National Atmospheric Deposition Program NRSP-3 (IR-7)
Technical Committee Meeting
October 7- 10, 1991
Philadelphia, Pennsylvania
Minutes

Monday, October 7, 1991

Opening -

The opening session of the 1991 NADP Technical Committee Meeting was called to order by Chairman, Bill McFee. Following participant self introductions (see attached list), Bill outlined the agenda for the meeting. Following this session, the subcommittees will meet. At 5 p.m., a concurrent poster presentation and social will begin. A Symposium on Trace Metals will be held all day Tuesday, and Wednesday will include technical sessions and a field trip to historic Independence Park for a Cultural Resources Symposium. Another technical session and the final business meeting are scheduled for Thursday morning.

Coordination Office Report-

Jim Gibson, Coordinator, reported. He mentioned the renewal of IR-7 and announced the change in designation for the Program from IR-7 to National Research Support Project. This designation is given to programs which provide support for research. A proposal for continuation of NADP as NRSP-3 has been drafted. It is much the same as those prepared for the IR-7 projects, although previously, there was a section which addressed effects research. NADP has historically served in an advisory capacity for effects research, particularly the research effort at North Carolina State University. When that phased out, NADP provided support to NAPAP, but the Program has not been directly involved in effects research, and this new designation is a recognition of that. However, NADP has always been very much tied to the effects research community, and there are still strong ties. There is now the major category--trends—related to the need to assess the effectiveness of the Clean Air Act. Another important responsibility is assessment of long-term trends. The renewal proposal must be submitted about January 1.

With regard to program status, Jim believes we will see some difficulties within the states in maintaining sites, and he stressed that it is important that anyone in a position to provide support for NADP at the state level do so. North Carolina is an example. They have been forced to look for other sources than the power companies for support of their sites. Massachusetts is another example, and there are several other instances. The Coordination Office has been successful in obtaining support for some of the threatened sites through alternate sources of funding.

Carol Simmons reported on Coordination Office activities. She presented the report on network status and overall status of the program during this session to prevent repetition in the subcommittee meetings.

1. Three threatened sites will remain open, so the current number of active sites remains at approximately 200.

2. The Annual Data Summary has been completed and will be mailed within the next few weeks.

3. Site Report Notebooks were completed and mailed to all site operators and site supervisors.

4. The Coordination Office continues to receive data requests at the rate of 5 or 6 per week, with no apparent drop-off. These are special data requests from people doing research.

5. There was a change in data processing capabilities at NREL which speeded up our ability to provide information to users. The Coordination Office is now modifying its data products to make them more user friendly.

6. The Coordination Office was requested by the Network Operations and Data Management subcommittees to develop a mechanism for informing data users of name changes or site moves. A data file which will inform users that data from a particular site will include data from two locations will be provided Overhead transparencies illustrating the reports which have been developed were displayed.

7. The Coordination Office continues to record references to NADP data which appear in the literature and is very interested in receiving copies of any publications which contain references to or uses NADP data. Carol also asked that the Coordination Office be involved in any such uses.

8. Overheads which depicted continuing improvement in the percentage of sites meeting the completeness criteria were displayed.

9. Program to refurbish raingages at the sites. Last year, the funding agencies contributed money to create the refurbishing program with 15 donated raingages. The COED has now distributed those 15, and 14 more are currently being processed. The average cost is $450 per raingage. EPRI also donated some leftover lab equipment which has been sent to CAL for evaluation and use. They are making it available to sites on a "loaner" basis.

10. Site operator training was held in June with 28 operators attending. The Coordination Office provided full or partial support for 21 of those participants.

11. The Coordination Office has been involved in a number of small studies.

    A. A Nipher Shield study at eight NADP/NTN sites has been going on for three years. Results will be summarized in a poster being presented at this meeting. Annual estimates of precip only increased about 6% with use of Nipher shields. It was concluded that it probably isn't worth the extra effort in most instances.

    B. The USGS Pesticide Study was completed the end of September. Don Goolsby will be reporting on results from the first year at this meeting.

    C. As a result of information presented at the spring meetings, the Coordination Office was asked to develop a presentation for the Technical Committee meeting which illustrates the differences in pH maps based on field and laboratory pH measurements, and how field measurements might better be quality-assured so that there could be some confidence in publishing those measurements. Carol discussed briefly the methods which were used to develop the maps and showed two pictures illustrating the differences found. The Data Subcommittee also recommended that the Coordination Office look into developing a procedure for screening field pH data. Dave Bigelow has developed a proposal for screening this data which he is presenting in a poster.

CAL Report.

Kenni James presented the lab report for CAL.

1. pH Electrode Update. CAL is now using Broadley-James electrodes in their program to furnish electrodes to sites. There are currently 140 in the field and 60 in stock, being tested for distribution. These electrodes are working well.

2. Herbicide Project. The shipment of excess precipitation samples from 86 selected sites in the network ended. These samples were used in a study to measure the amount of triazine- and metolachlor-based herbicides in rain water samples and to develop a mass budget for these compounds throughout the corn and soybean growing areas. Preliminary results were presented by Don Goolsby of USGS at the Atlanta American Chemical Society meeting last April. A press release prepared in conjunction with the meeting resulted in nationwide reporting of the initial study findings.

3. Trace Metals Pilot Network. An NADP/NTN pilot network began sampling on a weekly basis in April of this year. Three sites have been involved Bondville. Illinois; Arvada, Colorado; and Oak Ridge National Laboratory, Tennessee. Analyses are being performed by ICP-MS at the Illinois Hazardous Materials Laboratory GFAA at the Illinois State Water Survey, and GFAA at the USGS Laboratories in Denver. Mercury determinations on selected samples are being performed at Oak Ridge National Laboratory. Preliminary results will be presented at the Symposium on Trace Metals on Tuesday. The project will be continued through March 1992.

4. Bucket Versus Bottle Comparison. The use of bottles versus buckets for shipment of NADP/NTN samples from the field to CAL ended in May. A portion of each sample is being shipped in a bottle, with the remainder being shipped, as usual, in the bucket. The results of the comparison of sample chemistries will be presented on Thursday by Jim Lynch and Van Bowersox.

5. Alternate Shipping Containers. CAL has been working on this question for some time. In the past year, alternate shipping/sampling containers have been investigated. Four alternatives were considered.

   A. The current bucket with a snap-on lid which leaked.

   B. A 1-liter teflon jar with a screw-on lid which was too expensive and too small.

   C. The current bucket with modification for a screw-on lid with a gasket which leaked during shipment.

   D. The current bucket and lid with an inert Nalgene 0-ring. The rings have passed cursory blank and leak tests, but the methods for inserting the rings into the lids is expensive, and the cost must be considered.

   This will be an on-going study.

6. Response to the CAL audit: It was recommended that the pH meter be re-calibrated with bracketing buffers for those samples which measure less than 4 or greater 7. CAL uses a 4.3 check point. A measurement comparison was conducted and no significant differences in pH were found between samples measured with 4 and 7 buffers and those measured with 3 and 10 buffers. Therefore, CAL does not plan to request any change in procedures.

7. The 100,000th sample arrived at CAL on August 14th. In honor of the occasion, the staff participated in an afternoon seminar to discuss this and other milestones from the years in the program, including over one million analyses.

8. The Quality Assurance report for 1989 is out. The 1990 report has been reviewed internally and is ready for external review as soon as results of the external audit are summarized.

9. Other activities have included:

   A. Site Operator Training

   B. Aerochem Metrics parts repairs

C. Provision of supplies for RTI site audits

D. Dry-side change memos, and memos encouraging sites to renew their check solution

10. EPRI equipment. CAL evaluated the donated pH and conductance meters for loan possibilities. The conductivity meters are being used. The electrodes were discarded, but the conductivity cells were retained.

11. Aerochem Metrics Collector Foam Pad Replacement. The site audit team recommended that the foam pads in the collectors be changed every 12 months rather than every 18 months. Evaluation of the old pads indicates that some sites are not cleaning their pads as instructed.

12. Splash-In Project. The potential for the horizontal flat surfaces of the Aerochem Metrics to contaminate the contents of the sample buckets is under investigation. Scott Dossett has prepared a poster illustrating the "splash" problem. Research will continue on this project.

Quality Assurance Steering Committee Report

Jerry Aubertin, QA Steering Committee Chairman, reported. The network is doing a very good job, and the QA Steering Committee has had a relatively easy year this past year. The committee met twice during the year—in Austin, Texas, and prior to the start of this meeting. Topics included:

1. The QA plan was completed and distributed. One error in the figures was found and has been corrected. The revision of Chapter Five is on hold since there is no pressing need for revision prior to the next major review.

2. The Remedial Action Program is working very well, and the Steering Committee may find themselves out of business as occurrences are down considerably. Twenty-one variances were granted between November 1990 and March 1991, and only two were granted between April 1991 and August 1991. Six current situations are under review and will be resolved shortly.

3. One new issue for the Steering Committee is review of the SOPs (Standard Operating Procedures) at CAL and the Coordination Office. The committee will look into this in more detail and report at the interim meetings.

4. The question of quality assurance for phosphate was referred to the Network Operations subcommittee.

Administrative Advisor Reports .

USDA CSRS-

Jack Barnes commented on his move to NAPAP for the next 15 months. He will continue to represent NADP with CSRS. Jack feels it is important to look at renewal of this project in view of the Clean Air Act and the open-ended continuation of the new NAPAP.

SAES-

Lanny Boyd commented that he is Director-At-Large for the Western Region which makes it somewhat easier for him to also serve an the NADP Administrative Advisor from that region. If NADP gets approval for renewal, it will receive off-the-top funding, and in addition, it will also be eligible to receive travel funds for the annual meetings. The 1992 budget recommended by Conference Committee has ag appropriations at 4% in base funding for Hatch and Mclntire-Stennis, $8-$9 million for water quality, and $2 million back in special grants. The 1990 Farm Bill contains the State Ag Weather Stations Network for $400,000.

Jack Pickering reported that USGS continues to support the operation of NADP/NTN. He is concerned about the drop off in funding for individual sites and hopes that all agencies will continue to support their sites.

Nominating Committee

A nominating committee was named to select a candidate to begin the progression of chairs to Technical Committee Chairmanship. Jack Barnes, Lanny Boyd, Wayne Martin, Jack Pickering (as Chairman), and Sashi Verma were asked to meet and choose a candidate for Secretary of the NADP Technical Committee.

1992 Meeting

Mike Kelly, as incoming Technical Committee Vice Chairman, will also be Program Chairman for the 1992 meeting. The '92 meeting is tentatively scheduled for the week of October 19th in Cocoa Beach, Florida. Mike asked for suggestions for the meeting program—half day versus full day field trip, symposium topics, and special sessions-and potential conflicts with the date.

Subcommittee Committee Reports

Network Operations Subcommittee

Ed Klappenbach, Chairman, reported that the primary role of the subcommittee is to assure that the data coming in is validated, that site audits are being conducted correctly and on time, and to maintain a close connection with CAL and the Coordination Office with respect to changes in siting.

Environmental Effects Subcommittee

Chairman Jerry Walker commented that, historically, this subcommittee was a larger subcommittee which was divided into four working groups—Aquatics, Field and Horticultural Crops, Forestry and Materials. The tentative agenda for this meeting is discussion of future relationships with EMAP, the impact of the new project proposal and the NRSP designation on the Effects Subcommittee, and discussion by Jack Barnes regarding budget constraints and resultant impact on effects research. There will also be an election to select a secretary to begin the progression of chairs within the subcommittee.

General Session Adjournment

The opening session was adjourned for subcommittee meetings.

Poster Session

A concurrent poster presentation and social convened at 5 p.m. A listing of displayed posters and authors follows.[1]

Modification of Precipitation Samplers for the Collection of Trace Elements in Wet Deposition
T. C. Willoughby, M. A. Nilles, S. J. Vermette and F. P. Nelson.

[1]Published abstracts may be obtained by contacting Linda Bandhauer in the NADP/NTN Coordination Office.

Modification of the Aerochem Metrics Precipitation Collector for Enhanced Sensitivity . D. B. Orr and M. R. Stevenson

Differences in Estimated Deposition Based on Precipitation Measurements by Nipher-Shielded vs. Standard Belfort Recording Gages at NADP/NTN Sites .C. L Simmons, E. W. Clime, and G. Scott

Differences in Annual Weighted-Mean pH and Hydrogen Ion Deposition Maps Based on Field and Laboratory pH Measurements .C. L. Simmons, C. L. Olsson, D. S. Bigelow, and S. E. Molden

The Media and Acid Rain .K. E. Douglas

Evaluation of Initial Analysis and Reanalysis Results in Samples Selected Randomly From the NADP/NTN Data Base . A. L. Morden-Moore and V. C. Bowersox

The Potential fir Sample Contamination Due to Raindrop Splash Off Of the NADP Wet/Dry Precipitation Collector . S. B. Dossett and V. C. Bowersox

The NADP/NTN Site Visitation Program . W. C. Eaton, K W. Murdoch, J. S. Nichol, R. C. Stores, C. O. Whittaker and B. L Bennett

Background Trace Metal Element Aerosol Climatology of Rural Indiana . R. H. Grant, D. G. Schulze, S. R. Sutton and M. L. Rivers

Enhancement of Regional Wet Deposition Estimates Based on Modeled Precipitation Inputs . J. A. Lynch, E. S. Corbett, and J. W. Grimm

SOX, NOX and Acid Rain: Is There A Relationship?- J. A. Lynch, E. S. Corbett, J. W. Grimm, and V. C. Bowersox

Analysis of the Distribution of Phosphate Values: Chemical, Geographical, and Seasonal Effects . L M. OIszewski

Decreasing Calcium in NADP Data .Could It Be Due to Unpaved Roads? . G. Stensland *Trace Elements in Rain Over North Florida* .W. M. Landing and J. Wang

Tuesday, October 8,1991

Symposium .

An all day Symposium on Trace Metals was convened for the following presentations.[2]

Global Metal Pollution . Jerome Nriagu, Environment Canada

The Clean Air Act and Trace Metals .Dale Pahl, USEPA/RTP

Analysis and Deposition of Trace Metals in Ontario - Dan Orr, Ontario Ministry of the Environment

[2]Proceedings may be obtained by contacting E. S. Verry

Analysis and Deposition of Trace Metals Around the Great Lakes - Ed Klappenbach, EPA

A Method for the Automated Collection and Proper Handling of Trace Metals in Precipitation - T. M. Church, *J. R.* Scudlark, and K M. Conko, University of Delaware

A Pilot Network for the Collection and Analysis of Metals in Wet Deposition - *S.* J. Vermette, M. E. Peden and S. Hamdy, ISWS; T. C. Willoughby and L J. Schroder, USGS; S. E. Lindberg and J. G. Owen;, ORNL; and A. D. Weiss, HWRIC

Mercury in the Environment - Don Porcella, EPRI; and Carl Watras, Wisconsin DNR

Atmospheric Cycling and Air-Water Exchange of Mercury Over Mid-Continental Lacustrine Regions - W. F. Fitzgerald, B. P. Mason, and G. M. Vandal, University of Connecticut

Paleolimnological Assessments of Atmospheric Deposition of Trace Metals - Steve Norton, University of Maine

Soil Accumulation of Trace Metals - Andrew Friedland, Dartmouth College

Metal Toxicity and Development of Fishes - Peddrick Weis, University of Medicine and Dentistry of New Jersey

Trace Metal Impact on Plants: Mediation by Soil Mycorrhizae - Michael Dosskey, Savannah River Ecology Lab

Atmospheric Deposition: Evidence in Forest Ecosystems - E. A. Nater and D. F. Grigal, Department of Soil Science, University of Minnesota

Special Presentation

At 9 p.m., Steve Lindberg hosted a special presentation titled Siberia and the Soviet Far East -Forests in Decline and Society in Decay - a pseudoscience slide show of travels to the Soviet Arctic and Central Asia.

Wednesday, October 9, 1991

A general session of the NADP Technical Committee was convened at 8:30 a.m. for invited papers in the areas of Data Management ani Analysis and Science and Technology The following papers were presented.

Data Management and Analysis Papers -

Canadian Nation al Atmospheric Chemistry Database (NAt Chem) Descriptions and Results - C. U. Ro, K J. Vet and W. B. Sukloff, Environment Canada

Monitoring Network Redesign - Tim C. Haas, University of Wisconsin, Milwaukee

Science and Technology Papers

Herbicides in Atmospheric Deposition In the Upper Midwest and Northeast United States D.A. Goolsby, E. M. Thermion and M. L. Poms, USGS

Pesticides in Rain in Minnesota P. D. Capel, USGS; and P. J. Whiskey, Minnesota Department of Agriculture

Episodic Response Project on the Northern Appalachian Plateau David K DeWalle, The Pennsylvania State University

A History of Atmospheric Chemistry at the Illinois State Water Survey Richard G. Semonin, Chief, Illinois State Water Survey.

Special Recognition and Appreciation

Dick Semonin's paper was followed by special recognition and acknowledgment of his years of service to NADP in anticipation of Dick's retirement in early December. He was presented with a Certificate of Appreciation commemorating several milestones from his tenure with the Program.

Cultural Resources Symposium-

Following a formal luncheon, the group departed for Independence National Historic Park for an afternoon of special programs and tours. Several presentations had been arranged. They were:

Introduction and Welcome Jim Lynch, Symposium Chair, Katherine H. Stevenson, Associate Director, Cultural Resources, Mid-Atlantic Region, NPS; and Bernard Goodman, Assistant Superintendent, Independence National Historic Park.

Atmospheric De position Effects on Cultural Resources: Issues and State of Knowledge, with Special Emphasis on Research *at Gettysburg NMP and Bronze Corrosion* Susan L Sherwood, Physical Scientist, Preservation Assistance Division, NPS

Stone Decay Issues Elaine S. McGee, U.S. Geological Survey

Microclimate and Pollution Monitoring at the Merchants Exchange, Independence NHP Donald A. Dolske, Illinois State Water Survey.

Philadelphia Rain Chemistry 1978 to Present Cornelius Dugen, retired, Public Health Department, City of Philadelphia

Private showing of the film *Independence*

Tour of Merchants Exchange Research Site William Brookover, Park Historical Architect, Independence NHP

Special Reception and Social First Bank of the United States

Thursday, October 10, 1991

Invited Papers -

A general session was convened for presentation of contributed science and technology papers. They were:

Examination of an Alternative Sample Handling Protocol Using Bottles - V. C. Bowersox, ISWS; J. A. Lynch and J. Grimm, The Pennsylvania State University

Comparison of the New York State Acid Deposition Network to Nearby NTN Sites - Philip G Galvin, New York State Department of Environmental Conservation

Rain Homogeneity in a Rain Bucket - Kenneth F. Steele and George H. Wagner, University of Arkansas

Relationships Between Deposition and the Flux of Sulfate in Forest Canopy Throughfall: Real or Coincidental - S. E. Lindberg and C. T. Garten, Jr., Oak Ridge National Laboratory; J. N. Cape, Institute of Terrestrial Ecology, Edinburgh, Scotland; and W. Ivens, University of Ufrecht, The Netherlands

Business Meeting -

The final session of the 1991 NADP Technical Committee Meeting was called to order. Sandy Verry asked that any comments regarding format of this year's meeting be made to Mike Kelly for use in planning the 1992 meeting.

Thanks were expressed to the authors of the posters and papers. Thanks were also extended to the symposium authors and co-editors, Steve Vermette, Steve Lindberg, Jim Lynch, Jerry Walker, Jim Gibson and Van Bowersox, and to those who helped run the meeting.

Site Operator Recognition -

Bill McFee announced the presentation of awards for site operators who have served the network for five years or longer and who have attended the CAL training. Recipients of this year's plaques and certificates are identified in the tables below.

TEN-YEAR PLAQUES			
CAL Code	**Site Name**	**Site Operator**	**Site Supervisor**
M109	Douglas Lake	Robert Vande Kopple	Jim Teeri
NJ99	Washington Crossing	Kathy McCullough	Richard Artz

Bill presented the five-year certificate to Clarence Klingensmith of NY65 who was present at the meeting. It was noted that special awards have been presented to site operators each year for the past *12* years.

FIVE-YEAR CERTIFICATES			
CAL Code	Site Name	Site Operator	Site Supervisor
CA75	Sequoia Nat'l Park	Annie Esperanza	David Parsons
CAN4	Sutton Quebec	Louis Veilleux	Michael Lessard
IL11	Bondville	Mike Snider	Gary Rolfe
NE99	N. Platte Ag. Station	Jim Goeke	Sashi Verma
NY65	Jasper	Clarence Klingensmith	Dan Matias
OR11	Vines Hill	Jerry Bourasa	Donna Webb
TN00	Walker Branch Watershed	Jim Owens	Steve Lindberg
TX16	Sonora	Nick Garza	Charles Taylor
VT01	Bennington	Dan Taylor	Rich Poirot

Subcommittee Reports

Data Management and Analysis Subcommittee

Jim Lynch reported that the Subcommittee considered three action items.

1. Publication of site moves in the annual reports. The file format developed by the Coordination Office was approved, and the following guidelines were established.

   A. Indicate actual distance moved if latitude or longitude didn't change.

   B. Include a list of site moves and name changes in the annual report.

   C. Highlight moves that occurred. Jim asked for Technical Committee approval of this recommendation.

Jim asked for Technical Committee approval of this recommendation.

Motion – It was moved and seconded that the Subcommittee recommendation for publication of information pertaining to site moves and name changes be approved. Motion carried.

2. Publication of field pH data in the annual summary report, provided it meets the criteria for selection of data from which the field pH maps would be developed and the screening criteria for sites to be included in the field pH isopleth map. The proposed criteria are:

   A. Calculated conductance from pH $\leq$ measured conductance.

   B. Check simple pH must be within acceptable (± 1 pH unit) range.

   C. Both intercomparison measurements of audit solution pH must be within acceptable range.

Motion – It was moved and seconded that these criteria be accepted.

Discussion of what the criteria specifically mean and the effect they might have on field pH followed. The first two points deal with screening the third point deals with production of the map. The definition of "acceptable range" is ± 1 pH unit. One value is pH over 5, and one value is pH under . The question of possible criterion c. in developing the isopleth map was raised. Concern was expressed that USGS could influence results by changing the composition or strength of the check solution. Supporters stressed that we would continue to do things as they have previously been done, except that these criteria would be used only to develop the isopleth map.

Carol Simmons displayed maps showing all values using weighted mean field pH, using map values, and using screened field pH data. The basic contours are the same. These changes could be incorporated in the *1991 Annual Summary Report* if a decision is made at this meeting or at the spring meetings.

It was suggested that the motion be amended that these criteria would only be used for the maps and that it be well defined as to how they were produced.

Amendment To publish the maps as screened by the motion (3 criteria), and to footnote or highlight on the map the procedures which were used. This would not affect the data tables of field pH. It would include both pH and W deposition maps based on field pH. Amendment carried

Amended Motion To accept and apply the screening criteria to the field pH and H maps but leave the data tables as they are for the next report.

The current criteria states that values below 5 must be within 1 pH unit and values above 5 must be within 3 pH units. Further discussion ensued.

Motion To refer this issue back to the Data Management subcommittee for recommendation to the Committee for approval. Seconded and carried.

3. The subcommittee also continued discussions regarding publication of additional temporal trends. There is strong determination within the Data Management Subcommittee to publish information on temporal trends. It is felt that publication of results are the most important aspect of the program.

Network Operations Subcommittee

Paul Kapinos reported that the Network Operations Subcommittee had a rather routine meeting. They heard reports from the Coordination Office, CAL, the Site Visitation Program, and the USGS QA program. They also heard a report on the site equipment refurbishing program and a site acceptance report. There was nothing new to discuss from these reports, and there are no agenda items for Technical Committee action.

They did discuss one item related to orthophosphate data which was referred back to the Data Management Subcommittee for consideration. The subcommittee motion was to recommended that the Data Management Subcommittee consider a change in the policy for release of orthophosphate data which states that orthophosphate will be treated as sequestered data and will be available only by special request, and that transmittal of the data be accompanied by documentation which would discuss limitations of the data. The motion passed.

The subcommittee elected new officers for 1992. They are:

Chairman - Lois West
Vice Chairman - Paul Kapinos
Secretary Rick Artz

Motion – It was moved, seconded and carried that the Network Operations Subcommittee report be accepted.

Environmental Effects Subcommittee

Jerry Walker reported. The work record of NC-141, IR-7 and NRSP-3 has been successful. The program has provided physical and biological scientists with important information critical to effects research. The subcommittee spent time discussing their role in the new proposal and subsequent program. NRSP-3 will continue to provide information for controlled tonnage and stress levels which is needed by both physical and biological scientists. The members felt there is a need to identify user groups of all types--researchers, industry, etc.—for several applications, including:

A. Experiment Stations must look at what programs they support in the future.

B. Geological history: If uninterrupted data is available, it will provide a picture of atmospheric conditions for developing models. It must be stressed that it not be interrupted. This information can also suggest other areas to look into besides precipitation.

C. UV-B investigations

There needs to be a close link between the effects research program and NRSP-3. This (NADP) is a particularly diverse group, providing interaction between groups. Under the Clean Air Act and NAPAP, directives are for high quality data from which to make assessments.

New subcommittee officers for 1992 are:

Chairman: Rich Grant
Vice Chairman: Julian Chazin
Secretary: Patricia Brewer

Motion – It was moved, seconded and carried that the Environmental Effects Subcommittee report be accepted.

Election of Technical Committee Officers –

The nominating committee reported that they selected Van Bowersox as a candidate for the position of Secretary under the rotational structure for leadership of NADP. Nominations from the floor were invited. There were no additional nominations.

Motion – It was moved, seconded and carried that the nominations close and Van Bowersox be elected by acclamation**.**

Technical Committee Officers for 1992 are:

Chairman: Sandy Verry
Vice Chairman: Mike Kelly
Secretary – Van Bowersox

Participant List

1992 Meeting

Mike Kelly commented that the program is in an evolutionary state with regard to format and content of the technical meetings. He asked for discussion of future meetings. Suggestions included any focus around analysis of NADP/NTN data, and broader utilization of the data in an assessment context. Watersheds and ecosystem studies were also suggested.

Motion – That the minutes reflect special recognition of Linda Bandhauer's efforts in organizing the technical meetings was made, seconded, and carried.

Renewal Proposal

Jim Gibson is currently working on the renewal proposal for NRSP-3 (IR.7). The proposal must be to the Experiment Station Directors by the first of January. Any comments or suggestions should be communicated to Jim.

1993 Meeting

Possible locations suggested for 1993 and future meetings were:

1. Nashville Tennessee
2. State Park, Tennessee - an isolated location, but good facilities
3. Mackinac Island, Michigan
4. Virginia Beach, Virginia

A final decision will be made at the spring Executive Committee Meeting.

Closing

The gavel was passed to incoming Chairman, Sandy Verry. Thanks were expressed to outgoing Chairman, Bill McFee for his service to the program. The meeting was adjourned.

Participant List

Richard Artz	NOAA/Air Resources Laboratory
G.M. Aubertin	Southern Illinois University
Linda Bandhauer	NADP/NTN Coordination Office
John Barnes	NAPAP
David Bigelow	NADP/NTN Coordination Office
Van Bowersox	Illinois State Water Survey
Lannie Boyd	Colorado State University
Patricia Brewer	Tennessee Valley Authority
Paul Capel	US Geological Survey
C.H. Can	Environment Canada
Julian Chazin	Wisconsin Department of Natural Resources
Thomas Church	University of Delaware
Kathryn Conko	University of Delaware
Edward Corbett	US Forest Service
George Crawford	Southern Methodist University
Donald Dolske	Illinois State Water Survey
Scott Dossett	Illinois State Water Survey
Mike Dosskey	University of Georgia
Kathy Douglas	Illinois State Water Survey
Herb Feely	USDOE/Environmental Measurements Lab
Ivan Fernandez	University of Maine
Joel Frisch	US Geological Survey
Cari Furiness	North Carolina State University
Philip Galvin	New York State Department of Environmental Conservation
James Gibson	NADP/NTN Coordination Office
Donald Goolsby	US Geological Survey
John Gordon	US Geological Survey
Richard Grant	Purdue University
David Grigal	University of Minnesota

Participant List

Allen Heagle	USDA/ARS Air Quality Program
Shao Xian Hong	The Ontario Ministry of Environment
Kenni James	Illinois State Water Survey
Paul Kapinos	US Geological Survey
Michael Kelly	Tennessee Valley Authority
Edward Klappenbach	US Environmental Protection Agency
Clarence Klingensmith	Alfred University
Dennis Lamb	Penn State University
William Landing	Florida State University
Steven Lindberg	Oak Ridge National Laboratory
Roald Lund	North Dakota Agricultural Experiment Station
James Lynch	Penn State University
Bernard Malo	US Geological Survey
C. Wayne Martin	Hubbard Brook Experimental Forest
Robert Mason	University of Connecticut
William McFee	Purdue University
Andrea Morden-Moore	Penn State University
Mark Nilles	US Geological Survey
Cindy Olsson	NADP/NTN Coordination Office
Leon Olszewski	Penn State University
Dan Orr	The Ontario Ministry of Environment
Evelyn Orr	Minnesota Pollution Control Agency
William Parkhurst	Tennessee Valley Authority
Mark Peden	Penn State University
Jack Pickering	US Geological Survey
Richard Poirot	Vermont Division of Air Pollution Control
Chul-Un Ro	Atmospheric Environment Service
LeRoy Schroder	US Geological Survey
Joseph Scudlark	University of Delaware

Participant List

Richard Semonin	Penn State University
Carol Simmons	NADP/NTN Coordination Office
Luther Smith	ManTech Environmental Technology
Kenneth Steele	University of Arkansas
Gary Stensland	Penn State University
Shashi Verma	University of Nebraska
Stephen Vermette	Illinois State Water Survey
Elon (Sandy) Verry	USDA Forest Service
Jerry Walker	University of Georgia
Carig Weidensaul	Ohio State University
Timothy Willoughby	US Geological Survey