

## **Joint Minutes NADP Fall Meeting 2023**

### Session 1 October 23, 2023, at 09:00 am

Tim Sharac, Network Operations Subcommittee Chair called the meeting to order at 9 am.

Tim made several housekeeping announcements related to the meeting, then everyone introduced themselves.

At 9:10 am Dr. James Schauer, WSLH Director, NADP Principal Investigator gave a welcoming address.

At 9:20 am Richard Tanabe, NADP Program Office, gave an overview of improvements to the NADP Website and daily precipitation availability. Richard explained that they do not have direct control of the website any longer but work with a web developer from DoIT so it takes longer to make changes. The program office put together a list of priorities for web improvements based on the 2022 Program Office review which have been implemented and they think that the website is in much better shape now. The major issues have been resolved – such as generating site reports from individual site pages and improving and testing API calls, but there are a few more issues that they are still working through. One of those issues is improving the data plots generated from the site pages. Richard indicated that these issues will continue to be worked on as time allows.

Richard then discussed the availability of precipitation data through the website specifically addressing a finding from the 2022 Program Office Review. This finding resulted in a motion from the Executive Committee, “The Executive Committee requests that Program Office ensure that the quality assured 15-minute, hourly and daily precipitation depth data be available for download on the new version of the NADP website. The Executive Committee additionally requests that the Program Office make these data available in as timely a manner as possible after completion of quality assurance steps.” Currently, the daily data are available in tabular and graphical format so the program office will have to add functionality for the hourly and 15-minute data. Richard said that they envision adding this functionality to the Network Tab on the website as “Precipitation Network”. This added functionality will help EEMS troubleshoot problems in the field more easily.

The second piece of the work will be to make quality-assured 15-minute and daily precipitation data available for download. The executive committee asked for the functionality to be available within a year. Richard explained that Dana Grabowski typically has the precipitation data quality assured within a couple of weeks of receipt of the data so he did not see this as a difficult request. They will deliver data only, not plots of the data. Richard said a prototype of the new functionality should be available before the 2024 Spring Meeting.

Richard pointed out that for the operator traditionally there were 2 pages on the NADP website that had tabular data and those will no longer be available if they serve only fully quality-assured data. In addition, once the precipitation data are quality-assured the raw data are no

longer available on the website. The raw data will not be available, so for operators that only submit data every couple of months that data will not show as available for some time. Richard then asked the question, “Do we want the raw data to always be available?” Eric Hebert from EEMS indicated that Yes, we always want the raw data to be available. He uses those data to explain to site operators how to avoid specific data problems. Richard said that is something they will need to discuss internally.

Richard then went over the new E-agenda available on the website as a mobile version of the meeting agenda (<https://nadp.slh.wisc.edu/nadp2023/agenda/>). He asked people to use it and give him feedback.

The meeting proceedings: Richard showed a new web version of the meeting proceedings (<https://go.wisc.edu/68jet0>) and said they are planning to do something similar for the Governance Handbook, Committee Annual Reports and other documents. You can also still download these documents and it will provide a flat PDF file.

Questions:

Chris Rogers asked why they cannot serve both the raw and quality assured precipitation data?

Richard Tanabe agreed in principal, but said it would require an internal NADP discussion.

A discussion ensued, Dana Grabowski gave a quick overview of her workflow, she agreed making both raw and QA'd data available would be ideal.

### **Black Carbon Update – Dr. Ross Edwards**

Dr. Ross Edwards, gave an update on the experiments he and David Gay have been doing on Black Carbon at 12 NADP sites. They are looking at weekly carbon concentration and deposition fluxes to examine the temporal variability. He described the methods used which have been very laborious, but they have recently been able to automate the process which has been a game-changer for the analyses. Ross commented that for samples with a lot of nanoparticles, processing the results takes longer than analyzing the samples because there is so much data associated with each sample. They are working to streamline that process. Ross then discussed some of the results and potential sources of Black Carbon.

### **Executive Committee Status on 2023 Priorities Linda Geiser**

Presented by Linda Geiser, Executive Committee Chair

The Executive Committee chose 4 items to work on during the year:

1. Develop guidance for operational and funding issues.
2. Prepare a 12 point plan for a PFAS Network
3. Develop a total N and total P monitoring program
4. Expand monitoring to support Environmental Justice and urban information needs.

They assigned a lead for each activity who then pull together a group of people to work on them.

*Develop guidance for operational and funding issues: Melissa Puchalski*

They developed some guidance for agency leads and other people on the executive committee, lessons learned, thinking through not just funding issues, but also operator issues, land leases, developing documentation from all the different Federal agencies. So that document is available intended to be a living document, it is on a shared drive and available for people to use and update.

*Prepare a 12 point plan for a PFAS Network: Melissa Puchalski*

The PFAS twelve-point network plan was completed and will be presented at the Joint session 2 as well as at the Executive Committee meeting.

*Develop a total N and total P monitoring program*

There was an effort to develop total nitrogen and phosphorous methods for NTN samples. A lot of really good progress was made in terms of the field sampling and analytical methods that's been put on hold until the final details of the method can be worked out, and then the work will resume. The Park Service has pulled together some funding, and EPA is going to put together some funding as well to pick this work back up and move it forward.

*Expand monitoring to support Environmental Justice and urban information needs*

The idea was to expand our network by bringing on more sites in urban areas with analytes of interest to urban areas and at the same time support environmental justice needs and increase the awareness of the network and the use of its data. They had several meetings and followed up with the Fall 2022 speaker, Elena Kraft, from EDF, who had talked about how the city of Houston used citizen science monitoring to collect data that later influenced the city's transportation plan. She talked to them more specifically about some of the things that EDF is doing to provide air quality monitoring and monitoring data and other related environmental data to cities.

One of one of her ideas was that they could include NADP data in tools that are serving urban communities. They looked at 2 tools that EDF is developing: for example developing a climate vulnerability index tool and an air tracker tool that covers specific cities. This seemed like a nice way to expand the use of NADP data. Ellen offered to help include NADP data in those tools.

The other idea they had, which they started drafting with Richard Tanabe's help, was to create a page on the NADP website, which would be a one-stop shop for people in urban areas who are interested in establishing a monitoring network. This is something that will carry-on into next year, identifying some partners that could pilot the idea. Linda said that she would like to set a goal of attracting a couple more cities to our network by bringing on some help, maybe some

interns other folks that would like to volunteer with the NADP community and try to carry this forward into next year.

Questions:

Emmi Felker-Quinn: How is NADP site criteria going to affect urban NADP monitoring? I'm very interested in this because we have so many urban national parks, and it would be great to put these types of sites there.

Answer: Greg Wetherbee

Basically, throw the siting criteria out the window. There is not a lot that you can do in an urban environment. You have to put things on top of buildings because you have vandalism. That's the number one thing. The siting criteria just basically can't really apply. The urban sites are not included on the deposition maps so the urban sites are not subject to the same sighting criteria. The main goal is to choose places with as much open a sky as possible and make sure that it can't be vandalized.

Tim Sharac: If these data were on the NADP map, they could be displayed differently. Using the normal techniques, inverse distance weighted just between site to site and rural areas, just designated differently.

Chris Rogers: The urban sites are currently included on the maps but circled with a little color and not included in the deposition interpolation calculations.

Comment (not sure who): EPA has a network of N-Core sites. They're national core sites. They're mostly in urban areas there are 10 rural sites, Acadia National Park is one of the rural the N-Core sites in Maine. The whole idea is multi-pollutant monitoring locations, so this might be something to coordinate with in terms of outreach.

Tim Sharac: He suggested reaching out to conferences or other groups such as the 2024 Ambient Air Monitoring Conference.

Mark Kuether: We no longer print the maps so that frees up our ability to expand them quite a bit. Maybe down the road we could have a separate urban map that just has the urban sites without the interpolation so they are easier to see by themselves.

David Gay: N-Core has talked to us several times in the past about adding AMON sites at N-core. This all goes back with Nielsen Watkins. I don't know how far they've progressed, if at all, but they've at least been talking about it.

Linda asked that anyone interested in working on the topic reach out to her.

**Session End**

## Joint Session 2 October 24, 2023, at 01:30 pm – 03:15 pm Central Time

Tim Sharac, Network Operations Subcommittee Chair called the meeting to order at 1:30 pm.

### Operator Recognition Award

Kristi Morris presented Jim Renfro with the Operator Recognition Award, Jim has operated several NADP sites at Great Smoky Mountain National Park, he began working in air quality in 1987. Jim is both a dedicated site operator with amazing attention to detail and a strong advocate for clean air and parks. Jim often highlights NADP as a tangible illustration of Nature's interconnectedness and points to the data record as evidence that air quality is improving.

In addition to the NADP field trip in 2022, Jim often hosts elementary school age groups as well as Senators and Congress people at the site and he inspires all who attend with his enthusiasm for science and education. Jim's message of stewardship and love of science will help ensure the protection and enjoyment of the parks for future generations to come. Congratulations, Jim, we appreciate all the great work you do for the network and the National Park Service.

Jim Renfro accepted the award, thanked Kristy, and then spoke about the importance of monitoring in our National Parks.

### Van Bowersox Meritorious Service Award

Kristi Morris then presented Eric Prestbo with the Van Bowersox Meritorious Service Award.

Eric began working with NADP when he was the principal scientist for development at frontier Geosciences., which was the first mercury analytical lab for Mercury Deposition Network. He began working for Tekran in about 2007 Eric worked on instruments, and he was instrumental in navigating differences in opinions between mercury researchers and bringing folks together. An example of that leadership is the initiation of AMNET network. Eric has also done important work on the international scene with Asia Pacific Mercury monitoring network.

His colleagues describe him as creative and persistent in method development, a clear thinker, a straight shooter, a good listener and someone who always genuinely wanted the best for the NADP program. Eric is still contributing in retirement.

Eric thanked everyone for the award, he knew Van Bowersox and so it was very special for him to receive the Van Bowersox Award.

## **Subcommittee Highlights and Motions**

### **MELD (Rick Haeuber/Colleen Flanagan-Pritz/Katherine Ko)**

Colleen Flanagan-Pritz reported out for MELD. They met in the morning with about 50 attendees, some virtual attendees called in from Peru.

David Gay spoke about the NADP Program Office updates, including the new bag sampling for MDN collectors. Winston Luke spoke about Hg dry deposition. Kristi Morris spoke about the 8-point plan for an NADP Passive Mercury monitoring network. Terry Keating and Sandy Stefan gave a Minamata update. Sandy is interested in some NADP level contributions to the EE air team, so contact Terry and Sandy for continued contributions toward that end. David Schmeltz spoke about the integrated Mercury Review. They're making progress on prioritization of sites using multimedia overlay of biota with atmospheric measurements and identifying where the gaps are and where we can better fill in for interpolations.

There was a little bit of talk about litterfall, May Guston has offered to lead a trends paper with David Gay and Emmi Fulker-Quinn.

There were no motions. Rick Heueber is transitioning off of the role of co-chair, David Schmeltz will be stepping up in Rick's absence.

### **TDEP (Amanda Cole/Colleen Baublitz/Ryan Fulgham)**

Presented by Amanda Cole:

Amanda discussed 4 TDEP workgroup updates.

Measurement and Model Fusion work Group – Greg Beachley shared a preliminary analysis of the impact of site discontinuities or closures on the TDEP maps and he said that they expect to need a follow up with the Executive Committee. Perhaps Greg could participate in a future EC meeting to brief them on the needs for continuing that kind of analysis which is really valuable but he just doesn't have the resources to do it.

Measurements Workgroup: Bret Schichtel said that they are planning a workshop for April 29, 2024, the first day of the Spring 2024 NADP meeting. As a result, regular TDEP business will likely occur online before the workshop. They will discuss some new or proposed measurements and how they could be integrated with the TDEP map.

Stakeholder work group: Ian Rumsey briefed everyone on a plan to hold a series of webinars for agricultural stakeholder engagement in the summer. More will be presented at the Spring 2024 meeting.

They had a number of presentations:

Paul McCarr, from Environment Climate Change Canada, updated everyone on the ACME deposition study the multi-model comparison study, highlighting the results over North America for nitrogen and sulfur deposition and the impacts on various critical load exceedances.

Jeff Herrick spoke about the Ozone critical loads work and potential areas where we might be able to advance that work with better deposition or ozone concentration estimates.

Sally Ing gave an overview of the Ascent monitoring network for aerosol composition.

Chris Florian gave an update on atmospheric deposition data at Neon, he was interested in an intercomparison with the NADP NTN sites.

Dean Carpenter and John Walker on air monitoring to support the Albemarle Pamlico National Estuary program.

Kristen Foley at EPA was elected the new TDEP secretary, Amanda Cole and Colleen Baublitz will be the new TDEP co-chairs.

### **CLAD (Kris Novak/Jeremy Ash/Nifer Wilkening)**

Presented by Kris Novak

They had a couple of regulatory updates. Doug Burns provided an update on KSAC input into the NO<sub>x</sub>/SO<sub>x</sub> and PM<sub>2.5</sub> secondary standard and some of the feedback that they provided to EPA on that process. There was also a discussion on the ozone max review, which was restarted this past August and EPA is going to be kicking that off with a science and policy workshop in spring of 2024.

They also had several presentations and sessions on data products and science delivery. Linda Geiser presented on a new online lichen database that's available. Also an application of the database for the Forest Service in their wilderness stewardship reporting and a shiny app that produces a lichen summary report for all wilderness areas in the Forest Service.

Linda Pardo walked them through a critical loads hub working session, which is an online tool that is meant to guide decision makers where they can access information on critical loads and how it can be applied. She thanked Richard Tanabe for all of his efforts and work to develop that website which has been instrumental in keeping the effort moving forward.

Mike Bell, presented on the automated reports, which are a summary of all the critical loads based information for all National Park Service, Fish and Wildlife Service and Forest Service managed units in the country, and summarizing all that information to help engage decision makers and natural resource managers on critical loads in our lands.

Linda Geiser mentioned potential for a communication and outreach action plan workshop. They'll be happening in spring meeting 2024.

The ozone critical levels working group held a session discussing how they might be refining data, sets, approaches and methodologies on estimating critical levels for ozone in comparable ways to what the CLAD has done for nitrogen and sulfur.

One formal motion was approved: The nomination cycle for the incoming secretary is being moved to the spring meeting. They had someone leave the co-chair position and the new secretary came in behind them so to get back on their normal three-year cycle of nomination

and serving out terms, they are moving the nomination and election of a new secretary to the spring meeting.

The CLAD executive team is going to assume responsibility for the time being for serving as EOS representatives. Lastly, they talked about ways of raising the awareness of NADP in general and attendance at conferences, recruit additional members and encourage additional collaboration.

### **AMSC (Andy Johnson/Selma Isil)**

Presented by Andy Johnson

They had approximately 12 members in person attend, and about 16 remotely. Andy emphasized that having the virtual meeting capability is hugely important for AMSC because many of their members don't have a lot of other connections to NADP. They went through a recap of about 7 specific activities with which they have been involved.

A couple highlights: their newly formed data management scheme workgroup that was formed to develop a data format for reporting Aero Allergen data that would be uniform across the NEB and any other States or individuals who might want to share their data. They are trying to come up with a consistent data format. They have a draft fact sheet that Soma has put together and that was shared with the members and invited their feedback on any changes and gave them a deadline of the end of the 2023 calendar year to provide feedback. Then it will be forwarded to their graphics design people.

They had updates from 4 of 6 stakeholder organizations and then talked about the study that they did in 2021 to look at different measuring methods for Aero Allergens and will likely put out a social media announcement about that.

Andy thanked Greg Wetherbee and David Gay and Eric who did the majority of the work to get a paper out on August 9 in the Journal Aerobiologia. That was a significant accomplishment for AMSC.

No motions were made.

### **NOS**

Presented by Tim Sharac

They had quite a number of presentations:

Zac explained a new approach to quality assure data, a new branched approach to make things happen faster.

Dana reported that there's Aerochem collector improvements specifically to the motorbox clutch design as well as additional functionality with the ticket system. Vid had audited a



number of AMNET sites in 2023, including Beltsville, nearly all of the AMNET. There was a new AMNET site started on June 20, 2023 in Mexico City with Rudolfo.

Nicole, for QAAG, reported that she is planning to use an existing PerkinElmer ICP that the metals group owns as a backup. She is also finalizing the internal audit for 2023, and planning an external Program Office audit in 2025, and she talked about using wind rose plot analysis to determine whether collectors are oriented properly. She mentioned for the QA report there was an issue with the AMON hood which has been resolved. She also said they are going to reduce the reusing of AMON bodies from 8 times to 5.

David Gay demonstrated both the current MDN sample train hardware and potential bag sample train that would save substantial money on the sample train equipment and the shipping costs.

Christa showed the results that indicate the PET bottle is equivalent to PETG. This change was approved during COVID because of the supply chain issues. PET bottles are less expensive than PETG so there may be a motion to approve use of PET bottles indefinitely.

Richard demoed significant improvements to the NADP website, including adding photos to site pages such as the EEMS Site survey pictures.

They discussed additional operator training, if there's an appetite for it, that would focus on network-wide difficulties that were observed in the EEMS audit report. The training would highlight consistent issues and ask the site operator to watch Youtube videos and take a simple quiz to see if they understood. The idea is to incentivize and encourage the site operators and recognize their hard work.

Noel Deyette went over the external QA Report and mentioned that the future of the co-located site program is uncertain. Also, there's been expansion of site telemetry, and there's a change in USGS personnel. Noel is taking over Greg Wehterbee's responsibilities, and Doug Burns will train a new USGS NADP Coordinator.

Mike, with the EEMS, showed some improvements in the audit database that they host at EEMS, including some highlighted changes to remove questions that don't apply for a certain methodology or certain sites as well as rephrasing of the survey questions so they are more logical allowing more Yes/No answers.

Melissa Puchalski provided an update on the preliminary feedback from the Scientific Advisory Board with respect to CASTNET monitoring efforts and focus areas.

Kristi Morris mentioned that tightening of Forest Service budgets caused the elimination of 2 SO2 filterpack sites and she anticipates a 5% cut in the next year's budget.

Martin Shafer gave an update on his PFAS work and reported that over 1,200 samples of PFAS were collected and analyzed nationwide across numerous projects.

**Motion:** Noel Deyette was nominated and voted in as NOS Secretary

Approval of the Spring 2023 NOS Minutes

**A motion was brought to the floor by Tim Sharac,** “The NADP shall accept PET bottles/material as a sampling container for MDN. PETG will remain an acceptable material.”

This came about because there were supply chain issues during COVID, PET bottles are significantly less expensive than PETG bottles. There weren't any major drawbacks to this substitute so the lab would like to use PET bottles indefinitely.

Discussion:

Noel Deyette: Are they going to keep track of when the bottles are used? I know they keep track of the lots that are used for these bottles before they make a complete transition.

Answer: NADP keeps track of every lot of bottles that are being used, and the timeframe that it's being used, and that's all incorporated into their LIMs system so all of that information will be available, they would be able to go back, and see which bottle material was used during which timeframe.

Winston Luke seconded the motion and the **motion was approved with no opposition.**

### **EOS (Catherine Collins/Rebecca Dalton)**

Presented by Catherine Collins

They are working on plans for 2024 Air Quality Awareness Week. They had a couple of ideas such as biological species for a theme like trees, lichens and fish subcommittees like TDEP, CLAD and MELD. Air Quality Awareness Week is during the NADP Spring Meeting.

Two new people volunteered to help out with EOS and Air Quality Awareness Week: Noel Deyette and Mike McHale.

They discussed social media, and we will be better about sending some reminders so that everybody can get their social media posts in on time.

An idea was presented to create an NADP presentation slide deck for people, so if folks are going to conferences and meetings they don't have to create their own.

They have 1 or 2 fact sheets that are in progress. They are going to put together a bundle of fact sheets that can be shared with managers and used for outreach. The governance document is going to be updated to a more friendly way to keep it up-to-date in HTML.

They are also going to work on developing a list of universities and colleges with atmospheric science, so that they can do some outreach with them. Lastly, EOS has a panel of judges that will be reviewing the posters and papers at this science symposium.

They approved their NADP spring meeting minutes by online survey last July.

They had one motion: Emmi Falker-Quinn was elected as the new EOS secretary.

### **DMAG (Mark Kuether/Zac Najacht)**

Presented by Mark Kuether

DMAG reviewed some of the data review improvements that they have been going through, such as:

Zac's serial to parallel workflow for data quality assurance.

Reviewing how they review samples, that some of the best and some of the worst samples don't need additional review from another set of human eyes.

They had help from Association of Public Health Laboratories (APHL) interns during the summer they were a great help to the team overall, and with their help the data review team was able to make a good amount of progress into the 2023 data year.

They brought on an APHL fellow for January 2024, they are hoping that she can be a fresh set of eyes on their whole process.

They've been working with their web developers to correct some of the errors with APIs and downloads and they will be creating a precipitation network page. That work will start in about February 2024 with a possible prototype in the spring and the developer said that they will be fitting in other corrections as they're able to with their own schedule. That will include precipitation chart corrections and some small updates to the web forms.

The elimination of printing a final report frees staff to do some new things with the charts. This year, in the final report, they included potassium charts because of forest fires they are looking at potassium closer. They have also broken the AMON quarterly charts into sections, so they are easier to read.

They are going to be back filling some of the grids and rasters from 2021 that aren't currently on the web. They are building rasters for the NH4 2016 and 2017 data in response to errors that were discovered last year so that raster data will be available to review; the old copy and the new copy will both be available on the web page.

They are working to find ways to reformat the AMON quarterly charts because right now the size of the symbol can be very small and difficult to read. The feedback they have received is that people generally liked the geographic reference of the current chart, but they agreed that it was sometimes difficult to read the concentrations in the quarterly pie charts, so they are thinking of possibly making it more dynamic and breaking the quarters out into bar charts. Mark showed a couple example slides.

Another possibility would be to normalize the chart, so it's all 100 which gives a good view of the quarters. The weakness is that the bars in the middle are difficult to read.

The last possibility would be to group them. The grouping gives a better visibility and can be normalized. The weakness with the groups is that you cannot include all of the sites.

Mark asked people to take a look and get back to him with suggestions or to let him know what they prefer.

There were no motions.

### **QAAG (Martin Shafer/Nicole Miller)**

Presented by Nicole Miller

The lab is planning to purchase a new flow injection instrument because the company will not service theirs after 2025. They talked about using wind rose plots to see if reorienting collectors at a few sites would be useful.

They are working on getting TN/TP up and running in the lab. They also finalized the MDN data, for 2022 with the bottle contamination issue for which about 30% of samples were affected, but it did not affect their mapping criteria. The maps look great, thanks to Mark K.

No motions out of QAAG

### **TDEP Measurement Workgroup Workshop Spring 2024 (Bret Schichtel/Kristi Morris)**

Presented by: Bret Schichtel

The TDEP measurement workshop is planned for April 29, 2024, the agenda will be out by January.

Measurement Subcommittee Work group: One of the things that they are doing, which is at least partially, if not fully funded, is taking a more detailed look at the snippet samplers to better understand their uncertainties and potential biases, to measure total nitrogen and total phosphorus.

They are becoming much more interested in total phosphorus because of hazardous algal blooms that that we're starting to see in high Alpine lake systems, not in National Parks, but in similar settings. It's something they want to be able to get ahead of and the snippet sampler will hopefully allow them to do that.

Question – Greg Wetherbee: We're trying to figure out what we're going to do with the co-located program. Maybe we could put some snippets out at our co-located sites. We will need to talk about it. Can you maybe explain why you're running samples at Colorado State University and Wisconsin? Is there going to be an interlaboratory comparison?

Bret: Yes there will be an interlaboratory comparison that's a key component to nail down. We planning to put out 4 samplers, 2 will be analyzed at Wisconsin and 2 will be analyzed at CSU, and that should give us the ability to be able to look at the precision within labs and then across labs.

### **Nomination of NADP Secretary**

John Walker

John explained how the nomination process works: the chair of the executive committee appoints a nominating committee, and that consists of the past chair and 2 other people that have knowledge of the NADP program, and in this case it was Tim Sharac and Chris Rogers.

They got together and had a discussion, and after some consideration, the committee nominated Catherine Collins. Catherine has been involved with EOS for many years and also judging and the student presentations and posters, and generally just her enthusiasm for engaging students in the in the NADP Symposium as part of her interest in outreach.

Catherine works in the Air and Water Quality Resources branch at the Fish and Wildlife Service. Her day-to-day duties are all relevant to the NADP program, reviewing the air quality portion of NEPA actions with emphasis on oil and gas activities in the West, review of major source prevention of significant deterioration permits for industrial sources near class one wildlife refuges and review of State regional haze program state implementation plans.

There was a call for other nominations from the floor, there were none.

John Walker made a motion to nominate Catherine Collins as the incoming secretary of the Executive Committee.

There was a second, but it was not clear from whom, it sounded like Melissa Puchalski

John asked for any discussion, there was none. He called for a vote.

All were in favor, none opposed, the motion passed.

### **Spring Meeting 2024 (Mike McHale)**

Mike McHale announced that the Spring Meeting would be held in Madison, WI which saves the program a great deal of money. He also promised good weather for the meeting.

### **New Initiatives Update**

*PFAS 12-Point Plan (Melissa Puchalski)*

Melissa said that after all of the work Martin Shafer has done on developing a PFAS lab method and piloting NADP PFAS data collection they are ready to propose this as an initiative to move

forward as a new NADP network. They developed a committee of advocates from many of the State agencies that have already participated and are currently participating in the pilot program and other Federal agencies. John Offenberg, EPA ORD, has also been instrumental in the pilot as has the lab.

The goals of this initiative:

- Offer a robust method and data product that can be used to improve estimates of PFAS loadings to terrestrial and aquatic ecosystems.
- Assess temporal trends and spatial distribution of PFAS concentrations in precipitation.
- Evaluate and validate chemical transport models.
- Advance our understanding of PFASs transformations in the atmosphere.
- Determine if precipitation-sourced PFAS have “fingerprints” that may enable source-apportionment of atmospherically processed PFAS.
- Characterize regional PFAS anthropogenic background concentrations to assess source emissions that have become well mixed.
- Evaluate the atmospheric contribution of PFAS contamination to land surface water and drinking water sources.
- Assess changes in atmospheric chemical composition due to PFAS emission reductions.
- Monitor, global and regional PFAS, atmospheric pools and the influence of PFAS use mitigation strategies.

#### The Pilot Network

In 2018, the lab collaborated with Federal and State agencies to develop a method for reporting concentrations of more than 30 PFAS compounds. These are using the excess samples from the NTN collections. There was an effort funded by EPA ORD to look at precision of these measurements at the Duke Forest site. There were 3 collectors in the grass field there and typically the standard deviation was less than 10% for each of the analytes.

There have been over 200 quality assurance samples collected, including the quarterly field and trip blanks and the field analyte spikes. The bag sampling has been tested now and shows no contamination issues so there is no need to change the field sampling, the operator just needs to handle the QA samples and wear a Tyvek jacket. The methanol rinse can now be performed in the laboratory. At the start of the pilot, the methanol rinse was being done by the operator and is now performed in the lab if it is required.

The pilot network has resulted in nearly 22,000 observations, which is the largest database of PFAS levels in precipitation in the world and the external data quality audits are now complete for 2020 through 2021, and in progress for the 2022 data set, which is a critical step for EPA to release the data.

Melissa showed a map of the pilot sites.

They are hoping that this benefits the NADP program by providing a way to expand the NTN network potentially into urban areas and Environmental Justice communities.

They are encouraging that sites continue to measure or fund the regular NTN site, as well as well as other emerging contaminants like PFAS and black carbon.

There has already been a lot of interest in this effort and they are hoping that this continues to expand. As this network becomes more official, they are hoping to interest small or rural municipalities that that manage their own drinking water sources, urban communities looking at surface water contamination, Tribes, the agricultural sector as well as the Department of Defense.

The unique thing about this effort is that the NTN site sponsors are not required to fund the PFAS add-on. There has been quite a mix in the way the sites have been funded, for example CAMD may be funding the NTN suite of measurements and ORD or one of the state agencies funds the PFAS add-on so there can be many combinations of how these sites are funded.

The lab has developed the foundation for future PFAS in air potentially using PFAS passive samplers.

Melissa then showed an organizational chart of how the new network would look under the NADP structure where all PFAS activities would be overseen by a PFAS laboratory director to whom the PFAS chemists and data reviewers would report.

The process: The PFAS supplies are shipped to the sites every three months (the jacket, the lid and the liner). Once the samples are received, the first 150 milliliters is sent to the lab for the routine NTN analysis and then the remaining sample is sent to the PFAS laboratory. If the sample does not contain 250 milliliters the sample is held within the laboratory.

The PFAS lab handles entering the metadata, doing the analysis and the staff within the PFAS lab does the QA. So then the concentrations are extracted, using some queries that have been developed to make this more of a routine process. This is the part where things will hopefully start to be more streamlined. The concentrations will be reported to the program office and then they are proposing to have preliminary results sent to site sponsors and the data be posted to the web only after final lab and precipitation data are final. Preliminary data will not be made publicly available because of the sensitivity of the PFAS measurements.

They are proposing a transition phase of one year. They expect that the sites that are already operating will continue through this transition phase. They are hoping that this one-year transition will allow the program office to further develop their data reporting procedures. They are planning for the data turnaround to be about 180 days after the calendar quarter which mimics what EPA has required states and other agencies to do with regulatory data.

The data will be integrated into the annual reports, data handling protocols will be developed for sites that don't meet the NTN siting criteria, for example urban locations. There are

numerous publications already in process which will be critical for making this an official network. She then mentioned some of the publications.

**Melissa then introduced a motion:** Establish a PFAS NTN subnetwork as a provisional or transitional network for one year. Starting January 1, 2024. During the transition period the advocates will work with existing and potential new site sponsors to expand the current pilot network. The program office and the laboratory will continue to develop the SOPs, streamline the data management and reporting functions, and develop a web page for the PFAS concentration and flux data.

Melissa then presented several name options for the new network (the advocates prefer PFN, “puffin”):

- PFAS Atmospheric Deposition of Wet Anions Network (PADAWAN)
- PFAS Atmospheric Deposition Network (PADN)
- Bunch of Fluorine Network (BFN)
- PFAS Network (PFN, puffin”)
- PFAS Rain Network
- PFASNET

Discussion:

Greg Wetherbee: Greg expressed concerns about the way the network was being presented, specifically that the 12-point plan had only been submitted a week before and had not been discussed in Executive Committee. He expressed support for the network but was concerned about the way it was being executed and felt that protocol was not being followed.

Kristi Morris said that she was looking at the process in the governance handbook and said a new network is presented to the Executive Committee and if approved, then the QA documents are submitted to QAAG. She thought the part Greg was talking about came after approval by the Executive Committee. She clarified that what she was reading was from the 2020 guidelines.

Melissa: My understanding is that we will present this in Joint and then also present it to the Executive Committee and discuss and the Executive Committee will decide whether this moves forward as a transitional network for one year.

Chris Rogers: The last network that was approved was for mercury litterfall and I think this follows very closely with that it had already been developed and in place we did a plan that was approved as a provisional network and then the major decision came when it was approved as a network; that is not what we're doing right now, this is just approval of the plan to pass it to the executive committee. This is just reviewing the plan that the advocates have put together and approving that and then it becomes a transitional network and we can kill it if it doesn't work.

There was a call for a second for the motion and Greg Wetherbee provided that second.



## **Second: Greg Wetherbee seconded the motion**

Further discussion:

Chris Rogers: My main question, directed at Martin but also to all of the advocates, is how are you going to scale up if this moves forward? Yesterday you said you were at capacity in the lab.

The second question is from a money perspective right now there's like a sample handling charge and a per analysis charge. Is there consideration that there would be eventually some type of charge to be a part of the network to cover all of the stuff that's being mentioned: websites, data analysis, data reporting and all of that type of stuff. Has that been considered or is it all going to be covered in an analysis cost?

Melissa: We can answer the second part right now. The budget is for a \$2,500 fee per site for the program office right now.

Martin: I think part of the transition period would be surveying the sites, trying to get a good sense of the interest of how many sites would be interested. How many samples it would likely generate; the whole process is scalable so we can put things in place to reasonably handle the additional sample load so I'm not sure that that's a big problem. But I think it would certainly behoove us to make a large effort to define the interest over that transition period.

David Gay: I would just add as part of the pilot network the program office would go through all the money, analytical side, and a program office charge and come up with better estimates of the costs.

Melissa: I do have the budget laid out for the executive committee I just did not present it here.

Greg Wetherbee: What's the analytical fee?

Melissa: about \$18,000 per year

Greg Wetherbee: Will you require the program to be self-supporting? Your customers will put up the \$18,000, we're not going to subsidize it with NTN funds?

No clear answer was given to this question.

Greg Wetherbee: You said that this might expand the NTN network, does that mean that all PFAS sites are going to be required to be NTN sites, and will they be assessed a separate NTN fee?

Melissa said that they are strongly encouraging NTN and PFAS sampling to be done in conjunction and that so far there is only one site that is PFAS only.

Greg Wetherbee: Who are the customers? That is part of the twelve-point plan, you have to identify your customers that you anticipate will sign up for the network. Is it just EPA and the first nations?

John Offenberg: Maine, New Jersey, New York, possibly Minnesota, possibly North Carolina, possibly Michigan.

Greg was satisfied that there was an identified customer base.

David Schmeltz: I have a question about data, and you alluded to the sensitivities of the data, and I know when this initiative was launched a couple years ago there was a lot of discussion about data sharing agreements and sensitivities with releasing data from all the participants that are involved in the network. Is there general agreement about what and when data should be released or is this going to be decided after this initiative is formalized?

John Offenberg: In my personal opinion, this process will get the data out from under the EPA ORD umbrella on data, because they have a very tight clearance, registration, and QA process for PFAS and getting clear of that umbrella would be a major step forward both for our agency for other Federal agencies and States. In addition, there is a tribal question in here that I don't know how to navigate, whose data is it and how are those data released? But I don't think that's the first order question.

David Schemltz: I think it would be important to get all the site operators and sponsors together and have a data workshop to iron out these issues. So maybe we think about that as a future step.

Melissa: We did have a call with advocates and agree on the 180 days release on final data only. And I feel like there was consensus on that, but certainly an area where we can do some more work just to stay out of trouble.

Melissa asked if there was any more discussion

And then called the vote, all were in favor none opposed

### **The motion passed**

#### *Passive Hg 12-Point Plan (Kristi Morris)*

Kristi Morris presented an initiative for a passive mercury monitoring network.

Kristi and others have been working on a passive mercury network that eventually they would like to see this as a new initiative for NADP. They are not ready to move forward yet and they were not asking for a vote on this issue, this was a progress update. They were looking for input from the NADP community. She showed the 2020 NADP guidance on the process for introducing a new initiative and showed that the process results in an 8-point plan rather than a 12-point plan. She suggested that this documentation might need to be updated to include a path for a pilot network and a separate path for an official network to avoid confusion.

Review: The purpose of a passive Hg network is to provide low-cost, dry deposition component to the NADP portfolio. The mercury measurement evaluation team was formed in 2021 and

they looked at a bunch of different methods, favorably reviewed the MerPAS collector as network ready. There was a motion that came out of the budget committee that directed the program office to investigate initiating a passive mercury plan in order to give some economic sustainability to the mercury programs within NADP. That motion then passed up to the executive committee.

The executive committee then made their own motion that the mercury measurement evaluation team look into some foundational components of this concept by doing some laboratory inter-comparisons and looking for site sponsors for passive mercury measurements.

The first ad hoc committee involved Mark Olson, David Schmeltz, Winston Luke and Kristi Morris, they are working to draft an eight-point plan. This is their presentation to the NADP subcommittees. They are looking for input as well as other people to join their committee.

The objectives of the network:

- Provide a low-cost monitoring option for gaseous mercury that will allow for new partnerships with tribes states and international and environmental justice communities.
- Assess long-term status and trends of ambient, gaseous mercury concentrations.
- Fill gaps to improve spatial resolution of gaseous mercury, particularly in the West and internationally.
- Potentially contribute to better estimates of dry deposition which, together with wet deposition, will result in improved assessments total mercury inputs to ecosystems.
- Help develop and validate atmospheric models.
- Assess changes in atmospheric mercury in response to mercury emissions reductions.
- Inform the effectiveness evaluation of the Minamata Convention.
- Provide global consistency in methods to allow improved data comparisons.

Justification for this network

There are several publications about the technologies involved and shown to be accurate and repeatable, it supports the NADP mission by providing a cost-effective and easily operated network to complement, not replace, the current NADP networks, MDN, AMNET and Mercury Litterfall Network.

The network would support the Minamata Convention. It would be great for NADP to become a global Mercury monitoring network and any pilot program that we develop will build on the Environment Canada climate change global pilot network that is currently going on.

This effort supports impacted communities and will allow for the expansion and measurement capability and data collection to more communities due to low cost and ease of operations.

The network would use the MerPAS sampler developed by University of Toronto and now available through Tekran instruments.

The goal is to have a one-month duration sample. They are currently testing to see if that is feasible. These will be duplicates and include a travel blank.

Sampling locations will target co-location with current AMNET, MDN and CASTNET sites as well as tribal sites in the Western US.

They are planning 2 phases (1) Purchase MerPAS samplers directly Tekran (2) Build the passive samplers in-house by NADP.

Laboratory operations: The sample analysis is following the Environment Climate Change Canada protocol for direct thermal decomposition.

Kristi went over the data that would be included on the website including dry deposition and dry deposition flux. They envision that MELD will facilitate a group of modelers to decide how to do that and make sure that it's scientifically viable. They envision data being delivered on the NADP website.

Phase 1: There has been a methods intercomparison at Beltsville that Winston has run looking at MerPAS from Tekran, the Tekran speciated mercury, and the dual channel and the Canadian passive samplers that run quarterly. There has also been an evaluation of 1, 2, and 3-month samples at Eagle Heights. There is concern as to whether one month is long enough to get the amount of mercury needed for analysis. NADP has begun building passive mercury samplers in-house.

Phase 2: Phase 2 is looking to start either the end of 2023, or the beginning of 2024, and that will consist of adding the in-house built passive samplers to this inter-comparison at Beltsville and there will also be a lab verification with NADP, Tekran and Canadian laboratories.

There should be minimal additional time for site operators and they are still working out how much lab time this will take, their best guess, for a small network, is multiple days. There will also be some data management program office duties for compiling the data and getting it up to the website.

Cost

~\$3,600 per site if using the Tekran MerPAS

~\$1,800 if using in-house built samplers

Available funding: They have nothing confirmed yet but think that there are potentially multiple clients for this network and they believe the network will be self-supporting.

Next Steps: They would like to initiate a pilot network in 2024 if seed money can be found and they will continue to evaluate the NADP MerPAS and the NADP in-house mercury passive samplers. They will continue to develop the written 8-point plan, add some additional advocates, refine the QA/QC, including establishing a data quality objective for detecting trends in mercury concentrations, and refine the budget.

They need a name for the network. The goal is to approve an official NADP network in 2024.

Questions:

Greg Wetherbee expressed concern about the additional load on the lab since they are already not meeting 90-day turnaround. He asked about staffing for these additional activities, including the PFAS pilot network.

Answer: This is a real concern

Zac: I think the PFAS and the passive mercury are both great plans going forward. I think it's something NADP should focus on. I do think we need to consider the current software and development issues we have within NADP on the front-end especially. They only have 1 developer for the whole program. If development will be required to be consistent with the other networks, there will be significant development time.

David Gay: A point of clarification the majority of the data review occurs in the laboratory and comes out of the analytical charge and he does not see that changing.

Chris Rogers: These data will never go into the NADP LIMS correct? He asked whether there were ways to reuse sampler parts or other strategies for making it more cost effective.

Kristi said that they will do everything possible to learn from previous work such as the AMNET sites.

Martin Shaffer: All of PFAS data is currently reported out through the Horizon LIMs system and we have robust queries to report the data.

Greg Wetherbee: Greg asked whether the University of Wisconsin could contribute to development of the systems needed for these networks and get paid back later?

Jamie Shauer said they cannot do that, but that the university is making changes across the board with the new Horizon LIMs system that will definitely help.

**That was the end of the discussion.**

**The meeting was adjourned.**