

**Joint Committee Meeting Minutes
2020 NADP Virtual Spring Meeting
May 11-14, 2020**

NOS Chair: Melissa Puchalski (USEPA)
NOS Vice Chair: Winston Luke (NOAA)
NOS Secretary: Ryan McCammon (BLM)

**Joint Subcommittee Meeting Agenda
2020 NADP Virtual Spring Business Meeting**

Motions Passed:

Motion to approve the minutes from Fall 2019 Joint Subcommittee Meeting. Richard Tanabe moved, Winston Luke second. Motion passed by virtual polling

Motion: Beginning with the 2020 season, change the number of collectors deployed for sampling in the Mercury Litterfall network from 8 to 4. Moved by Mark Olson, second by Winston Luke. Motion passed.

Action Items:

MELD

Provide comments on USG background papers – air, modeling, biota, multi-media – in the context of the Minamata framework, requested by June 1.

Documents to be (re-)circulated within the next week, alongside framework. More input requested from the MELD community after the annotated monitoring guidelines are provided in 2nd wave of preparation for COP4

Form measurement (and modeling) workgroup – to include planning for future webinars/in person workshop to facilitate evaluation of additional Hg measurements to be made by NADP.

Explore directions and options for estimating deposition at certain paired dragonfly sites, in order to link deposition with ecological receptors. Also explore creating paired sites for the future.

Plan for in-person or virtual Fall 2020 meeting.

Introduce a motion at Executive Committee Meeting to move from ad hoc to permanent science committee status.

QAAG

Action Item for Fall: Wait until the fall to see what is going on with COVID-19 to plan for the CAL/HAL and PO reviews.

Action Items (Continued):

Network Operations/Viability

Discussions of network viability in the wake of anticipated funding cuts and options moving forward will start in the August Budget Committee meeting and will continue in the Fall 2020 meeting.

Mark Olson, Chris Worley, David Gay will analyze the operational costs of networks before the August 2020 BC meeting, to better reflect the true cost of each network.

Sample Archive

The PO will examine the NADP contract to determine whether maintaining the 5-year sample archive is obligatory, and will analyze the number of archive sample requests and the number of samples discarded, in an attempt to optimize the utility of and storage costs associated with the archive.

May 13th 11:00-1:30 EDT

Agenda

1. Welcome, Logistics, Introductions (Melissa Puchalski) 11:00 – 11:20AM
2. WSLH Welcome Address (Jamie Schauer) 11:20 – 11:30AM
3. Approval of Fall Minutes (Melissa Puchalski) 11:30 - 11:35AM
4. Introduction to new Program Coordinator (David Gay) 11:35 – 11:45PM
5. State of the NADP (Mark Olson) 11:45 -12:15PM
6. Impact on Program from COVID-19 (Richard Tanabe) 12:15-12:45PM
7. Discussion on Program Recovery after COVID-19 (Greg Wetherbee) 12:45-1:15PM
8. HAL Update (Mark Olson) 1:15 – 1:25PM
9. Subcommittee Logistics (Melissa Puchalski) 1:25-1:30PM

1. Welcome, Logistics, Introductions (Melissa Puchalski, EPA)

- Melissa opened the virtual meeting by highlighting the meeting logistics and online etiquette protocols for the virtual meeting, and shared call-in numbers and the Zoom meeting ID
 - Requested that subcommittee reports be brief given the compressed time schedule
 - Melissa thanked the WSLH for maintaining the supply chain and sample processing activities during the COVID-19 pandemic and praised the dedication of site operators in keeping the networks up and running.

2. WSLH Welcome Address (Jamie Schauer, NADP Program Office)

- Dr. Schauer is the Principal Investigator of NADP
 - As WSLH is a focal testing point for COVID-19 in WI, Jamie's time has largely been spent addressing the lab's testing capabilities and the safe operation of the laboratory.
 - WSLH has been declared essential and remains open
 - It has been challenging to adapt but the WSLH remains efficient and adaptive
 - Operation of the WSLH - 2/3 of duties are in the lab, 1/3 by telecommuting
 - Jamie welcomed the participants to a productive meeting

3. Approval of Fall Minutes (Melissa Puchalski)

- **Motion to Approve the minutes from Fall 2019 Joint Subcommittee Meeting. Richard Tanabe moved, Winston Luke second. Motion passed by virtual polling**

4. Introduction to new Program Coordinator (David Gay, NADP Program Office)

- Dr. David Gay introduced himself to the NADP community.
 - David served as previous Program Coordinator from Late 2007-through 2018 when the Program Office was at the University of Illinois
 - New PC as of March 30, 2020
 - David has an Air Quality background, but is officially a climatologist
 - Primary role will be outreach to the broader community with the goal of ensuring the growth of the networks and coordination among various program components
 - Other duties TBD as they arise.
 - David has Open door policy – he encourages contact as issues arise

5. State of the NADP (Mark Olson NADP Program Office)

- New Coordinator
 - Two-month National search
 - Eight applicants
 - Three were interviewed and gave presentations at UW
 - Dr. David Gay was the most experienced candidate and was selected as the new NADP Coordinator
 - Specialty in budgets and outreach
- Team NADP
 - Several Managers, PO, CAL, HAL, Data, all operate as one team – no divisions
 - Managers are without egos and strive for the common goal => NADP
 - Managers are willing to mop the floors, help where needed
 - Trickle down to staff, everyone works as a team
 - Our staff is awesome
 - We are close, monthly non-meetings, outdoor fun, we are family
- Organizational chart of Program Office and WSLH
 - Leadership: Jamie Schauer, David Gay, David Webb (Dir. of Env. Health Div. at WSLH)
 - Independent QA Systems Specialist (Martin Shafer)
 - Database Administrator – NADP Sample & Data Processing Manager (Amy Mager)
 - Administrative Program Specialist (Camille Danielson)
 - Associate Chemists (James Sustachek, Erin Pierce, 2 vacant positions)
 - Network Specialists (Zac Najacht, Dana Grabowski)
 - Laboratory Manager III – NADP CAL Supervisor (Chris Worley)
 - Senior Chemist (Katie Blaydes)
 - Chemists (Nichole Davis, Jesse Wouters, Marie Assem)
 - Laboratory Manager III – NADP Program Office & HAL Manager (Mark Olson)
 - Program Office:
 - Associate Information Processing Consultant (Bob Larson)
 - Associate Scientist (vacant)
 - Associate Database Administrator (vacant)
 - Environmental Program Associate (Colin Kelly)
 - HAL Manager:
 - Trace Elements Clean Lab Supervisor/Sr. Scientist (Christa Dahman)
 - Chemist (Kristin Widmayer)
 - Overall NADP support (2 students)
- Last 12-month hires

- 5/2019 - Mark Olson PO (originally a non-competitive hire from the old PO, limited to 2 year term, now permanent)
- 6/2019 - Erin Pierce HAL
- 8/2019 - Colin Kelly NED
- 8/2019 - Dana Grabowski HAL/PO
- 9/2019 - Christa Dahman TECL
- 9/2019 - Jimmy Sustachek CAL
- 12/2019 - Bob Larson PO (originally a non-competitive hire from the old PO, now permanent)
- 4/2020 - David Gay PO
- 4/2020 - Nichole Davis promoted to CAL Chemist
- 4/2020 - Kirsten Widmayer promoted to HAL Chemist
- Vacancies for Associate Chemists, Site Liaison and Students delayed due to COVID-positions currently filled internally with existing WSLH staff.
- NADP Personnel Percent Distribution
 - About 21.5 FTE's
 - Equivalent to PO+CAL at ISWS, without the HAL
 - Lean and efficient, improved communication among the components
 - Almost every employee devotes part of his/her work load to the CAL, HAL, and PO to varying degrees
- NADP Moving Forward at the WSLH
 - First year (2018) – Move Program Office then Central Analytical Lab to UW
 - Second year (2019) – Move HAL from EFGS to UW, develop HAL LIMS
 - Third year (2020) – Focus on data products and the Web site
 - Website will be managed by webmasters at UW DoIT center
 - LIMS will be managed by internal WSLH IT
 - Program Office will focus on Web content, data posting, Network improvements
 - Strategic Planning, keeping NADP viable for the next 40 years
- Web Site
 - UW DoIT has been contacted and are willing to update Web site to WordPress and make it mobile friendly
 - Delayed due to focus toward on-line learning in response to COVID-19
 - Work will be done on a reasonable hourly rate (~ \$60/hr)
 - DoIT has specific groups that handle scientific sites
 - The Program Office will work directly with WSLH IT and UW DoIT
- Lab Information Management Systems (LIMS)
 - University of Illinois (UI) CAL developed LIMS systems for the PO and CAL
 - The WSLH continues to use the UI LIMS
 - WSLH developed a LIMS for the HAL, mirrors CAL LIMS
 - HAL LIMS included improvements in data validation and precip review
 - WSLH IT employs Casey Lanham fulltime to manage NADP LIMS
- Data Review and Posting
 - Laboratory data reporting to the PO and clients is about 110 - 120 days for NTN/AMoN; longer for MDN due to start up
 - Working to reduce reporting time for all networks, goal is 90 days
 - Evaluating ways to streamline process and reduce turnaround time
 - Several bumps in the road – HAL transition, Government shutdown, COVID

- Being proactive with COVID-19 and future eventualities
 - Distributed survey to sites
 - Alternative shipping address' to keep samples flowing
 - Return shipping problems – WSLH supplied labels for return
- Network Site Activity 2019
 - NTN began 2019 with 259 sites
 - Lost 5 sites (CO11, CO87, KY99, NC17, PA90)
 - Gained 5 sites (AB34, AB36, TN00, WI06, WV99)
 - 259 sites total at the end of 2019
 - MDN began 2019 with 92 sites
 - Lost 9 sites (AK98, NC17, OK05, OK97, PA00, PA13, PA42, PA90, WA18)
 - Added 1 site (WI06)
 - 84 sites total remained at the end of 2019 (down 9%)
 - AMoN began 2019 with 103 sites
 - Added 4 sites (AB35, WI06, WI94, WY92)
 - 107 sites total at the end of 2019 (up 4%)
 - AIRMoN Closed 9/2019
 - AMNet began 2019 with 18 sites
 - Lost 5 sites (IL11, IN34, MA22, NS01, WI07)
 - 13 sites remained at the end of 2019 (down 38%)
- Network Site Activity 2020 to date
 - NTN began 2020 with 259 sites
 - Lost 2 sites (SK21, SK30)
 - Added 2 sites (CO83, NC30)
 - 259 sites total to date (steady)
 - MDN began 2020 with 84 sites
 - Added 1 site (PA13)
 - 85 sites total remain to date (+1%)
 - AMoN began 2020 with 107 sites
 - Added 1 site (MDXX)
 - 108 sites total remain to date (+ 1%)
 - AMNet began 2020 with 13 sites
 - No change in number of sites thus far (steady)
 - 13 sites remain to date
- Sites in Jeopardy
 - NTN, AMoN – none
 - AMNet – MS12 (NOAA)
 - David Gay will resume compilation of Quarterly Sites in Jeopardy in the future.
- HAL and MDN Transfer to WSLH
 - The HAL transfer was completed on June 1, 2019
 - Gained several efficiencies (will be reported further in the HAL update)
 - Transfer date moved from up October to June, 2019
 - WSLH developed an accelerated Readiness Validation Plan
 - WSLH purchased new instrumentation
 - Hired Trace Element Clean Lab Supervisor, Christa Dahman
 - Promoted Kirsten Widmayer to HAL Chemist
 - Developed HAL LIMS

- Acid Rain 2020 Update
 - Meeting postponed – tentative date now March 2022
 - Co conveners in Japan are Dr. Nobu Ohtu, Biosphere Informatics Lab., Dept. of Social Informatics, Kyoto University and Dr. Hiroyuki Sase, Ecological Impact Research Dept., Asia Center for Air Pollution Res. (ACAP), Network Center for the EANET
- Funding Contracts
 - SAES/NRSP agreement
 - FY2019 is the first Year of our NIFA Agreement (5 years, operating Sept 1- Aug 31).
 - Second year, FY2020 signed this week, through Aug 2021
 - SAES (FY17 to FY22?)
- Preparing for the Future
 - Need to be prepared for reduced revenues from States and Federal partners
 - Need to seek improvements in efficiency (discussions in NOS)
 - Streamline process to approve emerging chemicals
- Jack Beach, founder of NCON collectors, turned 90 on May 9, and is in now in the hospital

Discussion:

Doug Burns commented (via chat) that USGS also brought the PA13 NTN site back into operation in 2020. Richard Tanabe responded that PA13 NTN never stopped, funding changed in 2020.

Cari Furiness asked about sharing of the presentations – Melissa pointed her to the NADP Spring 2020 Agenda website. Presentations can be downloaded, the password is nadp2020.

Melissa asked Mark Olson/David Gay to elaborate on the Strategic Plan with regards to streamlining the approval process for emerging pollutants. David responded that a summary of the proposed initiatives is being prepared for Exec this week and will discuss the specifics of implementation. He expects that Exec will review the initiatives and provide guidance accordingly.

Mary Lynam asked if there is intention to investigate PFAS in precipitation. Mark Olson responded that the WSLH is currently verifying the potential of NTN to collect PFAS species. A pilot study is being conducted in Wisconsin. Martin Shafer will address this on Thursday in Joint.

6. Impact on Program from COVID-19 (Richard Tanabe, NADP Program Office)

- Timeline of Pandemic Response
 - 3/10 –NADP Management met with Exec/federal partners to discuss the Spring Meeting and how to proceed. Decision was made to host it as a virtual meeting.
 - 3/11 –WHO declares COVID-19 a pandemic
 - 3/12 –First 1-800 call re: Guidance on COVID-19
 - 3/13 –NADP Management developed plan of action to respond to COVID-19
 - 3/16 –Initial email sent to Operators/Site Supervisors via listservs
 - 3/23 –Email sent to NTN, MDN, AMoN, Tech listservs
 - 3/25 –Update summary provided to Exec/federal partners
 - 3/30 –Email sent to NTN, MDN, AMoN, Tech listservs
 - 4/2 –Update summary provided to Exec/federal partner
 - 4/13 –Email sent to NTN, MDN, AMoN, Tech listservs
 - 4/16 –Update summary provided to Exec/federal partners

- 4/22 –Update summary provided to Exec/federal partners on Zoom (test call for spring meeting capabilities)
- 4/28 –Reached out to sites that had not contacted or submitted samples since mid-March
- Plan of Action
 - Essential Tasks
 - Communication to site operators/Exec/federal partners
 - Development of survey for operators
 - Instructions on equipment for sites being suspended
 - Altered work schedules to maintain social distancing
 - Ensure analytical/sample processing have adequate supplies
 - Non-essential Tasks
 - Sample storage in archive cooler. Potential to discard 2013 samples if space needed
 - Storage of coolers/glassware/buckets
 - Communication to site operators/Exec/federal partners
- Communication to Site Operators
 - Update operators on NADP operations
 - Guidelines for those able to continue sampling
 - Guidelines on shipping
 - Guidelines on sample storage if unable to ship
- WSLH NADP Operations
 - Henry Mall
 - Adjusted work schedules, split shifts allowed for social distancing in shipping, receiving, sample processing, and the NED
 - Continuing to receive samples
 - Continuing to ship supplies with minor delays
 - Ag Drive
 - Adjusted work schedules, maintain social distancing in analytical and AMoN prep areas
 - Data management team able to work from home
- Operator/Site Supervisor Survey
 - Designed to be simple and to the point:
 - Is the site still operational?
 - If NOT, Why? Stay at Home order, site closed, campus closed, etc.
 - Are they still able to ship? If not, instructions for holding were sent
 - Are they able to receive? If not, operators to provide alternate address
 - Sent via NTN/MDN/AMoN and Tech listservs on 3/16, 3/23, 3/31, 4/13
 - Responses to date: 229
- Survey Response - Site Status (5 categories)
 - Continue: Operators can continue sampling and they can receive and ship samples/supplies
 - Alternate Address: Operators can continue to sample, but cannot receive supplies at their regular address, they have provided an alternate address
 - Continue & hold: Operators able to sample, but do not have access to shipping resources
 - Limited access: Operators have indicated they will try to continue sampling as access allows
 - Suspended: Site operator has indicated they cannot collect samples at sites, due to site is closed, organization travel ban, shelter-in-place order, campus/building closed

- Shipping Issues
 - Operators able to sample, but unable to receive at normal work location due to campus, building, and other closures
 - Operators provided alternate addresses
 - Initially NTN supply boxes, AMoN samplers, MDN coolers were coming back as “Return to Sender”
 - PO Started providing Return Shipping labels for supply boxes
 - Samples were being held initially due to site shipping issues
- Sample Validity and QR Codes
 - For NTN, samples received > 60 days after Off are categorized as “Very Late Sample” with QR Code C (invalid)
 - For MDN, a Very Late Sample/QR Code C imposed for those received > 30 days after OFF
 - NTN samples are stored in fridges; AMoN stored in freezers where possible
 - NADP reached out to operators and provided UPS return shipping labels to those operators who were unable to access their normal shipping methods.
- Summary of Impacts by Funding Agency
 - Suspended Sites: BLM 1, FWS 2, NOAA 1, NPS 1, USFS 7, USGS 10, Wood/EPA 8, Subscribers (lumped category, non-federal partners) 16
 - Restarted Sites: BLM 1, FWS 1, NOAA 1, USFS 2, USGS 4, Wood/EPA 3, Subscribers 6
 - Unknown Status: BLM 0, FWA 1, NOAA 1, NPS 0, USFS 0, Wood/EPA 0, Subscribers 2
 - The numbers above reflect the funding agencies affected by the suspended sites. For one site there may be multiple funding agencies for MDN, NTN or AMoN.
 - i.e. VT99 –Underhill; NTN=USGS; MDN=UVT; AMoN=Wood EPA
- Timeline (NTN, MDN, AMoN)
 - March 17: 10 sites suspended, none restarted
 - March 24: 25 sites suspended, none restarted
 - March 31: 30 sites suspended, 3 restarted
 - April 7: 33 sites suspended, 4 restarted
 - April 14: 33 sites suspended, 5 restarted
 - March 17: 10 sites suspended, none restarted
 - April 21: 31 sites suspended, 8 restarted
 - April 28: 29 sites suspended, 10 restarted
 - May 5: 24 sites suspended, 14 restarted
 - May 12: 24 sites suspended, 15 restarted, 5 with unknown status
- Impacts on Site Additions & Relocations
 - MD96/MD95 AMoN sites were scheduled to start 3/31/2020 – Have not started due to COVID-19
 - Delays for these sites: MI94 (NTN), NY28 –Piseco Lake (AMoN move from NY94 – Nick’s Lake)
 - Delay to WI95 -Eagle Heights (NADP research site)
- NADP Summary –Of the 342 sites (NTN/MDN/AMoN)
 - NADP has heard from 222 unique sites
 - 39 sites suspended (11%); 15 have reopened; Unknown -5 sites (1%)
 - 298 sites continue to submit samples (87%)

- Communication is critical; Good response from sites on their status
- COVID-19 related 1-800 calls were 33% in March, 53% in April
- 229 responses to the on-line survey
- To date the impact on sites has been less than initially expected
- Operationally, NADP is in a good position to ride out this pandemic
- Impacts of COVID-19 on Canadian Air and Precipitation Monitoring Network (CAPMoN)
 - Government employees directed to Work From Home effective 3/16/2020
 - Only 1 out of 26 active sites has been suspended (Wood Buffalo NP)
 - Analytical laboratory closed since 3/16
 - Samples are being received, logged in and stored in walk-in coolers
 - Estimated # samples as of 5/12/2020: Air filter packs (3 stage) ~1024; Precipitation ~500+
 - Precipitation sample bag order delayed due to lab closure, sent raw materials to 3rd party lab (WSLH CAL) for testing
 - Equipment issue response time; Delay to field site audits
- Impacts of COVID-19 on Clean Air Status and Trends Network (CASTNET) Monitoring (Melissa Puchalski)
 - CASTNET operated by EPA Office of Air Program in partnership with NPS and BLM
 - Most CASTNET sites are co-located with NTN and AMoN sites.
 - The Wood laboratory (Gainesville, FL) continues to prepare, ship, receive and process samples for all sites (including NPS and BLM) using social distancing guidelines
 - As stay-at-home orders were announced many site operators provided home addresses for shipping filter packs
 - Some National Parks have faced issues receiving and shipping filters
 - March 18th EPA's Office of Air Quality Planning & Standards distributed a memo: Ambient Air Monitoring Programs Continuity of Operations Associated with the COVID-19 Response
 - During an emergency or COOP, ambient air monitoring programs are a mission essential function (human health impacts) and should continue unless state, local or tribal directives prohibit their operation
 - We ask that air monitoring agencies continue to operate the air monitoring networks to the best of their ability, while considering employee health and safety
 - March 25th EPA's Office of Acquisition Solutions provided a memo for contractors to travel in restricted locations
 - All overnight travel for routine calibrations (every 6-months by Wood) and independent audits (annually or bi-annually by EEMS) were suspended in early April
 - Travel will resume when it's safe to do so
 - Dr. Janice Brahney (Utah State University) has requested CASTNET Teflon filter extracts for a COVID-19 pilot study. Extracts will be analyzed by qPCR for the presence of COVID-19 RNA to determine if the virus is transferred in the atmosphere. First samples were sent last week.
- Impacted Sites
 - Filter pack concentrations are considered valid if they are exposed for 21 days or less
 - There should be very little impact to overall data quality/completeness, except for Cherokee Nation and Bondville, IL sites.
 - A map of affected sites shows 5 sites suspended for < 3 weeks, 2 sites suspended for > 3 weeks

- Preliminary Air Quality Impacts
 - Weeks 11-19 of 2020 represent the period after the White House declared a National Emergency
 - During this time, O₃ concentrations were 4.5 ppb (9.3%) lower than the 5- year average. Temperature anomalies were also considered.
 - Preliminary results only – O₃ data not QA'd yet, but EPA will post data soon on the web
 - NO_x emission changes due to COVID shutdown will be considered in future analysis

Discussion:

Greg Beachley asked for clarification about Janice Brahney's COVID study and whether she is looking at transported viral genetic material? Melissa answered in the affirmative.

Mary Lynam asked Melissa whether the differences in ozone concentrations or percentages due to COVID are statistically significant? Melissa was unsure.

Donna Schwede commented that modeling 2020 O₃ concentrations will be complicated as 2020 is an emissions inventory year and compiling inventory data will be challenging due to economic slowdown – this will have long-term impacts on modeling for TDep and other assessments. Melissa agreed and responded that emissions inventories, modeling, and policy questions will be affected.

7. Discussion on Program Recovery after COVID-19 (Greg Wetherbee, USGS)

- Greg noted that NADP has adjusted well to the challenges imposed by the pandemic, but that he is less certain that the future health of NADP is assured, in this and next fiscal years. Thinking of and planning for eventualities is advised.
- Greg began with presenting maps of NTN sites, segregated by funding agency, that have closed during the COVID-19 pandemic – both in the US as a whole, and with greater detail on regional maps of the Western and Eastern US. There is a relatively high density of NTN sites in the Northeast and in Colorado.
- A National map of MDN sites, by agency, and COVID-affected sites was also presented. MDN is predominantly funded by the states.
- Given the COVID-related closures and anticipated budget reductions to state and federal sponsoring agencies, a contingency plan should be formulated to protect the networks
- Option 1: Redistribute sites from spatially concentrated areas to sparsely monitored areas for optimal spatial coverage or to ensure that high-priority natural assets (e.g. national parks) are monitored?
 - There is a dense network of NTN sites in the Northeast (Connecticut, New Jersey, Upstate NY, Vermont, New Hampshire, Maine)
 - Are there enough NTN sites in Colorado? Several sites have closed due to COVID, and two NUANC sites in Northern CO are scheduled to close in January 2021.
 - Colorado has an abundance of complex terrain of varying elevation – there are a lot of NTN sites, perhaps we can reconsider the network density there.
 - Can we move sites and/or funding in spatially well-represented locations to areas of poorer spatial coverage and/or sites in jeopardy?
- Option 2: Redistribute sites to continue trends at long-term sites in jeopardy?
 - Trend detection is critical for the networks
 - Setting priorities for site locations

- Long-term trends vs. spatial density?
- National maps?
- Sensitive Ecosystems?
- Critical Loads?
- Option 3: Begin reinvention of the networks by developing low-cost, passive, lower frequency monitoring techniques?
 - i.e. Will wet chemistry continue to be sustainable at this frequency/cost?
- Keeping Sites Funded – how will we respond to reductions in funding?
 - Passing the Hat
 - Reallocation of meeting and travel funds from site sponsors to support sites in jeopardy
 - Reallocate funding from sites in areas with ample coverage to sites in jeopardy with long-term records or in sensitive ecosystems.
 - Cost saving measures that we can implement now
 - Implement bag sampling ASAP
 - 2-week composite collection (i.e., NEON’s approach)
 - Onsite monthly compositing of refrigerated samples by site operators?
- Are 2020 National maps still possible? Will we:
 - Relax data completeness criteria (QAAG’s purview?)?
 - Estimate missing data with Schichtel Method?

Discussion:

Cari Furiness stressed the importance of cost savings while meeting QA goals, but there are subtleties – some sites may not be able to generate monthly composite samples due to a lack of refrigeration.

Doug Burns signaled that he would equally prioritize protecting the long-term continuity of sites and maintaining adequate spatial coverage.

Kristi Morris stressed the importance of preparing for future funding shortfalls and thanked Greg for his efforts. Kristi commented on the redistribution/relocation of sites and noted that federal land managers are protective of sites under their direct control, and relocation away from federal boundaries is unlikely.

Doug Burns added that USGS is better positioned to relocate sites and is not bound to consideration of specific national parks or forests.

Greg stressed the importance of developing a proactive plan to deal with future budget cuts, to examine the networks and determine monitoring priorities at each location, and assess the flexibility within each agency to better support the networks. Greg stressed the importance of addressing this proactively.

Tom Butler asked if any work has been done to compare composited with non-composited samples. Greg answered in the affirmative and noted that ICAL had compared results from co-located AIRMoN and NTN samplers. While the data might be useful to inform a decision on compositing, the comparison was of event and weekly, not monthly, composited samples. Martin Shafer noted that comparing composited samples (with NEON) has been proposed, and Richard Tanabe suggested that WI06 (Arboretum) might be a good location. David Gay responded that compositing might be problematic chemically, especially for N species. Melissa Puchalski noted that a comparison at only one location might not be sufficient, as a range of atmospheric conditions would need to be studied at various locations.

David Schmeltz commented that this topic cuts across networks (e.g., MDN), activities (e.g., strategic planning) and discussions among agencies to cut costs and keep networks running. EPA has prioritized long-term sampling for trend detection, but considerations of the broader purposes served by the sites should be given. David noted that we should look at low-cost technologies to fill data gaps and to integrate into existing or new networks. He acknowledged that funding challenges will remain.

Greg suggested that prioritization of measurements and planning for alternate budget scenarios might be first attempted by members of the Budget Committee at the next meeting. David agreed and noted that the Joint Subcommittee forum might not be the appropriate venue. Greg responded that the Joint Subcommittee members bring a wide range of expertise (field ops, technical, etc.) to bear on the discussion, beyond budgetary considerations.

Donna Schwede noted that a consideration of spatial variability addressed by the networks will be highly variable by chemical species – e.g., NH₃ vs. mercury. It is also important to consider wet vs. dry deposition of the target species and how this changes with in response to changes in climate, emission sources, etc. Prediction in response to anticipated change is crucial. All the data and networks are important to the modeling community to fill gaps (measurement-model fusion). Models can be used to inform decisions on monitor placement or relocation in future.

Jamie Schauer reiterated the need to plan proactively, but the discussions should start with the Budget Committee and begin with a programmatic analysis of the budget – cutting the number of sites in half does not necessarily cut costs in half. NOS, stakeholders, modelers, measurement experts should be involved but discussions should begin with programmatic budget analysis to inform potential changes to networks due to cuts.

Melissa commented that NTN sites in the Eastern U.S. will be important to PFAS measurements, especially moving forward.

Discussions of network viability and options moving forward will start in the Budget Committee and continue in the Fall 2020 meeting.

8. HAL Update (Mark Olson)

- MDN Numbers
 - MDN peaked at 131 sites in 2010
 - Closed 2019 with 84 sites
 - Sites are needed in the Western U.S.
 - Currently at 85 sites in 2020
 - Net loss of 8 sites in 2019
 - Gain of 1 in 2020
 - There may be cost savings associated with the HAL move to WSLH, and a cost analysis of MDN will be conducted to evaluate
 - MDN is largely state-funded, and may face significant cuts
- Eurofins Frontier Global Sciences (EFGS)
 - THANK YOU!
 - Readiness Validation Plan
 - Sale of equipment to NADP
 - Michael (former President) was awesome, helped every step of the way
 - Most of current staff have moved on. Michael is a contractor, limited contact

- Requests for 2019 QA data have not been filled
- MDN Equipment
 - \$25K Coolers and MDN equipment from EFGS
 - \$12K with local glass blower, thistle tubes and funnels
 - We're in good shape, with cooler site rotation we have about 2 extra weeks of glassware, about a month's worth of extra coolers
 - Continue to explore new sample train designs
 - Cooler site rotation – EFGS shipped one cooler per site per week, leading to a number of coolers to pile up at the sites. At WSLH depending on shipping times, sites have designated coolers assigned to them. Local sites may have only 3 in rotation, distant sites typically 5. This helps track coolers, keeps coolers rotating, and limits the number of coolers on site
 - We keep track of coolers and encourage rotation
- HAL Transition from EFGS to WSLH
 - Exec decision Fall 2018 to move HAL to WSLH
 - Original move date set as October 2019
 - EFGS notified us in January 2019 that the move must be completed the end of May
 - WSLH then developed an accelerated Readiness Verification Plan
- Readiness Verification Plan Results
 - Analytical splits were removed due to shipping restrictions (BrCl)
 - Other Analytical comparisons looked good
 - Field Intercomparison conducted, 3 sites (WA18, WI06, and WI31), dual chimney N-Con, mid-March to May. With closing of WA18, comparisons were conducted at IL11 (Bondville).
 - Difference of 10% in the field intercomparison -WSLH was higher
 - RVP reviewer comments – could it be a change in method?
 - Due to timing constraints, WSLH manual Hg system was used for RVP
 - Automated Hg system was installed in April 2019, validated in May, and proved to be equivalent
 - One lab in USGS (Middleton, WI) PT study analyzed samples with both systems, detected a negative bias on the automated system
 - EFGS used the automated system
 - All PT (ECCC and USGS) run on the automated system are acceptable
- Field Intercomparison
 - Correlation plots of EFGS total Hg measurements (Y) vs WSLH results (X), using both WA18 and IL11 data
 - A problem was noted with negative intercept (-1.75 ng/L) using WA18 data – was EFGS blank-correcting the samples? No word from EFGS. Slope 0.90, $r^2 = 0.94$
 - Comparisons with IL11 data better, slope 0.92, $r^2 = 0.92$, intercept closer to zero
- USGS RVP PT and beyond
 - Box-whisker plot of lab results in PT program (USGS) shows a median positive bias (reported- MPV concentration difference) of 0.310 ng/L for EFGS, vs 0.030 ng/L for WSLH, but greater variability
 - USGS (Middleton Lab) automated method was biased -0.670 ng/L from MPV, manual method -0.200 ng/L lower than MPV, illustrating the greater negative bias in auto method
 - More time was needed for a complete comparison, EFGS vs. WSLH

- Spike recoveries from WSLH manual system were typically 96-117% (mean $108 \pm 7\%$ for 5 samples)
- Spike recoveries from WSLH automated method ~80-101% (mean $92.5 \pm 6\%$ for 17 samples)
- WSLH will continue to monitor PT samples and results
- HAL Quality Assurance Report 2019
 - First WSLH QA report, only from June 1 through end of year
 - Missing data from EFGS, January through May 2019 – will proceed w/o it
 - Kirsten Widmayer has taken the lead, HAL chemist
 - She finished this past weekend, out for internal review
 - Will be available for external review in June 2020
- HAL Quality Assurance
 - Ongoing QA analyzed for Total Hg at WSLH
 - Monthly checks: Acid Bath (for funnels), Acid Crock (thistle tubes)
 - Weekly checks: Type I water, Sample Train Blanks
 - Each batch checks: Bottle Blanks, Preservative Acid
 - HgT in acid bath and crock – not sure how to adjust the warning and control limits
 - HgT < 15 ng/L June-Oct. 2019, increased to > 40 ng/L Dec. 2019, varied from ~ 30 – 75 ng/L thereafter (to April 2020)
 - Acid bath cleans the sample trains, but is expensive – WSLH balanced cost vs. performance
 - Evaporation from bath/crock drives up HgT – is reduced as DI water added back
 - Acid bath crock HgT < 22 ng/L
 - DI Water and Sample Trains
 - High HgT in DI water June-July 2019 (2.67-3.39 ng/L)
 - May have contributed to high Sample Train Blanks (0.60-1.70 ng/L) at this time
 - Type I water and Sample Train blanks fell markedly beginning August 2019
 - Sample Train blanks tracked changes in water blanks
 - WSLH now monitoring water and Sample Train blanks weekly
 - Acid Bath to Sample Train
 - Both QA tests are new to the HAL, which is establishing limits for the Acid Bath based on Sample Train blanks.
 - Sample Train blank on 4/3/2020 was 0.34 ng/L, above warning limits.
 - Acid Bath on March 6 was 76 ng/L, acid was added to bring to volume
 - It appears an acid bath concentration of 50 ng/L has an effect on the Sample Train
 - Bottle Blanks and Acid Preservative
 - Bottle blanks as needed – purchased in large lots (~ 3month supply)
 - Analyzed, average weights calculated to use as the tare weight
 - Acid Preservative is made in batches, analyzed for HgT and distributed into bottles
- Changes and Improvements
 - One 800 number for all Networks (previously separate numbers)
 - Improved Quality Assurance
 - Samples are brominated and analyzed in the Trace Element Clean Lab (polypropylene)
 - Samples less than 1.5 ml (0.004” of precip) are considered dry
 - Coolers shipped in boxes to save additional shipping charges (extra \$ for coolers)
 - NTN collocated sites ship NTN samples in coolers
 - Rotating coolers by site, easier to track and reduces coolers on-site

- Tare weights of bottles tracked in the LIMS system
- Sample weights calculated by the system (EFGS did by hand)
- Amount of BrCl to add calculated by the system
- Methyl sites identified by system and amount of subsample calculated
- Error flagging and notes codes incorporated into the system
- Sites are emailed their reports directly, as opposed to going to a site and having to download their report.
- MDN Return Shipping
 - HAL has explored covering return shipping costs for sites (volume discount with UPS)
 - Started with subsample of sites
 - Response was lukewarm
 - Cost would be ~\$500/year
 - It's easier to manage if everyone buys in
 - We'll revisit this option under the new Coordinator
- MDN Field QA
 - Arboretum WI06
 - N-Con Dual Chimney
 - Ongoing field Duplicates
 - Summer – spike experiment planned. Taiwan results with NCON collector in summer report low recoveries if sample spiked at start of the week. Revisit at WI
 - Eagle Heights (future)
 - Aerochem evaporation study revisited
 - N-Con Dual Chimney
 - Lab
 - Acidification study
 - Must acidify sample to prevent loss of Hg to bottle walls and evasion of Hg
 - Is 20 ml 1% HCl sufficient for a full 1L sample?

Discussion:

Greg Wetherbee commended the HAL for an impressive job on the transition. Greg is very impressed that the HAL is taking on field QA issues that have been needed for some time, and that Bob Larson has harmonized data fields between NTN and MDN data sets.

9. Subcommittee Logistics (Melissa Puchalski)

- Melissa summarized the topics to be addressed in the NOS meeting later in the day
 - ECCC Hg Passive Pilot Study (Sandy Steffen)
 - Update on Dry Side Bucket Dust Collection (Janice Brahney/Greg Wetherbee)
 - NADP Site Survey Report (Eric Hebert)
 - USGS Next Generation Observing Systems (Mike McHale)
 - USGS External QA Report (Greg Wetherbee)
 - Equipment Update (Mark Olson)
 - Low-power collector modification (Bob Larson)
 - MDN/AMNet Update (Mark Olson)
 - AMoN Update (Camille Danielson)
 - Bag Sampling Update – NTN (Chris Worley)
 - Litterfall Update (Doug Burns)

- Wrap-Up (Melissa Puchalski)
- Chris Rogers summarized the topics to be addressed in EOS on May 14
 - Topics include discussion of the Governance Document
 - Wikipedia page
 - Updates on NADP foundation
 - Discussion of Education Outreach plan
 - Update on Hg in rain brochure
 - Status of AMoN brochure
 - Lengthy discussion of the NADP newsletter and transition to a social media plan
 - Updates on web page
 - Round robin from subcommittees
- Melissa summarized the agenda of the Joint Subcommittee meeting on May 14
 - Subcommittee Highlights: MELD, TDep/CityDep, CLAD, ASMC, NOS, EOS, QAAG, DMAG
 - CAL Update
 - PFAS Update
 - Spring Meeting 2021
 - Fall Meeting update
 - Final Discussion/Questions/Wrap-up

May 14th 1:30-3:30 EDT

Agenda

10. Subcommittee Highlights 1:30-2:20PM
 - a. MELD (Rick Haeuber/Colleen Flanagan-Pritz)
 - b. TDEP/CityDep (Greg Beachley/Greg Wetherbee)
 - c. CLAD (Jeff Herrick/Linda Geiser)
 - d. AMSC (Andy Johnson)
 - e. NOS (Melissa Puchalski)
 - f. EOS (Chris Rogers/Catherine Collins)
 - g. QAAG (Camille Danielson/Martin Schafer)
 - h. DMAG (Bob Larson)
11. CAL Update (Chris Worley) 2:20-2:40PM
12. PFAS Update (Martin Schafer) 2:40-2:50PM
13. Spring Meeting 2021 (Winston Luke) 2:50-3:00PM
14. Fall Meeting (Greg Wetherbee) 3:00 – 3:15PM
15. Final Discussion/Questions/Wrap-up (Melissa Puchalski) 3:15-3:30PM

10. Subcommittee Highlights 1:30-2:20PM

MELD (Rick Haeuber, USEPA/Colleen Flanagan-Pritz, NPS)

- MELD Spring 2020 Meeting Objectives
 - Inform MELD participants on Minamata Convention on Mercury-related activities, including the effectiveness evaluation, as discussed at the January US Government - Technical Experts Group meeting on Mercury Monitoring Data Gaps and Needs.
 - Identify how MELD can help inform the Minamata community going forward.
 - Discuss potential concrete activities that MELD can undertake, including a Mercury Measurement Concept Paper to help plan for or meet future atmospheric mercury

monitoring needs, and how to link deposition with ecological receptors to test the efficacy of mercury reductions.

- Define next steps and plans for the Fall 2020 meeting.
- MELD Agenda – Day 1, Monday, May 11
 - Topics of Discussion:
 - Background and intro to the US Government (USG) Technical Expert Group (TEG) on mercury monitoring data and gaps, in the context of the Minamata Convention on Mercury (D. Krabbenhoft, USGS)
 - Updates from COP3 Minamata Convention on Mercury, and how MELD can contribute (Liz Nichols, Dept. of State)
 - Discussion
 - USG-TEG presentations and discussions on mercury monitoring data and gaps (C. Flanagan Pritz, NPS)
 - Air (D. Krabbenhoft, USGS)
 - Modeling (R. Bullock, EPA)
 - Biota (C. Eagles-Smith, USGA)
 - Multi-Media (C. Eckley, EPA)
- MELD Agenda – Day 2, Tuesday, May 12
 - Day 1 Recap (R. Haeuber and C. Flanagan Pritz)
 - Mercury measurement concept paper, and discussion (D. Gay, MADP PO, K. Morris, NPS, D. Schmeltz, EPA)
 - Linking deposition with ecological endpoints of impairment – discussion paper (C. Eagles-Smith, USGS, and C. Flanagan Pritz)
 - Round robin – recent related work (all)
 - Wrap up (R. Haeuber and C. Flanagan Pritz)
- MELD Action Items
 - Provide comments on USG background papers – air, modeling, biota, multi-media – in the context of the Minamata framework, requested by June 1.
 - Documents to be (re-)circulated within the next week, alongside framework.
 - More input requested from the MELD community after the annotated monitoring guidelines are provided in 2nd wave of preparation for COP4
 - Form measurement (and modeling) workgroup – to include planning for future webinars/in person workshop to facilitate evaluation of additional Hg measurements to be made by NADP.
 - Explore directions and options for estimating deposition at certain paired dragonfly sites, in order to link deposition with ecological receptors. Also explore creating paired sites for the future.
 - Plan for in-person or virtual Fall 2020 meeting.
 - Introduce a motion at Executive Committee Meeting to move from ad hoc to permanent science committee status.

TDEP/CityDep (Greg Beachley, USEPA)

- The Spring TDep meeting had one motion to nominate and voted to approve Katie Benedict as the new TDep co-chair in place of out-going co-chair John Walker. Congratulations to her.
- Had some additions from the Fall TDep Ag workshop and CityDep participants.
 - Meeting was well-attended – virtual access may improve attendance
 - 84 different attendees and stayed over 60 attendees throughout the meeting
- Intro presentation
 - 2019 Annual report
 - TDep Charter reauthorization was discussed

- John Walker gave the Stakeholder Workgroup update
 - recapped the 2019 Fall TDep Ag workshop
 - walked through the Workshop Summary report (examples of a presentation summary and panel discussion summary)
 - Timeline set with the goal to complete Summary by the 2020 Fall meeting.
 - After that, focus will be on Stakeholder engagement plan and communication piece to Ag Community.
 - Rich Grant gave update on the NIFA NCDC233 proposal to link in the Ag community to Nr issues. Looking to bring in more agricultural stakeholders. Proposal due in September.
- Greg Beachley gave the update for the Measurement Model Fusion Workgroup
 - Have a draft new script in ArcPy and will run with ArcGISPro
 - Script was written by Sonoma Tech (subcontractor to Wood on the EPA CASTNet contract. Nathan Pavlovic and Changsy Chang walked us through some of the technical details and a good discussion followed.
 - Summer work will focus on error evaluation and bug fixes and be a focus of the Workgroups.
- Directly related, Kristen Foley of EPA/ORD gave a nice update of the CMAQ v5.3 time series. Good to see all the work behind-the-scenes and get idea of large scope of product. Expect the 2010 (comparison year we'll use in TDep) finished this summer/fall which will line up well with completion of the script transcription.
- Amanda Cole presented an update of the Global Atmosphere Watch MMF for Global Total Atmospheric Deposition steering committee
 - focus on global total atmospheric deposition maps and how deposition relates to UN sustainable development goals.
 - Of particular global interest in the impact of O₃ deposition on agriculture.
 - Near-term projects
 - producing an implementation plan and state of the science overview
 - focus on how to link regional models (like TDep) to develop methods for global models or ensemble models.
 - involve a lot of “data harmonization” or reconciling different methods/strategies.
- Amanda Cole again presented on ADAGIO update on ADAGIO.
 - Model background & Comparison to TDep 2010 (will be publication)
 - overall good with slight TDep bias (-0.5±1.2 kg N ha⁻¹)
 - breakdowns of reduced/oxidized and wet/dry components indicated that some artifacts occurring in wet.
 - Arise from differences in handling the Precip depth measurements & modeling
- Mike Bell gave an update on the Deposition Uncertainty workgroup. Several projects on-going:
 - John Walker is conducting a (now-COVID delayed) study at Duke Forest to compare flux and throughfall measurements
 - Downscaling of modeled grid deposition data into land-use types is moving forward.
- Todd McDonnell gave a presentation on modeled TDep and CMAQ deposition differences and how those impact Critical Load exceedances.
 - will be published in NPS report very soon.
 - A good discussion followed on the biases and some wet/dry breakdowns and why they may have occurred.
- Chris Rogers gave an update from EOS
 - Update on Social media replacing the NADP newsletters
 - TDep will be in for an annual update (~2 to 4 posts) currently for May 2021.
 - 2-page visual-based Fact sheet on the TDep white paper
 - First draft completed; Looks good, still revisions needed, target date is the Fall meeting

- TDep flux metadatabase
- Looking to post on the NADP website the data submittals received and a new data entry
- City Dep was given a forum for updates at the TDep biannual meetings. Many common goals and interests in spatial representation of urban deposition and measurement sites.
 - NSF proposal in the works (lead has been selected)
 - Many sites are shutting down with the COVID-19
 - Completing sampling intensives in Boulder and Ft. Collins in Jan 2021
 - Boston studies on urban N deposition variability still on-going.

CLAD (Jeff Herrick, USEPA/Linda Geiser, NFS)

- Monday Session: Applications of CLs by Federal Agencies
 - Participants: 71 from US, Mexico, Canada
 - Presentations:
 - Wilderness System
 - NPS Planning
 - FS Planning
 - BLM NEPA
 - NPS Clean Air Act permitting
 - FS National Scale Assessments
 - EPA NOx and SOx secondary standards
- Wednesday: CLAD Business meeting
 - Approved Fall meeting minutes
 - Mike Bell reported on the virtual UNECE ICP 2020 Meeting
 - Mike & Jason Lynch continue to plan for the CLAD Fall 2020 Symposium
 - Mike Bell reported on his work with John Walker on Deposition Uncertainty & work with Linda Pardo on Critical Load Synthesis
 - Jason Lynch update on the Critical Loads Database
 - Chris Clark update on Critical Loads uncertainty
 - CLAD outreach update from Linda Geiser and Jen Phelan.
 - Linda previewed one of the Critical Load videos that will go up on YouTube
 - Great round-robin session of updates from CLAD members & captured in shared google doc

AMSC (Andy Johnson, Maine DEP)

- Andy decided not to convene AMSC as part of the Spring meeting
 - Will wait until late June
 - Andy has not been able to find a co-chair for AMSC, and his time has been taken up elsewhere
 - Conference calls outside the Spring/Fall meetings may be prove to be more a productive venue for AMSC business
 - Andy hopes to present updates to AMSC as part of the Fall meeting

NOS (Melissa Puchalski)

- ECCC Hg Passive Pilot Study (Sandy Steffen)
 - 27 countries involved
 - 5 NADP sites included
 - ECCC not allowed in the laboratory. Sites are holding their samples.
- Update on Dry Side Bucket Dust Collection (Janice Brahney/Greg Wetherbee)
 - Good agreement between dust samples and IMRPOVE
 - Published results in Aeolian Research

- NADP Site Survey Report (Eric Hebert) 2:50 – 3:00 PM
 - PO will develop a plan for virtual surveys and quicker review of precip to identify issues.
 - Moving forward the Program Office will
 - Write a script to identify when precipitation is present, the collector event recorder is logging time (it's open). We will flag data and address the problem directly with the Sponsor and Operator.
 - Meet quarterly with EEMS to identify problems and needed improvements.
 - Create a "siting criteria" help sheet, have pictures of what your site should and shouldn't look like. We can include these packets in the bucket boxes so the end up in the hands of the user.
 - Look into the N-Con NTN lid seal rigidity issue, is there a difference/problem?
 - Purchase or create a widget that will hold the N-Con NTN motor in place to create a better lid seal.
- Doug Burns gave an update on the USGS/NGWOS project
- Equipment Update (Mark Olson)
 - Motion: Program Office to purchase a KJJ sampler and collocate with Aerochem, N-Con, and CAPMoN samplers at Eagle Heights – motion passed
- Bag Sampling Update – NTN (Chris Worley)
 - Motion: To proceed with the Canadian style (Mylar/polyethylene) bag if:
 - The initial bag resin tests demonstrate NADP chemical constituents are less than NTN network MDLs. This will be performed in conjunction with ECCC/CAPMoN (this was completed last week and all resin bead extractions less than network MDLs)
 - Acceptance based on approved bag quality language in the vendor contract
 - If the above two conditions are not met, then the PO will proceed with the original polyethylene bag rollout and will continue to assess and characterize low level losses of ammonium and phosphorous. – motion passed

EOS (Chris Rogers, Wood/Catherine Collins, USFWS)

- Approved EOS minutes from the November 5, 2019 meeting
- Old business
 - Governance handbook
 - Motion: Move forward with the proposed changes to the Governance Document related to the EOS name and mission changes and add award section.
 - Add: potential MELD
 - Edit: Eurofins and AIRMoN
 - Wikipedia page
 - Page is up
 - SOP developed and will be fine tuned
 - Committees will look at to add content/links
 - Foundation letter
 - On NADP Webpage
 - Outreach to past members/interest parties
 - Giving Tuesday
 - Education outreach plan
 - Committee formed: Donna Schwede, Amy Mager, Beth Boyer and Camille Danielson
 - Look into Science Fair/Video lessons/Zoom meetings with a scientist
 - Mercury in the Rain brochure
 - Draft prepared

- Committee formed: David Gay, Doug Burns, Beth Boyer, Mark Olson, MELD
Steering Committee Representative
- o AMoN brochure
 - Bob to update maps
- o NADP Social Media Plan
 - Proposed plan
 - Developed calendar and post guidelines
 - EOS will fine tune plan and get to committee chairs
- o Web page
 - PO is working on updating and making mobile friendly
- Committee/Lab Outreach Forum and Reporting
 - o CLAD
 - o TDep
 - o AMSC
 - o NOS
 - o DMAG
 - o QAAG
 - o CityDEP
 - o MELD
- New business
 - o Meeting Minutes Motion: NADP Executive Committee, subcommittees, science committees and ad hoc committees shall submit draft minutes to their meeting attendees for approval within one month from a meeting. Online polling of the committee meeting attendees within an additional two weeks shall be sufficient for approval.
 - o Outreach for Fall Meeting
 - Developed initial list
 - Tabled work until meeting format determined

QAAG (Camille Danielson, WSLH/Martin Schafer, WSLH)

- Met via teleconference April 29
- Site Survey Status - The COVID pandemic upset the EE&MS field schedule. Only a few sites have been visited so far this year. Eric will update everyone when site surveys resume. Looking at field data storage issue.
- Documents being revised/completed:
 - o HAL/CAL QAP
 - o CAL QAR
 - o HAL QAR
 - o Network QMP
 - o Network QAP
 - o HAL RVP
 - o SOPs
- External Audits – Combined CAL and HAL reviews are a good idea, but PO review requires different skill set, preferably reviewers from the Budget Committee. Would like a HAL review as soon as possible. Suggested a prequel PO meeting this summer after Budget committee.
- Action Item for Fall: Wait until the fall to see what is going on with COVID-19 to plan for the CAL/HAL and PO reviews.
- General QA Updates
 - o Internal Audits are being done
 - o SOPs are up-to-date, and TOC .pdf is posted

- MDLs 2020 – Based on samples that undergo the entire process. Switched from buckets to bags to prepare for bag sampling. However, losses in nitrate, ammonium, and phosphate complicated that process. NTN and MDN MDLs have been validated for 2020 and are the same as 2019. AMoN MDLs are slightly lower than last year and will be updated.
- HAL Updates – Going well - Reporting preliminary data to sites and to the web is a priority moving forward.
- Bag analyte loss study update – Chris covered this in NOS
- Data/LIMS Updates – CAL is working back toward 90-day data turnaround despite many challenges. Currently, CAL output is 120-day turnaround time for NTN and AMoN; MDN 180-210 days. Delay in MDN because of transfer of LIMs to WSLH.
- pH Bias and pH calibration error – Chris covered in Joint
 - May mean historical (prior to 2/4/2020) WCAL data biased low on the low end due to incorrect calibration parameters ~ 0.05 to 0.15 units and not stirring may also cause a bias. A statement in the data notes on the web site will be prepared ASAP.
- Eagle Heights Site Update – soon will have 2-3 electronic rain gages, NTN samplers, MDN samplers, another evaporation study on the N-CON will be implemented.
- QA at Arboretum – dual chimney NCON doing duplicates. Acidity study – have samples been acidified enough to keep Hg in solution.
 - Moving forward with field QA!
- AMoN Shelter “Audit” = AMoN shelter audit package ready to go and should be deployed in May. This will be a compilation of site surveys and AMoN sampler/site photos to ensure that the shelters are meeting criteria and are being maintained properly
- AMoN Network QC due to COVID -Radiello is in Italy with known COVID epidemic. It was unknown whether Radiello was going to be able to continue to supply AMoN. AL is now going back to normal QA/QC protocols for duplicates, blanks, June deployments on.
- Not discussed in QAAG but came about as a result of QAAG feedback on QA documents. Martin and I would like to organize a Data Quality Objective "Summit".
 - This would cover the importance of the QA programs internally and externally AND brain-storm how best to use those data.
 - Also include a look at the qualifying of data for all our networks as referenced in my AMoN presentation.
 - A new flagging strategy, new ways to determine MDLs or reporting limits, potential revisions to how field/lab QA data are collected, could all be all discussed.
 - We want participants from the greater NADP community as well as external experts to provide input and attend this summit. Please let me know now or contact Martin or me if interested. More details will be provided later this Spring.
 - Martin encouraged wide participation within and external to NADP.

DMAG (Bob Larson, NADP Program Office)

- Data Turnaround
 - NTN 120 Days
 - AMoN 120 days
 - MDN 210 days
- Programming developments
 - Combining multiple systems (CAL, HAL, Precip, PO) into 1 comprehensive and consistent system
 - Integrated MDN into the LIMS
 - Consistent with NTN
 - Improved precipitation integration
 - Trained a programmer in all things NADP

- Bob will now take a lesser role in LIMS development
- To come:
 - Revamp precip review
 - Update the NTN system with the new precip
 - Query/Reporting system for internal staff
- Mapping
 - Generate 2019 maps earlier
 - Maintain consistency with TDep
 - Convert to ArcGis Pro
 - Incorporate Tdep changes in interpolation and grid production
 - Grid size, projection, datum, process
 - Modify existing scripts for map display, outputs
- Website
 - Plan is for UW DoIT to convert to WordPress, manage the site.
 - Still in early talks.
 - Second meeting soon
- 2020 Goals
 - Get and stay caught up with data
 - Web site conversion
 - Mapping updates
 - LIMS development
 - Data Analysis project: NTN SL scores – better to identify data outliers (contamination)

11. Litterfall Update (Doug Burns, USGS)

- Future directions
 - In 2019 the network was operating in hybrid mode – USGS cleaned, prepped, and shipped the samplers, and received them. WSLH performed the freeze drying and analysis.
 - For next season WSLH will handle entire process
- Data to 2016 season is publicly available (2 different links -UW and USGS)
 - Doug plans to post the 2017 and 2018 data this year
 - Plans to thoroughly cross-reference the data links to make for easier access to data
 - UW has received most samplers, but some sites did not ship due to COVID
- Current collection protocols
 - 8 samplers are randomly deployed in a 10 x 10 m forest plot
 - Each site has multiple collections thru the litterfall season
 - Most sites have 2-3 per season
 - Southern sites have more - longer litterfall season
 - 4 samplers analyzed for HgT
 - 1 analysis for MeHg – weighted sample form the 4 collectors
 - Second set of 4 collectors used for litterfall mass only
 - Litterfall mass shows greater variation than the Hg concentrations
 - Biggest challenge for time and cost of network
 - Freeze-drying litterfall is the most time and labor-intensive procedure
 - Some samples are very wet and require more time to dry
- In order to save time and costs, can we reduce samplers from 8 to 4 per site?
 - What is the benefit of the 4 extra collectors?
 - Will going from 8 to 4 affect precision and accuracy of measurements?
 - Currently, 4 samples from multiple collections at each site are mass weighted to calculate an annual total Hg concentration

- Mean of the 4 represents the site for the year
- o Sum the mass for each of the 8 collectors for entire season
 - Deposition = mean HgT concentration * mean mass
- Analyze 2017-2018 data to calculate deposition using 4 vs 8 collectors
 - o Scatterplot of the annual Hg litterfall load calculated with 8 collectors (Y) vs 4 (X)
 - Slope of 0.97 ($p < 0.001$), $r^2 = 0.98$. Slight positive intercept
 - o Some variation in calculated loads but no significant bias in deposition
 - o Precision: standard deviation of deposition value for each site for each year, 4 vs 8 collectors
 - Both median and mean SD are slightly higher with 8 vs 4 collectors
 - Comparison test of SD shows little difference
 - Mean %RSD (8 vs 4 collectors) almost indistinguishable, median a little higher for 8 collectors than 4
- Conclusion – reducing the number of collectors from 8 to 4 will not significantly affect Hg deposition estimates (accuracy or precision)
 - o Literature is demonstrating the importance of litterfall as a vector for Hg deposition to forested ecosystems, and the measurements will prove increasingly relevant
 - o Try to expand the network to grass and shrublands? How to accurately collect litterfall in Western forested sites?

Motion: Beginning with the 2020 season, change the number of collectors deployed for sampling in the Mercury Litterfall network from 8 to 4. Moved by Mark Olson, second by Winston Luke. Motion passed.

12. CAL Update (Chris Worley, WSLH)

- Current Staffing
 - o 12 employees as full staffing levels
 - o Recent changes
 - Kirsten Widmayer promoted to HAL chemist
 - April Grant moved to private sector
 - April was replaced with Nichole Davis
 - o 2 current vacancies under Amy Mager
 - o Current hiring freeze at the lab
 - Share Nichole and Kirsten to help as needed
 - Occupational health lab chemist is helping out as well
- COVID-19 Response
 - o Staffing
 - Provide isolated or distanced work spaces
 - Split shifts
 - Fewer staff on slow days
 - Work from home – data entry, data review, analytical QC review, SOP review
 - o Implications of staffing changes
 - Minor slow down; processes normally completed in 1 day now spread over 2 days
 - Overall turnaround time not impacted
 - o Supplies
 - Increased order of certain supplies at start of pandemic (e.g. AMoN cores- approx. 1500 costing \$17K)
 - April 14th stopped sending out AMoN duplicates during Pandemic to save on samplers. Will resume duplicates for June 9th deployment.
 - PPE has become scarce and ordering requires special request through UW

- Instrument updates
 - Lachat flow injection system production was stopped on March 27th 2020. Lachat is used for NTN Ammonium, Phosphorus and AMoN.
 - Will continue service and supplies for the next 5 years.
 - After 5 years no guarantees!
 - Need to determine our course of action- begin purchasing replacement parts now?
 - There are other FIA systems out there
 - 3rd IC unit had a consistent noisy baseline. Service rep concluded the pumps were bad. Replacement IC is here but install is delayed due to pandemic.
 - Total Nitrogen analyzer (includes TOC): Innovation award (synergy between Wet Chem and NADP- move from manual to automated). We applied for this through the capital request process.
- 2020 Network MDLs
 - 2020 NTN Network MDLs will stay the same as in 2019.
 - At this point it was determined the CAL would maintain the existing 2019 Network MDLs into 2020. Once the bag decision has been determined, new network MDL data will begin to be processed through the network steps.
 - AMoN Lab MDL_L and Network MDL_N were updated based on core and travel blanks
 - AMoN MDL_N was reduced from 0.104 mg/L (2019) to 0.083 mg/L (2020)
- Deliverables/Turnaround Times as of April 2020
 - NTN 119 days (goal 90 days)
 - AMoN 115 days (goal 90 days)
 - AIRMoN 110 days (goal 90 days)
 - 2019 Quality Assurance Report (QAR) has been submitted and will be published on the NADP website shortly.
 - Quality Assurance Plan (QAP) has been updated with HAL integration.
- Site Update
 - Active sites per year
 - AMoN: 98 (2015), 103 (2016), 108 (2017), 103 (2018), 107 (2019), 110 (2020)
 - NTN: 270 (2015), 272 (2016), 274 (2017), 262 (2018), 265 (2019), 259 (2020)
 - Approximately 10% of NTN and AMoN sites were suspended during Covid-19 pandemic
- Archive samples
 - Illinois 11 archive progress: David Gay is working with Chris Lehmann to move this forward. In principal the transfer between the 2 parties has been agreed upon.
 - All archive samples (including Illinois forever) are now cataloged into the Archive Software system.
 - 5 year study: Completed year 1 of 5 year comparison of 112 frozen vs. refrigerated samples to help assess transition impacts of refrigeration to freezing of all archive samples.
 - Cost of Archive sample storage approximately \$6000/year (freezer rental space).
 - Will need to identify new freezer space due to closure of current walk in freezer.
 - Is the 5-year NTN archive a contractual agreement?
 - Possible smaller Archive sample footprint.
- Internal audit
 - Camille conducted an extensive internal audit of the CAL, HAL and a small part of the PO (overall systems) from 12/9/19 to 12/16/19.
 - This included
 - Sample log in
 - Supply Prep/Supply QC
 - Analytical

- Filtering
- Archive
- Sample check in
- AMoN Prep
- Data Management
- Overall systems
- 52 findings were identified. 31 have been resolved, the remaining are in progress.
- Internal Audit report was completed 12/20/19 and submitted to CAL, HAL and PO Managers.
- Goal is to have most findings addressed by end of May (several will take more time).
- ECCC PT Ranking
 - CAL was ranked good or very good from Summer 2018-Summer 2019
 - Ranking slipped to Fair in Winter 2019 PT
 - The ‘Laboratory Performance Scores’ are a combination of 50% Systemic Bias (parameters biased) and 50% Flagged Results.
 - No flagged results on any of our PT results.
 - PT samples tended to show a consistent positive bias (CAL result – Assigned value)
 - Especially for conductivity, Mg²⁺, NO₃⁻, Na⁺, and SO₄²⁻
 - Corrective Action: Rather than run the set of 10 PT samples on one run, we will stagger the PT sample introduction over several weeks to see if this reduces the overall positive bias.
- Major CAL changes
 - 1/1/2020 WI WD Protocol Changed to Syringe filter
 - 1/1/2020 Trace samples changed to < 4 mL, WI= 4-13mL, WD= 14-27 mL and W>27 mL
 - 1/1/2020 AMoN field QC changed from triplicates to duplicates at 15% of sites. First AMoN Deployment of 2020 (January 7th)
 - 1/6/2020 Changed holding time for reagents and standards for LACHAT FIA (NH₄/ PO₄) to 3 weeks
 - 2/25/2020 Started Analysis with extended ammonium calibration curve from 2.118 to 6.354 mg/L for FIA AMoN added new middle standard FMAM2001 0.75 mg/L
 - 2/4/2020 pH Calibration changed to 4.1 and 6.96 - was set to 7.0 and 4.0 in default calibration since 2018
 - 2/26/2020 Moved NTN Filtering to new lab in room 135
 - 3/5/2020 Moved pH and Conductivity analysis to room 135
- pH Calibration Change
 - pH Calibration changed to 4.1 and 6.97 on 2/4/2020 - was set accidentally to meter default of 7.0 and 4.0 since initial set up in May 2018.
 - CAL Low ionic strength buffers have TV 4.1/6.97 and require special programming of meters to install these values.
 - This issue was discovered as a result of the USGS PT inter-comparison program Greg runs which identified a consistent bias for WSLH on low pH samples.
 - The mistake was discovered during our PT bias investigation
 - WSLH assessed the impact of the incorrect calibration by measuring pH in 19 QC/PT standards plus 55 NTN samples with a range of pH values using both the old and new calibration on the same day.
 - Differences ranged from 0.0 to +/- 0.2 units.
 - A fairly consistent 0.05 to 0.15 negative bias was observed with samples below pH 5.6 when using the old calibration. Possible 0.02-0.15 positive bias on higher pH (pH 5.6 –

7.3) samples with old calibration were noted. This correction should improve pH measurement accuracy.

- This issue was discussed at the April QAAG meeting. David Gay and Greg Wetherbee suggested a statement in the data notes on the NADP website providing this information.
- No further correction/action is planned unless directed by NADP.

Discussion:

Mark Olson gave background on the sample archive – WCAL has 40 years of archived samples for 2 sites, is seeking to acquire samples from IL11. WCAL retains long-term sample archives from a few regionally-representative sites, but samples from ~250 sites are given away or discarded after 5 years. To maintain the archive (~60-70K samples) WCAL would have to buy another freezer, prompting the discussion as to whether the sample archive was created ad hoc by ICAL, or is a requirement of the NADP contract agreement? Greg suggested retaining only a 2-year archive record rather than 5 to preserve only the freshest samples. Martin said that there have been few requests for archive samples older than two years. David Gay thought that the ICAL started saving samples in the 1980s because they had spare freezers, and NADP liked the idea. He is unsure whether it is a contractual issue. The PO will examine the contract and analyze the number of archive sample requests and the number of samples discarded. Martin said that the long-term data quality tests (compare original analyses to refrigerated and frozen samples) will proceed and can inform the need to maintain a long-term archive.

13. PFAS Update (Martin Schafer)

- Atmospheric Deposition of PFAS via Precipitation - Goals of the 2019/2020 WSLH Pilot Study
 - Assess the efficacy of the NADP (NTN) infrastructure and current sample collection methods, for PFAS studies
 - Broaden the number of PFAS compounds evaluated to 36
 - Few studies quantify more than 20 compounds
 - Initiate a synoptic overview study of PFAS concentrations in precipitation across the US
 - Extant data is quite limited
 - Improve the Quality Assurance documentation of PFAS precipitation studies
 - limited QA in many of few published studies
- PFAS Analytical Methods
 - Analytical methods:
 - ISO Method 21675 (PFAS in Water by LC-MS/MS). 36 PFAS compounds. 26 isotopically-labeled internal-standards
 - 500 mL sample volume; entire sample extracted (weak anion exchange cartridge)
 - Automated SPE (Oasis-WAX; 8-station Promochrom Tech.)
 - Sciex QTRAP 5500 LC/MS/MS, Waters Acquity UPLC
 - Contamination Control:
 - QC'd polypropylene collection bottles
 - Gloves worn during sampling
 - NO Teflon or related materials
 - LODs typically 0.15-0.2 ng/L
 - Spike recoveries typically 90-110% for a 4 ng/L spike
- Outcomes of Efficacy Study: Blanks
 - System Blanks:
 - Both Bucket & Bag Collectors
 - Both Lab & Field Deployments
 - 7-day Trials, Run in Triplicate

- High Purity Water (7-day field conditions)
 - Bags: no detects for 36 species (except PFOA, 0.23 ng/L, one sample)
 - Buckets: no detects for 36 species (except PFOA, 0.44 ng/L, one sample)
 - NTN Bottle: no detects for 36 species
- Methanol Rinses
 - Buckets: No detects for 36 species
- Outcomes of Efficacy Study: PFAS Retention/Loss Studies
 - Both Bucket & Bag Collectors
 - Both Lab & Field Deployments
 - Both MQ & Precipitation Matrices
 - Kinetic Studies (0, 1, 3, 7-day samples)
- Outcomes of Efficacy Study: Summary
 - Results for samples spiked with 36-PFAS Compound Mixture
 - 10 ng Spike in 2L of MQ
 - 7-Day Exposure
 - 50 mL MeOH Bucket Rinse
 - Average of Triplicate Buckets
 - Loss of PFAS is minimal for compounds of carbon number <10 under current (and planned) NTN protocols.
 - Losses are observed in buckets for longer-chain (>10 carbon) PFAS compounds.
 - But recoverable with a methanol rinse of the bucket
 - The current NTN protocols are “CLEAN” for a broad range of PFAS compounds.
 - Alternate handling/collection protocols can be implemented to address losses of longer-chain compounds (MeOH rinsing).
 - Precipitation (and Air) are effective monitoring matrices for detection of trends (likely better than other environmental receptors (e.g. fish))
- Atmospheric Deposition of PFAS via Precipitation Pilot Synoptic Study: Key Findings
 - 30 Sites, 37 Samples, Summer & Spring 2019
 - Levels of many PFAS compounds were low (1 ng/L), though the sum of species’ concentrations exceeded 4 ng/L at several sites (proposed WI Action Level ~ 2 ng/L)
 - Sites in the mid-Atlantic states generally had the greatest # of detectable PFAS species and the highest concentrations.
 - PFHxA, PFHpA, PFOA and PFNA were each present in nearly 70% of all samples.
 - The carboxylic acid compounds were by far the most frequently detected and largest class contribution to the total targeted PFAS.
- PFAS Deposition Fluxes
 - Concentrations of 0.2 to 6.0 ng/L equate to a wet deposition PFAS flux of 0.7 to 21 ng/m²/day (at an annual precipitation volume of 125 cm/year).
 - This flux is significant for many environments, e.g. large lakes with long residence times
 - For Lake Michigan, an annual flux of 4.4×10^{14} ng/year implies a 0.1 ng/L/year PFAS accumulation throughout the water column
 - Field & Laboratory Effort Complete. Manuscript Draft Prepared
- NADP PFAS Tool Box
 - Developed a standardized robust protocol (SOP) for PFAS wet-deposition measurements using the NADP-NTN infrastructure
 - Incorporates optimized analytical methods
 - Could support site-specific, State, regional, and national PFAS wet-deposition efforts
 - Process used here can be applied to other emerging contaminants
 - Regulatory Limits and Reference Concentrations
 - EPA Reference Concentration: 70 ng/L (PFOA+PFOS)

- State Drinking Water Limits: 5 – 70 ng/L
- WI proposed 20 ng/L WQL, 2 ng/L action level
- Research suggests biological impacts at < 1 ng/L
- Atmospheric Deposition of PFAS - Major Unresolved Issues
 - The role of point, regional, and global emission sources at a given location
 - Primary emission source versus secondary (reactive transformation) pathway
 - Is source reconciliation possible from compound “fingerprint” profiles?
 - Emission factors from major classes of emission sources
 - The magnitude of dry deposition
 - Composition of PFAS pool. Unaccounted for fraction, oxidizable fraction, C2, C3, >C12?
 - Follow-up Studies will be Addressing Many of these Issues
- PFAS Measurement Approaches
 - Total
 - PIGE
 - XRF
 - TOF/CIC
 - EOF/CIC
 - Non-targeted
 - Discovery
 - Semi-Quant
 - Pathway analysis
 - Total Oxidizable Precursor (TOP)
 - Oxidative conversion of targeted & unknown precursors
 - Targeted
 - 12-50 species
 - Quantitative
 - Toxicologically relevant species
 - Small fraction of total
- What Next? Precipitation Focused
 - Expand “synoptic” sampling using NADP infrastructure
 - Analytical enhancements
 - Very short chain (C2, C3)
 - Total PFAS (TOF)
 - Oxidizable component (TOP)
 - Expand scope of targeted compounds
 - Non-targeted analysis
 - Phase speciation in precipitation / Washout Processes
 - Deposition Modeling (CMAQ, etc.)
- Atmospheric Deposition of PFAS via Precipitation - Wisconsin Precipitation PFAS Intensive
 - All 7 NADP-NTN Sites in Wisconsin
 - 14 Weeks (April – July 2020)
 - WDNR Funded: NADP, WSLH Partners
 - Optimized PFAS Sampling Protocols with MeOH rinsing
 - Comprehensive Analytical Protocols
 - 36 Targeted PFAS (LC/MS) - WSLH
 - Total Organic Fluorine (CIC) - WSLH
 - Non-Targeted Analysis (LC/MS) – EPA
 - This initiative incorporates further method enhancements for neutral PFAS species that are very important to atmospheric transport and transformations

- PFAS Collaborations – Ongoing or Planned
 - NADP & EPA & States & WSLH
 - Several States, as well as USEPA, have expressed interest in establishing precipitation monitoring as well as PFAS deposition modeling programs
 - NADP & EPA & WSLH & WDNR
 - Sharing of precipitation extracts for non-targeted PFAS analysis at EPA ORD
 - WSLH & NADP & Researchers
 - Method Exchange
 - Research Proposals
 - We have (in response to RFAs) submitted several proposals that (in-part) address the atmospheric PFAS issues noted previously

Discussion:

Melissa attended Martin's seminar and related discussions with Donna Schwede and John Walker at RTP – plans are underway for a PFAS virtual meeting for interested parties later this summer.

Donna Schwede noted that her group and ORD is excited to collaborate with Martin and his team to measure and model (CMAQ case study) PFAS perhaps at Duke Forest.

Ben Murphy mentioned that EPA is expanding its CMAQ modeling effort to the Eastern U.S. Although there are many uncertainties (PFAS composition, dry deposition, atmospheric reactions, etc.), this work hopes to fill gaps in our understanding of PFAS behavior and deposition.

Mary Lynam asked whether the presented error estimation for PFAS determination is based on single, duplicate, or triplicate determinations? Martin responded that most were single samples – it's challenging to get more than 500 mls of precip. Several duplicate studies suggest errors of +/- 10-20% at sub-nanogram per liter concentrations for individual compounds. Propagated error across all species about the same. Mary noted interesting variability in PFAS concentrations at some sites in different states and asked for clarification. Martin replied that the Mid-Atlantic states had higher concentrations in precipitation – reflects urban sources or transport from large emission sources. But some of the highest concentrations were found in remote locations (e.g., a state park in WI with no known sources nearby). A larger study is needed to address the issue of sources, transport, etc.

John Offenburg noted that he, Donna Schwede, and John Walker have discussed sampling strategies at Duke Forest to examine measurement precision, as well as throughfall measurements but have not discussed a sampling strategy with Martin.

13. Spring Meeting 2021 (Winston Luke, NOAA)

- If meeting is held in person, it will take place on May 10-14, 2021 at the Madison Concourse Hotel and Governor's Club, 1 W Dayton St, Madison, WI 53703
 - (800) 356-8293
 - <https://www.concoursehotel.com/>

14. Fall Meeting 2020 (Greg Wetherbee)

- Theme – NADP in a Changing World
- Was planned for Knoxville, TN November 2-6, 2020
 - Monday – CLAD workshop, Science committees
 - Tuesday – Business meeting
 - Wednesday and Thursday – Scientific symposium

- Guest Speakers Dr. LaToya Myles and Dr. Rick Saylor (NOAA) and Dr. John Schwartz (U. Tennessee)
 - o Friday - Field Trip to Great Smoky Mountains National Park
- Meeting venue University of Tennessee Conference Center
- Hotel – Hyatt near the Conference Center
- No signed contracts with UT, Hotel, etc. – so no financial liability as of now
- Hotel rooms must be canceled by August 1, otherwise incur a \$16K liability
- Conference Call on May 4 to discuss viability of in-person meeting, follow up with UT
 - o UT very flexible on arrangements
 - o WSLH is busy responding to the pandemic
 - o Should make a decision soon – in-person vs virtual meeting
- A robust discussion of the impacts of COVID-19 on the Fall Meeting
 - o Uncertain whether federal employees will be able to travel in November
 - o Would have to practice social distancing at the UT Conference Center, complicating meeting logistics, and necessitating rental of more meeting rooms to allow for lower capacity in each
 - o Risks to conference attendees from travel, etc.
 - o UT could be closed in the Fall, could be fully open – so many unknowns
 - o A decision should be made soon.
 - o Moving to virtual meeting will reduce costs (\$100K +) and uncertainty
 - Possibility of reprogramming federal travel funds to NADP operations?
 - Unlikely – funds typically not fungible
 - o Could go to an online scientific symposium
 - o NADP PO would save about \$13-15K in food and meeting room costs, \$25-28K overall
 - o Technical logistics/hurdles to marrying in-person meeting with virtual access
 - o Might be possible to keep Knoxville as a venue for Fall 2021 meeting, many of the contacts and arrangements have been made.
 - o The virtual meeting has worked well so far.
 - o Even if UT is open and we move to in-person meeting, many attendees may not risk coming and attendance will suffer.
- A final decision (virtual vs in-person) will be made by Exec.

15. Final Discussion/Questions/Wrap-up (Melissa Puchalski)

- Melissa thanked all the attendees, committee chairs, secretaries and PO staff for their hard work and efforts to make the virtual Spring 2020 meeting a success.
- Meeting Adjourned

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