

Curriculum Vitae

**JENNIFER BACK**

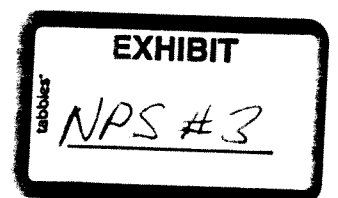
National Park Service  
1201 Oak Ridge Dr., Suite 250  
Fort Collins, CO 80525  
(970) 225-3533  
email: jennifer\_back@nps.gov

**ACADEMIC BACKGROUND**

Paul Smiths College	A.S. (1983)	Ecology and Environmental Technology
Evergreen State College	B.A. (1985)	Environmental Studies
Colorado State University	M.S. (1994)	Hydrology

**PROFESSIONAL EXPERIENCE**

2001– Current	Hydrologist, Water Resources Division, National Park Service, Fort Collins, CO
1998 – 2000	Water Resources Engineer, Spronk Water Engineers, Denver, CO
1997 – 1998	Hydrologist - Program Principal, Wyoming Dept. of Environmental Quality, Cheyenne, WY
1995 – 1997	Hydrologist, ASL Hydrologic and Environmental Services, Phoenix, AZ
1994 – 1995	Hydrologist, Wyoming Dept. of Environmental Quality, Cheyenne, WY
1993 – 1994	Hydrologist, U.S. Fish and Wildlife Service, Fort Collins, CO
1991 – 1993	Research Associate, Natural Resource Ecology Lab, Fort Collins, CO
1987 – 1990	Analytic Chemist, Datachem Laboratories, Salt Lake City, UT
1986	Laboratory Technician, ASARCO, Salt Lake City, UT



## **CURRENT DUTIES**

### **Project Leader, Water Resources Division, National Park Service.**

Evaluates water right applications near NPS units and determines the potential for impacts to NPS water resources. Identifies and implements studies needed to better understand hydrologic flow paths in support of NPS water rights and resources. Provides technical advice to parks and agency management in support of water rights issues and litigation. Provides expert witness testimony for water right hearings.

## **PROJECTS**

**Lake Mead:** Compiled and evaluated existing water chemistry and isotopic data for springs at Lake Mead National Recreation Area to identify potential ground-water flow paths and areas where additional data is needed. Developed a study plan to obtain additional data in consultation with a private contractor.

**Arbuckle-Simpson Aquifer:** Managed a study with the USGS in Oklahoma on the use of water chemistry to identify hydrologic flow paths to springs, and the use of chlorofluorocarbons to characterize the age of water discharging from springs at Chickasaw National Recreation Area., OK.

**Middle Rio Grande River:** Quantified surface water availability, consumptive use, and return flow, and evaluated the potential for injury to water rights under various management scenarios along the Middle Rio Grande River in support of litigation involving endangered species and interstate compact issues.

**Republican River:** Estimated ground-water use along the Republican River in Colorado, Nebraska and Kansas using hydrologic, climatic, and historic land use data such as satellite imagery in support of litigation involving interstate compact issues.

**Powder River Basin:** Reviewed annual reports for coal and gravel mining operations and advised operators in the development and revision of mining, monitoring and reclamation activities.

**State of Wyoming:** Prepared cumulative hydrologic impact analyses on hydrologic basins in Wyoming to assess changes in water quality, water quantity and sediment transport in areas disturbed by coal mining.

**Gila River Basin:** Conducted field infiltration studies to evaluate different sites for potential recharge facilities. Designed pilot scale recharge basins at selected locations. Directed the installation of monitoring wells to monitor ground-water recharge for a pilot scale recharge study. Assisted in the development of a full-scale 3.5 million gallon/day recharge facility. Prepared hydrogeologic reports and water supply assessments to identify potential sources of water for the City of Goodyear, AZ

**San Pedro River Basin:** Conducted field infiltration studies to evaluate different sites for potential recharge facilities for the City of Sierra Vista. Designed a pilot scale recharge basin for a potential tertiary treatment system. Conducted a pilot recharge

study. Directed the installation of a production well and monitoring well for a pilot scale recharge study.

**State of Arizona:** Evaluated the effects of long term ground-water withdrawals on water levels, flow direction and stream flow using two dimensional analytic ground-water models. Assessed water availability to meet the criteria for Assured and Adequate Water Supplies under the Arizona ground-water management code.

**Missouri River, Coal Creek, and Boulder Creek:** Conducted studies on the relationship between flood regimes, flow regulation, and riparian vegetation on river systems in Montana and Colorado.

**Rocky Mountain National Park:** Planned, initiated and managed a study of the seasonal variability of stable isotopes in lakes and streams as part of a long term ecological research program. Performed water quality sampling and analysis, monitored stream discharge, and maintained a remote weather station.

## PUBLICATIONS

Auble, G. T., Scott, M.L., Friedman, J.F., Back, J.T., and Lee, V.J. 1997. Constraints on Establishment of Plains Cottonwood in an Urban Riparian Preserve, *Wetlands* 17(1):138-48.

Back, J.T. 1994. Stable Isotopes as Tracers of Hydrologic Sources to Three Alpine Lakes, Masters Thesis, Colorado State University, Fort Collins, CO.

Back, J.T. 2011. Geochemical Investigation of the Madison Aquifer, Wind Cave National Park, South Dakota. Natural Resource Technical Report NPS/NRPC/WRD/NRTR – 2011/416, National Park Service, Fort Collins, Colorado.

Belcher, W.R., Bedinger, M. S., Back, J. T., and Sweetkind, D.S. 2009. Interbasin flow in the Great Basin with special reference to the southern Funeral Mountains and the source of Furnace Creek springs, Death Valley, California, U.S. *Journal of Hydrology*, 369(2009):30-43.

Bouwer, H., Back, J.T., and Oliver, J. 1999. Predicting Infiltration and Ground-Water Mounds for Artificial Recharge, *Journal of Hydrologic Engineering*, 4(4):350-7.

Mast, M.A., Kendall, C., Campbell, D.H., Clow, D.W., and Back, J. 1995. Determination of hydrologic pathways in an alpine-subalpine basin using isotopic and chemical tracers, in Tonnessen, K., Williams, M., and Tranter, M., eds., *Biogeochemistry of Seasonally Snow-covered Catchments*, p. 263-270.

## **PRESENTATIONS**

Back, J.T. 2010. Protecting Water Levels at Devils Hole. American Fisheries Society Meeting, Redding , CA.

Back, J.T. and R. Waddell. 2003. Analysis of Precipitation Patterns and Spring Discharge in Southern Nevada. Nevada Water Resources Association, Reno, NV.

Back, J.T. 2002. Evidence for a Regional Source of Discharge at Rogers Spring, Lake Mead National Recreation Area, Nevada. The Geological Society of America, Rocky Mountain Section. Cedar City, UT.

Back, J. T., J. M. Friedman, L. S. Ischinger, and M. L. Scott. 1994. Constraints on plains cottonwood regeneration in an urban riparian corridor. Society of Wetland Scientists: Wetlands - Local Functions, Global Dependence. Portland, OR.

Back, J.T. 1992. Stable Isotopes as Tracers of Hydrologic Inputs to Alpine Lakes, American Society of Limnology and Oceanography, Santa Fe, NM.

## **CONTINUING EDUCATION**

USGS, 2006. Principles and Applications of Estimating the Age of Young Ground Water, Reston, VA.

Colorado School of Mines, 2003. Modflow: Introduction to Numerical Modeling, Golden, CO.

Geological Society of America, 2002. Estimating the Rates of Ground-Water Recharge, Denver, CO.

## **PROFESSIONAL MEMBERSHIP**

Geological Society of America

American Geophysical Union