was before. It was great to have the guest list in advance.
- It was a great opportunity to say thank you personally to folks.
- People were so passionate and had little stories about why they cared about the Bay and why they were members.
- Some struggled to get a beer, the tray system did not work for everyone.
- There may be some logistics to improve upon but overall it went great.
- The staff presentation was excellent.

7. Mark your calendar: 2024 Events (so far!)

House party to benefit Friends of Casco Bay, hosted by Liz and Tim Williams, 19 Sturdivant Road, Cumberland Foreside, **July 16, 2024, 5:30 to 7:30 p.m.**

Friends of Casco Bay Members Annual Meeting: **July 25, 2024, 5:30 to 7:30 p.m., place: TBD**

Friends of Casco Bay
Casco BAYKEEPER

FY24 Interim Financial Report
For the Month Ending December 31, 2023
Prepared for the Board, January 11, 2024 by Will Everitt with assistance from Jeff Fetterer

The financial reports are as of 12/31/2023. We are nine months (75%) into our fiscal year. Operating income totals $1.097 m (81% of budget), expenses total 869k (63% of budget), resulting in a surplus of 228k; this surplus is 324k better than budgeted and 108k less than last year. While operating income is similar to last year, our expenses are higher as we are at a higher staffing level. As we begin buildout of our new office space (which we hope to move into in February or March 2024), our expenses will soon become even higher than past years at year-end.

FY24 Revenue Highlights:
Operating income is $145k more than budgeted and 21k less than last year at this time, mostly due to a timing difference as we received a $27k gift in December 2022 that arrived in January *this year*. Moving our operating cash to money market and certificate of deposit (CD) accounts has earned us $16,000 in interest when last year at this time we earned $225 in interest.

Gifts from Individuals total $490k, which is 104k more than budgeted at this time of year, is 49k more than last year at this time, and *exceeds our annual budget* by 10k. We raised an additional $17k for the Climate Change and Casco Bay Fund (not part of our operating income).

Corporate gifts total 36k, which is 4k less than budgeted for this time of year, and 5k more than last year at this time.

Foundation grants total 159k, which is 32k more budgeted for this time of year, is 6k less than last year at this time, and *exceeds our annual budget* by 4k.

Government revenue is 85k, which is 4k less than budgeted, and 20k less than last year at this time. Last year, we received a Maine Outdoor Heritage Fund grant that we cannot apply for this year. We are less than budgeted at this time, in part, too, because we ended our pumpout season slightly earlier than planned.

Nonprofit revenue is 5k, which is on budget, and 5k less than last year at this time.

Releases of funds for use in operations total 304k which is on budget.

FY24 Expenditure Highlights:
Operating expenses total $869k which is 179k less than budgeted. At this point in time, we project that our compensation expenses, while significantly higher than last year because of our increase in staff, will *remain under budget* through this fiscal year as we continue our search for a new Communications Coordinator (formerly Staff Writer). We also project that our Casco Bay Monitoring expenses will remain under budget through the fiscal year as we have needed to purchase less equipment than we originally anticipated. While our Contingency Office Relocation budget is 21k under budget at this point, we are likely to exceed our budget slightly as we build out our new lab and move into our new offices before the end of the fiscal year.

Capital Activity:
At the end of November, operating cash totaled $752k, and that with Accounts Receivable of 71k (not including Climate Change Fund pledges of 34k) together total 823k as compared to 870k at this time last year. We have not received our Maine Community Foundation quarterly statements as of the writing of this report.

Friends of Casco Bay / Casco Baykeeper
Profit & Loss Budget Performance
December 2023

9:36 AM
01/11/2024
Accrual Basis

	Dec 23	Budget	$ Over Budget	Apr - Dec 23	YTD Budget	$ Over Budget	Annual Budget
Ordinary Income/Expense							
Income							
Unrestricted Contributions							
Individuals							
All Gifts from Individuals	136,513.09	120,000.00	16,513.09	506,159.83	386,000.00	120,159.83	480,000.00
Less Restricted Climate Fund	-718.38			-16,566.83			
Less Restricted Capital Gifts	-5,750.00			-30,750.00			
Less Restricted for Program	-3,398.62			-9,104.68			
Total Individuals	126,646.09	120,000.00	6,646.09	449,738.32	386,000.00	63,738.32	480,000.00
Corporations							
All Gifts from Corporations	21,766.06	18,500.00	3,266.06	36,944.61	40,300.00	-3,355.39	55,000.00
Less Restricted for Climate Fun	-353.94			-453.94			
Less Restricted for Program	-3,000.00			-8,500.00			
Total Corporations	18,412.12	18,500.00	-87.88	27,990.67	40,300.00	-12,309.33	55,000.00
Foundations							
All Foundation Gifts	54,150.00			159,452.37			
Less Restricted for Program	-23,000.00			-44,678.00			
Foundations - Other	0.00	40,000.00	-40,000.00	0.00	127,500.00	-127,500.00	155,000.00
Total Foundations	31,150.00	40,000.00	-8,850.00	114,774.37	127,500.00	-12,725.63	155,000.00
Government & Quasi Governmental							
All Governmental Revenue	4,768.67	3,505.00	1,263.67	85,281.49	89,515.00	-4,233.51	100,000.00
Less Restricted for Program	-4,768.67			-85,281.49			
Total Government & Quasi Governmental	0.00	3,505.00	-3,505.00	0.00	89,515.00	-89,515.00	100,000.00
Nonprofits							
All Nonprofit Revenue	1,000.00	0.00	1,000.00	4,818.64	5,000.00	-181.36	10,000.00
Less Restricted for Program	0.00			-250.00			
Total Nonprofits	1,000.00	0.00	1,000.00	4,568.64	5,000.00	-431.36	10,000.00
Total Unrestricted Contributions	177,208.21	182,005.00	-4,796.79	597,072.00	648,315.00	-51,243.00	800,000.00

	Dec 23	Budget	$ Over Budget	Apr - Dec 23	YTD Budget	$ Over Budget	Annual Budget
Releases							
Releases of Restrctd Net Assets							
Releases Unrestricted Gifts	0.00	0.00	0.00	73,000.00	73,000.00	0.00	223,000.00
Releases for Programs	10,525.00	10,525.00	0.00	152,200.00	152,200.00	0.00	171,800.00
Releases for CMS Data & Commnty	8,750.00	8,750.00	0.00	78,750.00	78,750.00	0.00	105,000.00
Releases from Baykeeping Fund	0.00	0.00	0.00	0.00	0.00	0.00	38,316.00
Releases from Boats Fund	0.00	0.00	0.00	0.00	0.00	0.00	10,000.00
Releases from Emer Advocacy Fd	0.00	0.00	0.00	0.00	0.00	0.00	10,000.00
Total Releases of Restrctd Net Assets	19,275.00	19,275.00	0.00	303,950.00	303,950.00	0.00	558,116.00
Less Restricted	-19,275.00			-230,950.00			
Total Releases	0.00	19,275.00	-19,275.00	73,000.00	303,950.00	-230,950.00	558,116.00
Restricted Revenue							
Restricted Revenue - Program							
Climate Fund CMS Data Community	8,750.00			78,750.00			
Continuous Monitorng Sta op	3,505.00			31,545.00			
Baykeeping	10,525.00			155,578.00			
Water Quality Monitoring	14,398.62			37,154.68			
Pumpout - DEP	1,263.67			53,736.49			
Pumpout - Contributed Gifts	0.00			250.00			
Water Reporter	15,000.00			20,050.00			
Volunteer Efforts	0.00			1,700.00			
Total Restricted Revenue - Program	53,442.29			378,764.17			
Total Restricted Revenue	53,442.29			378,764.17			
Earned Income							
Pumpout Fees	3,839.40			4,364.40			
Special Events	0.00			28,904.00			
Total Earned Income	3,839.40			33,268.40			
Other Operating Income							
Other Operating Income							
Interest - operating accounts	867.70			16,120.43			
Gain (Loss) Sale Donated Stock	-1,222.92			-1,322.41			

	Dec 23	Budget	$ Over Budget	Apr - Dec 23	YTD Budget	$ Over Budget	Annual Budget
Total Other Operating Income	-355.22			14,798.02			
Total Other Operating Income	-355.22			14,798.02			
Total Income	234,134.68	201,280.00	32,854.68	1,096,902.59	952,265.00	144,637.59	1,358,116.00
Gross Profit	234,134.68	201,280.00	32,854.68	1,096,902.59	952,265.00	144,637.59	1,358,116.00
Expense							
Compensation							
Salaries - Gross	48,500.28	52,903.00	-4,402.72	498,744.84	536,275.00	-37,530.16	714,000.00
Payroll Taxes	3,605.13	4,069.00	-463.87	37,215.33	41,311.00	-4,095.67	55,000.00
Benefits	7,796.65	7,478.00	318.65	76,224.41	71,042.00	5,182.41	97,000.00
Total Compensation	59,902.06	64,450.00	-4,547.94	612,184.58	648,628.00	-36,443.42	866,000.00
Program Expenses							
Baykeeping Program	2,411.36	5,539.61	-3,128.25	46,194.79	49,856.49	-3,661.70	66,475.00
Boat and Vehicle Expenses	0.00	2,454.16	-2,454.16	12,728.89	22,087.44	-9,358.55	29,450.00
Casco Bay Monitoring	2,165.57	10,925.00	-8,759.43	66,286.17	142,325.00	-76,038.83	175,100.00
Pumpout Program	731.86	1,595.83	-863.97	12,802.10	14,362.47	-1,560.37	19,150.00
Total Program Expenses	5,308.79	20,514.60	-15,205.81	138,011.95	228,631.40	-90,619.45	290,175.00
Management and Administration							
Occupancy	4,801.67	3,583.34	1,218.33	18,766.70	32,250.06	-13,483.36	43,000.00
Contingency Office Relocation	0.00	3,750.00	-3,750.00	12,500.00	33,750.00	-21,250.00	45,000.00
Office and Management	4,695.91	5,583.34	-887.43	45,256.66	50,250.06	-4,993.40	66,994.00
Board Expenditures	0.00	208.34	-208.34	1,304.14	1,875.06	-570.92	2,500.00
Financing Costs	5.00	60.00	-55.00	185.00	540.00	-355.00	720.00
Total Management and Administration	9,502.58	13,185.02	-3,682.44	78,012.50	118,665.18	-40,652.68	158,214.00
Fund Raising Expenses							
Special Events Expenses	225.13			8,191.13			
House Party & Similar Events	0.00	1,845.84	-1,845.84	10,423.99	16,612.56	-6,188.57	22,150.00
Fund Raising Expenses	1,216.96	2,933.82	-1,716.86	21,733.68	26,404.38	-4,670.70	35,206.00
Total Fund Raising Expenses	1,442.09	4,779.66	-3,337.57	40,348.80	43,016.94	-2,668.14	57,356.00
Contingency Expense	0.00	1,000.00	-1,000.00	0.00	9,000.00	-9,000.00	12,000.00
Total Expense	76,155.52	103,929.28	-27,773.76	868,557.83	1,047,941.52	-179,383.69	1,383,745.00
Net Ordinary Income	157,979.16	97,350.72	60,628.44	228,344.76	-95,676.52	324,021.28	-25,629.00

	Dec 23	Budget	$ Over Budget	Apr - Dec 23	YTD Budget	$ Over Budget	Annual Budget
Other Income/Expense							
Other Income							
Capital Activity							
Capital Contributions							
Capital Equipment Gifts	5,750.00			30,750.00			
Total Capital Contributions	5,750.00			30,750.00			
Activity in Capital Funds							
Climate Change & Casco Bay Fund							
Climate Fund Gifts	1,072.32			17,020.77			
Climate Funds at MCF	0.00			5,381.19			
Climate Fund Interest	0.78			19.19			
Gain (-Loss) Stock Gifts	0.00			-173.03			
Total Climate Change & Casco Bay Fund	1,073.10			22,248.12			
Baykeeping Fund Net Activity							
Net Earnings (Loss) BKEndow MCF	0.00			8,167.29			
Total Baykeeping Fund Net Activity	0.00			8,167.29			
Boats Fund Net Activity							
Net Earnings (Loss) BoatsFd MCF	0.00			971.19			
Total Boats Fund Net Activity	0.00			971.19			
Advocacy Fund Net Activity							
Net Earnings (Loss) Advocacy Fd	0.00			411.41			
Total Advocacy Fund Net Activity	0.00			411.41			
Total Activity in Capital Funds	1,073.10			31,798.01			
Total Capital Activity	6,823.10			62,548.01			
Total Other Income	6,823.10			62,548.01			
Other Expense							
Depreciation							
Depreciation - BK Boats	1,955.90			17,603.10			
Depreciation - WQ Equipment	2,397.62			21,578.58			
Depreciation - Pumpout	1,506.89			13,562.01			
Depreciation - M&A	419.51			3,775.59			

	Dec 23	Budget	$ Over Budget	Apr - Dec 23	YTD Budget	$ Over Budget	Annual Budget
Total Depreciation	6,279.92			56,519.28			
Capital Activity - Expenditures							
Release Net Assets - Programs	10,525.00			152,200.00			
Release Net Assets - Unrestr	0.00			73,000.00			
Release of Climate Funds	8,750.00			78,750.00			
Total Capital Activity - Expenditures	19,275.00			303,950.00			
Total Other Expense	25,554.92			360,469.28			
Net Other Income	-18,731.82			-297,921.27			
Net Income	**139,247.34**	**97,350.72**	**41,896.62**	**-69,576.51**	**-95,676.52**	**26,100.01**	**-25,629.00**

Friends of Casco Bay / Casco Baykeeper
Profit & Loss Prev Year Comparison
April through December 2023

9:46 AM
Jan 11, 2024
Accrual Basis

	Apr - Dec 23	Apr - Dec 22	$ Change
Ordinary Income/Expense			
Income			
Unrestricted Contributions			
Individuals			
All Gifts from Individuals	506,159.83	442,389.24	63,770.59
Less Restricted Climate Fund	(16,566.83)	(1,650.00)	(14,916.83)
Less Restricted Capital Gifts	(30,750.00)	(1,000.00)	(29,750.00)
Less Restricted for Program	(9,104.68)	(19,006.00)	9,901.32
Total Individuals	449,738.32	420,733.24	29,005.08
Corporations			
All Gifts from Corporations	36,944.61	31,848.78	5,095.83
Less Restricted for Climate Fun	(453.94)	(250.00)	(203.94)
Less Restricted for Program	(8,500.00)	(950.00)	(7,550.00)
Total Corporations	27,990.67	30,648.78	(2,658.11)
Foundations			
All Foundation Gifts	159,452.37	164,963.22	(5,510.85)
Less Restricted for Program	(44,678.00)	(7,500.00)	(37,178.00)
Total Foundations	114,774.37	157,463.22	(42,688.85)
Government & Quasi Governmental			
All Governmental Revenue	85,281.49	105,591.77	(20,310.28)
Less Restricted for Program	(85,281.49)	(105,591.77)	20,310.28
Total Government & Quasi Governmental	0.00	0.00	0.00
Nonprofits			
All Nonprofit Revenue	4,818.64	9,925.63	(5,106.99)
Less Restricted for Program	(250.00)	0.00	(250.00)
Total Nonprofits	4,568.64	9,925.63	(5,356.99)
Total Unrestricted Contributions	597,072.00	618,770.87	(21,698.87)
Releases			
Releases of Restrctd Net Assets			
Releases Unrestricted Gifts	73,000.00	155,002.00	(82,002.00)
Releases for Programs	152,200.00	69,993.00	82,207.00
Releases for CMS Data & Commnty	78,750.00	80,253.00	(1,503.00)
Releases from Baykeeping Fund	0.00	28,737.00	(28,737.00)
Total Releases of Restrctd Net Assets	303,950.00	333,985.00	(30,035.00)
Less Restricted	(230,950.00)	(178,983.00)	(51,967.00)
Total Releases	73,000.00	155,002.00	(82,002.00)
Restricted Revenue			
Restricted Revenue - Program			
Climate Fund CMS Data Community	78,750.00	80,253.00	(1,503.00)
Continuous Monitorng Sta op	31,545.00	28,974.01	2,570.99
Acidification Work	0.00	7,500.00	(7,500.00)

	Apr - Dec 23	Apr - Dec 22	$ Change
Baykeeping	155,578.00	99,380.00	56,198.00
Water Quality Monitoring	37,154.68	4,344.00	32,810.68
Nitrogen	0.00	11,015.00	(11,015.00)
Boats Operations	0.00	1,000.00	(1,000.00)
Pumpout - DEP	53,736.49	69,117.76	(15,381.27)
Pumpout - Contributed Gifts	250.00	7,500.00	(7,250.00)
Water Reporter	20,050.00	0.00	20,050.00
Volunteer Efforts	1,700.00	8,360.00	(6,660.00)
Total Restricted Revenue - Program	378,764.17	317,443.77	61,320.40
Total Restricted Revenue	378,764.17	317,443.77	61,320.40
Earned Income			
Pumpout Fees	4,364.40	6,657.50	(2,293.10)
Special Events	28,904.00	20,601.83	8,302.17
Sales of Merchandise	0.00	35.00	(35.00)
Total Earned Income	33,268.40	27,294.33	5,974.07
Other Operating Income			
Other Operating Income			
Interest - operating accounts	16,120.43	224.56	15,895.87
Gain (Loss) Sale Donated Stock	(1,322.41)	(631.26)	(691.15)
Total Other Operating Income	14,798.02	(406.70)	15,204.72
Total Other Operating Income	14,798.02	(406.70)	15,204.72
Total Income	1,096,902.59	1,118,104.27	(21,201.68)
Gross Profit	1,096,902.59	1,118,104.27	(21,201.68)
Expense			
Compensation			
Salaries - Gross	498,744.84	488,740.69	10,004.15
Payroll Taxes	37,215.33	37,026.23	189.10
Benefits	76,224.41	60,212.74	16,011.67
Total Compensation	612,184.58	585,979.66	26,204.92
Program Expenses			
Baykeeping Program	46,194.79	43,617.45	2,577.34
Boat and Vehicle Expenses	12,728.89	20,871.80	(8,142.91)
Casco Bay Monitoring	66,286.17	18,369.48	47,916.69
Pumpout Program	12,802.10	22,575.31	(9,773.21)
Total Program Expenses	138,011.95	105,434.04	32,577.91
Management and Administration			
Occupancy			
Rent	18,766.70	15,516.70	3,250.00
Total Occupancy	18,766.70	15,516.70	3,250.00
Contingency Office Relocation	12,500.00	0.00	12,500.00
Office and Management	45,256.66	36,547.89	8,708.77
Board Expenditures	1,304.14	2,100.99	(796.85)
Financing Costs			
Bank Charges	185.00	410.00	(225.00)

	Apr - Dec 23	Apr - Dec 22	$ Change
Total Financing Costs	185.00	410.00	(225.00)
Total Management and Administration	78,012.50	54,575.58	23,436.92
Fund Raising Expenses			
Special Events Expenses			
Film Festival Expenses	8,191.13	6,415.34	1,775.79
Total Special Events Expenses	8,191.13	6,415.34	1,775.79
House Party & Similar Events	10,423.99	4,805.00	5,618.99
Fund Raising Expenses	21,733.68	24,948.61	(3,214.93)
Total Fund Raising Expenses	40,348.80	36,168.95	4,179.85
Total Expense	868,557.83	782,158.23	86,399.60
Net Ordinary Income	228,344.76	335,946.04	(107,601.28)
Other Income/Expense			
Other Income			
Capital Activity			
Capital Contributions			
Capital Equipment Gifts	30,750.00	0.00	30,750.00
Total Capital Contributions	30,750.00	0.00	30,750.00
Activity in Capital Funds			
Climate Change & Casco Bay Fund			
Climate Fund Gifts	17,020.77	1,900.00	15,120.77
Climate Funds at MCF			
Climate Fd Int DivsGains at MCF	29,148.78	13,474.02	15,674.76
Climate Fd Unrealized MCF	(19,406.85)	(51,620.08)	32,213.23
Climate Fd Fees MCF	(4,360.74)	(6,127.15)	1,766.41
Total Climate Funds at MCF	5,381.19	(44,273.21)	49,654.40
Climate Fund Interest	19.19	92.19	(73.00)
Gain (-Loss) Stock Gifts	(173.03)	0.00	(173.03)
Total Climate Change & Casco Bay Fund	22,248.12	(42,281.02)	64,529.14
Baykeeping Fund Net Activity			
Net Earnings (Loss) BKEndow MCF	8,167.29	(67,264.13)	75,431.42
Transfers to Baykeeping Program	0.00	(28,737.00)	28,737.00
Total Baykeeping Fund Net Activity	8,167.29	(96,001.13)	104,168.42
Boats Fund Net Activity			
Net Earnings (Loss) BoatsFd MCF	971.19	(8,377.32)	9,348.51
Total Boats Fund Net Activity	971.19	(8,377.32)	9,348.51
Advocacy Fund Net Activity			
Net Earnings (Loss) Advocacy Fd	411.41	(3,385.20)	3,796.61
Total Advocacy Fund Net Activity	411.41	(3,385.20)	3,796.61
Total Activity in Capital Funds	31,798.01	(150,044.67)	181,842.68
Total Capital Activity	62,548.01	(150,044.67)	212,592.68
Total Other Income	62,548.01	(150,044.67)	212,592.68
Other Expense			
Depreciation			
Depreciation - BK Boats	17,603.10	0.00	17,603.10

	Apr - Dec 23	Apr - Dec 22	$ Change
Depreciation - WQ Equipment	21,578.58	0.00	21,578.58
Depreciation - Pumpout	13,562.01	0.00	13,562.01
Depreciation - M&A	3,775.59	0.00	3,775.59
Total Depreciation	56,519.28	0.00	56,519.28
Capital Activity - Expenditures			
Release Net Assets - Programs	152,200.00	69,993.00	82,207.00
Release Net Assets - Unrestr	73,000.00	155,002.00	(82,002.00)
Release of Climate Funds	78,750.00	80,253.00	(1,503.00)
Total Capital Activity - Expenditures	303,950.00	305,248.00	(1,298.00)
Total Other Expense	360,469.28	305,248.00	55,221.28
Net Other Income	(297,921.27)	(455,292.67)	157,371.40
Net Income	**(69,576.51)**	**(119,346.63)**	**49,770.12**

Friends of Casco Bay / Casco Baykeeper

Balance Sheet Prev Year Comparison

As of December 31, 2023

9:58 AM
Jan 11, 2024
Accrual Basis

	Dec 31, 23	Dec 31, 22	$ Change
ASSETS			
Current Assets			
Checking/Savings			
Operating Cash			
Key - Checking	121,783.56	150,657.50	(28,873.94)
Petty Cash	300.00	300.00	0.00
Post Office Permit	684.05	920.97	(236.92)
Total Operating Cash	122,767.61	151,878.47	(29,110.86)
Savings and Contingency Cash			
Key Business Interest Savings	174,401.51	632,435.69	(458,034.18)
M&T Savings	205,013.13	0.00	205,013.13
Bangor Savings Money Market	5,000.80	0.00	5,000.80
Certificate of Deposit 3 BSB	197,553.00	0.00	197,553.00
Certificate of Deposit 9 BSB	50,000.00	0.00	50,000.00
Due from Climate Fund for Ops	83,750.00	80,253.00	3,497.00
Due to Climate Fund	(265.22)	(265.22)	0.00
Due from (to) Baykeeping Fund	(85,920.00)	(62,183.00)	(23,737.00)
Due from (to) Boats Fund	0.00	(5,915.00)	5,915.00
Total Savings and Contingency Cash	629,533.22	644,325.47	(14,792.25)
Total Checking/Savings	752,300.83	796,203.94	(43,903.11)
Accounts Receivable			
Contributions Receivable			
Pledges Receivable	6,000.00	65,500.00	(59,500.00)
Board Pledges Receivable	3,125.00	500.00	2,625.00
Contributions Receivable	14,917.21	2,550.00	12,367.21
Total Contributions Receivable	24,042.21	68,550.00	(44,507.79)
Contract and Grant Receivables			
Receivable from CBEP	3,505.00	3,219.37	285.63
Receivable from DEP	43,028.41	1,391.97	41,636.44
Total Contract and Grant Receivables	46,533.41	4,611.34	41,922.07
Sponsorships Receivable	0.00	500.00	(500.00)
Climate Change Fund Pledges Rec	33,527.44	62,515.00	(28,987.56)
Total Accounts Receivable	104,103.06	136,176.34	(32,073.28)
Other Current Assets			
Climate Change & Casco Bay Fund			
Climate Fund Money Mkt TDBank	18,297.32	250,247.05	(231,949.73)
Climate Fund Checking TDBank	11,638.93	3,143.21	8,495.72
Certificate of Deposit 91 Day	100,000.00	0.00	100,000.00
Certificate of Deposit TD 12	182,161.68	0.00	182,161.68
Due from Operating Account	265.22	265.22	0.00
Due to Ops from Climate Fund	(83,750.00)	(80,253.00)	(3,497.00)

	Dec 31, 23	Dec 31, 22	$ Change
Climate Fund at MCF			
Climate Fund Principal at MCF	500,000.00	500,000.00	0.00
Climate Fd Int Divs Gains MCF	72,612.30	40,616.94	31,995.36
Climate Fd Unrealized MCF	(58,201.12)	(58,550.08)	348.96
Climate Fd Fees MCF	(20,202.26)	(13,721.66)	(6,480.60)
Total Climate Fund at MCF	494,208.92	468,345.20	25,863.72
Total Climate Change & Casco Bay Fund	722,822.07	641,747.68	81,074.39
Baykeeping Fund			
Baykeeping Fund at MCF			
Baykeeping Fund Gifts Received	752,267.59	752,267.59	0.00
BK Fund Earnings Net of Fees	180,465.01	141,741.79	38,723.22
Unrealized Gain/Loss Mkt Value	965,544.49	965,014.88	529.61
Transfers from Baykeeping Fund	(1,148,237.09)	(1,148,237.09)	0.00
Total Baykeeping Fund at MCF	750,040.00	710,787.17	39,252.83
Baykeeping Fund due from Ops	85,920.00	62,183.00	23,737.00
Total Baykeeping Fund	835,960.00	772,970.17	62,989.83
Boats Fund			
Boats Fund at MCF			
Boats Fd Gifts Received	116,952.98	116,952.98	0.00
Boats Fd Earnings Net of Fees	13,521.01	8,921.78	4,599.23
Unrealized Gain/Loss Market Val	48,744.57	48,663.04	81.53
Transfers from Boats Fund	(90,000.00)	(85,915.00)	(4,085.00)
Total Boats Fund at MCF	89,218.56	88,622.80	595.76
Boats Fund due from Ops	0.00	5,915.00	(5,915.00)
Total Boats Fund	89,218.56	94,537.80	(5,319.24)
Advocacy Fund			
Advocacy Fund at MCF			
Emeritus Fund Gifts	79,668.49	79,668.49	0.00
Emeritus Earnings Net of Fees	5,653.74	3,702.33	1,951.41
Unrealized Gain/Loss Market Val	18,910.62	18,883.92	26.70
Transfers from Advocacy Fund	(66,432.00)	(66,432.00)	0.00
Total Advocacy Fund at MCF	37,800.85	35,822.74	1,978.11
Total Advocacy Fund	37,800.85	35,822.74	1,978.11
Prepaid Expenses	1,610.00	500.00	1,110.00
Total Other Current Assets	1,687,411.48	1,545,578.39	141,833.09
Total Current Assets	2,543,815.37	2,477,958.67	65,856.70
Fixed Assets			
Fixed Assets			
Boats and Equipment			
Boats, Trailers, Improvements			
Boat AJ 28	234,707.66	234,707.66	0.00
Boat Pumpout	180,827.00	180,827.00	0.00
Total Boats, Trailers, Improvements	415,534.66	415,534.66	0.00
Vehicle	31,440.84	31,440.84	0.00

	Dec 31, 23	Dec 31, 22	$ Change
Equipment			
Equipment - Office	70,234.84	70,234.84	0.00
Equipment - Water Quality	143,857.04	143,857.04	0.00
Total Equipment	214,091.88	214,091.88	0.00
Total Boats and Equipment	661,067.38	661,067.38	0.00
Accumulated Depreciation	(480,636.42)	(348,758.20)	(131,878.22)
Total Fixed Assets	180,430.96	312,309.18	(131,878.22)
Total Fixed Assets	180,430.96	312,309.18	(131,878.22)
TOTAL ASSETS	**2,724,246.33**	**2,790,267.85**	**(66,021.52)**
LIABILITIES & EQUITY			
Liabilities			
Current Liabilities			
Other Current Liabilities			
Funds Held for Others			
On behalf of Oil Spill Seminar	1,207.70	1,207.70	0.00
On behalf YardScaping & SoPo	795.29	795.29	0.00
Total Funds Held for Others	2,002.99	2,002.99	0.00
Accrued Vacation Liability	41,635.73	28,804.92	12,830.81
Total Other Current Liabilities	43,638.72	30,807.91	12,830.81
Total Current Liabilities	43,638.72	30,807.91	12,830.81
Total Liabilities	43,638.72	30,807.91	12,830.81
Equity			
Net Assets			
NA Without Donor Restrictions			
Unrestricted Undesignated	166,839.18	166,884.18	(45.00)
Board Designated Contingency	76,566.00	76,566.00	0.00
Board Designated Legal BK Fund			
Board Designated Legal Issues	31,562.60	31,562.60	0.00
Total Board Designated Legal BK Fund	31,562.60	31,562.60	0.00
Equity in Fixed Assets	204,845.39	204,845.39	0.00
Total NA Without Donor Restrictions	479,813.17	479,858.17	(45.00)
NA With Donor Restrictions			
Restricted for Programs & Ops	66,275.00	136,275.00	(70,000.00)
Baykeeping Fund	827,793.06	868,972.06	(41,179.00)
Boats Fund	88,247.21	102,915.21	(14,668.00)
Advocacy Fund	37,388.81	39,206.81	(1,818.00)
Climate Change & Casco Bay Fund	811,804.66	838,736.66	(26,932.00)
Total NA With Donor Restrictions	1,831,508.74	1,986,105.74	(154,597.00)
Total Net Assets	2,311,321.91	2,465,963.91	(154,642.00)
Unrestricted net fr prior year	438,862.21	412,842.66	26,019.55
Net Income	(69,576.51)	(119,346.63)	49,770.12
Total Equity	2,680,607.61	2,759,459.94	(78,852.33)
TOTAL LIABILITIES & EQUITY	**2,724,246.33**	**2,790,267.85**	**(66,021.52)**

Friends of Casco Bay
Casco BAYKEEPER

January 12, 2024

What you should know about the following memo "RE: Consideration of Maine's Proposed Numeric Nitrogen Criteria and application of that criteria to MEPDES permits":

- These are Friends of Casco Bay's comments on the Maine Department of Environmental Protection's (DEP) work to develop nitrogen criteria—in other words, enforceable standards for nitrogen so that it can be better regulated in Clean Water Act permits.
- We have been working to ensure nitrogen criteria are set for Casco Bay since at least 2007. Our approach and understanding of how nitrogen criteria could protect the Bay have evolved over the years and this document helps explain our current approach.
- The comments were prepared for DEP as part of a collaborative meeting we had with their staff on January 11, 2024. Our comments and sugguestions were well received at that meeting.
- The comments are very technical in nature. Essentially, we are encouraging the state to set nitrogen standards that are protective of our waters and critical habitat such of eelgrass, and that use the best science available.

To: Maine Department of Environmental Protection
From: Friends of Casco Bay
Date: 10 January 2024
RE: Consideration of Maine's Proposed Numeric Nitrogen Criteria and application of that criteria to MEPDES permits

INTRODUCTION

This memo discusses proposed numeric nitrogen thresholds for Class SC and SB receiving waters of Casco Bay. DEP has paused adopting these thresholds to determine how they might be applied in MEPDES permits. This memo sets forth questions to discuss as the process resumes. The memo is based upon a review of materials developed during the PANG process and an extensive review of permits from other jurisdictions. Other jurisdictions have adopted narrative criteria that specifically address nutrient pollution. Their permits require more rigorous water quality monitoring, impose more stringent effluent limits, and longer and greater optimization requirements than any currently required in MEPDES permits.

BACKGROUND

Pursuant to a 2007 legislative resolve, DEP must establish nitrogen criteria to protect Casco Bay from eutrophication caused by anthropogenic sources of nitrogen.[1] In compliance with the Resolve, DEP submitted a report to the legislature in 2008, indicating that it needed to collect more data before it could develop sound numeric nitrogen criteria. It created a plan to do this work and collected the data in 2016-2020. Shortly thereafter, DEP began to develop numeric criteria.

From 2007 to the present, the need to control nitrogen pollution has heightened. Friends of Casco Bay consistently documents troubling total nitrogen levels near wastewater effluent pipes, stormwater and CSO outfalls, and urbanized streams and shorelines. Excess nitrogen causes nuisance algal blooms that smother and degrade clam flats; fuel excess phytoplankton blooms that deplete dissolved oxygen, sometimes kill marine life, and sometimes produce toxins harmful to humans; degrade critical eelgrass habitat; and contribute to coastal acidification.

LEGAL BACKGROUND

The Clean Water Act requires states to promulgate water quality standards that protect human health and the environment.[2] Within those standards, criteria must be developed that protect the designated uses assigned to water bodies.[3] The criteria must be based on sound scientific

[1] Maine DEP, Development of Nutrient Criteria for Maine's Coastal Waters (June 2008), https://www.maine.gov/dep/water/nutrient-criteria/nutrient_criteria_report_2008.pdf.
[2] CWA § 303(c)(2)(A)
[3] *Id*. "Such standards serve the dual purposes of establishing the water quality goals for a specific water body and serve as the regulatory basis for the establishment of water-quality-based treatment controls and strategies beyond the technology-based levels of treatment required by sections 301(b) and 306 of the Act." 40 CFR § 131.2

rationale and scientifically defensible methods.[4] Each standard must also contain an antidegradation policy and methods for implementing this policy.[5] Lastly, the criteria must consider the water quality standards of downstream waters to ensure the downstream standard is both attained and maintained.[6]

Maine's water quality standards for marine and estuarine waters do not specifically reference nutrient pollution. The standards do, however, set numeric limits for dissolved oxygen and narrative criteria that protects habitat and marine life. Class SB numeric criteria provide that the dissolved oxygen content may not be less than 85% of saturation and Class SC waters may not be less than 70% of saturation. Class SB narrative criteria mandate that discharges cannot impair habitat and the receiving waters must be of sufficient quality to support all estuarine and marine species indigenous to the receiving water without detrimental changes in the resident biological community. Class SC waters must be of such quality that they are suitable as a habitat for fish and other estuarine and marine life. Class SC narrative criteria mandate that waters must be of sufficient quality to support all species of fish indigenous to those waters and to maintain the structure and function of the resident biological community. [7]

To date, no MEPDES permit for discharges into the Casco Bay watershed sets a numeric limitation on the discharge of nitrogen. In some areas near effluent discharges, data shows high total nitrogen (TN) levels and signs of impairment in the near and mid field. In a few of these MEPDES permits, DEP has required facilities to engage in seasonal composite sampling for TKN[8] and to optimize current operations to reduce TN in the effluent.[9] To require optimization, DEP applied a reasonable potential analysis using a far field dilution model.[10] Both EPA and Friends of Casco Bay have objected to the use of the model because it fails to account for harm to water quality within the near and midfield.[11] To date, reasonable potential assessments have applied the following thresholds:

1. 0.32 mg/L for of eelgrass, when historically mapped as present within close proximity (defined by DEP as within 0.5km or based on professional judgment based on eelgrass resources) to the discharge in question.
2. 0.45 mg/L for the protection of dissolved oxygen, when eelgrass has not been historically mapped within close proximity to the discharge in question.

[4] 40 CFR § 131.11(a), (b)(iii).
[5] 40 CFR § 131.12(a), (b). If a state were to issue a NPDES permit that violates the antidegradation policy, the State would be subject to a discretionary EPA veto under Section 402(d) or to a citizen challenge. Additionally, any wasteload allocations and total maximum daily loads violating the antidegradation policy are subject to EPA disapproval and EPA promulgation of a new wasteload allocation/TMDL under Section 303(d).
[6] 40 CFR § 131.10(b).
[7] 38 MRS § 465-B.
[8] Portland Water District East End WWTF, MEPDES Permit #ME0102075 at 7.
[9] *Id.* at 28. See also South Portland WWTF, MEPDES Permit #ME0100633 at 19.
[10] *Id.* See also Falmouth WWTF, MEPDES Permit #ME0100218.
[11] See Friends of Casco Bay Public Comments for East End, Falmouth, and South Portland MEPDES Permits.

DEP has administratively continued expired MEPDES permits in Casco Bay, and focused on addressing how nitrogen criteria should be applied when it renews the expired permits.

In 2021, DEP drew together expert stakeholders and received a grant from EPA to develop numeric nitrogen criteria for the Class SC waters around Portland Harbor. Through the process, the goal has broadened to setting numeric criteria for both SC and SB waters in Casco Bay and potentially to applying the criteria coast-wide. The stakeholder process led to a July 2022 analytical report (N-STEPS report)[12] and a summary of numeric nitrogen criteria for Casco Bay (Criteria Summary).[13]

The N STEPS Report

The N-STEPS report analyzed available data to evaluate two approaches to setting numeric criteria: a reference-based and stressor-response approach. The reference-based analyses used distributions from a reference population and a predicted reference model using multiple regression. The stressor-response analyses attempted to link chlorophyll and TN to target response conditions protective of DO and eelgrass as well as models of TN and chlorophyll to identify TN concentrations associated with potential chlorophyll targets.[14] EPA supports using either approach.

> The reference line derives nutrient targets from populations of similar waters either presumed or known to be supporting uses or valued assessment endpoint conditions. It tends to use the most data because it does not require paired stressor-response combinations. This line of evidence is also supported by USEPA nutrient criteria guidance, including the estuarine and coastal criteria guidance, and was used for deriving the current rivers and streams recommended national 304a criteria (USEPA 2001). On the other hand, **the reference line has been criticized as generating thresholds not specifically linked to demonstrable impacts, with the degree of protection (or lack thereof) somewhat unknown**. Of course, where reference populations are not expressing adverse conditions, protection can likely be presumed. Moreover, the percentiles chosen can be used to adjust for uncertainty in the population condition, but it is a concern that has been expressed. **Another concern is the degree to which reference populations represent the target water**. For small, forested watershed streams, with an abundance of samples from which to choose and sample, this is less an issue. **For large estuaries, the site specificity in hydraulics, residence**

[12] Tetra Tech Inc, Exploring Development of Numeric Nitrogen Targets in Portland Area, Casco Bay, Maine under the Nutrient Scientific Technical Exchange Partnership and Support (N-STEPS) (July 2022) [hereinafter N-STEPS].
[13] Maine Casco Bay: Summary of State Narrative Nutrient Criteria and Consolidated Listing and Assessment Methods (Feb 2021) [hereinafter Criteria Summary].
[14] N-STEPS at 29.

> **time, geography, topography, climate, etc. may make finding appropriate reference waters more difficult**.[15]

The stressor-response approach is the gold standard for setting criteria. Under this model, rather than comparing the receiving water to reference waters that may be remote, it creates relationships between TN levels and certain impairments to water quality.[16]

> The stressor-response line of evidence attempts to quantify relationships from the conceptual model linking nutrients to assessment endpoint targets reflecting protection (or harm) to the management goals (designated uses). It attempts to identify those nutrient values that are associated with impacts and can include estimates of uncertainty (e.g., error). This line is also supported by USEPA estuarine nutrient criteria guidance, USEPA stressor-response guidance, and is the basis of the recently finalized USEPA national 304a lake criteria (USEPA 2001, USEPA 2010; USEPA 2021). On the other hand, **field-based stressor-response relationships can be highly variable and the error around values can be large** (unlike those from, say, randomized controlled laboratory toxicity studies). **Moreover, models of distant paired relationships that omit intermediate causal pathway steps (e.g., nutrients and dissolved oxygen) can be subject to influence from confounding co-occurring stressors or modifying variables. These concerns require careful consideration** when evaluating this evidence.[17]

The issues identified by EPA and highlighted in bold raise questions to address before applying either approach to set numeric criteria for Casco Bay.

Reference Approach

To define reference, the N-STEPS process modeled anthropogenic nitrogen loading rates and known eelgrass support. In the Portland Harbor area, the data showed higher TN concentrations in the Upper Fore and lower concentrations in Marine Waters.[18] Medians in the Upper Fore exceed the reasonable potential thresholds for DO and eelgrass currently used by DEP, and medians in the Middle Fore and Presumpscot exceed the threshold for eelgrass protection. This finding, which is consistent with Friends of Casco Bay's long term data set for the region, warrants imposing meaningful TN monitoring and effluent limits for MEPDES discharges that cause, have the reasonable potential to cause, or contribute to an excursion above any State water

[15] N-STEPS at 13 (emphasis added).
[16] *Id.*
[17] *Id*. (emphasis added).
[18] *Id*. at Figure 6, Table 3. For the Portland Area, median average annual growing season TN concentrations in the Fore and Presumpscot declined in a downstream direction from Upper Estuarine to Lower Estuarine to Marine Waters locations (Figure 8, Table 3). The Upper Estuarine median was above the eelgrass and DO thresholds, the Lower Estuarine median at the eelgrass threshold, and the Marine Waters median was just below the current eelgrass protection threshold.[18] The Marine Waters median was .292 mg/l.[18] Although not documented in the report, the median at this site met or exceeded .32 mg/l before the East End WWTF began denitrifying its effluent in 2018.

quality standard, including narrative criteria for water quality.[19] In the harbor area this includes, at a minimum, the South Portland and East End wastewater treatment facilities (WWTFs).

TN concentrations in the N-STEPS reference estuaries are generally lower to substantially lower than in the Portland Region.[20] The four non-Casco Bay estuaries with the lowest loading rates were Machias, Penobscot River, Saco and York. Two are Class SC and two Class SB.[21] The report attempted to model reference site conditions and account for variability between the reference sites and Portland Harbor area.[22] The reference model relies on significant assumptions and assumes that the statistics are not linked to responses.[23]

Can Maine apply a reference approach that improves and protects water quality?

The answer to this question depends upon how well the selected reference site(s) informs the TN threshold beyond which Casco Bay experience harm to water quality. The N-STEPS report identifies several questions to be addressed.

First, the reference line has been criticized as generating thresholds not specifically linked to demonstrable impacts.

To date, DEP has used the .45mg/l threshold for its reasonable potential analyses in MEPDES permits, linking it to potential DO impairments. This threshold has been questioned because well before you reach DO impairments in estuaries, other impairments such as macroalgal blooms and phytoplankton blooms are often present. Moreover, the N-STEPS process has revealed no correlation between this threshold and DO impairments in Portland Harbor.

The Criteria Summary that complements the N-STEPS report reviews Maine's most recent Integrated Report (IR), which does not link nitrogen pollution with dissolved oxygen impairments in estuarine and marine waters. The IR states that excess nitrogen enrichment can cause blooms of algae or bacteria in the water or on the substrate, low DO concentrations, fish kills, cyanotoxins, and altered community structure including epiphytic growth on eelgrass.[24] However, the section on "Causes and Sources of Impairment" to estuaries and coastal waters,

[19] 40 CFR§ 122.44(d)(1)(i).
[20] N-STEPS at Figure 7, Table3.
[21] The N STEPS report does not recommend setting separate criteria for Class SC and SB waters and instead favors an approach based on salinity levels.
[22] The N-STEPS team constructed a multiple regression model of average annual growing season TN using salinity and temperatures, two major drivers of TN variability across marine and estuarine waters. N STEPS report at 22. Interestingly, in 2023, the Casco Bay region experienced far fewer nuisance algal blooms. Those blooms had been consistently present each growing season on mud flats in nutrient impaired areas. It is unknown yet whether salinity was a limiting factor.
[23] N-STEPS at 13-14.
[24] Criteria Summary at 6.

focuses on blooms. It "discusses dissolved oxygen impairments, but … does not explicitly [connect that to] nutrient enrichment or eutrophication, suggesting that the state presumably does not see nutrient enrichment causing DO issues. [For this reason, the N-STEPS analysts recommend that t]his … be discussed."[25]

In particular, this should be considered when setting the threshold for discharges that are in Class SC waters, which must be at or above 70% DO saturation,[26] and where eelgrass is not present. The N-STEPS report documents TN levels above .45 mg/l in Portland Harbor, but no DO values below 70% saturation.[27] Friends of Casco Bay's observational data does, however, document other impairments including nuisance algal blooms and episodic phytoplankton blooms, including the *Karenia* mikimotoi bloom that degraded water quality in 2017. This data illustrates that the .45 mg/l threshold will not protect water quality in Portland Harbor. The threshold is too high to protect against other signals of eutrophication and does not correlate with DO impairments.

To date, DEP has applied the .32 mg/l threshold in MEPDES permits to evaluate the reasonable potential of the discharge to impair eelgrass health. As we learned from the East End wastewater facility, discharges that cause or contribute to TN levels of .32 mg/l negatively impact eelgrass health in the near and midfield. This makes sense. Healthy marine waters in Casco Bay have TN values well below .32 mg/l. In fact, healthy waters nearshore, such as off Clapboard Island, typically have TN values of .28 mg/l or lower. The threshold should be set at .28 mg/L to reflect healthy conditions in lower estuary and marine waters of Casco Bay. This fact is supported by examining the data near the East End wastewater treatment facility (EEWWTF) discharge pipe. In the years prior to the plant shifting its operations to denitrify effluent[28] the receiving waters had median TN levels at or above .33 mg/l. The eelgrass bed nearest to the discharge showed signs of eutrophication and a persistent nuisance algal bloom set up over two consecutive summers in the lower intertidal zone of Back Cove. Since the plant began its successful efforts to denitrify in 2018, the algal bloom in Back Cove has not returned. The nearby eelgrass bed has had less epiphytic growth. Additionally, TN levels in the receiving water have come down to a median of .28 mg/l.[29] Based on this analysis, the threshold of .32 mg/l is too high; a lower value must be set.

[25] *Id*. at 6-7. (emphasis added)
[26] 38 M.R.S.§ 465-B (2) and (3).
[27] N-STEPS at 24. This data includes Friends of Casco Bay's 31 year data set which has no DO levels below 70% saturation in the upper Fore River, but does document TN levels above .45 mg/l and other signs of impairment.
[28] The East End facility went from discharging an average seasonal effluent nitrogen mass loading of 2,437 lbs per day to an average of 504 lbs per day.
[29] TN values also decreased in other areas of the Bay as well.

Second, the reference populations do not represent the target water.

The reference sites chosen in the N-STEPS report are not representative of Casco Bay. Estuaries are unique and finding comparable reference sites poses a serious challenge. The selected reference sites have different hydrologic features and may not represent healthy conditions for Casco Bay. For example, Casco Bay has over 300 islands and many embayments that make it very distinctive. For this reason, the Casco Bay Estuary Partnership is encountering difficulties with creating a hydrodynamic model for the Bay; it is simply harder to create a model for a Bay with many islands and embayments.

Moreover, the selected reference sites do not clearly correlate the presence and health of eelgrass beds with documented TN values. This is presumably because the reference line is not specifically linked to demonstrable impacts. Nonetheless, setting values based on reference sites/populations must improve and protect water quality in the target water body. For that reason, there must be some comparison that reveals why the reference sites/populations represent what should be healthy conditions for Casco Bay.

The selected reference sites do not do this. They historically had eelgrass beds and have lost eelgrass habitat. If DEP's goal is to protect eelgrass habitat, it must select reference sites that achieve this purpose. [30] Neither the N-STEPS report nor the Criteria Summary make the link between observed TN levels in the reference estuaries and healthy eelgrass; neither establishes the reference sites as ones that represent conditions for healthy eelgrass beds in Casco Bay. The reference sites are simply ones with the least anthropogenic nitrogen loads per unit of watershed drainage area.[31] That alone may not qualify the sites as reference sites. "For large estuaries, [such as Casco Bay], the site specificity in hydraulics, residence time, geography, topography, climate, etc. may make finding appropriate reference waters more difficult."[32]

For this reason, DEP should consider applying the approach used in the NPDES permit[33] for the City of Taunton's wastewater treatment facility.[34] In that permit, EPA selected the reference site from within the target estuary. In relevant part, the Taunton River is impaired for organic enrichment/low dissolved oxygen and Mount Hope Bay for total nitrogen, dissolved oxygen and chlorophyll-a.[35] The saltwater portions of the Taunton River and Mount Hope Bay are part of the greater Narragansett Bay Estuary, which covers about 147 square miles within Massachusetts

[30] US EPA, Nutrient Criteria Technical Guidance Manual, Estuarine and Coastal Marine Waters (Oct. 2001).
[31] N-STEPS at 13.
[32] *Id.*
[33] See Attached Excel Spreadsheet of NPDES Permits.
[34] City of Taunton, MA, NPDES Permit No. MA0100897 [hereinafter Taunton Permit]. *See also* Attachment A: Chart of NEPDES Permits with RP Analysis for TN.
[35] City of Taunton, NPDES Permit No. MA0100897 Fact Sheet at 4 [hereinafter Taunton Fact Sheet].

and Rhode Island. The Narragansett Bay Estuary is one of 28 "estuaries of national significance" under the National Estuary Program (NEP).[36] Casco Bay is another NEP.

The Taunton Fact Sheet examines the progression of effects from nutrient overenrichment starting with primary symptoms such as excessive growth of phytoplankton and macroalgae and loss of water clarity to secondary symptoms such as loss of submerged aquatic vegetation, nuisance and toxic algal blooms and low dissolved oxygen.[37] It references a Critical Indicators Report that analyzed how to translate narrative criteria into numeric thresholds for estuaries in southern Massachusetts.[38] With respect to total nitrogen, the report concluded:

> It is not possible at this time to put quantitative nitrogen levels on each Water Quality Class. In fact, initial results of the Massachusetts Estuaries Project (Chatham Embayment Report 2003) indicate that the total nitrogen level associated with a particular ecological response can vary by over 1.4 fold (e.g. Stage Harbor versus Bassing Harbor in Chatham MA). **Although between embayments nitrogen criteria may be different, it does appear that within a single embayment a consistent quantitative nitrogen criterion can be developed**.[39]

Adopting this approach makes sense for Casco Bay. For example, DEP could select nearshore sites with healthy levels of TN, such as Clapboard Island or Fort Gorges, and use that as the reference for setting limits in MEPES permits in or near Portland Harbor.

Stressor Response Line of Evidence

The stressor-response approach is the gold standard for setting criteria. Nonetheless, it is criticized because: (1) field-based stressor-response relationships can be highly variable and the error around values can be large; and (2) models of distant paired relationships omit intermediate causal pathway steps and can be subject to influence from confounding co-occurring stressors or modifying variables. Instead of attempting to set a number based on one single stressor response, DEP could adopt an approach that considers a continuum of stressor responses typical of Casco Bay. The list of variables could be informed by the analysis contained in the IR which identifies

[36] Taunton Fact Sheet at 12.
[37] *Id*. at 14. See also *id*. at 15, Figure 1 Progression of Nutrient Impacts.
[38] *Id*. at 17. The Critical Indicators Report identifies the indicators of primary concern as:
- plant presence and diversity (eelgrass, macroalgae, etc.)
- animal species presence and diversity (finfish, shellfish, infauna)
- nutrient concentrations (nitrogen species)
- chlorophyll-a concentration
- dissolved oxygen levels in the embayment water column

[39] *Id*. (emphasis added).

nutrient enrichment as an element leading to aquatic life impairments in marine waters[40] including nuisance macroalgal blooms, excessive phytoplankton blooms, and degraded eelgrass health.[41] DEP could use this continuum of stressor response in its reasonable potential analysis. It could combine this with a reference site from a healthy location in Casco Bay.

Estuary Division

The N-STEPS report divides the upper from the middle/lower estuary based on salinity.[42] The division in the report, as illustrated in Figure 4, corresponds with Friends of Casco Bay's long term data set for salinity. It shows that little of Casco Bay is upper estuarine; most of its waters maintain salinities reflective of lower estuarine or marine waters. Under the N-STEPS report, it appears that the only WWTF that discharges to upper estuary waters might be Falmouth. Can DEP confirm this? Will DEP continue to explore adopting this division in its criteria?

Concentration or Load Based Criteria

The NPDES permits reviewed for this memo had either or both concentration or load based limits. Based on this review, where there is no TMDL designed to reduce overall load, it appears best to set numeric thresholds for healthy receiving waters and both load and concentration limits for effluent. Setting both allows the regulator to also assign load reductions to permitted stormwater dischargers or, should it be warranted to improve water quality, to creatively incentivize reductions in NPS pollution in lieu of costly upgrades at WWTFs.[43]

ADDRESSING NITROGEN POLLUTION IN MEPDES PERMITS

This section of the memo is based upon review of permits issued to reduce nitrogen pollution to estuaries with known nutrient impairments, including Great Bay, Narragansett Bay, Long Island Sound and Chesapeake Bay. Casco Bay is far less impaired than these estuaries, and the collective goal is to keep it that way. At present, certain nearshore areas show signs of excess nutrient enrichment, but offshore waters remain relatively healthy.

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[40] Criteria Summary at 6.

[41] The IR also discusses nutrient/eutrophication biological indicators and identifies instances of elevated nutrient conditions and corresponding biological responses including phytoplankton blooms, nuisance macroalgae blooms, and degradation of eelgrass health (*Zostera marina).* Phytoplankton blooms are called out specifically as being observed more in tidal waters with ample nutrients, light, and less turbulent mixing. For macroalgae, opportunistic growth occurs when temperature, light, and nutrient availability coincide and that anthropogenic N has been shown to fuel nuisance macroalgal (e.g., *Ulva*) growths, typically on protected shorelines with shallow slopes (e.g., mudflats) but also elsewhere, importantly among eelgrass. Widespread and dense blooms can smother organisms and release toxic hydrogen sulfide. Lastly the IR identifies the well-established dependence of eelgrass on light which can be reduced by nutrient mediated epiphyte and water column turbidity from CDOM, sediments and phytoplankton. *Id.*

[42] N-STEPS at 10, Figure 4.

[43] EPA adopted this approach in the Great Bay general permit.

The attached Excel Spreadsheet contains elements from the permits reviewed for this memo. The spreadsheet has three pages. The first provides details from relevant individual permits. The second reviews general permits issued to categories of NPDES permittees to reduce nitrogen loading. The final sheet focuses on the Chesapeake Bay Area, which has a nitrogen TMDL and multi-jurisdictional approach. Although not helpful to informing a reasonable potential analysis, Chesapeake Bay's approach could inform ways that nitrogen loading can be reduced including from CSOs .

Nitrogen Thresholds and Reasonable Potential Analysis

The far field dilution model cannot be used; it fails to account for harm in the near and midfield. While all models harbor shortcomings, the unique dynamics of Casco Bay, including its many islands and coves, justify using of a model that considers the near field. Further, none of the permits reviewed use a far field dilution model.

The Massachusetts permits on sheet one offer an approach that might work for Maine. For individual discharges that require an in-depth threshold calculation, reasonable potential analysis, and effluent calculation, the City of Taunton Wastewater Treatment Plant and the Town of Marion Water Pollution Control Facility permits set forth a practical and defensible approach.[44] For Taunton, to calculate the threshold concentration, EPA applied the procedure developed by the Massachusetts Estuaries Project to identify a reference site within the target estuary where water quality standards are met. It set the TN threshold based on that.[45] This approach comports with EPA guidance regarding the use of reference conditions for the purposes of developing nutrient water quality criteria. The Taunton River Estuary is classified as an SB water and is not a location where eelgrass has historically been found. Therefore, dissolved oxygen was the primary water quality parameter considered in determining a reference location.[46]

Moving to the Town of Marion, EPA applied a reasonable potential analysis to this small facility, which discharges 0.588 MGD.[47] To determine an appropriate threshold concentration,

[44] See Attached Excel Spreadsheet of NPDES Permits.
[45] Taunton Permit at 30.
[46] While it made sense to consider a DO impairment in the Taunton River Estuary, for the reasons set forth earlier in the memo it does not make sense to use DO as a primary water quality impairment in Casco Bay.
[47] Town of Marion, MA, NPDES Permit No. MA0100030 [hereinafter Marion Permit]. EPA notes that it "analyzes available record materials from a reasonably conservative standpoint, as it regards one key function of a nutrient limit as preventative. This protective approach is appropriate because, once begun, the cycle of eutrophication can be difficult to reverse due to the tendency of nutrients to be retained in the sediments. Nutrients can be re-introduced into a waterbody from the sediment, or by microbial transformation, potentially resulting in a long recovery period even after pollutant sources have been reduced. Eutrophic conditions are often exacerbated around impoundments and in other slow moving reaches of rivers, where detention times increase relative to free flowing segments of rivers and streams. In addition, in flowing systems, nutrients may be rapidly transported downstream and the effects of nutrient inputs may be uncoupled from the nutrient source, which complicates source control. Thus, a second key

EPA identified a target nitrogen threshold based on a reference location within the estuary that had unimpaired conditions.[48] Based on certain characteristics, EPA determined that the cove to which the tributary drained would be expected to support eelgrass. Thus, the primary water quality parameter that EPA used to choose a reference location was eelgrass; EPA selected a monitoring site in an eelgrass bed seaward of the impaired inner cove.[49] These examples illustrate the sound science and common sense of this approach; each reference site is directly representative of healthy conditions in the target estuary and includes consideration of relevant water quality impairments. In this way, the approach cures two major defects attributed to the reference line approach: (1) the criticism that the reference sites do not represent the target water; and (2) the reference line fails to correlate with impairments. This approach could apply well to Casco Bay, given its unique hydrodynamics.

Moving on, the approach taken in the MA 2022 Final General Permit that regulates nitrogen discharges from medium wastewater treatment facilities would be worth considering for the many MEPDES discharges for which DEP needs more data.[50] This approach could be applied more broadly than Casco Bay to cover small facilities where DEP needs more TN and impairment data, to determine dilution zones through dye studies and to consider whether and how to incrementally regulate nitrogen discharges. The general permit identifies specific dischargers to marine waters that must conduct a new model or dye study "to determine a defensible dilution factor for their discharge."[51] Requiring and gathering such data, would allow DEP to more defensibly determine the field within which to look for impairments.

The MA General Permit then requires evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen and reduce the annual average mass discharge of total nitrogen within a year of the effective date of the permit.[52] The permittee must submit a report to EPA documenting the evaluation and recommended operational changes, and must then implement them.[53] The operational changes include, but are not limited to: operational changes designed to enhance nitrification (seasonal and year-round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management.[54]

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function of a nutrient limit is to protect downstream receiving waters regardless of their proximity in linear distance." Marion Permit Fact Sheet at 16.

[48] Marion Permit Fact Sheet at 17.

[49] *Id.* at 18.

[50] MA Medium WWTF General Permit, NPDES Permit No. MAG590000 [hereinafter MA Medium General Permit]. This permit covers POTWS that discharge between 1-5 MGD, do not have combined sewer overflows, do not discharge to special waters, and do not violate the anti-degradation policy.

[51] MA Medium General Permit Fact Sheet at 16.

[52] *Id.* at 27-28.

[53] *Id.*

[54] *Id.*

In addition, certain permittees must submit an annual report to EPA "that summarizes activities related to optimizing nitrogen removal efficiencies, documents the annual nitrogen discharge load from the facility, and tracks trends relative to the previous calendar year and the previous five (5) calendar years. If, in any year, the treatment facility's discharges of TN on an average annual basis have increased, the annual report shall include a detailed explanation of the reasons why TN discharges have increased, including any changes in influent flows/loads and any operational changes."[55] This approach may be the logical next step to the optimization approach DEP has taken in some MEPDES permits. It strengthens the approach by requiring study of the dilution field, suggesting multiple methods for optimization, and setting enforceable load limits. These elements are worth considering for all MEPDES permits that must address nitrogen pollution.

Monitoring and Seasonality

All NEPDES permits reviewed for this memo required more monitoring than Maine currently requires. MEPDES permits should include both effluent and ambient water quality monitoring. Such monitoring can first fill data gaps and then can measure the success of operational changes designed to remove nitrogen. For example, the Massachusetts Medium General Permit includes year round monitoring and monitoring for ambient characteristics immediately outside of the zone of discharge.[56] Please also review and consider the monitoring requirements in The City of Taunton and Town of Marion permits, and in the permits for dischargers to Chesapeake Bay, Long Island Sound, and Great Bay.

With respect to season, MEPDES permits often consider April through October. In recent years, nuisance algal blooms have appeared before and after this window.[57] Should DEP consider adding year round monitoring requirements to certain MEPDES permits and extending the season for optimizing nitrogen removal? Should fall and winter monitoring also consider impacts to receiving water? This seems increasingly justified given the heavy rains of recent winters and warming ocean temperatures. With the warmer weather further into winter, can WWTFs optimize nitrogen removal beyond October?

FINAL QUESTIONS AND CONCLUSION

[55] *Id.*
[56] MA Medium General Permit at 5. Additionally, permittees are allowed a schedule of compliance of 24 months for any newly established or more stringent water quality-based effluent limits which EPA has determined the Permittee is not expected to be in compliance with upon the effective date of the authorization to discharge under the General Permit. During the compliance schedule, the Permittee shall either report monitoring results (for newly established limits) or comply with an interim limit equivalent to the existing limit in their previous permit (for limits becoming more stringent).
[57] Friends of Casco Bay Water Reporter data and personal observations of nuisance algal blooms in March, November, December and January.

Will Maine revise its water quality standards to include narrative nitrogen criteria? Would Maine consider adopting and applying the approach set forth in the Taunton and Marion permits? The Massachusetts Estuary Project (MEP) report seems useful.[58] The MEP report provides "a translator between the current narrative standard and nitrogen thresholds (as they relate to the ecological health of each embayment) which can be further refined based on the specific physical, chemical and biological characteristics of each embayment. Th[e] MEP report is intended to provide a detailed discussion of the issue and types of indicators that can be used, as well as propose an acceptable range of nitrogen thresholds that will be used to interpret the current narrative standard."

The MEP report finds that the indicators of primary concern are: plant presence and diversity (eelgrass, macroalgae, etc.); animal species presence and diversity (finfish, shellfish, infauna); nutrient concentrations (nitrogen species); chlorophyll-a concentration; and dissolved oxygen levels in the embayment water column.[59] With respect to total nitrogen, it concluded that "it is not possible at this time to put quantitative nitrogen levels on each Water Quality Class. In fact, initial results of the Massachusetts Estuaries Project (Chatham Embayment Report 2003) indicate that the total nitrogen level associated with a particular ecological response can vary by over 1.4 fold. Although between embayments nitrogen criteria may be different, it does appear that within a single embayment a consistent quantitative nitrogen criterion can be developed."[60]

If Maine adopted narrative criteria based on similar reasoning, it could establish defensible and sound site-specific numeric thresholds when issuing NPDES permits. Those numeric values could be established by using the reference based approach, as set forth in the City of Taunton and Town of Marion NPDES permits. Alternatively, a numeric value could be established using stressor-response, provided enough data was available to do so. Once a numeric threshold was determined, the reasonable potential analysis could take place. This analysis would ideally use a model such as USGS LOADEST program or the Water Quality Analysis Simulation Program (WASP). This model helps to interpret and predict water quality responses to natural phenomena and manmade pollution for various pollution management decisions. It is a dynamic compartment-modeling program for aquatic systems, including both the water column and the underlying benthos. It is also able to be linked with hydrodynamic[61] and watershed models.[62]

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[58] Massachusetts Estuary Project, Site-Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators Interim Report (July 2003).
[59] *Id.* at 11.
[60] *Id.* at 19.
[61] The Casco Bay Estuary Partnership is currently in the process of developing a hydrodynamic model for Casco Bay.
[62] We are aware of two towns that are in the process of evaluating their watersheds for land use activities: Brunswick and Falmouth. Whether watershed models are derived from those evaluations remains to be seen.

This flexible approach also seems more in keeping with the approach Maine has developed, and hopes to implement, for phosphorus criteria. We look forward to discussing the above comments submitted to DEP to foster development of sound and sensible nitrogen criteria for Casco Bay.