HABs Forum Day 1 Recording_Trim

[00:00:10.09] Welcome, everyone. Folks are joining. We're going to wait just a moment here as everyone's getting into the Zoom, then we will get started.

[00:00:40.76] All right. Thanks for joining, everyone. We are going to go ahead and get started. Good morning or good afternoon. My name is Darcy Peth, with Ross Strategic. We are contractors to EPA, and we want to welcome you to day one of this two-day virtual forum on Federal Funding for the Prevention, Monitoring, and Treatment of Harmful Algal Blooms. We really appreciate you all taking the time to join us today. Next slide.

[00:01:08.46] We're going to start with a brief overview of the Zoom functions and how you can participate today. The Zoom menu bar should appear on your screen if you move your mouse slightly. Please keep your microphone muted when you're not speaking. To ask a question, please click on the Q&A box on the Zoom toolbar. Please note that is different from the Chat box.

[00:01:26.74] We do request you use the Q&A box, as this helps us to keep track of questions and ensure we're able to respond to everyone in a timely way. You can also let us know if you'd like to ask a question by using the Raise Hand button on the Zoom toolbar. If you don't see it there, click on the Participants icon and hover over your name. In some versions of Zoom, the Raise Hand option is part of the Reactions button. Or finally, the keyboard shortcut to raise or lower your hand is Alt-Y.

[00:01:54.36] And if at any time you need technical assistance, you can send a chat to me, Darcy Peth, and we will try to get you all set up and straightened out. And those Q&A portions are on the agenda at designated times. So we will be keeping track of the questions that come in and the people who have raised hands and turn to all of you when we get to those designated portions of our agenda today. And next slide. And I will go ahead and hand it over to Ellen Tarquinio. Go ahead Ellen.

[00:02:27.39] Sounds good. Thank you all so much for joining, and thank you to our presenters for really taking the time to lay out some of the federal funding programs that they have. Just before we even get into this, I'll be pretty quick. There's lots of forums that focus on the technical aspects of some of the harmful algal blooms that I'm sure, hopefully, some of you have attended. Maybe it focuses on some of the research, some of the modeling, some of the analysis. We're not going to really touch any of that today.

[00:02:54.54] We are really going to focus on the federal funding programs that exist out there. I'm sure if you're joining today, it's because you've either experienced a harmful algal bloom situation in your community, in your state, you're working with some of the communities that have these issues. So you know very well that there's just not enough funding out there.

[00:03:14.40] Hopefully, at the end of this forum you'll hear a little bit about the different programs that exist-- some maybe different opportunities in different places to look for funds to

address those issues that you're experiencing-- and that you'll be able to really look to the federal agencies for some of that funding need that I'm sure we all have.

[00:03:36.10] So with that, again, thank you to the presenters. Thank you all for joining and to Darcy for pulling this all together. And I'll turn it back over to you all. And looking forward to a lot of the questions and hopefully the engagement that you all will have during this, the rest of the two days.

[00:03:55.54] Great. Ellen, thanks very much. Well, good morning and good afternoon. Welcome to this EPA-sponsored forum on Federal Funding for the Prevention, Monitoring, and Treatment of Harmful Algal Blooms. I'm Rob Greenwood from Ross Strategic. I'll be moderating the forum for the next two days. Next slide, please.

[00:04:19.27] I just wanted to quickly introduce you to the team that we have supporting today. You've already met Darcy Peth. She kicked things off with the forum. Working behind the scenes on the technical aspects are Sarah Sarfaty Epstein and Melissa Bañales, other Ross team members. Next slide, please. So this is our agenda for today. A couple of notes that I'd like to make here.

[00:04:48.32] The first is, the forum will run for two consecutive days for three hours each day, from 1:00 PM to 4:00 PM, Eastern. As you can see from the agenda, each day is segmented into presentations by different federal agencies. Representatives from those agencies will review their HAB-related funding sources and will take your questions. We also have set aside time during each of the federal agency segments to receive your feedback through exploring three questions.

[00:05:18.71] So what you'll see on the more detailed agenda is that, for each of the funding segments, we have about 20 minutes set aside to, again, ask for some of your feedback. Given our participant numbers and as already mentioned by Darcy, we'll lean in to using the Q&A function. So please type your questions into Q&A as you have them.

[00:05:43.93] I'll monitor and queue those questions for our speakers. And we'll handle as many questions as time allows. If you'd like to come in over audio, go ahead and raise your hand. But again, we'll really look to lean in to going with what's coming through the Q&A, again, just given our time and the level of our participation. I'd also like to make just one note to our speakers.

[00:06:09.52] I'll show up briefly on video as you're nearing the last couple of minutes of your allotted presentation time as a signal that your time is drawing down. And as we've talked with you previously during your presentation, in the Q&A, if you could keep your video on, that will be very helpful. All right, let's go ahead and move to the next slide, please.

[00:06:32.57] And I'll introduce our first two speakers. Both of our speakers right now are from EPA, and they'll provide a HAB overview. We have first Lesley D'Anglada from the US EPA, and then second, Katherine Foreman. So Lesley, if you want to come off video, and we'll go ahead and move into your presentation. Thanks very much.

[00:06:58.24] Thank you. And thank you for inviting me and Katie to present today and provide an overview of harmful algal blooms. As you said, my name is Lesley D'Anglada, and I work with the Office of Science and Technology Office of Water. And today, with my colleague Katie Foreman from the Office of Groundwater and Drinking Water, we will provide an overview of what are harmful algal blooms and their impacts.

[00:07:21.97] Next slide, please. We can move to the next slide, please. All right, so in addition to talking about HABs and their impacts, we will also provide today an overview of EPA's effort to address cyanobacteria and their toxins in freshwater systems. I want to say that HABs can impact both marine and freshwater systems.

[00:07:47.17] But since EPA's jurisdiction is over the freshwater, estuary, and coastal waters-- that extends to the near-shore boundary of the open water of the oceans and the Great Lakes-- and NOAA has jurisdiction over marine and coastal waters offshore, we will focus our presentation mostly on the impacts in freshwater systems. Next slide, please.

[00:08:12.37] All right, so phytoplankton, or algae, is the base of numerous aquatic food webs and is essential for aquatic ecosystems. However, certain conditions, such as an excess of nutrients, high temperatures, stagnant water, light availability, et cetera, make this microalgae reproduce at an excessive rate, which causes what is known as a bloom.

[00:08:38.88] And when it affects the water quality, people, animals, it's known as a harmful algal bloom. As I said, HABs occur both in marine and freshwater systems. In marine, are usually caused by diatoms and dinoflagellates. And in freshwater systems, cyanobacteria is the most common harmful algal bloom, also known as cyanoHABs And many types of cyanobacteria are able to produce toxins, which are known as cyanotoxins.

[00:09:07.41] HABs are not static. They change in frequency, and they change in location. So you may find a bloom today, here. Tomorrow, it will not be there and will be in another location. It could be here for two hours, or it could be there for three days, six weeks, six months, a year, et cetera. So they're very variable. Next slide, please.

[00:09:30.06] All right, so HABs can affect people and animals and aquatic systems. People and animals are exposed to cyanotoxins by drinking contaminated water or eating contaminated fish and shellfish; swimming during recreational activities, or dermal contact during recreational activities affects their skin; or breathing in aerosols, which are tiny airborne droplets that contain toxins, from recreational activities or windblown seaspray.

[00:10:01.52] Human and animal illnesses and symptoms can vary depending on how they were exposed. We know that ingestion of water contaminated with toxins has a higher risk than the exposure from inhalation, for example. How long they were exposed-- so we understand that if you are exposed during a longer period of time, the risks are higher. Although, we don't have a lot of information for certain toxins on the chronic effects.

[00:10:28.40] And the particular toxins that you are exposed to-- we know that there are certain toxins that could affect your nervous system. There are other toxins that could affect your liver,

and others could affect only your skin. HABs also been associated with the death of wildlife and domestic animals. Pets like dogs, birds, and livestock who drink or swim in the water with an ongoing toxic bloom could be affected. Some toxins cause very rapid symptoms in these animals.

[00:11:00.86] On the aquatic side, toxins can cause fish kills and can accumulate in shellfish and can cause the deaths of marine animals like dolphins, manatees, sea lions, and sea otters. HABs may adversely impact aquatic life by reducing oxygen levels in the water-- which is known as hypoxia-- which can result in higher fish kills or fish mortality. Next slide.

[00:11:30.86] HABs can also pose economic problems. HABs can affect drinking water systems, and my colleague Katie will expand on those impacts in the next slide. HABs pose negative economic impacts in recreational areas by limiting the recreational activities when a beach is contaminated or has a big bloom and needs to be closed. HABs also affect commercial and recreational fishing when fish and shellfish harvesting needs to be closed due to toxin concentrations.

[00:12:01.58] We know that HAB events can cost millions of dollars in cost to communities, again, including the losses from commercial fishing, losses from recreation, tourist industry, the public health costs of illnesses, and additional expenses on monitoring and management of blooms and toxins. So to expand a bit on the economic impacts to drinking water system, let's move to the next slide with Katie. Katie, please take it away.

[00:12:28.38] Thanks, Lesley. So I'm going to really talk very briefly about the challenges that HABs pose to drinking water. And I'm also going to talk just a little bit about-- Lesley mentioned the impacts of HABs broadly. I'm going to talk a little bit about what EPA is doing, our activities, to manage the risk of HABs to both public health and environmental impacts. So switching gears a little bit to talk about the drinking water challenges specifically, as Lesley mentioned, there is the risk of ingestion of cyanotoxins that can be formed from freshwater harmful algal blooms.

[00:13:00.38] And if those are sources of drinking water and they break through the treatment process to finished drinking water, that poses an immediate health risk. There are other risks, as well, too, and other kind of things that public water systems-- when managing harmful algal blooms in their source waters used for drinking water-- have to think about. That includes managing for taste and odor issues that harmful algal blooms can raise, as well as the fact that disinfection byproducts can be more likely to form during a HAB because they provide organic material that can have the potential to develop into disinfection byproducts through the drinking water treatment system.

[00:13:33.98] And that itself poses additional risks. So that, in and of itself, just meant to talk about those challenges, and then talk about the ways in which public water systems need to address these issues. And this is where this forum comes into play. Looking forward to hearing the conversations that come up around these needs that public water systems have specifically for treatment costs, but as well as analyzing, monitoring costs, as Lesley mentioned.

[00:14:00.02] But one of the bigger things, too, that is that large ticket item, is how do you prevent these blooms from happening in the first place in public water systems. This is something that our public water systems are very interested in, finding effective, cost-effective source water treatment to try, and source water management, to try to reduce the chances of these HABs happening in the first place and having to mitigate some of these risks I noted above, there. Next slide, please.

[00:14:26.10] And so with that, just talking about-- the things that we're doing to help with these challenges are multifaceted. And they are for our public water systems and the drinking water world, but also for other water managers across all kinds of uses, including ambient, aquatic life, as well as recreational uses. So we have a multifaceted approach here at EPA to manage HABs. Looking ranges from outreach to assessments to partnerships to developing some technical support documents and providing direct technical support to water managers, including drinking water systems as well as research and development.

[00:15:01.22] And all this work spans across multiple parts of the agency and multiple different offices. Lesley and I have the opportunity to talk to you about this today, but there are a lot of people behind the slide on this work, as well as touching this work from the mitigation and prevention aspect. Our nutrient team here and EPA is also working to help us think about ways that we can reduce HABs from forming in the first place, as well as source water protection team looking at how can we effectively manage them in the source waters.

[00:15:29.30] So if you all have any questions on any of these particular kinds of activities we do-- this is a short presentation, so I won't go over all of them. But the next slide is information on Lesley and my contact information, if we go to the next slide. And feel free to contact us, and we'll be happy to answer questions. And also a link there to our website, the cyanoHABs website for EPA, where you can find a lot of information, as well. So thanks for your time. Appreciate it.

[00:16:01.73] Great. Katie and Lesley, thanks very much. And you blew right through that presentation. You left us with a few minutes. A question came in, and you may or may not be able to respond to this. But I'd like to just tee it up since we have a minute. It's, "Is cyanotoxin monitoring going to be part of UCMR 5?"

[00:16:27.44] Great question. So for those that don't know what UCMR is, it's the Unregulated Contaminant Monitoring Rule, where we look at a nationally representative sampling of finished drinking water for different contaminants that are unregulated. And cyanotoxins are unregulated. They were just monitored in the last round, UCMR 4. So I would not expect there to be additional monitoring for cyanotoxins in UCMR 5, which is the next cycle to come up.

[00:16:53.00] But we are currently analyzing the UCMR 4 results. And those are forthcoming, and hopefully we'll have a final data set by beginning of next year on that. And sorry, Rob just to be clear for folks, that's some microcystins and the congeners, as well as cylindrospermopsin and several other cyanotoxins. And there's more information on our website on that, if you want more details.

[00:17:19.12] Great. Katherine, thanks very much. Greatly appreciate it. OK. And let's just briefly-- just for a minute, let's jump back one slide to the contact information. I did want to note that there's been a question about will we receive a copy of the presentation. And I see my colleague Darcy Peth is typing in an answer to that. So that will come around. But there's contact information. We'll just let that pause for a moment there.

[00:17:55.59] Thanks, Rob. I just wanted to speak that one aloud so that everyone can hear. Yes, the slides and the recording will be posted to the EPA website within a few weeks. So you'll know that, when that happens.

[00:18:06.78] Great. Thanks, Darcy. OK, let's go ahead and move forward here. Great, and next slide, please. So I'm going to just quickly review. There's a landscape document that was produced in advance of the forum and has been shared out, on federal and innovative funding related to HABs.

[00:18:39.87] I'm not going to go read through all the detail of each of these slides, but I'll pause at each one. But the landscape document is designed to provide sort of a compact reference for participants and others. It's fine to share that around. And what it does is, by each of the major federal funding partners-- you'll see there, in the left-hand column, the funding source is listed.

[00:19:08.91] It gives a very high-level overview of eligible recipients for that funding source, moves on to the funding type, so, again, characterizes that. So you'll see here, on this page, each of these, the eligible participants or researchers. And the funding type is grants. And then, it gives a very brief description of each of these. So again, this is designed to be a handy reference.

[00:19:37.32] This covers some of the NOAA items that were contained in the landscape document. If you want to go to the next slide, OK, we'll pause here for a moment. This relates to USGS funding for HABs. And again, just pause. Let everyone take a look at that again. I want to stress that this is directly drawn from the landscape document that's been shared out.

[00:20:10.47] And if we want to go to the next slide, here we have a list of USDA funding for HABs. And I'll just note here, you'll see in terms of eligible recipients, different sets of eligible recipients. So here, rural communities, local communities, and then the funding type. For example, for the first entry there, loans, grants, and technical assistance.

[00:20:38.58] So again, the document looks to cover each of the types of funding that's available along with the descriptions. Let's hold here for just a minute so participants can glance over this. All right, let's go to the next slide.

[00:21:04.36] This slide covers funding from the Drinking Water State Revolving Fund, so Drinking Water Office within the Office of Water at US EPA. Again, let's hold here for a minute so participants can just glance over these. And as we move into each of the presentations for the different federal partners, they'll be going over and providing more detail related to these funding sources.

[00:21:42.43] And let's go ahead to the next slide. And this is US EPA funding under the Clean Water State Revolving Fund. And next slide, please. A list of other funding sources, so sort of a catchall category-- again, we'll pause here.

[00:22:14.47] But again, a reminder that this was all contained in the landscape documents. And let's go to the next slide, please.

[00:22:49.28] And just a final list here of some other funding sources. Give a moment. Just take a look here.

[00:23:29.03] And we just had a question come up, I see. "Are any of the drinking water funding sources applicable for private water body intakes?" And Ellen Tarquinio, could I tap you for that? You may or may not have an answer right off the top of your head.

[00:23:53.64] Yeah, well, I could answer it. But we do have Katie, who's on from the Drinking Water Office. I feel like we're playing pass the potato, but I do want to give her a chance to speak to that. And if not, I can take it. But Katie, since that's your office, do you want to talk about the drinking water sources for a private--

[00:24:21.14] Yeah, I'm sorry, the specific one you're looking for, I don't see it on this page here. Are you looking at the part with the Drinking Water SRF? I'm sorry, I don't see the--

[00:24:32.90] Yeah, I think what the question is, is basically, can you use the Drinking Water SRF for a private water utility or a private water company.

[00:24:42.34] Yes. Yes, that is public and private, for the Drinking Water SRF. I'm sorry, I did not-- I'm sorry, I thought you were going over something here. I missed the question.

[00:24:52.17] We're catching you off guard, so--

[00:24:53.48] No, no worries. No worries. Thank you, Ellen. And then, there's a lot-- and I just want to-- full disclosure, I'm not the Drinking Water SRF lead in my office. But any other related questions that I can't answer, I can be sure we get back to you.

[00:25:06.17] And I guess, as we're going through, this is a great time and a good segue. So while we're going through these different funding sources, the presentations that will fill up most of the forum-- the rest of the forum-- really do go through all of these different funding sources in a lot more detail. And the Clean Water SRF will be addressed on day two.

[00:25:28.05] Great. Ellen, thanks, and Katherine, thanks very much. Greatly appreciate it. I see a couple of other things that have come in through the Q&A. "Would you provide a link to the landscape document?" Sure, we'll go ahead and do that as part of the forum. And then, just some other observations or questions here, question about local governments listed separately from local communities.

[00:25:58.08] We'll go ahead and we'll type in an answer to that as we're moving into the presentations. Follow-up question here, from that original question about private, and clarifying that it was meant individual household intake. So Katie, do you want to just jump in on that, or Ellen, just for a moment there? We'll clear that up.

[00:26:28.36] Yeah, I'm sorry. I didn't understand the question. Yeah, because we talked a lot about private and public water systems, which are eligible for the DWSRF. But it's meant for those infrastructure programs, not for private homeowners.

[00:26:45.05] Great. Thanks, Katie. And then, there's just a suggestion here about addressing the minimum size covered. Duly noted. We can think about V2 for the landscape document at some point in the future. OK, so thank you very much for that participation over in Q&A. It seems like everyone is warming up their fingers to participate, which is terrific.

[00:27:13.08] So let's go ahead and move to the next slide, please. Great. So I'd like to move us to our first Federal Funder Profile. This is for NOAA. And I'd like to introduce Felix Martinez, who will be our speaker. He's the Competitive Research Program Manager. So Felix, I'll turn things over to you, and you can take over asking for your slides to be advanced.

[00:27:56.39] I know Felix had-- pardon me. Felix had indicated earlier that he was having somewhat spotty internet. So let's just hold for a minute.

[00:28:33.14] Ah, great. Felix, your timing could not be better.

[00:28:39.62] Can you hear me?

[00:28:40.65] Yes, you're coming through loud and clear. And I had--

[00:28:44.60] Yeah.

[00:28:46.10] I had just turned the baton to you. So I've introduced you. And are you are you good to go over there? I know you were having a little bit of trouble with your internet.

[00:28:56.89] Yeah, so I ended up connecting with my phone, using the wireless. So I might have trouble. I cannot see with this light. So I'll be able to tell you--

[00:29:11.31] Great.

[00:29:11.73] I don't know my video is on or not.

[00:29:15.02] Great. So would it be helpful then for me to-- you can say to advance the slides, and I'll just make sure I can verbally cue you into which slide is being presented. How does that sound?

[00:29:28.98] OK, well, right now I can see them. So we can work from that. I'm just going to turn off my video, to make sure that nothing else happens. So if everyone can see me-- well, thanks for the introduction that I didn't hear.

[00:29:40.71] It was glowing.

[00:29:43.01] If we can move to the next slide, please. The one after that. Perfect. So I thought I'd begin by telling you a little bit about our office in general so that it will give you a better perspective to where we're coming from and how we do the things we do. And so some new ones from a long time ago-- we started something called the Coastal Ocean Program, then we became something that was known at the Center for Sponsored Coastal Ocean Research.

[00:30:12.95] And after a third reorganization within our unit at NOAA, we went back to becoming a program. And now, we're known as the Competitive Research Program of the National Centers for Coastal Ocean Science. But through all those changes, we've always sort of worked the same way, keep the same focus. And I even tell people, the best way to describe ourselves really easy is to say that we're a mini NSF within NOAA and that we issue grants to the external community, research community, though we can fund sets.

[00:30:46.87] And we try to fill in those information gaps for the agency by funding this external research. And typically, our approach would be one of national- and regional-scale programs. We use a competitive research approach to fill in those information gaps. And one thing that we particularly focus on, too, is also making sure that research has some transition to or is in some form applied.

[00:31:21.64] Next slide, please. And we use what we call our three-phase approach. The way we typically begin-- before we make one of our announcements-- by doing some sort of prioritization of what those research needs are. And we do that by engaging directly with users and stakeholders throughout the life of our programs.

[00:31:44.20] And we also do especially in terms of what are the priorities that the agency itself has in our particular offices. We also respond to congressional direction. Another important aspect is that our office does a little program oversight. And it doesn't mean that we are involved in the day-to-day activities of the projects, but we also have more of a hands-on approach.

[00:32:15.10] And even though in the document that you're going to get with our programs it says that we use a grant as our funding types, we actually do cooperative agreements. But we typically refer to them as grants, because that's the way we run them. But we actually do it as a cooperative agreement, because it allows a door to come in and have some substantial involvement with the projects.

[00:32:36.94] And typically, the substantial involvement comes in in making sure that projects are sticking to the milestones, that they actually do have some outputs out of the program, that we can track and make sure that we'll work with their budgets, if necessary. And we also do-- as much as we can, given COVID now-- site visits with PIs and the managers that they're engaging with.

[00:33:06.10] But the most important part is that transition to application. And all our projects are required to have what we call a management transition group or advisory group. And typically, that's composed of managers, end users, stakeholders. And the idea is to provide a two-way communication between the project team and the end users so that the end users can tell the project unit, this is what we need from you.

[00:33:36.37] And then, the PIs can then talk to them and say, hey, what we're doing is appropriate for what your needs are. We encourage that managers and end user are co-PIs in the proposals. We also encourage them to have a strong outreach component, to communicate that science that they're producing.

[00:34:01.21] And we also have some very distinct criteria for what we consider outputs and outcomes, and that's our focus. And typically, we look for changes in management knowledge. So are managers getting something that's going to help them do better? Is the research actually changing the behavior of managers to solve those problems and make sure that there are some societal benefits to the money that we are implementing? Next slide, please.

[00:34:31.47] Going back to the setting priorities, we say we typically are responsive to Congress; also to the administrations, things like the Ocean Action Plan; some of these external governmental, different commissions, like-- what's it called? The National Ocean-- oh, I can't remember that. Anyway, we look at internal agency strategic plans.

[00:34:56.40] We actually do also look at strategic plans that are produced by other groups, external groups. We also look at reports that come out of national regional workshops. We also do a lot of internal planning. And ultimately, we have to sort of be responsive to the users and engage with them as often as we can. So next slide, please.

[00:35:25.51] Now, turning more into what we're here for today-- so because we're responsive to Congress, Congress a few years back when they enacted the Harmful Algal Bloom and Hypoxia Research and Control Act, they designated NOAA as the government agency to sort of lead this national HAB effort. Very early on, out of that direction came several programs. They were not all enacted at the same time.

[00:35:57.46] First announcement particularly focused in to a program we call ECOHAB, the Ecology and Oceanography of Harmful Algal Blooms. And that's a program that's more focused on understanding what are the things that are causing these HABs and what are the impacts from the HABs. And the information is typically used to develop forecast models that can be used to predict when and how big these blooms are going to be. Soon thereafter, the understanding that once we have better knowledge of the blooms-- what can we start doing about them?

[00:36:31.00] And also, one of the things that we know is that we need to know is how big are they, how they behave. So this next program is called Monitoring and Event Response of HABs, or what we call MERHAB. The idea was to help build a national capacity to better monitor the blooms and help entities respond to them, and particularly with a focus on early warning. So you know, by monitoring you should be able to respond better, right, before they get too bad.

[00:37:04.15] And ultimately, once we knew what causes them-- we've been monitoring the HABs to see how big they get. Well, now we need to do something about it. And that led to the development of our third big program, which is the Prevention, Control, and Mitigation of HABs, or PCMHAB. And the idea of this program is to start looking at, OK, what can we do to try to get rid of these things or at least mitigate their impacts.

[00:37:31.66] And the idea is to develop methodologies that can be implemented, at the same time making sure that we can assess where are the socioeconomic impacts of these strategies. You know, true to its name, there's an emphasis on mitigation. And the emphasis typically has the elements to sort of help develop methodologies that can be used to monitor and develop monitoring systems.

[00:37:59.73] And then, once they get developed, we transition those into operation through our second program, which is MERHAB. And we also have a smaller program we call HAB Event Response. This is a small pot of money that is set aside so that when there is a bloom, some entities can have the opportunity to respond to it quickly by being able to collect samples and analyze them.

[00:38:24.78] When they have money set aside-- so this is a pot of money that is outside of the agency. Therefore, it can be moved quicker. And some of you may have used in the past. Next slide, please. And true to the meeting today is what I wanted to highlight, how much we have sort of got involved in this aspect of monitoring and forecasting.

[00:38:53.86] And this map gives an idea of where we have ongoing monitoring efforts, where our place is, where some of them are being tested or developed, which ones are operational, which ones are just sort of fulfilling the research and administration. And you'll have this in the copy of the presentation later on. And if you have questions about any of these, feel free to contact me. Next slide, please.

[00:39:23.92] So I want to move now to the PCMHAB program, which is the one that I lead and which is what, I think, applies mostly to we're talking about today. And like I said earlier, basically, the goals are to develop technologies that are socially and environmentally acceptable, to address the HABs and either to try to control them or mitigate their impacts. And it also has a component where it's sort of spinning off, which is more focused on the larger economic impacts of the events.

[00:39:59.23] And I'm going to table that, because it's relevant to us today. Next slide. We'll go through the topics. So in terms of preventing HABs, what we're looking for is just sort of-- here, there's a little bit of a jurisdictional issue. And like Lesley said before, we're limited to coastal ocean waters. Although, we do intersect with EPA on the estuary side of the high water mark and the Great Lakes.

[00:40:36.51] But because of that jurisdictional issue, we really have a hard time tackling directly the prevention part of the equation because we cannot dedicate funds to do research on how to eliminate nutrients from the watersheds that sometimes are the fuel for the HABs. But

what we can do is provide funding to understand how those nutrients do impact HABs downstream and allow managers to do what if scenarios.

[00:41:04.14] So if we were able to enact this landscape modification, land use, or BFPs, is that going to have an effect? So we can provide that kind of support. In terms of the third aspect, the control, the idea, again, is pretty straightforward. You know, how can we eliminate or reduce HABs through the use of biological, chemical, or physical treatments?

[00:41:31.83] And then finally, as for the mitigating, that's where we provide funds for people to do research on how to better detect cells and toxins in the water and other things, such as like what can be done to relocate aquaculture operations, the idea whether harvesting bans and closures related to fisheries can help with mitigating the potential impacts of a HAB.

[00:42:04.54] And I'm sure that a lot of people here are aware that there often are particularly shellfish closures nationwide in response to potential HAB events. Next slide, please. So how would we put the money on the ground? So when it comes to PCMHAB, we have yet another three-phase approach.

[00:42:34.79] One is in which we can fund projects at the developmental phase, which is like, what is the idea. Is it going to work? How can we test it? Then, once it passes that developmental phase and we think that yeah, it may work, then we go into the demonstration phase, which is to do sort of [INAUDIBLE] some type of small-scale tryouts in the field.

[00:43:01.41] And if it does pass that demonstration phase, then we can also support the transition of that technology into an end user application. And grants can do that, the three different phases separately. Sometimes, we have large grants that can tackle all three at the same time. Or it can come in at different levels, depending on how well an idea has been tested before they apply to our programs.

[00:43:32.18] Like I mentioned earlier, all our projects must have a transition advisory committee. And they also have to respond to the environmental requirements through NEPA, the National Environmental Policy Act, particularly with the idea that these technologies-- or control methodologies, sorry, are socially and environmentally acceptable.

[00:43:59.49] And for that, we have developed already a programmatic environmental analysis that has gone through and identified some of the current methods that are available and how they relate and what kind of impacts they may have. Next slide, please. Just to give you an idea of where we have been since the project started, over the last, about, 10 years or so, we have had about 20 projects for a total of about $60 million.

[00:44:34.09] And this graph gives you an idea of where that funding has gone. And most of it have gone into mitigation, the development of this monitoring technology, sort of using all methods to detect cells and toxins. A little bit has gone into control.

[00:44:52.90] And we have some ongoing projects that are looking at mostly biological-- through the use of algaecides to try to kill some of these things-- and also some physical, by

using clays that will flocculate with the cells and try to get them out of the water column and precipitate up through the substrate. And like I mentioned earlier, because of some of those jurisdictional issues, we have very little money that has gone into that prevention side. We're glad the EPA is involved. Next slide, please.

[00:45:32.17] And this also gives you an idea of how the money has been implemented by the different HAB groups. A little of it has gone to, like, karenia. But also, of late, cyanobacteria has also become a major group that we're tackling. So between those two, that's where most of our forwarding has gone.

[00:45:55.71] And if you look at it by region, it pretty much cuts across, throughout the entire nation. It's essentially [INAUDIBLE] in the Great Lakes. And you can see a blip now, there, for the Caribbean and the Pacific Islands. And that's mostly on the Caribbean, with this new emerging threat of the sargassum. Next slide, please.

[00:46:24.75] If you want to find out more information about these programs, because I only [INAUDIBLE] about, I provided some links here in the presentation that you can go to for more. And if you had any program-related questions on the presentation, there's my contact information. So feel free to contact me if you have any questions. And that's all I had.

[00:46:56.28] Great, Felix. Thank you very much. Greatly appreciate the presentation. Pardon me. Hold on one second. All right, hopefully that's enough of that. So Felix, thanks. We did have a couple of questions come in.

[00:47:18.55] And I just did want to note that someone had put in the Q&A a request for the agenda. And we've just sent a link to that in the chat. So you can go ahead and take a look at that. There was a question that came in that just asked, "What is PCM?" So if you want to go ahead, and I think they're just wondering what that acronym is.

[00:47:45.67] Yeah, sorry, I may have spoken too fast and that sort of-- but so PCM stands for prevention, control, and mitigation.

[00:47:54.86] Great. Thanks very much. There was also a question that came in. It was right on the cusp of your presentation. And I don't know if you're someone that can answer this. But it said, "What agency would be best to contact regarding funding for warning buoys to deploy in HAB-affected coves?" Felix, any thoughts on that question?

[00:48:25.22] Actually, yeah, because if you're talking about in the coves-- so not, sort of, inland lakes, but anything that's coastline-related. And we have received guidance that we can even work on some of these coastal lagoons that may not be directly connected, but there are tidal influence. We are actually able to provide funding for work in those systems.

[00:48:55.52] Great, Felix. Thanks. And let me just pause a minute. I just wanted to see if any of the other federal partner representatives that are currently on the webinar have any additional thoughts about that question. So let me just pause. Feel free to just unmute your video and audio if you have a thought about that.

[00:49:23.49] OK, I'm not seeing anybody jump in. All right, thanks. So Felix, a few other questions that are coming in at this point-- "This may seem like a ridiculous question." And I'll stress there are no ridiculous questions, so please don't hold back. But, "Do you have authorization to work inland with partners on freshwater HABs?"

[00:49:54.70] No. Unfortunately, no, not our program. That doesn't mean that NOAA cannot. I mean, there are certainly researchers with NOAA, but are just sort of regular researchers that are engaged in HAB work. They could certainly partner and provide, indirectly, NOAA resources that could go through by just sort of providing advice or being co-PI in projects.

[00:50:19.00] But it would be mostly in sort of the development of technologies or the development of modeling efforts. But unfortunately, our office cannot support research ourselves, directly, if it's going to be inland. I mean, I know there's lots of places that could use some support. But no. Unfortunately, no, we cannot provide funding directly.

[00:50:48.03] Great. Good. Thanks. Thanks, Felix. And we actually have-- I'm just going to quickly-- I'm going to jump ahead to a couple of questions for just a minute, because they're germane to the answer you just gave. I want to make sure there's nothing else you'd want to add. But we had two questions.

[00:51:05.16] "Are any of the programs applicable to freshwater systems further inland, other than the Great Lakes? Or does NOAA programs only apply to coastal waters?" And then, hold on one second. I just need to scan down here. "Is NOAA focused on coastal water, or are the funds available for rivers and freshwater?" So I think you pretty much answered those questions. But is there anything you'd like to add there for those?

[00:51:34.56] Yeah. No, just sort of to reiterate that we're sort of ocean, coastal, estuarine, anything up to the high tide mark, and the Great Lakes proper. And in the Great Lakes will be exactly the same. We do anything coastal in the Great Lakes, anything that's estuarine in the Great Lakes. Or as we survey to the high water level, we can actually provide something.

[00:51:59.40] Great, Felix. Thanks. Another question that's come in, "Are PCM projects considered research? Or is there funding for mitigation, such as aeration and other projects?"

[00:52:18.36] So typically, the projects will provide some funding. And that's the third phase of PCM process, where there's the development, there's the testing, sort of the proof of concept-- develop the idea, kind of proof of concept, yeah, what's going to work. And then, there's some funding to allow for that transition phase. And the idea would be that it provides some initial funding to perhaps start implementing some of this control technologies.

[00:52:47.21] But the expectation is that at some point shortly thereafter, some other entity will be the one that's going to be implementing. The same thing happens with us, when it comes to monitoring. You know, the MERHAB, with PCM-- and MERHAB can actually provide funding to develop technologies to monitor and start implementing monitoring programs. But at some point that has to transition to an actual operator.

[00:53:16.24] Felix, thank you. A few more questions have come in. So next one here, "If the eligible recipient is a researcher and you are working at a private organization that might have control or mitigation applications, do we need to try and identify the researchers or get in front of the researchers with ideas?"

[00:53:45.94] No, private organizations can apply directly for our programs. And we do we do fund for-profit groups that are engaged in this type of work. So anyone can sort of do all the paperwork to be in the system so that you can apply through the federal application process. But as long as you meet all those requirements, you can apply to the program, see if you have something.

[00:54:17.24] And that gives me a segue to say something that I should have said earlier, because right now we have an announcement for a competition with the goal of developing a national-level control technologies idea incubator. And one of the things we want to try to do is sort of facilitate the development of new and novel ideas through streamlining the process, because, as I described, PCMHAB is a very complex process in which we do our prioritization. We do the announcement of opportunities.

[00:54:49.79] Then we have to go through a competitive process of receiving the proposals, impaneling a group of experts to review those proposals and provide us advice. And by the time all's said and done, it might take two years before we can fund a project. And then, typically, the projects are going to be three to four years in length. So it could be up to six years before anything can be determined from some of these research projects. But we want to be able to move quicker when it comes to testing new ideas.

[00:55:20.20] So we're hoping that this incubator will facilitate that. And it's going to be a partner and us soliciting the proposals for these technologies, and do so in a shorter term. So it'll be kind of similar to our initial phase, which is sort of, let's develop these ideas and see how they work. And what we foresee is that the ones that prove to be promising can then compete in the more formal PCMHAB program for full development.

[00:55:56.47] Great, Felix. Thank you. I just want to acknowledge an observation that came in, "USACE has funded NOAA to work on HAB now forecast in freshwater Lake O." We're very excited about this partnership and this project. So again, just wanted to read out that acknowledgment or contribution. And then, there was a clarification from the earlier question about warning buoys.

[00:56:26.38] Just says, "Warning buoy question refers to inland freshwaters, like Wylie in North Carolina and South Carolina." So we'll just pull that forward, ask our other federal partners that will be speaking later today if you have any advice or thoughts, with respect to that question. Please build that into your comments and your presentation. Terrific.

[00:56:53.68] I don't see any additional questions at this point. So Felix, thank you very much. We are now going to move into a segment where we're going to invite our participants to provide some further observations and perspectives. So if you're able to stick around for that, that would be terrific. So yeah, so let's go ahead, and if we can go to the next slide, please.

[00:57:31.94] Terrific. So participants, what you'll see here is, we have three questions. And we're hoping that some of the 195 of you that are participating today have had experience with NOAA funding, pursuing it, using it, applying for it. And so we have these three questions. "What successes have you had in applying for and using NOAA funding?" Number one.

[00:58:01.56] Number two, "What challenges have you encountered in applying for and using NOAA funding?" And then, three, "How can you engage more effectively with localities in need of funding to respond to HABs?" So this is an opportunity for you to share your experiences.

[00:58:22.55] This is designed to help the federal partners participating today and tomorrow, just to be thinking about their program offerings and make improvements where that's possible. So let's go ahead and take this first question. So those of you that have had experience with NOAA funding, could you just type in what successes-- and this into the Q&A, please.

[00:58:49.19] What successes have you had in applying for and using NOAA funding? So go ahead. And I'll go ahead and pause for a minute or two here, give an opportunity for participants to type in. And please, please don't be bashful.

[00:59:13.77] Also feel free to raise your hand if you would like to come in over audio and share. Again, we've got a good amount of time for this segment. So be happy to hear from you.

[00:59:54.91] All right, I'm not seeing anyone take advantage of the opportunity to respond to what successes have you had. I'll leave that question open. Let's go ahead to the next question. What challenges have you encountered in applying for and using NOAA funding? Oh, great, and we've got some items that have come in. Great.

[01:00:31.07] So again, we just had an observation here. "Was served my first ECOHAB as a subrecipient on a research proposal." Yes, and that's right. The chat is-- also that observation, the chat is disabled. We ask that you come through the Q&A function, please. So others, challenges that you've encountered in applying for NOAA funding or for using NOAA funding?

[01:01:01.03] Anyone like to share some challenges? And again, feel free to raise your hand, and we can bring you into the discussion via audio All right, not seeing anyone take advantage of that opportunity.

[01:01:36.15] Let's go ahead and look at our third question. How can NOAA engage more effectively with localities in need of funding to respond to HABs? So here, I would just ask in part for participants, even if you have not had direct experience with NOAA at this point, just based on Felix's presentation, if you have thoughts, those will be very, very helpful to NOAA.

[01:02:12.25] I see that, again, just in terms of challenges, we have finding matching funds. This is the problem that's not unique to HABs.

[01:02:26.22] If I can speak to that--

[01:02:28.47] Yeah, Felix please.

[01:02:28.92] One of the things about our programs is that we don't require matching funds. I know some of the programs do, but we don't.

[01:02:39.47] Great, Felix. Thanks for that clarification. All right, I'll just give another minute here, to see if anyone would like to weigh in on any one of our three questions. What successes have you had? What challenges have you encountered? Or how can NOAA engage more effectively?

[01:03:20.61] Great, further contribution. Thanks, and thanks for providing that bit of background on your actual operating context. Just in case, for those that may not be able to view this, I'll read it out.

[01:03:34.86] "This is a common thread that can be woven through all agencies. We are drinking water utility serving 600,000 customers, struggling with microcystin from HABs. It is daunting and confusing to figure out how to piece together a quilt of all the agencies to help, how to help with removing barriers." Great. Thanks very much for that observation. OK.

[01:04:11.90] If I can follow that, just for a little bit, quickly--

[01:04:14.04] Oh, yeah. Yeah, please. Yeah.

[01:04:16.07] Yeah, one of our most recent awards, too, is looking at developing using bacteria to treat water and water treatment plants. And this is a response to the water event in Toledo in 2014. It ended up shutting down that utility, and it cost quite a bit of money and impact to the community. And so we're working with someone out near Toledo.

[01:04:41.87] And the project's based-- it's looking into improving filtering technologies to remove microcystin from the drinking water. And even though he's tackling it from the Lake Erie perspective, that is some technology that, when it comes through, it'll be applicable in any place in the nation, not just the Great Lakes. Because it doesn't matter where the water treatment plant is. If you have a microcystin, this should be able to take care of it, hopefully. Not making any promises.

[01:05:16.51] Great, Felix. Thanks. Thanks very much. Another observation that's come in, in terms of, I think, being more effective with communities, "Reaching out to harbor masters from the marinas here in California. Some of the marinas have harbor masters that run the marinas for the municipalities."

[01:05:46.71] Great. Thank you very much for that contribution. All right, well, let me go ahead. Let's see. Another contribution has come in here. "We're also in upper Mississippi. Would love to engage with you further. Our intent is not to become the next Toledo."

[01:06:16.35] Great, thank you. All right, I want to do a quick check-in here. Jeremy Crossland, is it OK if we move to you a little early?

[01:06:30.85] Yes, absolutely.

[01:06:32.23] OK. So Jeremy, just hold on one second. I'd like to just do a proper thank you to Felix. Felix, thanks very much for the presentation and for answering the questions that have come in. Greatly appreciate it. Sorry for the bit of technology problems that you had, but you navigated that beautifully and in a very timely way. So greatly, greatly appreciate it.

[01:06:54.03] Yeah, that was on my side. That was on my side. And yeah, thank you. And for you, anyone to contact me if you have any questions. Thank you.

[01:07:00.17] OK, great. OK, Felix. Thanks very much. So let's go ahead and move to the next slide, please. And I'll introduce Jeremy Crossland. Jeremy's the Program Manager for Land Management with US Army Corps of Engineers. So Jeremy, I'll hand it over to you for your presentation. Obviously, we've got a little extra time here, Jeremy, so you needn't feel rushed in terms of your presentation. I know we had a somewhat short allocation of time for you. So Jeremy, come on in. Thanks very much.

[01:07:36.11] All right, thank you. All right, so again, I'm Jeremy Crossland, US Army Corps of Engineers. And it's good to be here this afternoon, in my time zone. Probably still morning for a few. If you can, next slide, please.

[01:07:57.05] So the Army Corps of Engineers, and then ERDC, which is where our research, especially in harmful algal blooms, comes from-- but this is us in a nutshell and what we're working on right now. I think we've hit-- we all know, we're all here, I guess, because we know why HABs are a problem. And so through our research funding streams, we've come up with-- right now, this is what we're trying to break down and prioritize into-- prevention, monitoring, and management.

[01:08:34.88] And so the things you see underneath each one are examples of ongoing research or concepts that we want to explore within those areas. So prevention, what can we do-- what can we do to-- I hate to use the word "mitigate" in our world of Corps of Engineer speak. So what can we do to reduce the impact in a perennial system, right? You can see the treating overwintering cyanobacteria in sediment. That's one thing.

[01:09:01.51] There's obviously other areas of prevention. That's just what we're using as an example. But it's how to reduce it in a perennial problem system. So that's over-simple, but that's the general concept, right? We're looking for research ideas that we can explore and potentially move from a lab or demo size to an operational size, so a scalable technology that can be used for one of these focus areas of our research.

[01:09:32.47] And the second one down, bottom left, is monitoring. And this is all types of monitoring, right? This is what you can see on the screen, but there's also, can we detect it looking at-- well, Mandy chimed in earlier with the project on Lake O, right? I mean, there's all different types of monitoring technologies, from satellite imagery to-- someone was asking about buoys, which I don't know anything about at this point.

[01:10:00.18] But I mean any way that we can better detect, monitor, and know what's going on in a system to improve our timing for response and understanding what's going on. So and then,

the third, which is probably the largest-- and you know, you have the problem present and accounted for. You have a bloom. What can we do to manage it? How can we reduce the overall bloom, the amount of algae in the system, or the toxins related to the algae, right?

[01:10:36.44] It's a management activity, direct application, or a direct way to mitigate something that's already ongoing. And yeah, I mean, you can see there's all kinds of ideas down there. Obviously algaecides, we know that they work. But what works best? What happens when you do it in a different scale? There's oxidants that are not registered today as algaecides that could be used. There's cavitation.

[01:11:08.44] All these things or a combination of them, or a physical removal of the algae-- I mean, there's just an ongoing list of areas. And we all have ideas about what can work. And we're trying to tease some of those out and be able to say, this one works better or this one doesn't work when we get to this scale or this is a great opportunity to expand in the algaecide world or UV light.

[01:11:36.67] This is anything you can think of that could be a management tool for someone that's managing a reservoir or drinking water system and trying to address the bloom that's already present in the system. So that's us in a nutshell, simply broke down. And that's just where we're trying to focus our efforts, to provide new technologies that can be developed into a field-level tool at some point in time.

[01:12:08.15] So next slide, please. All right, so for us-- I know with NOAA and, well, EPA also-- there's a whole bunch of funding streams, or there's opportunities to get funding in different areas or different focus areas. And ours is really, it's coming in through general Corps funding that's focused on research and has been specifically set aside to work on harmful algal blooms, right?

[01:12:41.06] So there's not 10 different ways you could apply for it. It doesn't focus on each of those areas. It's a single pot of money. And again, it's here for us to improve harmful algal bloom response, detection, management, whatever you want. You know, it's there to help us address this and develop tools to address it. So there's not multiple streams of money or multiple ways to get to it.

[01:13:08.67] So I put in two slides here about what happens if you are working with us or you have an idea that fits those funding areas and you want to sort out with us and see if it's an opportunity to work together. So there's two ways that we solicit work, which is broad agency announcement-- and that is open ended.

[01:13:35.15] Anyone who has an idea that fits within sort of the area of research can put in a proposal through that mechanism. And then number two is the CESU, which is Cooperative Ecosystem Studies Unit. And I'm sure a lot of people are familiar with it, and some may not be, I'll assume. But that is where we have an idea that we want someone to explore, and we basically put out a solicitation. It's maybe not quite as complicated as a contract, but it's basically a solicitation.

[01:14:06.50] We have an idea we want to explore. We're going to put it out on the CESU web page. And people can say, I have that ability to explore this and do the research for you, and this is how I would do it. So one is, someone comes to us. And the other is, we put it out and ask for input. And if you were-- either way that it was done, it's then broken into these types of awards, right? You're either a contract, cooperative agreement, or a grant.

[01:14:34.13] A contract is a contract. I mean, not to oversimplify it. But we are saying, researcher, we are expecting the following things. And you know, it's a one way street. We're going to fund it. They're going to deliver it. A cooperative agreement is someplace where there's more give and take. And so we could be providing part of the research or support to it. They could not have all the answers, and we think we have some.

[01:15:01.60] It's a give and take system. Or not give and take, but it's a work together. Look at the name, cooperative agreement, right? It's there for us to be able to work with a research entity and maybe provide expertise or provide part of the tools to do the work. And then a grant is not necessarily the, of course, primary way of putting out funding, because we don't have the same granting authority that some of the other federal agencies do.

[01:15:32.65] So we have some specific grant authorities where it's-- I mean, I guess I would say it's like a contract. The only flipside is, where you pay at the end of a contract, when the product is delivered, and a grant you fund-- well, for us. I'm not speaking in generality of all the other federal agencies. But in a grant, we would fund up front, expecting a product. So that's how working together would work. And then, next slide, please.

[01:16:05.06] And this is-- I kind of ran through this, I guess, in the last one. But this is more details about how a contract versus a cooperative agreement works. And I guess I would say that in the broad agency announcement system, right, a private company, an individual researcher, a university-- I don't know that there is actually any kind of requirement on who solicits. So under that, there's different rules for who applies, right?

[01:16:34.90] A for-profit company versus a university, right, there's different things that would move forward in that process. And this is just the breakdown of, again, how a contract versus a cooperative agreement would work, where we're working together on the right side of the screen and you're essentially working for us on the left side of the screen. And not to-- I don't know.

[01:17:00.36] If you're interested in either one, reading them all in detail and asking us specific questions is a great thing. But reading through them all one by one for you is not probably that helpful here. And then the last slide, please. So if you have specific questions, I would encourage you to start with Dr. Michalsen, Mandy, up on the top left.

[01:17:28.75] She leads the Harmful Algal Bloom Program, and has actually just responded to a question or made a comment earlier. So she's online now and can help me if people have questions. But also, if you're looking for a starting point to talk to somebody about ongoing research or any of these opportunities, I would start with her. The rest of the folks on the screen will help, also. Note, I didn't put myself, because I'm only here for four months. My normal job is in headquarters.

[01:17:57.34] But these guys will be around, regardless of where I go. And then, to the point that I made, all of our funding is, for simplicity's sake, a single stream. But if you use the websites on the bottom right, the Aquatic Nuisance Species Research Program is where the vast majority of our harmful algal bloom work is being conducted. And then there's a couple of projects in the other two at the bottom, Aquatic Plant Control and Ecosystem Management.

[01:18:26.14] The websites are there. You're welcome to explore what is going on and the other work, even on harmful algal bloom-related work that's going on. So you can get more information there, if you are interested in specific projects that we have ongoing. And I think that's really all I've got, to say thanks and any questions or things we can do to clarify how we're doing business.

[01:18:53.66] Great, Jeremy. Thank you. Greatly appreciated. Nice, clear presentation. Let's go ahead and pause here and invite questions from attendees. So please go ahead and chat your questions into the Q&A. We'll pause here for a minute and allow some time for those to come in.

[01:19:34.81] All right, let's see. We have a hand raised. So let me go ahead. Brianna, I see your hand is raised. Why don't you go ahead and unmute and come on in?

[01:19:59.64] Brianna, I think you're unmuted now, so you should be able to-- Great. Brianna, we're not hearing you. If you'd like to go ahead and put your question into the Q&A, we can get that answered.

[01:20:37.51] Yeah, great. So yeah, Brianna's going to go ahead and type the question now. She's been unable to unmute. And we've got some other questions coming in. So we'll go ahead and take those while we give Brianna a chance to type hers in. All right, quite a few questions coming in. Jeremy, here we go.

[01:21:05.68] Gotcha.

[01:21:06.67] All right. "Is funding only available for waters under Army Corps jurisdiction?"

[01:21:14.61] No. Under the research authorities, we could work in any place. I think any place-- don't hold me to that. But generally, it does not have to be a Corps-operated water body. We're looking for technology. We're looking to develop research and technologies that would be scalable and applicable to us managing and to other people.

[01:21:38.58] So we're just looking for things that will improve HAB management for all of us, right? If there's some minor place, I can-- we would work it out in a project. But generally, it's any-- we're focused on the effort of improving or researching harmful algal blooms, not just Corps water bodies.

[01:21:59.00] Great. Thanks very much. Next question, "Would the Corps ever fund work at a nonprofit water organization, such as applying innovative monitoring methods?"

[01:22:16.53] The simple answer is yes. And again, to my-- I'm sure there's specifics for the nonprofit. But we have the ability to work with anyone in that contractual or the-- again, I speak in generalities. I'm sure there's someone we can't work with. But in general, anyone, through that BAA process or CESU process, we could work with on that.

[01:22:40.40] It could be a private company, which could be profit or nonprofit. It could be a university. It could be, I don't know, an individual researcher that has an idea. If it's a warranted thing to look at, we mostly have a mechanism to do it. I hate to say the alls and the nos and the yeses, because there's a lot of legalities buried in the CFRs, right? But yes, we could.

[01:23:05.12] Great, Jeremy. Thanks. Another question, "In regards to the evaluation of effectiveness of different technologies, are you publishing material in a centralized location for agencies to look at and make decisions on what might suit their specific situation?"

[01:23:29.41] So yes. So we encourage the researchers to publish in research journals that support what's going on, if they have valid research. But we also publish and sort of categorize through ERDC. Not sort of categorize. It's a library of research. So everything that we're doing, we can pull up. We call them technical notes or-- I forget what-- or anyway, we've got-- yes, we collect these research efforts.

[01:24:06.09] And we produce documents so that we have a laundry list of everything that's been done that's very shareable. I would have to get into how we share it, other than, "If you ask me, I can get it to you." But it's all available. Anything that's been completed is available, obviously. If it's not done yet, we don't publish it yet. But yeah. So yes, we can share. I'd need to know the specifics before I could dig it up for you.

[01:24:31.81] Great. Jeremy, thanks very much. A few other questions coming in. "I am just looking to see if the possible funding, grant or otherwise, supports a permanent FTE for monitoring and communications activities. We as an agency do not have the capacity to launch projects at this time. But if this funding could pay for monitoring and communications activities, then we might be able to hire someone to do that with this funding. Is this a possibility?"

[01:25:11.85] Based on the question, I would say probably not, unless the monitoring was related to supporting some kind of ongoing research project, right? I mean, there might be a specific water body or a specific spot where we had such an interest that maybe it was a possibility. But in general, I would say no, right? We're looking for something that ends in a product.

[01:25:34.95] Not being critical, not that monitoring and communication aren't extremely important to the whole HAB process and dealing with the public and everything else. But the money that we're-- the dollars and cents that we're talking about in these programs, we're looking for product-driven research, I guess, for that. And so it would have to be something very specific or support another ongoing research project.

[01:26:01.97] Jeremy, thank you. I did want to know-- we have a question in that that's sort of outside of our scope for today. "Please give some examples of how sediment could be treated to reduce HABs in a 300-acre lake." So I just wanted to say that our scope for today is to focus on

federal funding sources for HABs, so we won't take that question. That's, again, a more technical question, a solution-oriented technical question.

[01:26:35.18] And I'm going to jump down. Brianna, thanks very much for your patience and your willingness to type in your question. I'll go to you next, since you've been patient. And then, I'll jump back to some other questions that have come in to the queue. "I work at a field site in the Philadelphia district with the Corps. We just started delving into HABs management at our lake. How is it best for us to try and work with ERDC for funding and research?"

[01:27:10.31] So the first step, Brianna, is probably just to email Mandy or Mandy and myself. ERDC, sorry, that's "erdic." I should have defined it earlier. That's our internal acronym, which is unfair to use like everybody should know it.

[01:27:23.59] But yeah, I would start just by emailing us and seeing what's happening with your specific site and if it fits into ongoing efforts, or if there's something, short-term or long-term, we could help with. But that's probably the best, is just a brainstorming email. And then we'll see where it matches up or what we could think about doing in the future.

[01:27:52.13] Great. Thanks very much. And yup, and you got a thank you there, from Brianna. OK, a few other questions here. "If I developed an instrument during my dissertation work for improved HAB monitoring but am now working for a state DEQ and am interested in incorporating it into our HAB monitoring program, what would be the most reasonable funding path, source of support to explore?"

[01:28:28.30] So again, ours is-- again, for simplicity's sake-- one funding source. But I think if you wanted to explore that-- if there's a way you thought you were incorporating making it something new and novel by combining it with something that's already out there-- you could. The way we would do something would be through a BAA, the broad agency announcement. Or if you think it's simpler than that or could be applied to an ongoing research project someplace else, an email that's kind of specific.

[01:29:03.67] And I don't-- yeah, I think an email to Mandy and I, or if you've got something fleshed out in your head and you just Google broad agency announcement-- I don't know why I forgot to put that link in our four slides, but you can find it real quick. Or you can email me, and then I'll send it to you. But if it's just a brainstorm, an email is probably the best place to start. If you got something hashed out you want to do and you think it's there, then I would say you could submit something. And we can evaluate it.

[01:29:35.14] Great, Jeremy. Thanks. I just wanted to note the very last question that just came in. "Can you re-display Mandy's contact information?" So could we go ahead and pop that slide up while we take the last couple of questions that have come in? Thanks very much. Terrific. OK, a couple of other questions here, Jeremy. "Does USACE fund nutrient controls of HABs in reservoirs?"

[01:30:08.83] I mean, we definitely-- well, again, that's not really the research. But I mean, yes, we have specific instances where there's operational things going on. It doesn't-- I mean, it does and doesn't overlap with this, right? But so yes, but it's not from where I've discussed today.

[01:30:31.16] Great, Jeremy. Thanks. And one last question, kind of bumping up against the fence lines of our scope today. But just see if you have any thoughts on this. "Are there funds available to combat invasive species, hydrilla and alligator weed?"

[01:30:53.88] I mean, so maybe. Yes, there's opportunity. But a lot more detail to understand and really give a decent answer, which you can happily email me if you've got a specific idea or something ongoing. But I would say yes, but it's not-- I mean, it's just not broad-spectrum, and it's not a grant.

[01:31:20.12] Great. Jeremy, thanks. It looks like one additional question has come in. "There are some mitigation methods on the market that introduced enzymes and microorganisms to alter nutrients and lake bed dynamics. Are you working with any of these?"

[01:31:47.86] I'm going to go with phone a friend, if Mandy wants to say yes or no. Or yeah, I'm going to have to default or get back to you. We'll see if Mandy can chime in the chat, or I can respond if you want to email me and follow up.

[01:32:07.30] Great, Jeremy. Thanks. We'll give Mandy a chance here to chat in here if she can, before we move to wrap up. Well, we're just creating-- oh, go ahead.

[01:32:24.49] Oh, no, I was going to say, this is Ellen. And while we're waiting to see if Mandy is able to jump in-- these are some really great questions that we're getting in. Some are very specific to the presenters. And some, I would just encourage you all, if you still have questions about it, some of the questions-- could you use HABs for mitigation work, and for nutrients in reservoirs-- you know, we'll have all these other agencies presenting again throughout this forum.

[01:32:54.69] If you want to ask other agencies, feel free to repeat your questions. If you heard what Jeremy was able to present here from Army Corps, and you want to ask USDA little bit later on today, feel free to repeat that question, to hear if one of the agencies that presents later has additional funding or different opportunities that you might want to explore. That's definitely what we're looking to provide you all with, is the opportunity to ask these different agencies about very specific funding questions that you might be encountering in your community or in your area.

[01:33:32.56] Great, Ellen. Thanks. Thanks very much. All right, Jeremy, I don't see anything having come in. So I think what we'll go ahead to do here is wrap up for your presentation. Again, just want to-- thanks very much for the presentation and your willingness to answer questions. And we'll go ahead and move on to our next agenda item. So Jeremy, thanks very much.

[01:34:03.58] Thank you.

[01:34:04.00] All right. Yup, you bet. All right, so we're running a bit ahead of time here. Just then I think what we'll do is then take our break early. But I did want to just check in with Sandra and Jennifer, our next two speakers. Sandra and Jennifer, will you be OK if we take a 15 minute break now and then start right back with your presentations? It'll be a little earlier than we had anticipated. Does that work OK?

[01:34:30.70] That works for me.

[01:34:31.99] Yes, it works for me, as well.

[01:34:33.61] OK, great. Thanks, Sandra. Thanks, Jennifer. OK then, let's go ahead and take a 15-minute break. And we'll see you back here, and we'll move into the Federal Funder Profile number three for the US Geological Survey. All right, thanks very much, everybody, for your participation, and we'll see you back here in 15 minutes.

[01:35:01.68] And if we can go ahead and advance to the next slide, please. Terrific. All right, welcome back, to all of our participants. We'll move into our third Federal Funder Profile for today, and this will be our final profile for this first day of the forum. It's focused on the US Geological Survey.

[01:35:28.67] We have two presenters. Our first presenter is Sandra Eberts. She's a Program Science Coordinator. And the second presenter is Jennifer Graham, Research Hydrologist at the USGS New York Water Science Center. We'll take both of these presentations in order, Sandra first, Jennifer second.

[01:35:49.58] And then, we'll have time for participants' questions and answers. And we'd also like to take some time at the very back end of this segment for some participant input. But Sandra, I'll turn things over to you. Thanks very much.

[01:36:06.53] Thank you. Next slide, our first slide. There we go. I'm Sandy Eberts. I'm with the USGS's Water Resources Mission Area Headquarters in our Planning and Programming Office. And I'm going to talk to you today about two funding opportunities that can be used to address HABs challenges. Next slide, please.

[01:36:36.23] The first one is a grant opportunity. And this is through the Water Resources Research Act Program. And with this program, USGS sponsors research at academic institutions through grants to water resource research institutes and centers. And these grants are used to develop research-based solutions to local and regional water resource challenges.

[01:37:04.12] The money can be used to also promote tech transfer, dissemination and application of research, train scientists, and it can also be used for public education and outreach. I know some folks have asked about that. The grants are not limited to harmful algal blooms, but harmful algal bloom projects are frequently funded. Next slide, please.

[01:37:35.30] These water resource research institutes or centers are generally located at the land grant universities in every state or territory across the country. The grants go to the institutes, but

then the institutes will funnel those funds to any accredited academic institution in that state. So any university in your state could actually receive these grants.

[01:38:02.95] The nice thing about these grants is, they allow entities beyond those that can partner directly with the USGS to combine their funds with USGS grant funds for work at these various research institutions. So this is where you guys come in, because most of you are not academics. So how does this affect or help you?

[01:38:31.21] You can inform your local water resource research institute in terms of what the local and state needs are. And when they hear from many people about harmful algal blooms and specifically what the specific needs are, they can prioritize their RFPs to attract projects to address those needs. And then, more specifically, if you have a relationship with or know an academic-- and in particular, early career scientists, because we like to fund early-career scientists to give them a start on their careers.

[01:39:04.81] But if you know an early-career scientist and you want to communicate with them what your specific research needs are, you might be able to encourage them to submit proposals against the RFPs to get that work funded. Next slide, please. And there are two types of grants that would be relevant for the harmful algal bloom work.

[01:39:29.11] There are the annual base grants, and those are fairly small grants. They help these various institutes plan and conduct research. The institutes put out RFPs and select projects that have a state-relevant water resource research focus. They do require a 2 to 1 match by the institute. So the grant money, that is appropriated to USGS and then provided to these institutes, these 54 institutes across the country.

[01:39:59.38] Then those academic institutions have to put up two times the funds for these projects. But again, they can be used to educate the public on water resource issues. They can be used through the engineering departments to advance technologies. And so they're very flexible in that regard. Then, there's the national competitive grants, and these are awarded through a national competition.

[01:40:27.31] So same funding mechanism, but instead of annual base grants going to every institute, these are much bigger funding pots of money. And each of the institutes can submit proposals to a national competition. And we only fund about a half a dozen, maybe even fewer, each year. These are for projects that are for one to three years in duration, and they can receive up to a quarter million dollars in federal grants.

[01:40:55.78] They're required to have a 1 to 1 match by the institute. And so a larger project could get as much as a half a million dollars. Again, not limited to HABs, but HABs projects are frequently funded. And these are focused on projects that have more of a regional or interstate nature, and, of course, HABs projects are of that nature. We also like to see these larger grants have academic researchers collaborate with some of the local USGS offices.

[01:41:30.59] Each of these have links to more of a description of what the annual base grants and the national competitive grants are, as well as to lists of all of the projects that we funded.

And you'll find in there some HABs projects. And that gives you a flavor for the type of work and the amounts of money we're talking about. I didn't realize initially that we would have so many other federal agencies on the call, and so I didn't put on the slide the coordination grants.

[01:41:57.10] But within this Water Resources Research Act Program, we have something else called a coordination grant. And these are grants that allow other federal agencies to develop projects and grants with the same water resource institutes and academic institutions. So we use our tool to help you take your monies and funnel them directly to the research institutes.

[01:42:22.69] Now, what's nice about this opportunity is, you can target an individual researcher and an individual product. These coordination grants, I will say, they're not competitive. They're just a way or a means for other federal agencies to access specific researchers if they desire. Next slide, please. And then, I thought what I would show is just kind of a sample of what the timeline typically is.

[01:42:52.58] This is from the Ohio State University's Water Resource Center, where I'm on the advisory board. Typically the RFPs go out for the base grant projects, the state-level projects, in June. There are pre-proposals. We invite a subset of those folks to submit full proposals. Decisions are made late in the year, in terms of what we're going to fund. And then, the projects start in the spring of that next year.

[01:43:19.84] And again, as I mentioned, I'm on the advisory committee. State organizations-- or I should say agencies-- and others make up that advisory committee and are bringing information to the institutes to make sure that the projects they fund meet the needs of the state and the local communities. Again, so this is where your voice counts. Next slide, please.

[01:43:43.54] The second opportunity are cooperative agreements through our Co-op Matching Funds program. The USGS has water science centers in every state across the country. And I imagine that many of you have partnered with us before. We have more than 1,600 partners that we've worked with to address local priorities and meet the goals that are also relevant nationally. Much of the work that our centers do are funded through a part of our appropriation referred to as Co-op Matching Funds.

[01:44:14.71] And these are funds that are required by law to have a 1 to 1 match by a state, a local, or a tribal partner. Again, the funds do not have to be used for a HABs project, but we frequently have funded HABs work. And I put a link on this slide to the contact for each of our water science centers. So the way you go about accessing these cooperative agreement funds is by contacting the local science center and working to develop a project with that center.

[01:44:47.56] Next slide, please. But recently, Congress has directed the USGS to use a subset of its Co-op Matching Fund appropriation and target those funds specifically to HABs-related projects, to advance real-time monitoring, remote sensing, advance molecular techniques to identify and predict the occurrence of HABs and the toxins they produce. So someone had asked if we can fund buoys in inland waters and inland freshwaters.

[01:45:21.64] And our Co-op Matching Funds-- whether it's the targeted HABs-directed CMF or CMF in general-- can definitely be used to support monitoring projects, but there is a match required. In 2021, we had $1.8 million to put towards HABs-related projects. Because it's not enough money to spread out across all of our water science centers, these projects are awarded annually through an RFP, an internal RFP that I oversee.

[01:45:57.34] And the successful projects receive as much as $100,000 a year for up to three years, plus the partner match. So these are sizeable efforts. Next slide, please. Again, in 2021, we had 24 active projects in 15 geographic areas. And this link goes to a web page that shows and describes those projects, to give you an idea of what we do.

[01:46:26.26] Next slide, please. And the timeline for this, and you'll want to make note of this if you're someone who partners with the USGS with our Co-op Matching Funds. In May, we put out the RFP to our water science centers. By August, our centers, having talked with potential partners, will submit a pre-proposal for a project with a HABs focus.

[01:46:50.49] We review those. We make selections in November. I'll be announcing those selections for FY22 before Thanksgiving. And then, once we receive our appropriation during that active fiscal year, the centers sign joint funding agreements with the partners and the money is awarded.

[01:47:10.04] Next slide, please. And these are just the contacts for the Water Resources Research Act Program, Earl Greene. Co-op Matching Funds in general-- Doug Yeskis. And the HABs-focused directed Co-op Matching Funds, and that's myself. And now, Jennifer is going to provide a case study that has been funded through our Co-op Matching Funds.

[01:47:42.25] All right. Good afternoon, everyone. I'm Jennifer Graham. I wear many hats related to HABs within the USGS. Today I'm wearing my research hydrologist hat. And as Sandy mentioned, I'm going to give an example of using Cooperative Matching Funds to partner and conduct HAB research. Next slide.

[01:48:05.58] So the USGS and the New York State Department of Environmental Conservation have complementary missions. And these two agencies have a long history of collaborative projects across a range of water resource concerns. And in 2018, New York State put forth an initiative focused on harmful algal blooms that included piloting advanced monitoring strategies.

[01:48:31.67] And partnering to focus on harmful algal blooms was a natural extension of the collaborative relationship that already existed between the USGS and the DEC. Next slide, please. And so as Sandy mentioned, if there is an issue that might be of-- where you'd like USGS to be involved, to just reach out to a local water science center. And that's what happened in this case.

[01:49:00.41] DEC talked with the New York Water Science Center and said we're interested in some advanced monitoring pilots for harmful algal blooms. And we actually had a tiger team meeting in April 2018 that consisted of harmful algal bloom experts from multiple water science

centers in the USGS, including New York, Pennsylvania, New Jersey, and Kansas, as well as staff from the New York State DEC and the New York State Department of Health.

[01:49:32.81] And over the course of this meeting, we collectively and collaboratively came up with objectives and a basic study work plan. And so the overall objective that we came up with for this advanced monitoring pilot included better understanding of harmful algal bloom developments in New York lakes using a multi-tiered approach which monitors the occurrence of and contributing factors related to harmful algal blooms.

[01:50:03.71] We wanted to evaluate water quality sensors and data to inform the development of an advanced monitoring strategy for New York State and for the nation. And we wanted to create a user-friendly, publicly accessible web application for data dissemination and data analytics. Next slide, please. And so the result that we came up with was really a four-tiered approach. We had an in-lake continuous monitoring and discrete sampling effort. We had a tributary sampling effort.

[01:50:39.59] There was an intensive water quality sampling effort and an intensive lake characterization effort. And two of these efforts were led by the USGS, and two of these efforts were led by the DEC. And USGS led A and B, listed here on the slide. And DEC led C and D. And for the USGS, we are working on next-generation water observing systems.

[01:51:11.01] And so this partnership for us met DEC goals and mission as well as USGS goals and mission. Next slide, please. And really, the centerpiece of this effort was these advanced harmful algal bloom monitoring platforms that we developed. And we decided collectively that it was an opportunity to test a lot of different approaches to determine which might be best to include in the monitoring strategies for harmful algal blooms.

[01:51:43.74] I won't go into detail on everything that we did as part of this study, but we included as much as we could. A lot of different approaches were tried here, and focused on some of those objectives that Sandy mentioned, that we were directed by Congress to look at using some of our Cooperative Matching Funds. Next slide, please. And so you know, when working with DEC on this project, we were working within New York, with New York scientists.

[01:52:20.82] But we also were bringing HAB expertise from across the nation to focus on New York waters. And this map here just illustrates the locations of some of our collaborators from other water science centers located throughout the USGS, to focus on some of the approaches that we used, including sensor evaluations, the use of passive sampling, imaging flow cytometry, and genetic tools looking at some of the genetic characteristics of cyanobacterial communities in water and at the sediment-water interface.

[01:53:03.97] Next slide, please. Another thing that we did in the heart of this effort, the advanced monitoring pilot was a three-year effort conducted from 2018 through 2020. And we also partnered to do some event response with DEC.

[01:53:27.53] There were a few events that occurred in 2018 and 2019 that we wanted to get additional data on quickly so that we can provide data to the public as soon as possible, so that we could characterize water quality conditions during and after these bloom events to build some foundations for long-term data collection and possibly provide some information on early indicators for blooms.

[01:53:54.32] And to do all of this, it was very close cooperation between USGS, DEC, in getting the equipment that we needed. You know, some of these buoys that went out for events, parts of the equipment were owned by USGS and parts of it were owned by DEC. DEC made sure that our permits were in place, et cetera. So this was an hectic and an exciting time, as we were figuring out event response together.

[01:54:22.34] Probably one of the-- from my perspective as a research scientist, and place high value on collaborations and collaborative opportunities, this initial focus on harmful algal blooms together has led to continuing collaborations. Next slide, please. Continuing collaborations with DC-- could I have the next slide, please?

[01:54:54.45] We have continuing collaborations with DEC that are continuing to advance the research agendas of both USGS and the DEC. And some of our more recent studies, we've moved away from the advanced monitoring pilot. And we're working on bloom events that are occurring in oligotrophic lakes in the Adirondacks, and we're looking at cyanobacterial communities in the lower Hudson River.

[01:55:27.20] Next slide, please. And outside of some of those more traditional research-type efforts, USGS and DEC have continued to look for projects that match the research agendas of both USGS and DEC. And so we have worked on some really nice projects together that are funded either by USGS or DEC.

[01:55:58.14] For example, in 2019, the DEC hosted a cyanobacterial harmful algal bloom mitigation workshop and invited USGS as well as the Corps and other agencies to participate and engage in that workshop. USGS has a group of experts that are focused on structured decision making. And we have really only applied that approach for decisions related to wildlife management and a focus on wildlife and land management.

[01:56:36.12] And that team thought perhaps it would be interesting to try this approach for harmful algal blooms, as well. And so USGS hosted a workshop and included the DEC and the New York State Office of Parks, Recreation, and Historic Preservation. We kind of said to them, why don't you come along with us, and let's try out this experience together for harmful algal blooms.

[01:57:05.38] That was a really rewarding experience for all of us, to try this tool and really focus it in on harmful algal blooms and thinking about how we think about harmful algal blooms and the differences between the way managers think about blooms and scientists think about blooms.

[01:57:25.56] And then, finally, another outcome here-- of the relationship that we have and that we've developed-- is that the New York State Department of Environmental Conservation and the USGS are partnering with NEIWPCC to host the 11th US Symposium on Harmful Algae in October of 2022. Next slide, please.

[01:57:52.92] And then, to conclude, one of the things that I think makes our partnership here work well is that, because we've taken the time to consider together how the USGS mission and how the DEC missions fit together and complement each other. And we were able to do this when we started the advanced monitoring study. we looked at where we intersected and what roles made sense for the USGS and what roles made sense for the DEC.

[01:58:25.34] And we've used that as a foundation to continue our ongoing relationship in the study and research of harmful algal blooms in New York State. Last side, please. Here on this slide, there are links to additional information on the harmful algal bloom cooperative matching funds projects.

[01:58:50.41] There's a link to more information about the advanced monitoring pilot in the Finger Lakes, as well as the Water Quality Data Viewer. There is that public-facing tool that we wanted to develop as part of the advanced monitoring pilot. And then, that final link there is to the DEC web page that talks about their harmful algal bloom programs.

[01:59:23.47] Great. Jennifer, thanks very much. And Sandra, thank you very much. We'll go ahead and invite participants to put your questions into the Q&A. So go ahead and use the Q&A button. Type in your questions. And we'll give it a minute for the queue to start to fill up here. And we've already got some coming in.

[01:59:51.63] So first question here, "Here or at a future event, we'd like to hear more about the structured decision making framework and what you learned by applying it to HABs." Jennifer is there a source-- either a website source or anything like that-- someone could go to today to find out more about that structured decision making framework?

[02:00:22.84] Yeah. For the HAB project, there is not. Although, we have a report that is currently in review with USGS, that we hope to have published here in the next couple of months. And then, there's a project that we are ready, I think, to start talking about and would be happy to give a presentation about our experiences at another venue.

[02:00:49.71] Great, Jennifer. Thanks. Next question, "Can you clarify if the USGS grants can be awarded to local governments for implementation or mitigation projects, such as line diffuser design and install? That is, non-research."

[02:01:11.94] Yes. So the grants go to academic institutions, but they can be informed by what some of the local needs are. I don't know that they would do a mitigation project, but they-- because the academics have to have a research focus.

[02:01:33.06] The research can be technology-focused, because a lot of the engineering departments will apply for these grants. So I'm not exactly sure that they could install something

for you, but they certainly could design and develop and test technologies for you as part of this type of work.

[02:01:55.22] Sandra, thank you. I think, Jennifer, you probably already covered this next question in your previous answer about the structural decision making framework. But I'll just say, "Are there any products from the structural decision making framework?"

[02:02:10.28] Yes, like I said, there is a report that is in review now, and we hope to have that published here in the next couple of months.

[02:02:19.52] Great. Thanks very much. Let's go ahead and pause, invite further questions. Also feel free to raise hand if you'd like to come in verbally.

[02:02:34.67] And while we're waiting for questions to come in, I did want to bring something up. I don't know that I explicitly stated this. But the Co-op Matching Funds can be used for lakes, reservoirs. We do work in rivers, and also groundwater and groundwater-surface water interactions. We have funded groundwater-related HABs projects. And you don't hear about many opportunities to include that in HAB-focused work. So I just did want to bring that up.

[02:03:02.39] And to follow up on that, what Sandy said, we also have some projects in estuarine environments, as well, that are related to HABs.

[02:03:12.44] Thank you both. All right, I'm not seeing any other questions come in right now. So let's do this. We'll go ahead and move to the next slide, where we invite some feedback from the participants, and--

[02:03:30.52] I think we got a couple more questions that just came in.

[02:03:33.10] Oh, you're right. They just popped in Thanks, Sandy. So let's go ahead and take those. I'll go ahead and read them out.

[02:03:41.59] First one, "Can you show Jennifer's email address again? I'd like to ask her more about that Hudson bloom." So yes, we can jump back to that slide. And then, let's see. And then, "Is there an example of how New York state parks might use the framework to manage public access in parks with HABs issues?"

[02:04:13.28] So I don't know about access, but the report itself is-- the first part of the report is focused on structured decision making and how it can be applied to HABs. And we did focus on New York state parks, so there's some specific things there.

[02:04:32.69] But then, there are two appendices associated with that report, where we really tested the template in two different parks. So we had two different parks with different HAB-related issues, where we went through and exercised the template. And so there are two examples that are associated with that structured decision making process.

[02:04:58.43] Great, Jennifer. Thank you. OK. I'm not seeing any other questions come in. As we move into this next segment, if you do wind up with further questions, feel free to type those in. I'll keep an eye on that, and we'll make sure we double back to answer those. So let's go ahead and move to the next slide.

[02:05:29.82] So again, what we'd like to do here is what we did earlier at the beginning part of the forum, is to give an opportunity for those of you that have had experiences with USGS funding, or just having listened to the presentations that are just taking place, if you have thoughts about that. So again, our three questions, identical to the ones we used earlier.

[02:05:59.57] "What successes have you had in applying for and using USGS funding?" So please share those successes that you've had. "What challenges have you encountered in applying for and using USGS funding?" Again, identifying these challenges can be helpful to Sandra and Jennifer as they think about moving their programs forward. And then, finally, from your perspective, "How can USGS engage more effectively with localities in need of funding to respond to HABs?"

[02:06:32.66] So I'll put those three questions out there. We won't take them sequentially, just would like to invite feedback from our participants. So I'll pause here, ask you to please go ahead and submit your observations. Also feel free to raise your hand, and we can look to bring you in over audio.

[02:07:43.62] All right, well, I'm not seeing any hands raised. I'm not seeing any perspectives being shared. I'll extend one more invitation. Your perspectives on this will be greatly appreciated, if you'd be willing to go ahead and share.

[02:08:02.68] So I'll give it just one more minute here. Sandy, do you have something you wanted to--

[02:08:26.60] I did, while we were waiting.

[02:08:28.06] Yes, please do.

[02:08:28.70] I imagine, because we have so many state folks on the call, that many of them have partnered with us, with our Co-op Matching Funds. I'm hopeful that they have. If you haven't, remember, the contact that I put in the slide will take you to the center director for your state office. And start having a conversation with them. But the thing I actually wanted to point out right now is that it's often difficult to get a very sizable match from the USGS when we have these co-op funded projects.

[02:09:02.28] It's not always 50-50. It's oftentimes predominantly state or local funding. But the directed HABs CMF projects really provide substantially more USGS funding for these partner projects. And so if you've worked with us before and you haven't worked with the Congress-directed CMF, you might feel like it's not a great match. But these are nice sized matches from the USGS side, larger than typical.

[02:09:34.97] Great, Sandy. Thanks very much. And we did have one observation come in. "One success to add to Jennifer's presentation is that we DEC staff actually share office and lab space with USGS, which contributes to our collaboration, as well." Thank you for that contribution. OK, well, not seeing any further contributions here.

[02:10:01.94] Sandy and Jennifer, I'd like to really thank you very much for the presentations and responding to the Q&A. Greatly appreciated. So we'll go ahead and move to our wrap up a little bit early. So if we can move to the next slide, and if we can move to the next slide--

[02:10:27.28] So I'd like to introduce Addison Chau. He's with the US EPA, and he'll provide an overview, "Accessing Funding: A Walkthrough of EPA'S Water Finance Clearinghouse." But Addison, I'll turn it over to you for that presentation. Hi, thank you. So again, my name is Addison Chau, and I'm with EPA's Water, Infrastructure, and Resiliency Finance Center. And I'll be sharing about a tool we have-- a tool that you all will hopefully be able to utilize after this-- and that's the Water Finance Clearinghouse.

[02:11:04.26] Next slide, please. And so the Water Finance Clearinghouse-- you'll notice the right image. That's an image of the Clearinghouse. It's a web-based portal. It's ultimately a database that helps folks locate information to assist them in making decisions for drinking water, wastewater, and stormwater infrastructure needs.

[02:11:28.62] And actually, a number of the funds and resources that we saw and heard about earlier today are accessible and able to be found through this clearinghouse. Next slide. So within the Clearinghouse, there are two searchable databases. One of them is a funding database, and so that's funding sources for water infrastructure projects. You'll notice the dollar icon in the center.

[02:11:59.79] And another database is the resources database, and that provides information such as reports, web links, and webinars. And that's the icon on the left that looks like documents. Next slide. So the benefits of the Water Finance Clearinghouse is that it's an all-in-one site. So in regards to searching for funding or searching for resources, rather than going to a variety of different platforms, it's essentially a one-stop shop for these types of needs.

[02:12:32.46] It's updated in real time, and so we'll try to keep the most relevant information there for you. It's searchable. It's modern, and it's user friendly. And it's also focused on high-quality data. So it's not just a hodgepodge of information. It's actually information that we hope is usable and useful for you to use for your needs.

[02:12:57.18] And ultimately, it's also free. It's a free tool that is open to the public and that is available and accessible through our website. Next slide. Now, when you use the Water Finance Clearinghouse, you can use it as it is. But what we recommend is actually creating a new account, as a new user. And you can notice the Create Account option on the top right of the page.

[02:13:29.50] And the reason why this is recommended is, by creating an account, you're able to save your searches, subscribe to emails, and hear updates, and also favorite or bookmark some

funds or resources that you find. As opposed to coming in onto the web page and simply searching and researching and continuing having to look for things that you've already found before, the account is essentially the area you can go to to return to things that you have found, items that you've found prior.

[02:14:04.41] Next slide. So after you click on the Create Account tab, you'll be brought to a page that will instruct you on how to create your account. And there are two types of accounts. There is a general account, and there is a contributor account. Next slide. More than likely, you'll be using the general users account.

[02:14:27.87] And again, that's the account that allows you to favorite and bookmark your resources-- allowing you quick access to those resources and funds-- and allows you to subscribe to receive emails and updates. The contributor account, that allows you to edit and add information to the Clearinghouse, and also remove information from the Clearinghouse, as well. But we can talk about that a little bit later. Next slide.

[02:15:00.72] So again, there is instructions that will walk you through on how to create this account once you click on the Create Account tab. But to create a general users account, you'll select General. Enter your email address, and you'll click Submit. And once we approve you, you will receive an email from the EPA with your login information. Next slide, please.

[02:15:25.22] So there's three main ways to search the Water Finance Clearinghouse, and those are the icons that we see here-- and also that we saw earlier-- the search resources, search funds, and map search. And there's also a banner, a blue banner along the bottom. And that's just a quick search option. That covers popular topics such as storm water, wastewater treatment technologies, or state revolving funds. Next slide, please.

[02:15:54.55] So in the search for funds, you simply click on the icon. Next slide. And this is the page you'll see when you're looking for resources. So you'll notice the gray banner. And when you click on any of the icons on the gray banner, there will be a dropdown that has filters. And so you can further filter your information. So for example, if you click on Sector-- maybe you'll want to filter to focus on agriculture and animal agriculture.

[02:16:24.18] And so you can select as many filters as you want, to narrow down your search. Next slide. And this is the icon for searching for funds, if you click that. Next slide, please. You'll see a similar page, and it works very similarly-- actually, exactly the same as the previous page that we saw. You click on any of the gray icons. There will be a dropdown box that allows you to further narrow down your search, to look for the specific information that you're seeking.

[02:16:56.08] Next slide. And the last way to search is a map search. Next slide, please. And so you'll notice you can-- in the yellow square, you can choose if you're searching for resources or funds. And you can have the different types of-- the scope that you're searching for. You can select national, a region, or tribes. So on and so forth. Or you can hover over a state.

[02:17:23.81] And so in this case, the pointer is hovered over the state of Wyoming. When you click on that state, you'll be brought to either resources or funds specific to that state. Next slide,

please. Now, as far as maintenance goes with the Clearinghouse, again, we mentioned that it's updated and we include high-quality data. So the resources the funds within the Clearinghouse are regularly updated. New entries submitted by the Clearinghouse are approved on a rolling basis.

[02:17:56.21] So again, it's not just a hodgepodge of information, but there is an approval process. And the Clearinghouse contributors are funding entities and programs that provide funding opportunities. Next slide, please. Additionally, within the Water Finance Clearinghouse, you'll find learning modules. And these learning modules provide different information on different financing sources and funding topics.

[02:18:22.41] Some modules we have include a module on SRFs, state revolving funds, or the Water Infrastructure Finance Innovation Act, WIFIA. And so this is getting a little away from HABs, but I do want to emphasize the scope and breadth of information and data that the Clearinghouse provides to its users. Next slide, please. So when using the Clearinghouse, there is also a way to keep in touch with us or stay in touch with us.

[02:18:54.94] So again, when you create an account, you can email us. You can contact us on our main page. You can also subscribe to updates to stay in touch with the EPA's Water Finance Center. Next slide, please. So that is it. Hopefully, you'll be able to utilize this tool. You can find this through a quick web search or EPA.gov/waterfinancecenter. And you can subscribe to our updates from the center or ask us any questions that you have. Thank you.

[02:19:30.80] Addison, thanks very much. Given that we're a few minutes ahead of schedule, is it OK if I invite questions?

[02:19:38.74] Yeah, sure.

[02:19:39.73] OK, great. So let's just pause for a minute, invite any questions from participants. Again, please go ahead and put those into the Q&A, or feel free to raise your hand. And Addison and I will just hold here for a minute to see if anything comes in.

[02:20:18.70] All right, Addison, I'm not seeing anything come in right now. Apparently a very clear presentation, and so thank you very much. Greatly appreciate that. So let's go ahead and we'll move to wrap up. We'll end a few minutes early today. So a couple of things-- first, as you might expect, I'd like to thank the attendees for your participation today. Hopefully, you found this helpful, this background information.

[02:20:49.57] And also, a special thanks to our presenters from the USGS, the Army Corps, and NOAA. Greatly appreciate the effort that went into preparing those presentations, and the question and answer periods, your participation in those. Tomorrow, we'll pick back up, same time, same place.

[02:21:12.40] And featured tomorrow will be USDA funding sources, the United States Department of Agriculture; EPA, federal Environmental Protection Agency funding sources; as well as some additional innovative funding sources. So there'll be three segments tomorrow,

structured in a similar fashion to how we went through our segments today. So without further ado then, we'll get you back about 20 minutes into your day. And I look forward to engaging with all of you tomorrow.