STATE/FEDERAL ACTIVITIES

WESTAR: WESTAR's fall technical conference was held in Park City, Utah, in mid-September. Concurrent sessions were held throughout the 3-day meeting on topics such as Title V Issues (i.e. operating permits), SIP Planning (e.g., redesignation for nonattainment areas, fugitive dust strategies and policies, and pollutant specific SIP status), Title III SIPs (i.e., hazardous air pollutants), dispersion modeling, and forest health. The conference provided an opportunity for State staffs to share information on technical and policy issues of common concern. Federal Agency representatives from the Environmental Protection Agency (EPA), Bureau of Land Management (BLM), U.S. Forest Service (USFS), and the National Park Service (NPS) were present to discuss the implications of State air quality programs as they relate to resource protection on Federal lands. (Brian Mitchell)

Grand Canyon Visibility Transport Commission (GCVTC): Committee meetings and a workshop to develop a methodology for evaluating management options were held in Salt Lake City from October 18-22. Reports from the August workshops on evaluation criteria, management options, and technical methods for examining clean air corridors were presented at the meetings. A report concerning the results of the methodology workshop will be written and provided to the Alternatives Assessment Committee for consideration at a meeting to be held in mid-December in Albuquerque.

Preparations were made for a series of 12 public meetings to be held in January 1994, one in each of the GCVTC's States and rural meetings in each of the 4 Corners States. The meetings will give the public information on the Commission's activities and process, present evaluation methodologies for selecting regional haze management options, and solicit feedback on the information presented and whether we are "doing the right thing." "User friendly" summaries of the workshop results will be developed by the Communications Committee along with brief slide presentations explaining the criteria and options for the lay public.

Commission tasks appear to be on schedule, and Mark Scruggs, Chief of the Air Quality Division's (AQD) Research Branch, has recently joined the ranks of the Committee structure by becoming the chair of the Modeling Subcommittee. All of the NPS representatives at the meeting are actively involved in preparing work products for the Commission. (Mitchell)

AQD Staff Review Draft Chapter for Environmental Protection Agency Ozone Criteria Document: The Environmental Protection Agency (EPA) is preparing an updated Air Quality Criteria for Ozone and Other Photochemical Oxidants, which will provide the basis for EPA's consideration of maintaining or revising the current ozone National Ambient Air Quality Standards (NAAQS). The AQD reviewed a preliminary draft of the chapter discussing environmental effects. We were pleased to see that while previous Criteria documents have, for the most part, limited their discussion to agricultural and other managed systems, the draft chapter devotes a great deal of discussion to the observed and potential effects of ozone on natural ecosystems. In addition, the chapter makes clear that the current 1-hour secondary NAAQS of 0.12 parts per million is not adequate to protect vegetation. The AQD provided additional information for the authors' consideration, including copies of publications resulting from AQD-funded research. (Maniero)

OUTREACH ACTIVITIES

Alaska Fire Management Workshop: Mitchell participated in a workshop for Alaska fire suppression personnel in Fairbanks. The presentation included information on Clean Air Act requirements, air quality regulations, air pollution emissions from wildland fire, and firefighter exposure to air pollutants (including several hazardous chemicals), and potential effects on firefighter health.

FY 1994 Air Quality Exhibit Budget: The budget for FY 1994 air quality interpretive projects is being drafted. Regional Air Quality Coordinators should contact Dee Morse if they wish to identify any new projects for FY 1994. Otherwise, only projects identified (but not funded) in FY 1993 will be considered for funding in FY 1994.

Sequoia/Kings Canyon Draft Air Quality Site Bulletin: The AQD reviewed a layout for an air quality site bulletin entitled, "OZONE - The Invisible Poison" for Sequoia/Kings Canyon NP. The bulletin provides information about the formation, transport, and monitoring of ground level ozone at the park. The bulletin also provides information on how ozone can affect human health and vegetation. (Morse)

PERMIT REVIEW AND TECHNICAL SUPPORT

During October 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 FWS areas. Please contact the staff person identified for more specific information regarding these projects.

GASEOUS POLLUTANT MONITORING

Annual Data Summary Reports: Annual gaseous pollutant summary reports for 1992 have been prepared for Acadia and Big Bend National Parks and Point Reyes National Seashore. 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.

Ozone Summary Statistics Report Program: A SAS computer program was developed that creates a one page statistical summary of as much as 10 years of ozone data collected at one site. Yearly, growing season, and monthly statistics are computed. A sample output is included in this monthly report. This summary will be used in the Air Quality Atlas currently being compiled by Monitoring and Data Analysis Branch staff. (Joseph)

Calibration and Maintenance Visits: With the installation of gaseous pollutant monitoring sites in Great Basin National Park (August 23-26) and Death Valley National Monument (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 October 1993 and those to be performed November 1993 through February 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 October 1993 indicates that all National Park Service areas with monitoring sites were below the hourly ozone National Ambient Air Quality Standards (NAAQS) of 0.12 ppm during the month.

Two sites had maximum hourly ozone concentrations greater than 0.100 ppm during October 1993: Sequoia and Kings Canyon NP - Lower Kaweah (0.102 ppm) on October 1, 1993, at 1600 hours and Sequoia and Kings Canyon NP - Grant Grove (.100 ppm) also on October 1, 1993, at 1600 hours.

Hawaii Volcanoes NP may have exceeded the 24-hour primary (0.14 ppm) and the 3-hour (0.50 ppm) secondary NAAQS for sulfur dioxide during October 1993. The park recorded a 24-hour average of 0.219 ppm on October 2, 1993, with a maximum hourly sulfur dioxide concentration of 1.024 ppm measured at 0700 hours. On October 2, 1993, between 0600 and 0800 hours, a maximum 3-hour average of 0.949 ppm was recorded. They also recorded a 3-hour average of 0.597 ppm on October 31, 1993, between 1700 and 1900 hours. (Bob Carson)

<u>New Joshua Tree National Monument Site</u>: The air quality site was moved from the Lost Horse ranger station to the Black Rock Canyon visitor center area on October 1, 1993. The Lost Horse site was powered by a diesel generator and the site was moved so the diesel generator could be shut down. The Black Rock Canyon site continues to monitor ambient ozone and meteorological parameters.

NPS/NBS - BIOLOGICAL EFFECTS

<u>AQD Staff Participate in Challenge Cost Share Proposal Review Panel:</u> Tonnie Maniero participated in the Challenge Cost Share (CCS) Proposal Review Panel, chaired by Frank Panek, Wildlife and Vegetation Division, October 13-14 in Washington, DC. The panel developed rating criteria, reviewed 77 proposals submitted by regions and WASO, and ranked the proposals based on technical merit. The final decision on project funding will depend on the amount of money allocated for the CCS Program.

<u>AQD Receives Final Report from Saguaro National Monument Biological Effects Review Panel:</u> Under the sponsorship of the AQD, a review panel chaired by Bill Halvorson, CPSU Unit Leader, University of Arizona (UA), met in Tucson in September 1992 to review air quality-related biological effects research in Saguaro National Monument (NM). The final report from the panel has recently been published. The report summarizes and evaluates past air quality biological effects research efforts in Saguaro NM and makes recommendations about future research priorities. The report also includes the AQD's response to the panel's recommendations. Copies of the report are available from Joan Ford at (602) 670-6885. (Maniero)

<u>Alpine Plant Ozone Sensitivity Research</u>: Anna Schoettle, USFS, Rocky Mountain Forest and Range Experiment Station, presented a seminar to AQD staff after the Division's monthly meeting in October. Schoettle discussed the lack of information on alpine plant species, the need to prioritize species for study, and the need to develop a method for estimating alpine plant sensitivity to ozone. The components of plant sensitivity, she commented, are based on the dose expected and internal interactions within the plant. The dose is dependent on the exposure and a plant's uptake ability, which in turn is a function of leaf conductance, leaf surface, and crown structure, and the plant's nutritional status. Her method of rating sensitivities was to survey plants for leaf conductance, rank by the ability to conduct, and test this ranking on seedlings in an experimental setting. She will eventually test the ranking on mature plants in the field. Her work is being conducted at two sites in the Rocky Mountains: Niwot Ridge in the Arapaho National Forest, Colorado and Glacier Lakes in the Medicine Bow National Forest, Wyoming. She has found the plants from the Colorado site have greater leaf conductance than the plants from the Wyoming site, even for the same species. She suggested this might be due to greater soil moisture at the Colorado site. A preliminary sensitivity list for alpine plants has been completed. (Ferrin)

Contaminants Encyclopedia Demonstration: On October 5, 1993, Roy Irwin, Water Resources Division, presented a demonstration of the contaminants encyclopedia he has been developing. Both AQD and EPA staff attended the presentation at the EPA conference facility in Denver. After discussing the history and need for the encyclopedia, Irwin demonstrated several retrievals from the contaminants data base. There are over 1100 individual chemicals described in the encyclopedia, with several thousand references. A typical entry for a chemical describes the chemical, its sources, bioaccumulation and bioconcentration tendencies, tolerance factors, carcinogenicity, presence in freshwater or soil, sediment concentrations, concern levels, water quality criteria, human health factors, and interactions. If there is a known link to air pollution, that is also discussed. A synonymy file allows cross-referencing for those chemicals known by a variety of names. Until copyright concerns are alleviated, Irwin is restricting access to the encyclopedia. A review copy was installed on one AQD Research Branch personal computer. Irwin is attempting to gather interagency support to complete the encyclopedia and provide for periodic updates. (Ferrin)

Field Trip to Niwot Ridge: This month Kathy Tonnessen visited the site of a planned AQD/NBS study of nitrogen deposition and transformations during snowmelt at Niwot Ridge in the Colorado Rockies, above Boulder. This is the site of an NSF-funded Long Term Ecological Research study of alpine ecology. Kathy accompanied Dr. Mark Williams, Dr. Nel Caine and CU graduate students to the Green Lakes Valley and the Niwot Saddle, site of the tundra lab. During this field tour they marked two lysimeter locations where meltwater will be collected beginning in spring 1994. During the summer LTER researchers installed two large solar panel arrays and a windmill to provide power for the large, research quonset hut and a new subnivian shelter for performing snowmelt experiments. They toured the two recent additions, funded through an NSF renewal grant to CU-Boulder. Technicians and researchers had erected a 100-foot long, 12-foot high, snow fence, made with vertical metal posts that support heavy plastic sheets threaded horizontally between the posts. This snow fence is to provide researchers with two different environmental conditions, snow-free areas of frozen ground and areas covered with large drifts. The subnivian shelter, located a few hundred yards from the Tundra Lab, is a wooden workroom built underground, where researchers can collect meltwater samples that run into the shelter through pipes that drain surface lysimeters. The study planned for spring 1994 will monitor how much nitrogen (as nitrate and ammonia) is deposited to the snowpack and how these concentrations change during melt and runoff. They will also add labelled N15 to the snowpack to determine the fate of different forms of nitrogen. (Tonnessen)

Planning for the NBS: We received a number of requests this month from the National Ecology Research Center (NERC) in Fort Collins for information to be used in formulating the mission and activities of the NBS. We provided NERC with an air quality effects perspective on target ecosystems that should be the focus of more intensive research activity: So. Appalachians, Central Rocky Mountains, and Sierra Nevada. We also provided information to NBS on global environmental issues that should be the focus of research in the new agency: global air contaminants and changes in snowmelt hydrology in high-elevation areas. We commented on the NBS Strategic Plan and prepared an outline for an article proposed for inclusion in the first National Status and Trends Report of the NBS titled "The Status of Air Quality in National Park Service Units, with the Identification and Status of Sensitive Resources." (Nash, Tonnessen)

Staff Prepares Article for IJC FOCUS: Responding to a request by the public information officer of the International Joint Commission, Kathy Tonnessen prepared an article for the IJC Focus, a newsletter published three times a year by the International Joint Commission to report on their recent meetings, activities, and publications. The article, titled "Canadian and U.S. Agencies Get Together to Monitor Air Pollutants and Their Effects in Protected Areas," describes recent meetings between park staff members from the United States and Canada. This article is designed to complement recent discussions between the International Joint Commission and the International Air Quality Advisory Board on the issue of monitoring of air quality and its effects in protected areas in the transboundary region. (Tonnessen)

Publications Available

C. L. Blanchard and K. A. Tonnessen, Precipitation-chemistry measurements from the California Acid Deposition Monitoring Program, 1985-1990, Atmospheric Environment 27A: 1755-1763, 1993. [Available from K. Tonnessen 303-969-2738].

Saguaro National Monument Air Quality Biological Effects Research Review Panel, "Review of the Air Quality-Biological Effects Research Program, Saguaro National Monument, Arizona," Technical Report NPS/WRUA/NRTR-93/09, September 1993. [Available from Joan Ford, CPSU-UA, (602) 670-6885].

VISIBILITY

Tables 4 and 5 list transmissometer service trips during the past month and a schedule of planned trips for the next 3 months. Due to weather and/or unforeseen instrument problems, we will not be able to provide a 12-month schedule of service trips as stated in our last monthly report.

TABLE 1

PROJECT	LOCATION	MAJOR COMMENTS	CONTACT
S.D. Warren (pulp mill modification)	83 km NW of Acadia NP	Significant increases in SO_2, NO_2, CO, and PM; no significant impacts expected at the park; clarified need for cumulative impact analyses.	Rolofson
Tuscarora Plastics (permit modification)	50 km NE of GRSM	Minor increase in VOC; no significant impacts expected at the park.	Maniero
Lasco Bathware (plant expansion)	26 km NW of LAME and 90 km NW of GRCA	Major source of VOC; no significant impacts expected at GRCA, but VOC emissions could increase already high ozone levels at LAME; recommended the County require additional emission reductions.	Maniero

TABLE 2

SITE LOCATION	VISITED BY	DATE
Yellowstone NP	Dave Meisters (ARS)	October 5-7
Big Bend NP	Mike Bagby (ARS)	October 19-21

TABLE 3

SITE LOCATION	TO BE VISITED BY	DATE
November Site Visits		
Shenandoah NP	Dave Meisters and John Faust (ARS)	November 2-5
Great Smoky Mtns. NP	Mark Tigges and John Faust (ARS)	November 8-12
Grand Canyon NP	Mike Bagby (ARS)	November 22-24
Denali NP&Pres	Robert Lehman (ARS)	November 30-December 2
December Site Visits		
Voyageurs NP	John Faust (ARS)	December 1-3
Death Valley NM*	John Faust and Mike Bagby (ARS)	December 6-10
Yosemite NP	Dave Meisters (ARS)	December 6-10
Mammoth Cave NP	Mark Tigges (ARS)	December 13-15
January Site Visits		
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
February Site Visits		
Hawaii Volcanoes NP	John Faust (ARS)	February 2-3
Haleakala Np	John Faust (ARS)	February 4-6
Death Valley NP	Mark Tigges (ARS)	February 7-9
Joshua Tree NM	Mark Tigges (ARS)	February 10-12
Lassen Volcanic NP	Robert Lehman (ARS)	February 16-18
Everglades NP	Mike Bagby and Dave Meisters (ARS)	February 21-25

* Trends Site Installation

Table 4
Sites Visited in October 1993

SITE LOCATION	VISITED BY	DATES
Tonto National Monument	Ivar Rennat (ARS)	October 22
Mesa Verde National Park	Mitch Walker (ARS)	October 28
Petrified Forest National Park	Jim Wagner (ARS)	October 28

Table 5
Site Visits Schedule for November 1993 - January 1994

SITE LOCATION	VISITED BY	DATES
Great Basin National Park	Ivar Rennat (ARS)	November 17-19
Canyonlands National Park	Ivar Rennat (ARS)	December 6-10
Petrified Forest National Park	Jim Wagner (ARS) Dave Beichley (ARS)	January 8-12, 1994

SAMPLE

NATIONAL PARK SERVICE
AIR QUALITY DIVISION
OZONE SUMMARY STATISTICS REPORT
AIRS SITE # = 38-053-0002
CONCENTRATIONS IN PARTS PER BILLION (PPB)   EXPOSURES IN PARTS PER BILLION HOURS (PPB-HR)

14:37 Monday, October 25, 1993

YEAR/ MONTH	% CAPT	N	MIN	PERCENTILES 1	5	10	25	50	75	90	95	99	MAX	MEAN	STD DEV	AVG 7TO7	SUM0	HRS >= 60 PPB	SUM60	HRS >= 80 PPB	SUM80	W126
YEARLY STATISTICS																						
1982	15	1339	0	5	8	10	14	19	24	27	28	30	32	19	6	20	25231	0	0	0	0	99
1983	65	5691	0	7	12	15	21	27	33	41	47	61	80	28	11	30	156984	69	4496	2	160	5766
1984	97	8544	0	6	12	16	22	29	36	43	48	56	68	29	11	33	248929	44	2766	0	0	8035
1985	89	7809	0	11	17	20	25	31	37	43	47	53	61	31	9	35	243410	2	121	0	0	6690
1986	73	6425	1	9	14	18	25	32	38	45	48	54	62	31	10	36	202246	6	365	0	0	6475
1987	43	3726	3	7	13	16	24	32	40	46	49	54	64	32	11	37	118103	3	186	0	0	4406
1988	32	2826	1	13	20	26	34	43	50	57	61	67	78	42	12	48	118705	196	12488	0	0	13804
1989	48	4206	4	10	18	23	30	39	47	54	58	65	73	39	12	44	162190	173	10983	0	0	14184
1990	33	2874	4	9	16	19	26	35	43	50	53	63	70	35	12	40	99541	49	3099	0	0	5841
ALL	55	43440	0	7	14	17	24	31	39	47	51	61	80	32	11	36	152815	60	3834	0	18	7256
GROWING SEASON (MAY - SEPTEMBER) STATISTICS																						
1983	21	755	7	12	18	23	33	42	51	59	63	74	80	41	14	50	31318	69	4496	2	160	4172
1984	94	3467	0	5	13	17	24	34	42	48	51	61	68	33	12	38	114548	43	2706	0	0	5828
1985	75	2760	0	9	16	19	25	33	41	47	50	55	61	33	11	38	90746	2	121	0	0	3626
1986	99	3620	4	8	13	16	24	32	40	47	50	56	62	32	11	37	115574	6	365	0	0	4596
1987	78	2860	3	6	11	16	23	31	38	46	49	54	64	31	11	36	87487	3	186	0	0	3058
1988	62	2293	1	12	20	25	34	43	51	58	62	68	78	42	13	48	96780	188	11997	0	0	12138
1989	98	3597	4	9	17	22	30	39	47	55	59	66	73	38	13	45	138267	173	10983	0	0	12822
1990	78	2874	4	9	16	19	26	35	43	50	53	63	70	35	12	40	99541	49	3099	0	0	5841
ALL	76	22226	0	8	15	18	26	35	44	51	55	64	80	35	12	40	96783	67	4244	0	20	6510
MONTHLY STATISTICS																						
JAN	98	2905	0	8	15	18	22	27	31	35	36	39	42	26	7	27	19642	0	0	0	0	194
FEB	100	2694	0	6	12	15	21	27	33	36	38	41	47	26	8	28	17886	0	0	0	0	218
MAR	99	2955	0	7	14	18	25	30	36	41	43	47	49	30	9	33	22139	0	0	0	0	437
APR	94	4713	4	14	20	23	30	37	43	48	51	56	64	36	9	41	26416	2	103	0	0	1273
MAY	77	4607	7	13	20	24	31	39	47	52	56	62	71	39	11	44	28080	12	762	0	0	1945
JUN	92	5294	0	11	17	22	30	38	46	53	58	66	80	38	12	44	27306	26	1681	0	22	2267
JUL	77	4024	1	9	16	20	29	37	46	53	59	66	73	37	13	43	27606	28	1771	0	0	2214
AUG	85	4409	0	6	13	17	24	32	40	48	52	61	68	32	12	38	24235	8	509	0	0	1203
SEP	90	3892	3	6	10	14	19	26	33	40	44	50	59	26	10	31	19360	0	0	0	0	436
OCT	76	2250	0	7	12	15	20	24	30	35	38	43	51	25	8	28	18611	0	0	0	0	209
NOV	95	2741	0	5	9	12	17	22	27	30	32	38	42	22	7	23	15402	0	0	0	0	96
DEC	99	2956	0	7	12	16	22	28	32	35	37	40	46	27	7	28	19867	0	0	0	0	215