



United States Department of the Interior

NATIONAL PARK SERVICE

Air Resources Division

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IN REPLY REFER TO:

February 10, 2011

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CASAC

c/o Dr. Holly Stallworth, DFO

EPA Science Advisory Board (1400R)

U.S. Environmental Protection Agency

1300 Pennsylvania Avenue, NW.

Washington, DC 20004

Dear CASAC Panel Members:

On behalf of the National Park Service Air Resources Division (NPS ARD), I appreciate this opportunity to submit comments for the consideration of the Clean Air Scientific Advisory Committee (CASAC) on EPA's Policy Assessment for the Review of the Secondary National Ambient Air Quality Standards (NAAQS) for Nitrogen Oxides and Sulfur Oxides. The NPS has been entrusted with the management of some of the most beautiful and unique areas in our country. As a nation, we have promised to leave these extraordinary places of discovery and power in a condition that is unimpaired so that they will continue to serve the needs of society to connect to authentic places for their educational, recreational, and restorative values.

National parks represent a legacy from Americans today to generations of Americans yet to come. Yet in many parks, air pollution from outside park boundaries has degraded resources.

Acid deposition has acidified streams, reduced biodiversity, and altered nutrient cycling in soils in Great Smoky Mountains and Shenandoah National Parks. Alpine lakes and meadows in Rocky Mountain National Park, a park most people would consider pristine, are being significantly altered by nitrogen deposition. Other parks experience increased non-native plant invasions and fire risk because of elevated levels of nitrogen deposition. These effects are occurring despite the fact that these parks are in attainment of the Secondary NAAQS for nitrogen dioxide and sulfur dioxide, standards established to protect public welfare. EPA has clearly demonstrated in their review documents that the current NAAQS are inadequate to protect sensitive ecosystems across the country from the harmful effects of nitrogen and sulfur deposition.

NPS ARD supports EPA's current approach to develop an ecologically relevant secondary standard to protect aquatic ecosystems from acidification that links ecological indicators and effects to deposition and, ultimately, to atmospheric concentrations of nitrogen oxides (NO_x) and sulfur oxides (SO_x). We agree with EPA's conclusion that acid-neutralizing capacity (ANC) is an appropriate indicator for the acidification standard. But we do not agree with EPA's proposal that 20-75 microequivalents per liter (μeq/L) is a reasonable range for the target ANC. EPA's review of available information found that in Shenandoah National Park, for example, the number of fish species in streams decreased significantly below an ANC of 100 μeq/L. And, CASAC's comments on the second draft Policy Assessment noted that there

is substantial confidence that there are adverse effects at ANC levels below 20 $\mu\text{eq/L}$, and reasonable confidence that there are adverse effects below 50 $\mu\text{eq/L}$. Given this reasonable confidence in adverse effects below 50 $\mu\text{eq/L}$, and evidence of adverse impacts as ANC decreases from 100 $\mu\text{eq/L}$, we believe that 50-100 $\mu\text{eq/L}$ would be a more reasonable range for the Administrator's consideration.

We agree that Omernik Level III regions are appropriate for defining ecologically relevant regions, but caution that even at this scale, there is considerable variation in acid sensitivity within ecoregions. For example, Appendix C describes the Southern Rockies Ecoregion as extending from high elevation alpine lakes and tundra to lower elevation shrub- and grasslands. Within the Ecoregion one might expect a large variation in acid sensitivity, from very sensitive at high elevations to insensitive at lower elevations. This is particularly significant in light of EPA's proposed range of percentiles for the critical load for the area. EPA has suggested a value in the range of the 70th to the 90th percentile. Choosing the 70th percentile would result in a higher critical load that might not protect very sensitive lakes that comprise a smaller proportion of the region's lakes. For example, in an analysis¹ of 40 lakes in Rocky Mountain National Park, the 75th percentile ANC was 44 $\mu\text{eq/L}$. Ten lakes had ANC less than 44 $\mu\text{eq/L}$, with a low value of 15 $\mu\text{eq/L}$. A critical load to protect the 70th percentile lake would not protect any of these most sensitive lakes. EPA offers no clear rationale for its selection of the range of 70th to 90th percentile and, therefore, we recommend using the 95th percentile of critical loads to protect that population of sensitive lakes that are often found in our most prized and endangered national parks and wilderness areas. As EPA notes in the Policy Assessment, there is precedence for using this value, as the 95th percentile is widely used throughout Europe to protect natural areas from acidification and the adverse effects of nitrogen enrichment.

We believe EPA's approach to this review represents a significant step forward in improving protection of our nation's resources. We have urged EPA to move forward quickly on a similar approach for protection of terrestrial ecosystems from acidification and both aquatic and terrestrial ecosystems from adverse effects associated with nitrogen enrichment. Please let us know if you have any questions concerning our comments.

Sincerely,

Patricia Brewer
Acting Chief, Air Resources Division

¹ Nanus, L., Williams, M., Campbell, D.H., Tonnessen, K.A., Blett, T., Clow, D.W. 2009. Assessment of lake sensitivity to acidic deposition in national parks of the Rocky Mountains. *Ecological Applications* 19: 961-973.