

RAYMOND C. VAUGHAN, Ph.D., P.G.
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Professional Geologist/Environmental Scientist/Consultant with specialties in geology, hydrogeology, physical chemistry, thermodynamics, public policy, technical communication, numerical methods and programming, environmental testing, site remediation, development of soil cleanup standards, chemical fate and transport, Great Lakes protection, aquatic invasive species policy and ballast water management technology, wetlands protection, climate change and carbon sequestration, bioassay and analytical methods, nuclear waste policy and technology, and research and development. Seven U.S. patents.

PROFESSIONAL EXPERIENCE

Consultant to Sierra Club Atlantic Chapter, 2017-2018

Geologist/Environmental Consultant, 2017-2018

- Review and interpretation of radiological test results from Hakes and Chemung landfills

Consultant to Cayuga Lake Environmental Action Now (CLEAN), 2017-2018

Geologist/Environmental Consultant, 2017-2018

- Reviewing Finger Lakes salt mining issues as part of geological support team

Consultant to Environmental Protection Dept. of Seneca Nation of Indians, 2016

Geologist/Environmental Consultant, 2016

- Report on large data set of radiological test results for several sets of soil samples

University at Buffalo, Department of Geology, 2015

Adjunct Assistant Professor, Fall 2015

- Created and taught graduate course, GLY 606, Environmental and Legal Issues in Geology

Consultant to Seneca Lake Pure Waters Association, 2014-2017

Geologist/Environmental Consultant, 2014-2017

- Report preparation and participation in Issues Conference on LPG storage proposal
- Ongoing support and consultation with scientific/legal team for preparation of legal briefs

New York State Attorney General's Office, Environmental Protection Bureau, Buffalo, NY, 1999-2012

Environmental Scientist, 2000-2012

Environmental Intern, 1999-2000

- Investigation and assessment of environmental issues
- Case preparation and other scientific consultation with experts
- Litigation support and interagency scientific consultation on mercury emission standards
- Affiant in mercury emissions case, *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008)
- Litigation support and interagency scientific consultation on aquatic invasive species
- Site characterization and remediation support for sites in New York State
- Design and execution of groundwater testing

- Head measurement and potentiometric surface mapping
- Groundwater modeling
- Design and execution of soil and sediment testing
- Integration of stratigraphic & structural data w/test results (esp. for assessing contaminant migration)
- Monitoring of well drilling and logging
- Pumping-test interpretation
- Interpretation of other testing and modeling results
- Development and application of soil contamination standards
- Review and interpretation of various reports submitted to Attorney General's Office
- Geologic characterization and interpretation of a major salt mine collapse
- Assessment of groundwater contamination from manure spreading
- Assessment of groundwater impacts from mining
- Assessment of potential impacts from oil & gas exploration
- Field investigation, record review, and interagency consultation on wetlands protection
- Consultation with environmental organizations on issues of mutual interest
- Participation in Great Lakes Binational Toxics Strategy

Graphic Controls Corporation, Buffalo, NY, 1976-1998

Senior Research Technician, 1981-1998

Research Technician, 1976-1981

- Development of electrode products including Quikset, Q-Trace, and Meditrace
- Development of silver/silver chloride and graphite inks and conductive substrates
- Development of hydrogels and conductive adhesives
- Design and construction of prototype equipment for coating, curing, and printing
- Product and component testing; development of test methods

Carborundum Company, Niagara Falls, NY, 1965-1975

Research Technician

- Development of boron nitride ceramic fibers and high-temperature polymer fibers
- Development of processes for converting fibers to various textile forms

EDUCATION/AFFILIATIONS

NYS Professional Geologist License No. 258

Ph.D., Geology, University at Buffalo, 2008

B.S., Math and Astronomy, Empire State College, 1975

Massachusetts Institute of Technology, 1962-1964

Member, Buffalo Association of Professional Geologists

Member, Clean Air Coalition of Western New York

Steering Committee, Coalition on West Valley Nuclear Wastes, 1978-2006

Member, West Valley Citizen Task Force, 1997-present

Member, Town of Hamburg Conservation Advisory Board, 1980-1999

Board of Directors, Western New York Land Conservancy, 1991-2002

Board of Managers, Buffalo Society of Natural Sciences, 2011-present

Board of Directors, Nature Sanctuary Society of Western New York, 2013-present

SELECTED PUBLICATIONS/PRESENTATIONS

R.C. Vaughan (editor and coauthor), *'Low-Level' Radioactive Waste: The Siting Process in New York State*, 3rd ed., Norwich, NY, 1990.

R.C. Vaughan, "Fending Off Orthodoxy with Ink and Umbrage: Church and State Controversy in Western New York, 1815-1837," presented at Conference on New York State History, Buffalo, 1998.

R.C. Vaughan, "State Options for Controlling Aquatic Invasive Species in the Great Lakes," *National Environmental Enforcement Journal* **18**, 3 (2003).

R.C. Vaughan, "Ranking the Bioassay TEFs and REPs," poster presented at Dioxin 2003 conference, Boston; published in *Organohalogen Compounds* **60**, 165 (2003).

R.C. Vaughan, T.D. Wood, D.J. Higbee, J.R. Olson, and Y. Tondeur, "Chromatographic Separation Strategy for Isolating and Characterizing Compounds with High Bioassay Response," presented at Dioxin 2005 conference, Toronto; published in *Organohalogen Compounds* **67**, 208 (2005).

R.C. Vaughan, testimony on site decommissioning on behalf of West Valley Citizen Task Force, before U.S. Nuclear Regulatory Commission, Rockville, MD, 2006, available at www.nrc.gov/reading-rm/doc-collections/commission/tr/2006/20061211.pdf.

R.C. Vaughan, "Applying an Effect-Directed Strategy to the Search for Unrecognized Toxic Chemicals," presented at Great Lakes Binational Toxics Strategy Integration Workgroup meeting, Windsor, Ontario, February 2007; available at <http://archive.epa.gov/bns/web/pdf/vaughan022107.pdf>.

R.C. Vaughan, "Due Process, Morgan's Disappearance, and American Antimasonry in Historical Context," presented at International Conference on the History of Freemasonry, Edinburgh, Scotland, 2007.

F. Zagorski and R.C. Vaughan, "New York's 401 Certification of EPA's Vessel General Permit (VGP)," presented at Great Lakes Aquatic Nuisance Species Panel Meeting, Grand Island, NY, 2009.

R.C. Vaughan, "Stemming the Tide of Aquatic Invasive Species: Efforts of the Office of the New York State Attorney General," presented at SUNY ESF, Syracuse, 2010.

R.C. Vaughan, "The Unfinished West Valley Experience at the Back End of the Nuclear Fuel Cycle, 1960-present," presented at Council of State Governments/Blue Ribbon Commission public meeting, Boston, 2011.

R.C. Vaughan, "The Nuclear Dilemma: No Good Place to Put the Waste," presented at St. Bonaventure University, St. Bonaventure, NY, 2013.

R.C. Vaughan, J. Sullivan, and C. Osterhoudt, "The Geology of Zoar Valley and the Cattaraugus Creek Watershed," *Nature Sanctuary Society of WNY Monograph in the Natural Sciences*, Vol. I, January 2013.

R.C. Vaughan, "West Valley site history, cleanup status, and role of the West Valley Citizen Task Force," presented at National Transportation Stakeholders Forum (U.S. Department of Energy/Council of State Governments), Buffalo, 2013.

R.C. Vaughan, "Geologic History of the Niagara Escarpment," Appendix G of Western New York Land Conservancy, *Niagara Escarpment Legacy Project* (2014), available at pp. 83-93 of <http://wnylc.org/site/wp-content/uploads/2014/05/Appendices-Niagara-Escarpment-Legacy-Project-May-2014.pdf>.

R.C. Vaughan, "Tom Diggins on the Ecology of the Zoar Valley Gorge," *Nature Preserves* **14**, no. 3 (August 2014), 7-8.

R.C. Vaughan, "Split-sample testing strategy to assess risk from dioxin/furan deposition," poster presented at Air Pollution Workshop, UB Department of Epidemiology and Environmental Health, Buffalo, 2014.

R.C. Vaughan, "NSSWNY Fall Membership Meeting: Ken Roblee on Western New York's Herptiles," *Nature Preserves* **14**, no. 4 (November 2014), 4-5.

R.C. Vaughan, "Industrial stack testing principles and methods," presented to Air Pollution Applications class, GEG 480/616, Buffalo State College, 2014.

R.C. Vaughan, "Mercury deposition from coal-fired power plant emissions, and the use of a simple computer model to predict downwind deposition," presented to Air Pollution Applications class, GEG 480/616, Buffalo State College, 2014.

R.C. Vaughan, "An air pollution episode involving residential exposure to a poorly characterized chemical," presented to Air Pollution Applications class, GEG 480/616, Buffalo State College, 2014.

R.C. Vaughan, "The Hemlock Woolly Adelgid: How You Can Become Part of the Solution," *Nature Preserves* **15**, no. 1 (February 2015), 4-5.

R.C. Vaughan, "Geologic Issues for LP Gas Storage in Seneca Lake Salt Caverns," presented at Rochester Committee for Scientific Information public meeting, Rochester, NY, April 7, 2015.

R.C. Vaughan, "The Big Impact of a Tiny Product: Sam Mason's Work against Microbeads / Local, State Governments Issue Bans," *Nature Preserves* **15**, no. 3 (August 2015), 1-3.

R.C. Vaughan, "The History of Zoar Valley: NSSWNY Fall Lecture Explores the Rich Past of a Local Treasure," *Nature Preserves* **15**, no. 4 (December 2015), 1-3.

R.C. Vaughan, "Cattaraugus Creek: A Story of Flowing Water and the Geology of the Channel It Flows Through," presented at SNI Cattaraugus Community Wellness Center, Irving, NY, April 22, 2016.

R.C. Vaughan, "Endangered: The Rusty Patched Bumble Bee (*Bombus affinis*)," *Nature Preserves* **17**, no. 2 (April 2017), 10-11.

R.C. Vaughan, "Unresolved geologic questions for salt mining under Cayuga Lake," presented at Cayuga Lake Environmental Action Now (CLEAN) public meeting, Ithaca, NY, June 13, 2017.

R.C. Vaughan, "Climate & intense rainfall events: Can they be predicted well enough to support cleanup decisions for the West Valley nuclear waste site?," presented at American Meteorological Society, Western New York Chapter meeting, Buffalo State College, June 20, 2017.

R.C. Vaughan, "Erosion Modeling Issues that Need Attention and Sensitivity Analyses," presented at West Valley Citizen Task Force meeting, West Valley, NY, June 28, 2017.