

Sensitive Air Quality Related Values of Greater Yellowstone Network Parks

An air quality related value (AQRV) is a resource that may be adversely affected by a change in air quality. AQRVs include visibility and specific scenic, cultural, physical, biological, ecological, or recreational resources. Research has identified certain AQRVs as sensitive, such as lakes with low acid-buffering capacity and plant species that display injury symptoms at ambient ozone concentrations. An “X” indicates the AQRV is known to be, or likely to be, sensitive to air pollution. “Unknown” indicates there is not enough park-specific information available to determine if the resource is sensitive. The table is based on best available information relative to park resources and pollution sensitivity, and will be updated when more information is available.

Visibility is a sensitive AQRV affected by air pollution to some degree in every unit of the National Park System. Air pollution affects how far we can see vistas and landscape features, and how well we can see them. Air pollution and light pollution also affect the dark night sky resource, an integral component of visibility. **Vegetation** may be sensitive to a variety of air pollutants, including nitrogen, sulfur, and ozone. Nitrogen and sulfur may affect plant growth and species composition. Ozone may cause leaf injury and growth and reproduction effects. Ozone-sensitive plant species have been identified in many parks and are listed in [risk assessments](#) that have been conducted to evaluate the risk to vegetation from ozone at park units. **Surface waters** and **soils** are susceptible to acidification, unnatural enrichment, or eutrophication from atmospheric deposition of hydrogen ions, nitrogen and/or sulfur. Water and soils that have evolved under low nutrient conditions, or those with low buffering capacity, are particularly vulnerable. **Fish and wildlife** are all potentially sensitive to air pollutants, including airborne toxics like mercury and dioxins. Air pollutants may have a direct effect to fish and wildlife (e.g., mercury neurotoxicity) or an indirect effect to their habitat (e.g., stream acidification).

Park	Visibility	Vegetation	Surface Waters	Soils	Fish and Wildlife
Bighorn Canyon NRA	X	X	Unknown	Unknown	X
Grand Teton NP*	X	X	X	X	X
Yellowstone NP*	X	X	X	X	X

* References:

Corbin, J and S. Woods. 2004. Effects of atmospheric deposition on water quality in high alpine lakes of Grand Teton National Park, Wyoming. 64 p.

Corbin, J., S. Woods and S.E. O’Ney. 2005. Predicting high alpine lake sensitivity to atmospheric deposition in Grand Teton National Park using basin characteristics. Poster presentation at George Wright Society Biennial Conference on Parks, Protected Areas and Cultural Sites. March 14-18, 2005.

Nanus, L., D.H. Campbell and M.W. Williams. 2005. Sensitivity of alpine and subalpine lakes to acidification from atmospheric deposition in Grand Teton National Park and Yellowstone National Park, Wyoming. U.S. Geological Survey Scientific Investigation Report 2005-5023. 37 p.

<http://www.acad.carleton.edu/curricular/GEOL/classes/geo258/studentswork/Jones.html> (discusses sensitivity of soils at Grand Teton and Yellowstone NPs)