

**The National Atmospheric Deposition Program (NRSP-3)
Technical Committee Meeting
October 6 - 8, 1997, Ellicottville, New York**

Minutes

Tuesday, October 7, 1997

Opening Business Meeting

Welcome and Introductions ---

At 8:05 a.m. Program Chair, Stan Coloff, welcomed all to the 1997 NADP (NRSP-3) Technical Committee Meeting. Stan asked the meeting attendees to introduce themselves (see attached list). He offered a special thank you to the staffs at the Illinois State Water Survey and at the Coordination Office in Colorado for working together to make the necessary arrangements for the meeting. Stan also thanked Stephen Vermette, the NADP Vice Chair and organizer of the technical program, for choosing a beautiful location with excellent accommodations. He then introduced Stephen and asked him to comment on the technical program and related activities.

Stephen Vermette presented an overview of the meeting, describing briefly the topics that would be addressed in the two oral sessions and one poster session. Stephen also reviewed the schedule for subcommittee meetings and the special luncheon with guest speaker, Richard Pouyat, a Legislative Assistant to Senator Moynihan.

Stan Coloff recapped the changes in NADP management that had occurred in the past year. Stan described the difficult decision that confronted the Executive Committee to move program coordination from Colorado State University to the University of Illinois, Illinois State Water Survey, as of the 1st of October. Stan described the transition as a very busy and challenging time for the staffs in both locations. He acknowledged all of the people involved with this move for their professionalism and for dealing with the transition in a positive and constructive manner. Stan offered his own high expectations for the future of the NADP.

Stan ended his opening remarks by thanking Past Chair, Rich Grant, for his leadership and by appointing a nominating committee (Past Chair, Rich Grant, Chair, Stan Coloff, and Jim Lynch) for the position of Secretary of the NADP (NRSP-3) Technical Committee for 1997-98.

Reports ---

Administrative Advisors -

AES -

Lee Sommers, Administrative Advisor for the Western Region, discussed the commitment of Agriculture to the NADP for the next five years. Lee reported that the proposal to renew the National Research Support Project - 3 for another 5 years had been approved by the Regional

Directors. He introduced Wayne Banwart from the North Central Region and Bill Brown from the Southern Region. Wayne is a faculty member at the University of Illinois and will serve as the lead Administrative Advisor to the NADP, since the Program Office is now located there.

CSREES -

Jack Barnes told the group that the NADP is highly regarded at the CSREES in Washington, D.C. Jack described the need for a review of the entire Program. He indicated that the need for the review was first introduced by the Northeastern Regional Directors during their deliberations over the proposal to renew the NADP for another five years. Jack reported that the Northeastern Regional Directors approved the renewal but noted that a program review had not occurred in the third year of the previous 5-year cycle. The Northeastern Region requested that a review be organized as soon as practical. Jack mentioned that this topic had received much attention at the Executive Committee meeting on Monday (5 October). Jack stressed the importance of the review and encouraged everyone present to offer their ideas on how the review might be structured and who should be involved. Jack reiterated the need to leave Ellicottville with a solid plan for the review.

USGS -

Mark Nilles reported that the USGS atmospheric deposition funding was restored by Congress at the same levels as FY97. In addition to the direct USGS support for NADP monitoring, ongoing interpretive efforts were supported, including: base cation depletion in soils in the Northeast and Southeast, an updated trends effort, and total deposition in high elevation precipitation in the Rockies. A new interpretive effort includes support for calculating nitrogen deposition in the Mississippi River drainage, as part of the federal Committee on the Environment and Natural Resources assessment of hypoxia in the Gulf of Mexico.

Program Office -

Van Bowersox, Program Coordinator, thanked the staff of the Coordination Office in Colorado for their cooperation and effort in moving the office to Illinois. Van especially thanked Linda Bandhauer for working with Kathy Douglas on the arrangements for the annual meeting. He recognized Jim Lynch for all his work in preparing the NRSP-3 renewal proposal.

Van described the overall plans for staffing the Program Office. He announced that a search was underway for a program assistant who will handle the agreements between non-federal participants and the University of Illinois. There are over 50 agreements covering approximately 80 sites in the NADP/NTN and its two subnetworks. This is an important position and a significant effort within the scope of activities in the Program Office.

Van highlighted the following items in his report:

- Van received notification that the NRSP-3 off-the-top monies had been approved and would be administered through the Illinois Agricultural Experiment Station.

- The proposal for the cooperative agreement between the USDA CSREES and the University of Illinois was submitted to the CSREES in September. CSREES sent a letter affirming its intent to fund this agreement. A formal cooperative agreement is in preparation. This agreement is funded with monies from nine federal agencies.
- Memoranda of Agreements (MOA) for the “non-federal” sites (e.g., SAES, universities, state agencies, national labs, and private companies) are being processed by the Water Survey and University of Illinois Grants & Contracts. For the NADP/NTN, 29 of the 34 agreements are in final or near final form. For AIRMoN, one site is funded using an MOA (Tampa Bay National Estuarine Program site). For MDN, all sites are funded with MOAs, which are now being prepared. MOAs will be sent to MDN sponsors before the end of December 1997, when MDN Coordination officially moves to the University of Illinois from Colorado State University.
- There are 196 active NADP/NTN sites and nine NADP/AIRMoN sites in the network as of 30 September 1997.
- Kathy Douglas will provide administrative support for Technical and Executive Committee meetings, coordinating meeting rooms, making arrangements for audio-visual equipment, and handling meeting registration and other matters, as needed.
- Jim Osborne, a Water Survey technician, has been employed by the Program Office to assist with the Network Equipment Depot (the spare parts shelf). Jim will work with vendors, including Wally Weber at Aerochem Metrics, to get motor boxes, sensors, precipitation gage clocks, and gage mechanisms repaired.
- Scott Dossett, the CAL site liaison, will expand his responsibilities to include oversight of site start-ups, moves, and modifications. He will work with the Coordinator to help site personnel address long-term problems with siting and equipment.
- Bob Larson has been hired as the NADP Data & Information Services Manager. Bob will work with Bob Gilpin at Colorado State University to move the NADP data base to the Water Survey. In addition, Bob will be responsible for development of the NADP Web page. Bob has experience with the NT operating system and use of Microsoft’s SQL data base management system, planned for use with the NADP data set. The goal is to have uninterrupted access to NADP data throughout the move from CSU to the UI.

CAL -

Jane Rotherth reported.

- Personnel Changes
 - Mark Peden continues as the Laboratory Manager
 - Karen Harlin is the Laboratory Supervisor, replacing Kenni James. She also replaces Andrea Morden-Moore as Data QA specialist
 - Laura Zangori was hired to do sample filtration and measure lab pH and

conductivity. She replaces Pam Scales

- Jane Rotherth is now the Analytical QA Specialist and AIRMoN Data Manager
- Phillis Ballard is a new half-time employee, who washes buckets and bottles
- Kathy Douglas, Data Base Manager, is working 25% for the Program Office
- Scott Dossett, Site Liaison, is working 25% for the Program Office
- Data Technician, new hire, will assist Kathy Douglas, and Scott Dossett with data screening and reporting and some AIRMoN duties.

Cross training is ongoing so that leaves and absences do not disrupt the work flow.

- pH Electrode Update
All but two sites use the Broadly-James electrode. 127 new and used electrodes were sent in the last year. The turnaround in electrodes is about 1.6 years. New electrodes seem to have a drift problem. Laura Zangori is working with the manufacturer to determine the cause of the problem.
- QA Reports
The 1995 report is at the University of Illinois printer. It will be available in mid to late October. Annual reports are now Jane Rotherth's responsibility.
- Training Course
There were 12 attendees at the course held in May. To date, the CAL has conducted 27 courses for 589 participants, representing 220 sites. 14 active sites have never attended training.
- Update on Interlaboratory Comparison Studies
The CAL was contracted to prepare samples for the World Meteorological Organization interlaboratory comparison.
- pH 4.9 Check Solution
This QC solution has been used since January 2, 1996. Sites consume a liter of solution about once every 4 months, considerably more than when the 4.3 check solution was used. Apparently more solution is required to get measurements in the acceptable range. The CAL is preparing about 100 liters of 4.9 check every two months, or 600 liters per year.
- The Flow Injection Analyzer was computerized to capture ammonium and phosphate data beginning in April 1997.
- Network Equipment Depot (NED)
NED replaces the Coordination Office Equipment Depot (COED). Transfer of supplies and materials began on June 1, 1997. By mid-August, all COED materials had been sent to the NED. As of September 1, 1997, all replacement components are being sent to sites from the NED. The NED has sufficient supply of parts at this time. Procedures are being written and local repair vendors sought.
- 11-Grid vs 7-Grid Sensor Test
MDN uses 11-grid sensors, whereas NADP uses 7-grid sensors on the ACM collectors. Results of a comparison performed at the CAL show similar collection efficiencies. Scott Dossett will present a poster detailing the experiment.
- EPA Site Audit Program/Training New Site Auditors

Scott Dossett presented a schedule for training new site auditors. The plan was for a 3-day training session, which would include the standard CAL training course plus intensive field and laboratory work.

- **Operators Manual Rewrite**
Progress on organizing and writing a revised NADP Operators Manual has slowed due to the Coordination Office move to the ISWS. Pictures and schematic diagrams in the manual are being digitized. The goal is to develop a document that is accessible via the Worldwide Web.
- **Annual Lid Seal Replacement**
Collector lid seals were changed on June 24, 1997. All but 10 sites participated. Memos were sent to non-participating sites to determine the nature of their problems, if any. Four sites were sent letters about especially dirty lid seals. 20 sites were classified as having off center lid seal impressions, which may indicate future problems with the collectors. Dossett is formulating a plan of action.
- **AIRMoN**
 - 1118 archival samples were sent to Tyler Coplen of the USGS in Reston, VA. Ty will analyze these samples for oxygen and hydrogen isotopes. Samples covered all sites for the years 1993-1994.
 - CAPMoN raingages were used for the last two summers at all but the Florida site. Preliminary studies show no bias between the CAPMoN gage and the NWS “stick” gage.
 - Nipher-shielded CAPMoN precipitation gages will be installed at 4 sites (IL11, OH09, NY67, and VT99) for use this winter to compare with the unshielded NWS “stick” gage. PA15 already has a Nipher-shielded gage and data for the winter of 1996-97 are available.
 - There is a potential new AIRMoN site in Sarasota, FL, funded by the Sarasota Bay National Estuary Program. Site operations could begin in early 1998.
 - NGS Kid’s Network - pH data are still being sent to NOAA for the National Geographic Society’s Kids’ Network - Acid Rain. Jane Rothert reviewed new text that describes pH measurements and general information about acid deposition and collection. This text will be used next spring in classrooms around the country.
 - The AIRMoN Site Operator’s Manual was published as a NOAA Technical Memorandum in April. At that time, edits were made and a revised version of the operators’ manual was sent out to all AIRMoN sites.
 - The AIRMoN QA Manual is in the process of being rewritten based on Data Quality Objectives (DQO’s). This has been delayed due to the move of the Coordination Office to the ISWS. Section 2 on Field Operations, Section 3 on Laboratory Operations, and Section 4 on Data Management Operations are nearly complete.
- **Special Research Projects**
 - Gelman Filters - A new type of Gelman filter was tested to see if the positive sodium bias, now observed with Millipore filters, is better or worse. Preliminary results are very positive. The Gelman filters have allow a good flow rate and are equal in price to the Millipore filters. If further tests continue to show results as good

as the preliminary study results, the CAL will start using the Gelman filters on Jan. 1, 1998.

- New bucket cleaning procedures - New buckets have been cleaned using various combinations of prewashing, acid leaching, and check solution/blank verification. The CAL wants to standardize the procedure and incorporate it into the regular bucket washing protocols. The new method will formalize how new buckets are introduced into the system.

- New pH meter/computer - The CAL is currently a beta test lab for Orion's new pH meter. This is a regular computer with a special attachment and software that turns the computer into a pH meter. All of the CAL instruments, except pH and conductivity, are now computer-controlled with data acquisition directly to a data-base-compatible spreadsheet. An Orion instrument for conductivity, similar to the pH meter being tested, will be evaluated by the CAL when it becomes available.

- Ammonium stability study - Sue Bachman, Van Bowersox, and Pam Scales have begun exploring various ways to study the degradation of ammonium and other biologically sensitive constituents in acid precipitation.

- Omnimark pH meter - Omnimark Instrument Corp. has a new electrode, the IQ200 pH system. The CAL is in the initial stages of testing this new meter and probe. The probe is designed to last at least 12-18 months but can last up to 5 years.

- **UPS Strike and its Effect on the CAL and Sample Shipping**

On August 5, the UPS went on strike. Data management staff faxed every site in the network, warning them to find alternate shipping services. About 90% of the sites sent samples by US Postal Service with the rest using Federal Express. Thirty sites did not send samples at all during the strike period. The overwhelming increase in business to both FedEx and the US Postal Service caused the travel time to increase from 3 to 10 days for each shipment. During the strike, approximately 500 mailers were sent from the CAL. The normal cost for sending these mailers would have been \$3000 when sent by UPS. The cost during the strike was \$6500 or an increase of 117%. One positive outcome of the strike was that sites were forced to rotate through their entire inventory of mailers. The CAL used this opportunity to confirm the bucket and lid inventories at each site.

- **In-house Technical Review**

Mark Peden, Karen Harlin, and Jane Rotherth will conduct a technical review of the CAL laboratory and shipping and receiving operations in November. This will be an educational review to look for areas that need to be improved, as well as to make sure all SOPs are being followed. All lab personnel will be reviewed in their primary and cross-trained jobs.

MDN-

Stephen Vermette presented the MDN report. Molly Welker will remain as the MDN Coordinator until January 1, 1998. Steve made assurances that the data will be sent soon and that they are finalizing the screening codes applied to the 1996 data. There are 26 sites in the MDN, and

8 additional sites that should be operational by the end of the year.

Mark Nilles suggested that the HAL and MDN should be more prominent at the meetings by making HAL and MDN reports.

Awards ---

Jack Barnes was presented with a plaque in appreciation for his many years of service and commitment to the NADP, as the CSREES advisor and as a loyal member of the Executive Committee.

Awards were presented to site operators that completed 5, 10, and 15 years of service to the project. They are:

Awards 1997

5-year awards (paper certificate)

<u>NAME</u>	<u>SUPERVISOR</u>	<u>SITE CODE</u>	<u>SITE NAME</u>	<u>START DATE</u>
Stan Green	Ron Steger	CO01	Las Animas Fish Hatchery	10/04/83
Sue Williams	Craig Axtell	CO19	Rocky Mountain NP	05/29/80
Natalene Cummings	Vicki Snitzler-Neeck	ID03	Craters of the Moon NP	08/22/80
Daniel Pepin	Robert Brooks	MA08	Quabbin Reservoir	03/05/82
Ron Gilstrap	Rick Artz	MS19	Newton	11/11/86
Verena Fabian	Matt Johnston	OR98	Bull Run	07/13/82
Bonnie Lu	J.G. Owen	TN00	Walker Branch Watershed	03/11/80
Collette Daigle-Berg	James Sweaney	WY08	Yellowstone National Pk	06/05/80
Rod Randall	Rick Schuler	WY99	Newcastle	08/11/81

10-year awards (5x7 plaque)

April Ammeson	Larry Windom	FL41	Verna Well Field	08/25/83
Lee Maull	Tom Dreschel	FL99	Kennedy Space Center	08/02/83
David Cook	Doug Sisterson	IL19	Argonne	03/11/80
Dan Mosier	Mike Carlson	KS07	Farlington Fish Hatchery	03/27/84
Hilliard Griffin	Darrell Wilson	MS30	Coffeeville	07/17/84
Robert McCollum	Wayne Swank	NC25	Coweeta	07/05/78
Raymond Masters	D.J. Raynal	NY20	Huntington Wildlife	10/31/78
Diane Boucher-Appel	John Hom	PA72	Milford	12/27/83
Ron McGonigle	Ted Cooney	SC06	Santee NWR	07/19/84
Cathy McLain	Bruce Rodger	WI09	Popple River	12/30/86

15-year award (8x10 plaque)

Jim Joiner	Grey Henderson	MO05	University Forest	10/27/81
------------	----------------	------	-------------------	----------

The opening business meeting was adjourned at 10 a.m.

Open Forum (2 p.m. to 4 p.m.)

Stan Coloff, Moderator

This was an open discussion on topics such as future plans for the NADP Web Page, marketing strategies for NADP, improving services to sites, and urban sampling.

Closing Business Meeting

The closing session of the 1997 NADP (NRSP-3) Technical Committee Meeting was called to order by Chair, Stan Coloff. There were 23 people in attendance.

Executive Committee Report---

- The Executive Committee prepared a draft outline for the NADP (NRSP-3) Program Review. Jack Barnes and CSREES will take the lead in this review. The time line is to have a report ready by the latter part of February 1998, in time for the Northeast Regional Directors meeting.
- MDN Coordination - There was a motion to recommend that Molly Welker be retained as Coordinator for the MDN. The motion failed (2 to 5).
- A committee was formed to plan the next technical meeting for NADP, which will mark the 20th year of site operations for the network. Committee members are Dennis Lamb, Rick Artz and Jim Lynch.
- The Executive Committee discussed the need to include representatives of the MDN community.

MOTION: Joel Frisch moved to expand the Executive committee by three members: an MDN advisor, appointed by the Program Chair, and the CAL and HAL laboratory managers. Van Bowersox seconded the motion. Motion carried.

- Another issue that was discussed by the Executive Committee is the need for an official set of rules for conducting business.

MOTION: Stan Coloff moved to create an ad hoc by-laws committee to define procedures for the Executive and Technical Committees and the NOS, DMAS, and Environmental Effects Subcommittee. Gary Lear and Mark Nilles comprise this ad hoc committee, which is charged with developing a draft set of by-laws by the Spring Executive Committee meeting. Stephen Vermette seconded the motion. Motion carried.

- Mark Nilles presented a new policy for the disposition of NADP archival samples, which had previously been discussed and approved by the Subcommittees and amended and approved

by the Executive Committee.

MOTION: Stephen Vermette moved to accept this new policy. Luther Smith seconded the motion.. Motion carried. (Note: this policy is described in the minutes of the Executive Committee meeting.)

Nominating Committee —

The nominating committee selected Jim Lynch of Penn State University to be the next NADP Secretary. This means Jim would be Chair in the year 2000.

MOTION: Jim Lynch be elected by a vote of acclamation. Motion was seconded and carried.

Technical Committee Officers for 1997-98 are:

Chair: Stephen Vermette
Vice Chair: Dennis Lamb
Secretary: Jim Lynch
Past Chair: Stan Coloff

Subcommittee Reports ---

Network Operations -

John Gordon briefly summarized the topics that were discussed in the Network Operations Subcommittee meeting:

- Officers were elected for 1997/98
Scotty Dossett, Chair
John Gordon, Vice-chair
Jane Rothert, Secretary
- Jane Rothert presented the CAL report
- Gary Lear described the new site audit contractor, Advanced Technology Systems, Inc. ATS will have a contract to visit 100 sites per year.
- Scott Dossett reported on the Network Equipment Depot (spare/replacement parts)
- Mark Nilles introduced an initiative to replace raingages in 2000-2001
- Scott Dossett gave an update on precipitation gage winterization
- The Site Operator Manual will be revised

MOTION: A motion was brought forward to the full committee to make field chemistry at NADP/NTN sites optional. An amendment to the motion was made to send a letter to sponsors stating the field chemistry is now optional but sites are encouraged to continue field chemistry measurements. Wayne Banwart seconded. Motion failed.

Network Operations and Data Management and Analysis -

John Gordon and Luther Smith briefly summarized the topics discussed in the combined Network

Operations and Data Management and Analysis Subcommittee meeting:

- Molly Welker gave a comprehensive report on the state of the MDN
- John Gordon described changes in the USGS collocated sampling program
- Luther Smith and John Gordon led a discussion of the possibility of urban monitoring
- Rick Artz led a discussion of the planned review of the NADP
- Mark Nilles led a discussion on the need for marketing NADP
- Rick Artz described the role of NADP/NTN in the Chesapeake Bay nitrogen loading studies
- Van Bowersox reported on the staffing and job responsibilities at the Program Office

Data Management and Analysis -

Luther Smith briefly summarized the topics discussed at the Data Management and Analysis Subcommittee meeting:

- Officers were elected for 1997/98
Chair - Luther Smith
Vice-chair - Mary Ann Allan
Secretary - Bob Brunette
- Molly Welker, Eric Prestbo, and Bob Brunette provided comments on the status of the MDN data base
- Bob Gilpin reported on the status of the annual data summary and indicated that it would not be ready on schedule; there was extensive discussion which led to a motion.

MOTION: Luther Smith moved that the Technical Committee approve deferring the delivery of the annual report in paper form to its members until the 1998 Fall Technical Committee Meeting. This motion was seconded and passed.

- Luther Smith led a discussion of issues related to moving the NADP data base and web page from CSU to the Water Survey; a “laundry list” of concerns was given to Van Bowersox for consideration during the implementation of the move.
- Luther Smith led a discussion of the treatment of MDN data, including coding issues and deposition calculations. A motion was brought forward.

MOTION: Mercury deposition will be calculated with the raingage reading, replaced by the sample volume when the raingage reading is missing. The code for not having an event recorder was changed from “P” to “ER”. Data will be available on the Web when these changes are complete. Van Bowersox seconded. Motion carried.

- Luther Smith proposed new wording and tables for the advisory that informs data users of the change in protocol that occurred in January 1994; this led to passage of a motion by the Data Management and Analysis Subcommittee to change the text and tables in the advisory. Luther’s presentation of this issue led to discussion and questions from the Executive Committee. Mark Nilles stated that he supported

changing the advisory to include formulas that could be used to adjust the data. Luther raised concerns about use of “adjustment factors.”

MOTION: A motion was brought to the Technical Committee to approve replacing the current advisory with the replacement suggested by Luther. Bob Gilpin seconded. The motion was amended by Mark Nilles to include the formulas of Bowersox and Shealy. Gary Stensland seconded. A discussion of the equations followed. The question was called on the amendment. Motion carried. A vote was taken on the entire motion. Motion failed.

MOTION: Gary Stensland moved to retain the revised text and leave the tables with the formulas added. Scott Dossett seconded. Motion failed.

MOTION: Gary Stensland moved to change just the part of the advisory that refers to the Coordination Office to say the new Program Office. Van Bowersox seconded. Motion carried.

Environmental Effects -

Ellen Porter briefly summarized the topics discussed at the Environmental Effects Subcommittee meeting:

- Ellen Porter and John Sherwell are the present co-chairs and will remain in that capacity for another year.
- The status of the nitrogen brochure was discussed; the Program Office will work on the text and figures to move it forward.
- Dick Cline discussed an EPA initiative to install a fine particle network, using NARSTO to implement the network; Dick suggested that some of these sites may be located at NADP sites. John Sherwell and Dick Cline will contact NARSTO people about this. The funding will come from EPA.
- The Subcommittee addressed the issue of NADP monitoring at urban sites; concluding that an urban subnetwork could be considered.
- The NADP review was discussed noting that more specific directions are needed to plan the review.
- The Subcommittee discussed future activities; other brochures were suggested, including one on the value of long-term monitoring, one on the MDN, and one on the value of NADP to educators and students. Gary Lear will develop a brochure on long-term monitoring and Stephen Vermette will develop a brochure on MDN.
- The Subcommittee discussed the possibility of organizing a technical session on deposition at a major national scientific meeting such as the American Geophysical Union, the Ecological Society of America, or the Air and Waste Management Association; or possibly combining our annual technical meeting with one of these national meetings.

Closing —

Stan Coloff thanked all of the subcommittees for their hard work. He was appreciative of the help

and support he received during the year. Stan Coloff passed the gavel to Stephen Vermette and at 8:05 p.m. Stephen officially adjourned the 1997 NADP (NRSP-3) Technical Committee meeting.

PARTICIPANT LIST - 49
NADP Technical Committee Meeting
October 6-8, 1997
Ellicottville, NY

Richard Artz
Wayne Banwart
John M. Barnes
Van Bowersox
William H. Brown
Robert C. Brunette
Kathy Douglas
Charles Driscoll
Guy Fenech
Joel Frisch
Cari Furiness
Bob Gilpin
Gary G. Lear
James A. Lynch
Dave MacTavish
Lee Maull
Mark A. Mesarch
Mark Nilles
John Sheehan
John Sherwell
Howard A. Simonin
Luther Smith
Lee E. Sommers
Gary Stensland
Derek Winstanley

Tom Butler
Boris Chevone
Richard Cline
Stan Coloff
Wayne Cornelius
Scott Dossett
John Gordon
Rich Grant
Karen Harlin
Susan Randall Johnson
Dennis Lamb
Douglas O. Lantagne
Dan Orr
Ellen Porter
Richard Pouyat
Eric M. Prestbo
Jane Rothert
Joseph Scudlark
Michael Uhart
Frederick A. VandeVenter
Stephen Vermette
Elon S. Verry
Molly Welker
Michael P. Wilson