

NATIONAL ATMOSPHERIC DEPOSITION PROGRAM (IR-7)
1984 Technical Committee Meeting
Minutes

First Session
Tuesday, October 30, 1984, 8:15 a.m.

The opening session of the 1984 NADP (IR-7) Technical Committee meeting convened in Asheville, North Carolina, with Bill McFee, chairman, presiding. A list of attendees is attached.

John Robertson, chairman, reported for Subcommittee No. 1, Network Site Criteria and Standards. He addressed the role of the siting committee now that the network is almost intact and covered the following points:

1. Site certification. The committee feels that this is an interdisciplinary problem.
2. Site visitation. EPA has hired a contractor, Research Triangle Institute, to conduct this program. Subcommittee No. 1 will be looking at the results of this visitation program.
3. Quality assurance. The subcommittee will continue participation in the quality assurance effort.
4. Dry deposition. Subcommittee No. 1 will be involved in helping choose where proposed dry deposition sites should be located.

He outlined last year's accomplishments which included 40 new sites coming on line and the publication of a new site selection and instruction manual (available from the Coordinator's Office).

Don Bogen, chairman of Subcommittee No. 2, Methods Development and Quality Assurance, reported that after sampling has been accomplished, Subcommittee No. 2 is involved in taking a sample through chemistry to the point where data is generated. The subcommittee met in April and discussed quality assurance, quality control reports, real time samplers, the external audit program, field and lab measurements, and dry deposition. The optional dry deposition program has been implemented.

Mike Kelly, chairman of Subcommittee No. 4, Effects Research, commented that the effects subcommittee is divided into four working groups: Aquatics, Field and Horticulture Crops, Forestry, and Materials. Accomplishments of the subcommittee and working groups over the past year have been: (1) made significant input to the CSRS Special Grants Program, (2) established the program for the Technical Committee meeting. This was particularly significant wherein there is a shift in the areas of reporting research results, and for the first time, NADP is distributing abstracts of the paper and poster presentations. In addition, during the course of the meeting, papers will be presented by four invited speakers. Unfinished business for the committee is to develop a draft of what other atmospheric contaminants should be monitored.

A report was presented from the Forestry working group by chairman, Bud Hart. He commented that the working group is as yet relatively small. The group has provided a forum for peer review and focused attention on some of the forest product affects (measure and quality).

Sandy Verry, chairman of the Aquatics working group, commented that most of the direction for aquatics work is through NAPAP.

Wayne Banwart reported that the Field and Horticultural Crops working group has discussed the direction

which they should be going. He asked persons interested in attending their meeting to bring agenda topics.

Ray Herrmann commented that the Materials working group is still seeking a group. There are now only about three participants. He commented that there are special needs in geochemistry and that materials is an urban issue due to the wide spectrum of pollutants. They are trying to interest monitoring groups in addressing some of their special needs.

Steve Lindberg, chairman of Subcommittee No. 3, Data Management and Analysis, reported that their primary activity over the past year has been to produce the annual data summary. A draft is ready, and there will be three copies available for examination and comments at the poster session. They hope to have the final report out in early 1985. Steve then presented a series of overhead transparencies depicting the contents and format used in preparing the data summary.

The role of the Quality Assurance Steering Committee was defined by Peter Finkelstein, chairman. The committee was established to bring together the interest of all four subcommittees in quality assurance. The first task of the steering committee was development of an overall quality assurance plan. This has been accomplished. The plan was approved by the Executive Committee and has been published and distributed. Peter presented an overview of what is contained in the Quality Assurance plan and defined each of the major components which are: (1) policy statement, (2) field operations (sites), (3) lab activities, (4) data management.

Other items accomplished by the committee were:

1. An audit of the CAL.
2. An audit of data handling within NADP, both at CAL and in the Coordinator's office. A report on that audit will be available from the Coordinator's office.
3. Provided input into the proposed EPA site visitation project.
4. Looked at data codes so that when data is good, it can be clearly stated and when data is questionable, the user can be informed so that they can make a decision regarding its use. If the data is bad, the user should know that or the data should not be released.

Gary Stensland, Director of the Central Analytical Laboratory, reported that there is now no data lag from CAL. They are presently reporting '84 data to the Coordinator's office. He commented on the systems audit of the data handling at CAL and remarked that these reports are extremely useful to CAL. CAL has documented the data screening procedures. Copies are available from Gary Stensland or Van Bowersox. They have prepared a trouble shooting guide for the Aerochem sampler. They have continued documentation of the analytical procedures and are providing assistance for field pH measurements. CAL has begun checking a new pH electrode. There are now 116 out, and CAL is receiving feedback from these sites. Fifteen more have recently been distributed. A large number of electrodes were returned to the factory. Also, a large number of electrodes that tested okay in the laboratory were reported as nonfunctioning from the sites. Gary feels that this points out the difficulty in making field pH measurements.

Gary mentioned the problem with the new buckets which were recently ordered and found to be slightly different in that the lids did not go on as well. CAL has made arrangements to go back to the old version. Representatives from CAL have been active in working with the various groups in the overall program— subcommittees, Coordinator's office, and the site—visitation program. They have also been assisting in the preparation of the '82 annual data summary. He commented that on July 1, dry sampling became optional. Approximately 40 sites have continued dry monitoring. Seven will be stopping within the next year. The network has increased by approximately 40 or 50 sites over the past year.

CAL has established a monthly review and feedback to sites regarding DA samples (blank buckets). They have worked with the sites which reported unusually high levels. In no case, has an equipment problem been identified. CAL should have a better method a year from now for providing feedback to the sites.

Jim Gibson, Coordinator, outlined the activities of the Coordinator's office and what the office is involved with:

1. Handle the contracts for all the analytical work.
2. EPA has funded the quality assurance activities, and Dave Bigelow has been named as Quality Assurance Manager.
3. Data publication and data screening.
4. Publication of other reports and miscellaneous publications.
5. Hopes to hire a site operations manager when funding becomes available.
6. Coordinator's office represents the interface between NADP and NAPAP.

This is becoming a more important part of the activities of NADP, as the NADP Coordinator's office carries out the coordination of NTN, which includes many NADP sites. The office is becoming more and more involved in responding to the needs of NAPAP.

Some accomplishments over the year were:

1. There are currently 177 operational sites.
2. The '83 data is available on tape. It is not yet available in hard copy, but this is being worked on. It was felt that it was more important to have the total data base to NAPAP first to meet some of their needs. As soon as all of the first quarter, 1984, data is received from CAL, work will begin on it.
3. Have established a permanent site visitation program with EPA through Research Triangle Institute. They will be reporting through Dave Bigelow to the Coordinator's office. They will audit the site and will work with them in correcting any problems such as calibrating raingages, etc. Approximately 1/3 of the sites will be visited each year on a rotational basis. The program will be starting within the next few weeks.
4. The position of associate coordinator has not yet been filled. Jim hopes to have it filled within the next few months.

Chris Bernabo, Executive Director of NAPAP, commented that we are now in a period of rapid change and growth. There are two major areas where funding has increased: (1) dry deposition techniques and (2) terrestrial effects areas. They are trying to get a better definition of how the two efforts interact, and Chris feels there should be a growing relationship between the two programs. Chris expressed concern with the data lag and commented that he will be working on this area with the Coordinator's office.

Jack Pickering, who is chairman of Task Group D and has responsibility for the NTN program, commented that USGS has added 40 sites to the NTN network over the past year. There are now 138 of the proposed 150 designed sites for the network. Many of these 138 are NADP sites. Of the remaining 12 sites, 5 are specifically planned and 7 are yet to be worked out. USGS is the lead agency for deposition monitoring. They are developing data to indicate the comparability of the Geotech collector to the Aerochem collector.

Jack then discussed the QA programs: (1) the external QA program, (2) field measurements QA, (3) interlab comparison program report.

Jack commented that the budget for the task group has increased from \$6 million to \$10 million for fiscal '85, with much of this funding going to dry deposition monitoring.

Reports were presented by the Canadian representatives to the Technical Committee. Walter Chan reported that the Ontario Ministry of Environment has operated two networks in Ontario. He described the methods currently being used and expressed appreciation to the group for the opportunity to interact.

Bob Vet is the new representative (replacing Malcolm Still) from the Atmospheric Environment Service in Canada. He described the CAPMoN network which replaces the earlier Canadian networks. This is a daily monitoring network for air quality. They hope to have 25 Sites in eastern Canada by the end of the year and next year to progress into western Canada with 8 to 10 sites. He mentioned the hope of AES to continue the intercomparison study. He feels with the new CAPMoN network in place, it would now be a better study, as the comparability of data should be better.

Ad hoc committee chairman, Ellis Cowling, talked about the draft of the NADP brochure which is currently being prepared. Ted Spiegel of the National Geographic Society will be taking pictures for the brochure during the course of the meeting. Ellis hopes to have a completed draft of the brochure available by the end of the calendar year.

Keith Huston, Administrative Advisor from the North Central Region, commented that the NADP has been a rather unique effort in bringing together interests, both scientific and political, at both federal and state levels. The state and, ore specifically, the regional locus is very important. They go to the polls and decide what the major issues are. There is considerable influence from the "private sector".

Alan VanArsdale commented that the acid rain issue is going to be worked on for a number of years. He feels much more money will be coming from the states and that coordination at that level is desperately needed. He suggested that participants make their research known within the states in which they live. He feels coordination among states is also important and discussions should be held as to how this could be accomplished.

Steve Lindberg mentioned NADP sponsorship for participation in the Heavy Metals of the Environment Conference.

Jay Jacobson announced a meeting, "Acid Rain—Economic Assessment," to be held in Washington. The main objective is to try to get economists, scientists, and assessment people together to decide what needs to be done.

The first session was adjourned.

SECOND SESSION

Tuesday, October 30, 1984, 1 p.m.

The large group convened for presentation of an invited paper, "Importance of cloud water interception to deposition rates in high elevation ecosystems in New England," presented by Tim Scherbatskoy from the University of Vermont. Following this presentation, participants adjourned to attend individual subcommittee meetings.

A two-day poster session began Tuesday evening at 8 P.M. A listing of posters and authors is attached.

THIRD SESSION

Wednesday, October 31, 1984, 8:15 a.m.

The third session of the NADP (IR-7) Technical Committee meeting convened for invited papers in the area of approaches to evaluating changes in forest growth and yield. The following papers were presented: "Measurement, modelling and prediction of growth and yield in southern forests" by Robert Bailey from the School of Forest Resources, University of Georgia, and "A regional scale study of forest responses to atmospheric pollutants" by Samuel (Sandy) B. McLaughlin from the Environmental Sciences Division at Oak Ridge National Laboratory.

Bob Bruck then presented information pertaining to the field trip to the top of Mount Mitchell which was held immediately following the morning session.

FOURTH SESSION

Thursday, November 1, 1984, 8:15 a.m.

The fourth session convened for presentation of contributed papers in the area of input analysis and effects research. A listing of speakers and topics is attached.

FIFTH SESSION

Thursday, November 1, 1984, 1 p.m.

The fifth session consisted of contributed papers in the areas of quality assurance sampling methodology and analysis on data. A listing of speakers and topics is attached.

SIXTH SESSION

Friday, November 2, 1984, 8:15 a.m.

The final session of the 1984 NADP (IR-7) Technical Committee meeting began with meetings of individual subcommittees. At 10:30 a.m., the large group convened for a business meeting. Chairman Bill McFee announced the agenda would consist of the following: (1) report from advisors, (2) meeting format, (3) next year's date and place, (4) committee appointments, (5) committee reports, (6) miscellaneous announcements, (7) election of officers.

Bill McFee, on behalf of chief administrative advisor Al Wood from the University of Florida, expressed Al's regret that he could not remain for the final business meeting. There are currently only three administrative advisors, as there is no representative from the Western Region at the present time. The advisors met earlier in the year at CAL. They have also helped a great deal with the preparation of the NADP brochure. Through their efforts, NADP received \$6,000 to prepare the brochure and is now asking for an additional \$6,000 to publish it. They are also attempting to obtain money to do interpretive things with the data. They will continue their efforts to see that the money for effects research is directed back to the Special Grants Program.

Bill then asked for comments regarding meeting format. A number of ideas and suggestions were presented. Meeting planning is the responsibility of the Chairman of the Effects Committee and the Vice Chairman of the Technical Committee and additional comments may be addressed to either of these individuals.

Bill announced there will be an Executive Committee meeting May 22 and 23 in Knoxville, Tennessee.

He asked for suggestions concerning next year's Technical Committee meeting location. Jim Gibson commented on the facilities available in Fort Collins and talked about the potential for field trips to the National Park Service watershed studies site in Rocky Mountain National Park or to the Niwot Ridge study site, which is part of the LTER program, where a number of activities are being conducted. He indicated this probably would require moving the meeting up a month to allow for access to these areas. Following a number of comments and other suggestions, it was agreed the 1985 Technical Committee meeting will be held the week beginning October 7 in Fort Collins, Colorado.

Bill McFee mentioned the problems within the Coordinator's office in obtaining timely funding for the coordination activities. He announced that, with the approval of the Executive Committee, a budget coordinating committee had been established consisting of the chairman of the Technical Committee, the past chairman of the Technical Committee, the chairman of the SAES administrative advisors, the administrative advisor from USDA CSRS, the administrative advisor from USGS, a representative from the U.S. Forest Service, and a representative from EPA. This committee will meet during the second week in December in Fort Collins.

Mike Kelly presented the report of the nominating committee on behalf of Chairman, Al Wood. Following consideration of a number of outstanding individuals, the committee recommended that John Robertson be nominated Secretary and Dudley Raynal be nominated Vice Chairman. These positions are successive chairs. There were no floor nominations for Vice Chairman. A question was raised regarding who would chair the Effects Subcommittee in place of the newly elected chairman, Dudley Raynal. The subcommittee had already agreed that Jim Perry would assume chairmanship of Subcommittee No. 4. It was moved and seconded that the nominating committee recommendation for vice chairman be accepted and approved by acclamation. Motion carried.

John Robertson, outgoing chairman of Subcommittee No. 1, reported that Subcommittee No. 1 and Subcommittee No. 2 had met jointly for a portion of their meeting. They considered two items of business.

1. With regard to sample bucket changes which fall on Christmas and New Years day, the committees jointly recommended that the sample buckets be changed on Wednesday, December 26, 1984 and Wednesday, January 2, 1985. This would result in an eight day sample from December 18 to December 26, followed by a seven day sample from December 26 to January 2, followed by a six day sample from January 2 to January 8. On January 8 sampling would return to the normal Tuesday schedule. This change is mandatory for the entire network. It was moved and seconded that the recommendation be adopted. Motion carried.
2. The committees listened to a report by Paul Kapinos of USGS. Paul presented preliminary data from intercomparison of a Geotech 650 sampler and the Aerochem Metrics sampler at Bondville, Illinois, and an intercomparison of a Leonard Mold and Die copy of the Aerochem Metrics sampler and the Aerochem Metrics sampler at Penn State. In discussion following presentation, the USGS was asked to provide a written report of the complete intercomparison study for consideration by the newly formed certification committee consisting of outgoing committee chairmen. Such data should be presented quickly so a decision can be made as to whether to include the data in the 1983 annual data summary. The quarterly data reports for 1983 will contain Leonard Mold and Die and Geotech data marked with the code "SP" to indicate to potential users that a different sampling protocol was used.

Following these decisions, the committees dispersed to separate sessions. The following items were discussed by Subcommittee No. 1.

1. EPA/RTI site visitation and the role of Subcommittee No. 1 in reviewing visitation reports. No decisions or recommendations were made at this time.

2. Proposed intercomparison with Canada. The committee strongly endorsed NADP/NTN participation in a joint intercomparison sampling program. However, no recommendations were made as funding for this program is still uncertain. Should the study be funded, the committee feels it should have a role in selecting sites for participation.
3. Minor equipment changes. No new information was available to clarify the issues of SO_4^- influence from battery backup systems or to show the effect of raingage or sampler and vice versa. These items were tabled until further information becomes available.
4. Dry deposition monitoring. The committee wishes to have a role in the siting aspects of this program and extends an invitation to the deposition task group and EPA to use its expertise.
5. Recommendations from the QA steering committee that affect Subcommittee No. 1.
 - a. Raingage charts. The subcommittee deferred action until data were gathered which would show the willingness/ability of sites to send in their original raingage chart or a xerox copy. The Assistant Chief of the Illinois State Water Survey volunteered the CAL to act in collecting this data. CAL would also poll scientists associated with the monitoring sites regarding their needs for rainfall data of time periods less than a day in resolution.
 - b. Relocation of the permanent site files from West Point to the Coordinator's office at Colorado State University. John Robertson reported that following discussions with Jim Gibson, Coordinator, both parties agreed that the files should be located in the Coordinator's office. However, the Coordinator's office does not have sufficient staff to keep the files current. They will therefore be retained at West Point until the Coordinator's office can assume this function.

1984-85 officers will be as follows: Chairman, Jerry Walker; Vice Chairman, Dick Semonin. It was moved, seconded and carried that the report be accepted.

The report for Subcommittee No. 2 was presented by Don Bogen, Chairman. The committee considered the following items of business:

1. Election of officers. The subcommittee voted to establish the position of secretary so that a rotation of officers consistent with that of the Technical Committee was established. The following officers were elected: Chairman, Donald C. Bogen; Vice Chairman, Gerald M. Aubertin; Secretary, Douglas Sisterson.
2. The subcommittee voted to accept the proposal of the CAL for a method change for the determination of anions by ion chromatography. The CAL presented a comparison of sample results for the auto analyzer, AAll, (present methodology), and I.C. There were 104 data points compared and the relative bias between the two techniques, I.C. to AAll, was as follows: Cl, -8%, NO_3 , -3%, and SO_4 , 0%. The bias for Cl was considered significant and the CAL is committed to generate additional data to resolve the Cl bias question. The change over to the I.C. ion methodology will start with the 1985 samples; all '84 samples will continue to be analyzed using the AAll method.
3. The CAL reported on the status of the program of pH electrodes being supplied to the sites. At the present time approximately 125 sites have received electrodes; 24 electrodes were returned to CAL after testing at the sites, and 6 of the 24 returned electrodes were found to be defective. In addition, CAL informed the subcommittee that there were some initial problems with the Beckman electrodes when tested at CAL prior to shipment to the sites. Concern was expressed that the one year predicted lifetime of the electrodes may not be adequate.

4. The CAL informed the subcommittee that the sample handling protocol at CAL had not been followed for a period of time in 1984. The problem was that the technician did not completely filter the sample rain water and discarded the filtered residue fraction. This break of protocol has been corrected.
5. The CAL requested that the subcommittee consider the question of sample archiving. To date, approximately 10,000 samples of rain water and filtered residue samples have been stored. The subcommittee made the following recommendations.
 - a. Rain water sample aliquots (plus or minus 60 ml) will continue to be stored. Subcommittee No. 3 should develop recommendations for sample compositing or suggestions for other possible uses of the samples. In the meantime, CAL will select samples at random from the archives, and analyze them to establish if changes in chemical composition have occurred.
 - b. Residue samples will be discarded since they are nonrepresentative of the sample insoluble fraction. Sites will be notified that CAL will dispose of the filters on or after February 1, 1985. Sites may request that their samples be returned to them prior to disposal. In addition, investigators may request samples from other sites by contacting the chairman of the Technical Committee.
6. A report of the external QA program of CAL was presented by LeRoy Schroder of the USGS. Results for the program indicate that CAL is performing quite satisfactorily and no significant bias has been observed. Biologically active nitrogen and phosphorus compounds continue to present a problem for comparison. The samples used in the program cannot be sufficiently stabilized to retard biological activity.

A report of the internal QC/QA program was presented by Jackie Lockard of CAL. Results for the programs indicate that all facets of the measurement program are operating satisfactorily.
7. LeRoy Schroder presented results of an interlaboratory comparison program between the USGS Atlanta and Denver labs, CAL, and the Canadian Inland Water Lab. The agreement between CAL, the Denver Lab and the Canadian Lab were quite good. The biologically active compounds, NO_3 , NH_4 , and P_0_4 , could not be compared because of sample degradation. The Atlanta lab showed variations of 10-20% compared with the other labs. This comparison program covers only the analytical measurements, not sampling.
8. Jackie Lockard reviewed for the subcommittee the status of gasket contamination research. She indicated that a substitute gasket will probably be available in 3-6 months.
9. The subcommittee considered the field measurement problems again. The following recommendations were made.
 - a. That field measurements are important to the overall NADP/NTN program objectives, and all sites are mandated to perform these measurements.
 - b. Sites are required to perform pH and specific conductance measurements to meet criteria to be developed by the Quality Assurance Steering Committee. If these goals are not met within one year, no data (all data) will be published for the site until the site is in compliance. To implement this plan, resources will be made available to review field data, confer and assist sites to achieve the quality field results required.
10. The subcommittee held preliminary discussions concerning the new NADP/NTN Quality Assurance Plan.

It was moved, seconded and carried that the report be accepted. Jim Gibson suggested that the two subcommittees begin to work on a statement to be included in the data report.

Steve Lindberg reported on the activities of Subcommittee No. 3. The 1983-1984 officers will be retained. They are Chairman, Steve Lindberg; Vice Chairman, Jim Lynch. The committee acted on the following items:

1. The annual summary report will take precedence in the Coordinator's office and should go to the printers before December 31, 1984 so that it will carry a 1984 publication date. The 1983 summary report will be started immediately. It will follow the same format unless strong objections are made in the meantime. Dave Bigelow is currently working with the Canadians to try to develop common reporting criteria.
2. Publication of field pH measurements.
 - a. As approved by the Technical Committee at the 1983 meeting, the 1983 quarterly data reports will include field pH measurements in the column adjacent to lab data and will include results of the field pH check samples. There will also be a description of the check samples.
 - b. Subcommittee No. 2, in conjunction with CAL and the USGS, should develop a field pH validity test using existing weekly check samples and the USGS blind pH samples. 1984 data will be published only after applying these tests.
 - c. Subcommittee No. 2 should develop a new verification test for field pH to be in use by January of 1985. At a minimum, it should include monthly blind pH samples.
3. Interpretive reports. The subcommittee encourages proposals from persons interested in interpretation of annual summary data. They recommend sending a letter from NADP to the task force to the effect that funding should be allocated for interpretation of data and not just collection of data. It was felt that there was a need for an interdisciplinary approach by a meteorologist, a chemist, and a biologist. NADP will assist in proposal preparation to whatever extent possible.
4. Valid sampling interval. The committee defined valid sampling interval for reporting of data as 6 to 8 days with special consideration being given to sequential samples of less than 6 days if the combined duration is 6 to 8 days.
5. Quarterly data reports. The committee recommended that the quarterly data reports be continued. They further recommended that a postcard be sent to all recipients to determine who is using the reports and for indicating a desire to continue receiving the reports.
6. Flagging procedure. The committee will consider what information to pass to users in future reports as the Steering Committee develops a new plan. A complete plan was deferred to the Quality Assurance Steering Committee.
7. Site description booklet. The committee recommended publication of the site description and information booklet as soon as possible.
8. CAL sample archiving. The committee recommended that CAL determine the status of the filters (check for filter deterioration, fungal growth, etc.). If the filters are still stable, the committee then recommends that they be saved at CAL and further recommends that proposals be developed for the use of these filters. The committee feels that while the filters may not be quantitative or chemically stable, they may provide useful information for qualitative analysis, such as microscopy, XRD or perhaps radio analysis, e.g., identification of pollen, fly ash, mineralogy. It was moved and seconded that this

recommendation be considered an amendment to recommendation 5.b of Subcommittee No. 2. Following discussion, the amendment carried.

With regard to the water samples, they recommend that a similar check on stability be done. The holding time is currently five years by contract so no changes can readily be made at this time. They also recommend a study be done, possibly by EPA, to determine stability of various organics in such samples for potential future use. The committee recommends samples not be composited but maintained as is for a period deemed useful for routine reanalysis by CAL. (roughly 12 to 18 months).

It was moved and seconded that the report be accepted. Discussion followed regarding the 6- to 8-day question, particularly as it relates to high elevation sites and the difficulty of obtaining samples during the winter months. It was suggested that the Steering Committee develop new flagging procedures but that the data not be eliminated from the quarterly reports. The report was approved as presented.

Peter Finkelstein commented on the work that is going forward regarding adopting new flagging procedures. He asked for opinions from the data users and particularly asked those in other networks to send a copy of flagging criteria.

The report from Subcommittee No. 4 was presented by Mike Kelly. The following officers were elected: Chairman, Dudley Raynal; Chairman Elect, Jim Perry; Vice Chairman, Wayne Banwart. However, with the election of Dudley Raynal as Vice Chairman of the Technical Committee, Jim Perry will now serve as chairman of the Effects subcommittee. Within the working groups, the following officers were selected: Aquatics Chairman, Alan VanArsdale; Field and Horticultural Crops Chairman, Patricia Irving; Vice Chairman, Dennis DuBay; Forestry Chairman, Gary Lovett; Chairman-Elect, Anne Bartuska; Vice Chairman, Ivan Fernandez. Ray Herrmann will continue as Chairman of the materials group.

The committee considered three items of business:

1. Change in funding for effects research. A major portion of the time allocated to subcommittee meetings was devoted to a discussion of priority research areas for future USDA competitive grants. The group was asked to review a set of research topics, prepared for CSRS Special Grants by an ad hoc committee prior to the meeting, to determine if the proposed topics were suitable to the group in general and consistent with the needs of the Competitive Grants Program. Based on the collective judgment of the group, a new, more generalized list was formulated for transmittal to USDA Competitive Grants. The group suggested that future grants should place greater emphasis on studies of multiple stress factors emphasizing, to the greatest extent possible, soil-plant-atmosphere interaction. It was also the position of the subcommittee that projects from the FY'83 and '84 CSRS Special Grants Program should be given priority for continued funding where appropriate progress has been made within the context of the original proposal. The group was also hopeful that it could continue in its advisory role and have significant input into the topics chosen for research funding. The group elected not to establish any priorities for distribution of funding beyond those already mentioned.
2. Expansion of NADP perspective. It was the recommendation of the group that NADP begin to take steps to embrace the full atmospheric input picture and not just limit its measurements basically to precipitation. To this end, the group has formulated a first approximation list of parameters of interest along with perceived priorities and recommended minimum detection values, where appropriate. Dudley Raynal, in conjunction with Walt Heck, is putting together a document on this subject which will be circulated to the entire Technical Committee for review and comment, as well as communicated to Peter Finkelstein at EPA RTP to be used in guiding the development of the EPA Inputs Monitoring Program. These documents should be available to the groups in December.
3. Quality assurance procedures. Several comments were made by individuals outside the

Effects Subcommittee concerning what appears to be a lack of procedures in many effects-oriented research projects. While the group felt in general that this was more a perception than a reality, it was agreed that appropriate steps should be taken to encourage the application and utilization of appropriate QA procedures to the greatest extent possible.

There was considerable discussion on the part of the subcommittee regarding program content and the feeling that the opportunity for group discussion had been lost and that technical sessions were becoming too formal. It was suggested that fewer presentations be scheduled and that topics be chosen which would lend themselves to a more lively discussion with considerable opportunity for interaction.

The Field and Horticultural Crops working group suggested that the Effects Subcommittee and NADP recommend that crops research continue to be an important component of NAPAP and that USDA, as the lead agency in terrestrial effects, assure, through funding programs, an adequate, long-term crops effects research effort. Specifically, since forest research will soon enjoy substantial new funding from EPA and EPRI, USDA should emphasize crops research in its funding programs, perhaps through the exclusion of projects concerned with unmanaged noncommercial forests. The crops working group also developed a set of statements justifying continued research in the crops area.

1. Well replicated studies with field grown crops are few in number and have examined only a few crops and cultivars.
2. Most crops research has been single-factor studies and multi-factor studies are needed to fill this important gap in our assessment efforts.
3. Crops are easier to deal with in true experimental designs than are trees. This suggests that we utilize crops in controlled experiments, testing the effects of combinations of pollutants and natural stress factors and determining mechanisms by which atmospheric deposition may affect plant growth, development, and productivity. Results will come in with crops before any similarly complex experiments could be completed with forests systems.
4. Much important work with forage, perennial and multicrop systems can be done that will also contribute significantly to our understanding of acid deposition effects on plants.

It was moved, seconded and carried that the report be accepted.

Bill McFee announced that, as past chairman, he will be responsible for preparing the annual report for CSRS. Letters will be mailed soon requesting help in the preparation of that report.

Jim Gibson asked for a decision from the Technical Committee regarding the possibility of charging for quarterly data reports. It was agreed that an effort should be made to purge the list and that no charge would be made for the reports at this time.

It was moved, seconded and carried that the 1984 Technical Committee meeting be adjourned.

NATIONAL ATMOSPHERIC DEPOSITION PROGRAM (IR-7)
TECHNICAL COMMITTEE MEETING
October 29—November 2, 1984
POSTER PRESENTATIONS

Dean E. Arnold. "Biological and Chemical Conditions and Changes in Three Pocono Mountain Lakes of Different Sensitivity to Acidification."

C. Lee Campbell. "Possible Alteration of Disease Development in Response to Simulated Acid Deposition."

Boris Chevone. "Growth Response and Drought Susceptibility of Forest Trees Exposed to Simulated Acidic Rain and Ozone."

Ronald E. Ferrell. "Screening Cultivars of Agricultural Crops for Relative Sensitivity to Simulated Acidic Precipitation."

T. C. Harrington. "Root Damage on Declining Red-Spruce and Balsam Fir Associated with Wind Exposure in the White Mountains."

K.T. Luu. "Effects of Simulated Acid Precipitation on Cool Season Forage Grasses."

Michael H. Reddy. "Modeling Limestone Dissolution by Acid Rain."

H.Riekerk. - "Atmospheric Deposition and Effects in North Florida."

Thomas J. Stohlgren. "Acid Rain Research in Sequoia National Park."

William E. Winner. "Design, Construction, and Operation of a Laboratory Rainfall Simulator."

Robert J. Vet. "The Canadian Air and Precipitation Monitoring Network (CAPMoN) — Status and Preliminary Results."

Keith A. Yarborough. "Deposition Chemistry Relationships at Big Bend National Park, Texas."

CONTRIBUTED PAPERS

Input Analysis and Effects Research:

Patricia M. Irving. "Parameters to Consider when Modeling Plant Response to Acidic Deposition."

Gary M. Lovett. "Effects of Acidic Deposition on Cation Leaching from Three Deciduous Forest Canopies."

William A. Feder. "Effect of Ambient Rainfall with a Mean pH of 4.0 on the pH of Leachate from Agricultural Soil, and Incinerated Municipal Solid Waste Over a Four—Year Period."

Dudley J. Raynal. "Comparative Growth Behavior of Scotch Pine, Red Pine, and Norway Spruce in the Adirondack Mountains."

Robert Stottlemeyer. "Snowpack Nutrient Dynamics in First-Order Lake Superior Basin Watersheds."

Lynn D. Whittig. "Buffering Intensity and Sulfuric Acid Sorption Indices for Soils of the Central Sierra Nevada"

Denis T. DuBay. "Direct Effects of Acid Deposition on the Sexual Reproduction of Agricultural Crops."

Wayne L. Banwart. "Corn and Soybean Yields as Affected by Simulated Acid Rain."

Bruce L. Vasilas. "Physiological Responses of Corn and Soybeans to Simulated Acid Rain."

Jay S. Jacobson. "Crop Response to Simulated Acidic Rain With and Without Exclusion of Ambient Rain."

C.Wayne Martin. "Chemistry on Remote Ponds in the White Mountains of New Hampshire."

Dale S. Nichols, "Differences in Lake Chemistry Across a Depositional Gradient in the Upper Midwest."

Claude E. Boyd. "Effects of Acidification on Bluegill Sunfish Production."

QA, Sampling Methodology, and Analysis of Data:

Jane E. Rothert. "The MAP3S Precipitation Chemistry Network Quality Assurance Procedures."

Leo E. Topol. "Performance of Precipitation Chemistry Measurement Systems."

Van C. Bowersox. "Are the Data for NADP Samples with Large Ion Imbalances Valid or the Result of Bad Measurements?"

Robert L. Houghton. "Differences in Composition of Wetfall Collected on Weekly and Event Basis in North Dakota."

Scott R. Williams. "Regarding the Uncertainty of Acidic Deposition Estimates Resulting from Spatial Under sampling of Precipitation."

Rosa G. dePena. "Collectors and Sites Comparison Study."

Douglas L. Sisterson, "Preliminary Applications of Averaged Deposition Velocities for Daily and Weekly Dry Deposition Estimates."

Richard G. Semonin. "NADP Dry Bucket Deposition Patterns Across the United States."

Steven E. Lindberg. "An Analysis of Nitrogen Deposition Data from the United States and West Germany."

Gary J. Stensland. "A Comparison of Methods of Computing Precipitation pH Averages."

E. Sandy Verry. "Ways of Using NADP Data to Describe Acid Rain."

Richard S. Artz. "Precipitation Chemistry at the NOAA Global Trends Network Sites."

M. Terry Dana. "Statistical Analysis of MAP3S Precipitation Chemistry Network Results: 1976-1983"

Walter A. Chan. "Evaluation of the Performance of the Acidic Precipitation in Ontario Study (APIOS) Networks."

Attendance List

<u>Participant</u>	<u>Affiliation</u>
Fred Allen	University of Tennessee
Dean Arnold	U.S. Fish and Wildlife Service
Richard Artz	NOAA/Air Resources Lab
G.M. Aubertin	Southern Illinois University
Robert Bailey	University of Georgia
Linda Bandhauer	Colorado State University
Wayne Banwart	University of Illinois
Ann Bartuska	North Carolina State University
Carmen Benkovitz	Brookhaven National Laboratory
Chris Bernabo	NAPAP
David Bigelow	Colorado State University
Don Bogen	U.S. Department of Energy
Van Bowersox	Illinois State Water Survey
Gordon Bradford	University of California
Patricia Brewer	Tennessee Valley Authority
Russell Brinsfield	Wye Research & Education Center
Robert Bruck	North Carolina State University
Walter Chan	Ontario Ministry of the Environment
Art Chappalka	VPI & State University
Boris Chevone	VPI & State University
Joyce Hilliard Clark	Acid Deposition Program
Jan Coe	Oak Ridge National Laboratory
Ellis Cowling	North Carolina State University
Lyle Craker	University of Massachusetts
Rachel Cremers	Louisiana State University
Katie Davis	NAPAP
David Dewalle	Penn State University
Kathryn Douglas	Illinois State Water Survey
Denis DuBay	North Carolina State University
Edward Duerr	NC Department of Natural Resources
Klaus Dumpert	Battelle-Institute e.V.
Cary Eation	Research Triangle Institute
W.A. Feder	University of Massachusetts
Herbert Feely	U.S. Department of Energy
Ivan Fernandez	University of Maine
Ron Ferrell	North Carolina State University
R. L. Finke	University of Illinois
Peter Finkelstein	U.S. Environmental Protection Agency
Joel Frisch	U.S. Geological Survey
Donald Gatz	Illinois State Water Survey
James Gibson	Colorado State University
Noel Grove	National Geographic Society
Howard Halverson	U.S. Department of Agriculture
Tom Harrington	University of New Hampshire
James Hart	Michigan State University
Walter Heck	North Carolina State University

Ray Hermann	National Park Service
Colin High	Dartmouth College
Ted Hinds	U.S. Environmental Protection Agency
Steven Hodges	Clemson University
David Holden	NAPAP
Jesse Holder	Freeport McMoran, Inc.
Robert Houghton	U.S. Geological Survey
Keith Huston	North Cental Association of Agricultural Experiment Station Directors
Patricia Irving	Argonne National Lab
Jay Jacobson	Boyce Thompson Institute
Robert Jungers	U.S. Environmental Protection Agency
Paul Kapinos	U.S. Geological Survey
J. M. Kelly	Tennessee Valley Authority
Warren Knapp	Cornell University
Sagar Krupp	University of Minnesota
Kenneth Kunkel	New Mexico State University
Philip Lapat	Newmont Mining Corporation
Chin-I Lin	Pacific Gas and Electric Company
Steven Lindberg	Oak Ridge National Lab
Raymond Little	Southern Illinois University
Jacqueline Lockard	Illinois State Water Survey
Gary Lovett	Oak Ridge National Lab
Kien T. Luu	University of Tennessee
James Lynch	Penn State University
Barry Martin	U.S. Environmental Protection Agency
C. Wayne Martin	USDA Forest Service
William McFee	Purdue University
Samuel McLaughlin	Oak Ridge National Lab
William Mitchell	U.S. Environmental Protection Agency
Andy Morton	Wisconsin Department of Natural Resources
Peter Mueller	EPRI
Patricia Muir	Holcomb Research Institute
Dale Nichols	USDA Forest Service
Henry Noldan	Bureau of Land Management
Olga Owens	U.S. Department of Agriculture
Mark Peden	Illinois State Water Survey
Jim Perry	University of Minnesota
Charles Philpot	USDA Forest Service
Jack Pickering	U.S. Geological Survey
John Pinkerton	National Council of the Paper Industry for Air & Stream Improvement
David Radloff	U.S. Forest Service
Danny Rambo	Corvallis Environmental Research Lab
Dudley Raynal	SUNY - Syracuse
Michael Reddy	U.S. Geological Survey
David Rengert	Niagara Mohawk
John Reuss	Colorado State University
John Reynolds	University of Tennessee
Hans Riekerk	University of Florida
John Robertson	U.S. Military Academy
Bruce Rodger	Wisconsin Department of Natural Resources
Jane Rothert	Battelle Pacific Northwest Labs
Jackie Sauer	Illinois State Water Survey
Tim Scherbatskoy	University of Vermont

LeRoy Schroder	U.S. Geological Survey
John Seiler	VPI & SU
Richard Semonin	Illinois State Water Survey
David Shriner	Oak Ridge National Lab
J.E. Sickles	Research Triangle Institute
David Silsbee	National Park Service
Douglas Sisterson	Argonne National Lab
Loretta Skowron	Illinois State Water Survey
Ray "Skip" Snow	Theodore Roosevelt National Park
Ted Spiegel	National Geographic Society
Pierre Sprey	PMS, Inc
Kenneth Steele	University of Arkansas
Gary Stensland	Illinois State Water Survey
Thomas Stohlgren	National Park Service
Harry Stopp	University of North Carolina
Irene Storcks-Cotter	VPI & SU
Robert Stottlemeyer	Michigan Tech University
M. Ali Tabatabai	Iowa State University
Patricia Thasan	University of Arkansas
Leo Topol	Rockwell International EMSC
Alan VanArsdale	Massachusetts Department of Environmental Quality Evaluation
Bruce Vasilas	University of Illinois
Shashi Verma	University of Nebraska
Sandy Verry	U.S. Forest Service
Robert Vet	Atmospheric Environment Service
Jerry Walker	University of Georgia
Derek Winstanley	NAPAP
Gary Wojciechowski	U.S. Military Academy
Jeffrey Wolt	University of Tennessee
James Womak	NOAA
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Keith Yarborough	National Park Service
Eugene Ziegler	University of Illinois