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STATE/FEDERAL ACTIVITIES

Virginia Air Regulations: NPS comments were prepared and sent to the State regarding a pre-proposal by the Virginia Department of Environmental Quality to adopt a program to allow emissions trading among air pollution sources. Citing existing adverse impacts on resources at Shenandoah National Park (NP), we urged the State to assure that any adopted program will not worsen these conditions at the park. We also advised the State to follow EPA guidance regarding emissions trading, some of which is still under development. A number of recommendations regarding the trading program were provided to the State, which would improve air quality at Shenandoah and hopefully enhance the condition of affected resources in the park (e.g., visibility, vegetation, and aquatic resources). (Julie Thomas-SHEN-NR, Brian Mitchell, and Karen Malkin)

Prescribed Fire and Fire Effects Working Team (PF&FEWT): Brian Mitchell attended a meeting of the PF&FEWT of the National Wildfire Coordinating Group (NWCG) held in Voyageurs NP, co-hosted by the park and the Forest Service's Minnesota Interagency Fire Center. Several activities related to smoke management and air quality were discussed including forest health issues being considered by the WESTAR Council and work of the Grand Canyon Visibility Transport Commission in addressing regional haze. There will be an effort to update/rewrite the NWCG's Smoke Management Guideline over the next several months and, for the future, the Working Team is interested in strengthening its relationship with air management agencies as a stakeholder in activities which could affect fire programs.

OUTREACH ACTIVITIES

Air Quality Wayside Exhibits for FY 1993: During FY 1993, the Air Quality Division (AQD) provided technical and financial assistance for the development of wayside exhibits at Big Thicket National Preserve and Sleeping Bear Dunes NL. The AQD also provided review and funding for smoke management interpretive signs at campgrounds at Yosemite NP. The following areas were also identified to receive FY 1993 funds for an air quality exhibit, but have not proceeded with the design of an exhibit: Apostle Islands NL, Canyon de Chelly NM, Effigy Mounds NM, Lassen Volcanic NP, Wrangell St. Elias NM, Washington Mall, and Sequoia/Kings Canyon NPs. Death Valley NM's exhibit plan was approved, however, funds for the exhibit will be transferred to Harpers Ferry Center in FY 1994. Contact the AQD and your regional air quality coordinator if you need funds and technical assistance or have any questions concerning the development of an air quality exhibit. (Dee Morse)

Natural Resource Council of Maine Request: Conrad Schneider from the Natural Resource Council of Maine (NRCM) contacted the AQD and requested Acadia NP photographs from the visibility monitoring program at the park. Mr. Schneider was trying to determine if visibility was reduced during the 1988 summer stagnation periods when ozone concentrations were high at Acadia NP. We informed Mr. Schneider that ozone is a colorless gas and is not the primary pollutant species that causes visibility impairment at the park. Several months ago the NRCM produced a color brochure with a photograph from Acadia showing visibility impairment. In the brochure they incorrectly stated that the impairment was due to "ozone smog." Acadia and AQD staff informed NRCM of this error. (Morse)

PERMIT REVIEW AND TECHNICAL SUPPORT

During September the Policy, Planning, and Permit Review Branch reviewed permit applications for the new air pollution sources listed in Table 1, which are proposed near NPS or Fish and Wildlife Service (FWS) areas. Please contact the staff person identified for more specific information regarding these projects.

AQD Staff Meet with State and Researchers to Discuss Nitrogen Deposition in Colorado: The AQD arranged a meeting to develop a standard analytical approach that new source applicants can follow to estimate acid deposition effects in NPS and U.S. Forest Service (USFS) lands in Colorado. Besides AQD staff, the meeting included Jill Baron (NPS-WRD), Bill Bowman (University of Colorado), Coleen Campbell (Colorado APCD), John Turk (USGS), and Mark Williams (University of Colorado). Based on the available data, there was general agreement that we should have applicants concentrate on aquatic, rather than terrestrial, effects associated with deposition. However, there are currently no "approved" models for nitrogen deposition that could be applied in Colorado. The AQD recently prepared and provided to an applicant near Glacier NP guidelines for an analysis that concentrates on episodic acidification associated with a snowmelt event. The Colorado researchers agreed that this is the best procedure to follow in Colorado for the time being. This method would only be applicable in the high-elevation wilderness areas and parks, since low elevation NPS and USFS areas do not have the same hydrologic cycles, nor do they have such sensitive surface waters. Another possibility is to estimate how much of the annual acid neutralizing capacity produced in a watershed will be used by the proposed source. This possible analysis requires further investigation. (Tonnie Maniero)

GASEOUS POLLUTANT MONITORING

Annual Data Summary Reports: Annual gaseous pollutant summary reports for 1992 have been prepared for Badlands National Park and Guadalupe Mountains National Park. Final ozone and meteorological data are included, as well as graphs and summaries of the data. These reports were sent to the parks and the Regional Air Quality Coordinator.

Calibration and Maintenance Visits: With the installation of gaseous pollutant monitoring sites in Great Basin NP (August 23-26) and Death Valley NM (November 18-23), the installation of the designated Trends monitoring sites in the continental U.S. will be completed. Tables 2 and 3 list the semi-annual calibration and maintenance visits conducted during September 1993 and those to be performed October 1993 through January 1994. This is a proposed schedule. Visits by monitoring support personnel will be scheduled with the site operators by the visitor. Site operators, park superintendents, and regional air quality coordinators will be given a 2-week written notice of the site visit once arrangements for the visit are finalized. Site operators should make every attempt to spend as much time as possible with monitoring support personnel during the semi-annual site visit. (Ron Lawler Heavner)

NAAQS Exceedances: The raw data for September 1993 indicate Sequoia and Kings Canyon National Parks may have exceeded the National Ambient Air Quality Standard (NAAQS) for ozone. These parks recorded 2 days above the NAAQS with a maximum hourly ozone concentration at the Lower Kaweah site of 0.129 at 1700 hours on September 11, 1993. All three monitoring locations within Sequoia and Kings exceeded the NAAQS on September 11, 1993, at 1700 hours. The Ash Mountain and Lower Kaweah sites also exceeded the NAAQS on September 10, 1993, with a maximum hourly concentration of 0.127 ppm at 1700 hours. All other NPS areas with monitoring sites were below the ozone NAAQS during the month.

Hawaii Volcanoes NP may have exceeded the 24-hour primary and the 3-hour secondary NAAQS for sulfur dioxide during September 1993. The park recorded a 24-hour average of 0.150 ppm on September 22, 1993, with a maximum hourly sulfur dioxide concentration of 0.829 ppm measured at 0800 hours. On September 12, 1993, between 0800 and 1000 hours, a maximum 3-hour average of 0.666 ppm was recorded, and on September 22, 1993, a 3-hour average of 0.608 ppm was recorded between 0600 and 0800 hours. The 24-hour and 3-hour NAAQS for SO_2 are 0.14 and 0.50 ppm, respectively. These standard violations are tentative pending data validation. (Bob Carson)

Field Trials of Passive Samplers for Ozone Completed: Passive samplers for the measurement of ozone are being carefully studied at field sites to determine their accuracy and reliability. These inexpensive samplers would be useful in spatial studies and for monitoring at locations where plants are being observed for ozone damage. Three sites in Great Smoky Mountains NP and two sites in Sequoia NP were used this summer to compare passive samplers to existing continuous ozone monitors. All laboratory analyses have now been completed and some preliminary results are available. We found repeatability for multiple samplers at a common site was better than measured during our previous study in 1991. The two separate labs used for analysis agreed within a few percent. We were especially interested in the ozone collection efficiencies for the different sites. Four of the five sites agreed well for collection efficiency. Further statistical analysis is in progress to determine what factors lead to variations in the collection rates for the passive samplers. (John Ray)

NO_y Measurements at Acadia NP during August-September: As part of the North Atlantic Regional Experiment, Gulf of Maine Ozone Study (NARE-GOMOS) of the formation and transport of ozone in the northeast, AQD measured NO_y (defined as the sum of all reactive nitrogen oxide compounds, including NO_x) and the State of Maine Department of Environmental Protection measured volatile organic compounds (VOCs) at Acadia NP in August and September. Both NO_y and VOCs are precursors to the photochemical formation of ozone in the troposphere. Measurement of NO_y in a rural setting requires an extra-sensitive analyzer and some modifications to assure that nitric acid is measured correctly. Preliminary data indicate that nitric oxide (NO) was generally less than 0.2 ppb, but had a high of 0.8 ppb, and NO_y was generally between 1 to 6 ppb with some peaks up to 14 ppb. These values are well below values found in urban environments. Many recent regional studies have found that ozone formation in rural areas is NO_x limited. In these areas, the addition of even small amounts of NO_x can translate to increases in O_3 concentrations. The Acadia data will be combined with data from other sites in the NARE-GOMOS program and compared to computer models to try to better understand ozone formation in the northeast region. (John Ray)

BIOLOGICAL EFFECTS

AQD Staff Attend the Second International Conference/Workshop on Integrating Geographic Information Systems (GIS) and Environmental Modeling: The purpose of this biennial meeting was to: "emphasize the potential for GIS to be an integrating mechanism for environmental modeling." Papers, posters, and demonstrations illustrated how database management, GIS, expert systems, ecological modeling, and scientific data visualization can be integrated into environmental information systems. Many of the systems discussed at this meeting were designed to provide information and decision support for problems dealing with air and water pollution. Some of the paper sessions included: Spatial Data Quality and Accuracy Issues, Land Surface Characterization for Environmental Models, Simulation and Interpolation of Weather and Climate Variables, Surface Water Hydrology, Forested Landscapes, Pollutant Transport and Risk, Ecological Modeling, Climate and Response to Climate Change, Groundwater, Water Quality,

Decision Support Systems, Temporal Modeling, System Integration, and Scientific Visualization for Environmental Modeling. (Nash, Flores)

Expert Systems Scientists Visit AQD: Dr. Michael Saunders and Mr. Bruce Miller (Department of Entomology, Penn State University), visited the AQD on September 30 and October 1, 1993. Dr. Saunders and Mr. Miller gave a series of seminars, demonstrations, and "hands-on" workshops with members of the AQD, NPS Geographic Information Systems Division, and Fish and Wildlife Service. The seminars were entitled, "The Use of Artificial Intelligence in Natural Resource Management" and "The Beginner's Guide to Expert Systems." The researchers illustrated the process of "knowledge engineering" (transferring knowledge from domain experts to a decision support system) using the subject of permit review and in-house experts. Dr. Saunders and Mr. Miller demonstrated several decision support systems (ForestHealth, PotatoES, and GrapES) and met with AQD staff to discuss the potential for interactive, computerized interpretive displays and a system to validate environmental data. (Nash)

U.S. Forest Service Air Resource Information Management Strategy Seminar: Steve Boutcher, USFS, Pacific Northwest Region, presented a seminar to AQD staff on September 15, 1993. The seminar dealt with the development of a strategy for managing the growing volume of information and data associated with the USFS Air Resources Management Program. This includes air quality, visual range, and meteorological data; information about sensitive receptors, emission sources, and volumes; and information concerning Prevention of Significant Deterioration (PSD) permits. Boutcher explained the first step in the process was to determine what information is needed to fulfill the mission of the air program. From there, his team developed a model which will efficiently handle the information. Software development will be needed for several of the components of the model. The AQD will be reviewing the products of the project for possible application to NPS needs, and will also share information management systems which are in use here, such as the PSD permit tracking system. (Ferrin)

Technical Assistance to Parks and Regions: Biological Effects Staff spent considerable time this month advising parks and regions on project proposals, especially those associated with recent submissions to the National Biological Survey (NBS). We provided input to North Cascades NP and Acadia NP staff on air quality related aspects of their proposals to the NPS Inventory and Monitoring Program. We discussed air quality issues of strategic interest to the Rocky Mountain Region, Pacific Northwest Region, Western Region, Alaska Region, and Mid-Atlantic Region in the course of developing proposals to be submitted to the NBS. We had extensive discussions with Shenandoah NP staff on projects that might be funded from sources outside the NPS. (Tonnessen, Nash, Ferrin)

Submittal of Proposals to the NPS and NBS: During this month we prepared two proposals for submission to the Challenge Cost-Share Program in response to a solicitation from the NPS. Randy Ferrin coordinated with researchers at the University of Maine to develop a proposal to monitor episodic acidification in Acadia NP; Kathy Tonnessen worked with researchers from the Virginia Museum of Natural History to assemble a proposal to inventory amphibian species in Shenandoah NP and assess their response to increasing acidity. We also submitted a project proposal to the Department of Defence's Legacy 2000 program that would allow for a comparison of amphibian populations and habitats in Shenandoah and three military reservations in the State of Virginia.

Most of our efforts at proposal writing went into submissions to the NBS call for strategic research initiatives during FY 94. Bruce Nash and Kathy Tonnessen prepared lists of project suggestions for regions and then developed proposals in concert with regional air quality

coordinators. We submitted six proposals to the WASO office under the auspices of AQD, and contributed to another three proposals that were submitted by regional chief scientists. Six of these proposals were ranked high enough by the review panel to be included among the 35 submitted to the NBS. (Tonnessen, Nash, Ferrin)

Activities in Washington, D.C.: Kathy Tonnessen travelled to Washington, D.C., to take care of AQD issues that needed attention during the week of September 27-30, 1993. Much time was devoted to the preparation of AQD proposals to be submitted to the NBS. Kathy also served on the review panel, chaired by Mary Foley, to evaluate the 70+ proposals submitted to WASO for strategic research to be funded in FY 94. She spent considerable time discussing air quality program issues with members of the NBS Implementation Team and was able to attend the NBS Employee Awareness Meeting at Main Interior, with a roster of speakers including Bruce Babbitt, George Frampton, Tom Lovejoy, and Gene Hester. On Wednesday of that week, Kathy met with Environmental Protection Agency (EPA) officials for a conference call on the U.S./Canada Air Quality Agreement. The EPA has now elevated discussions about the assessment obligations of the parties under Article V of the agreement to the State Department because of questions on how these assessments will be carried out when significant new sources are planned for construction in the border region.

AQD Staff Meets with IAQAB and IJC in Ottawa, Canada: On September 22, 1993, Kathy Tonnessen participated in meetings of both the International Air Quality Advisory Board (IAQAB) and the International Joint Commission (IJC). In the morning the IAQAB members met with Commissioners in formal session to deliver the semi-annual report. Kathy Tonnessen gave a short presentation on the need for protection of air quality related values in protected parks and reserves in the border region. She also prepared an article on this topic for the semi-annual report. The public information officer for the IJC informally requested an article on this issue be prepared for the Commission's newsletter, the Focus. Following the joint meeting of the IAQAB and IJC, the Air Board met to review a report they commissioned on monitoring of air quality in the Lake Superior region. The IJC's focus during the previous biennial cycle was on issues associated with Lake Superior. The Commissioners have announced that during the next 2-year cycle that they will consider issues concerning Lake Erie. The IAQAB will meet in January in Montreal to assign articles to be included in the next semi-annual report and to plan for a series of workshops requested by the IJC. (Tonnessen)

Publications Available

E.S. Gladney, R.W. Ferenbaugh, K. Stolte, and D. Duriscoe, *An Investigation of the Impacts of Inorganic Air Pollutants on Soils in Saguaro National Monument, Tucson, AZ,* LA-12575-MS, August 1993.

E.S. Gladney, T. Graham, R.W. Ferenbaugh, M. Bell, C. Burns, J. Morgan, and E. Nickell, *Chemical Analysis of Selected Pothole Water Sources in Southwestern National Parks, Monuments, and Recreation Areas,* LA-12605-MS, October 1993.

[Call Dale Breitenfeld (303-987-6694) to receive copies.]

AQD Personnel Transferred to NBS: As reported last month, as of October 1, 1993, Kathy Tonnessen and Bruce Nash will be working for the newly formed National Biological Survey. The AQD appreciates Kathy and Bruce's dedicated service to the NPS and looks forward to continuing to work with them in their new roles at NBS.

VISIBILITY

IMPROVE: A meeting of all IMPROVE members was held in Ft. Collins, Colorado, on September 23. Members agreed to begin preparation of several documents critical to the continued success of this program. These documents include: a formal Memorandum of Agreement among the participating agencies, an IMPROVE sanctioned visibility monitoring strategy, and a detailed monitoring guidance document. Drafts should be available within the next 6 months.

Transmissometer Service Visits: Tables 4 and 5 list transmissometer service trips during the past month and a schedule of planned trips for the next 3 months. A service schedule for nephelometers has not been developed yet. The planned dates may require some modification due to weather, unforeseen instrument problems, or special studies. We will provide a 12-month schedule for both transmissometers and nephelometers in the next AQD monthly report.

TABLE 1

PROJECT	LOCATION	MAJOR COMMENTS	CONTACT
Mobil Oil (natural gas treating facility)	78 km NE of Breton Island Wilderness Area	Significant increases in SO_2, NO_x, CO, and VOC; clarified use of significant impact levels, and recommended cumulative increment and AQRV analyses in future applications.	Rolofson
Bryce Toga-USA (laminated packaging facility)	450 km NE of Breton Island Wilderness Area	Significant increase in VOC; given large distance to the refuge, no significant impacts expected.	Porter
AES Harriman Cove (coal-fired cogen facility)	34 km NW of ACAD	Major source of SO_2, NO_x, PM, and CO; citizen groups strongly oppose this project; NPS is concerned about potential impacts at ACAD; given the delays and lack of developments on the permit application, the State returned the application to the Company. A complete new application will be required if the project ultimately goes forward.	Notar
Arizona Public Service--Cholla (power plant modification)	40 km SW of PEFO	Scrubber modification resulting in net decrease in SO_2 emissions; given emission reduction, no adverse impacts expected at PEFO; however, we discussed general air quality concerns at PEFO, and recommended even lower SO_2 emission levels.	Maniero

TABLE 2

SITE LOCATION	VISITED BY	DATE
Rocky Mountain NP	Dave Meisters (ARS)	September 7-9
Acadia NP	John Ray (AQD)	September 17-19
Indiana Dunes NL	Mark Tigges (ARS)	September 20-22
Joshua Tree NM	Mike Bagby and Mitch Walker (ARS)	September 27-October 1

TABLE 3

SITE LOCATION	TO BE VISITED BY	DATE
October Site Visits		
Yellowstone NP	Dave Meisters (ARS)	October 5-7
Big Bend NP	Mike Bagby (ARS)	October 19-21
November Site Visits		
Denali NP & Pres	Robert Lehman (ARS)	November 1-3
Shenandoah NP	Dave Meisters (ARS)	November 1-5
Great Smoky Mtns. NP	Mark Tigges and John Faust (ARS)	November 8-12
Death Valley NM*	John Faust and Mike Bagby (ARS)	November 18-23
December		
Voyageurs NP	John Faust (ARS)	December 1-3
Yosemite NP	Dave Meisters (ARS)	December 6-10
Grand Canyon NP	Mike Bagby (ARS)	December 13-15
Mammoth Cave NP	Mark Tigges (ARS)	December 13-15
January		
Olympic NP	Robert Lehman (ARS)	January 10-12
Mount Rainier NP	Robert Lehman (ARS)	January 13-15
Canyonlands NP	Dave Meisters (ARS)	January 17-19
Sequoia - Kings Canyon NP	Mike Bagby (ARS)	January 24-28

* Trends Site Installation

TABLE 4
Sites Visited in September 1993

SITE LOCATION	VISITED BY	DATES
Glacier National Park	Carter Blandford (ARS)	August 29 - September 1
Guadalupe Mts. National Park	Ivar Rennat (ARS)	September 7-10
Shenandoah National Park	Ivar Rennat (ARS)	September 14-17
Grand Canyon National Park	Ivar Rennat (ARS) Roger Tree (ARS) Scott Cismoski (ARS)	September 26 - October 1

TABLE 5
Site Visits Schedule for October - December 1993

SITE LOCATION	VISITED BY	DATES
Great Basin National Park	Ivar Rennat (ARS)	October 25-28
Petrified Forest National Park	Ivar Rennat (ARS) Dave Beichley (ARS)	November 15-19
Canyonlands National Park	Ivar Rennat (ARS) Mitch Walker (ARS)	December 6-10