PATRICK L. LARSEN

EDUCATION

University of Vermont, Burlington, VT
M.S., Geology, 1996
Thesis Title: Production rate estimates for ^{10}Be and ^{26}Al from erratics and bedrock near the Wisconsinan glacial terminus in New Jersey

University of Utah, Salt Lake City, UT
B.S., Geology and Geophysics, 1993

WORK EXPERIENCE

Larsen Applied Earth Science, LLC.
East Hardwick, Vermont
Principle, Hydrogeologist 2/2006 – Present

Conducts all aspects of wastewater and water supply designs and permitting for single family homes and commercial enterprises. Experience designing conventional systems, mound systems, as well as innovative/alternative systems. Also assists commercial clients with land use (Act 250) permitting and stormwater permitting. Activities performed on a regular basis include groundwater, soil pore water, and soil sampling; soil analysis for texture, structure, color, and consistence; identification of limiting factors such as seasonal high water table and impermeable layers; percolation testing; topographic surveying; groundwater mounding analyses; monitoring well installation; CAD site plans; and hydraulic conductivity testing in both saturated and unsaturated soils.

Stone Environmental, Inc.
Montpelier, Vermont
Project Geoscientist 2/2001 – 7/2006

Project manager for wastewater needs assessments and hydrogeologic capacity studies. Also project manager for groundwater studies in the midwest and southeast USA to determine environmental fate of pesticides. Skilled in all phases of project field work, including site selection, site characterization, instrumentation, and sampling. Field skills and responsibilities include soil characterization, stage and flow monitoring, monitoring well installation and sampling, hydraulic conductivity testing and analysis, interpretation of hydrogeologic and soils data. Project management skills and responsibilities include proposal writing, study design, protocol writing, coordination and cooperation with state regulators and officials, report writing, staff supervision, budget analysis, budget creation, and subcontractor management.

Stone Environmental, Inc.
Montpelier, Vermont
Staff Geoscientist 2/1999 - 2/2001

Field and office support for groundwater studies. Fieldwork including monitoring well installations, lysimeter installations, study site selection, soil characterization, water and soil sampling. Data management, analysis and presentation. Database design, development, and administration. Task Management.

University of Nebraska, Water Center/Environmental Programs
Lincoln, Nebraska
Clearinghouse/Data Manager, 1996 - 1999

Designed and created a database containing pesticide and nitrate data for Nebraska's groundwater. Worked with several local, state, and federal agencies to collect groundwater data for statewide groundwater management plan. Managed and analyzed groundwater contaminant data in databases, spreadsheets and GIS overlays. Participated in various groundwater and vadose zone pesticide projects. Participated in

committee meetings and professional conferences and workshops. Collaborated with others in writing and publishing technical papers. Fieldwork included operating GeoProbe Direct-Push rig, taking groundwater samples and soil cores. Designed and published departmental web pages. Designed vendor database.

Hydro–Trace Inc.
Raymond, Nebraska,
Environmental Consultant, 1997-1999

Provided analysis and display of environmental data. Looked for trends and results in data related to remediation of contaminated groundwater.

University of Vermont, Geology Department
Burlington, Vermont
Geology Teaching Assistant, 1993 - 1995

Taught several geology labs per semester as well as led field trips and museum tours. Taught diverse topics including mineralogy, petrology, tectonics, structure, geomorphology, and field techniques. Required leadership skills and an ability to convey technical information to lay audiences, both children and adults.

University of Vermont, Department of Plant and Soil Science
Burlington, Vermont
Soil Sampling Technician, Summer 1994

Collected and prepared soil and plant samples for phosphorus analyses as part of an agricultural runoff study. Soil samples were taken with a hand auger and with a tractor-mounted hydraulic auger.

Datachem Laboratories,
Salt Lake City, Utah
Chemist I, Summer 1993

Prepared and analyzed environmental water and soil samples on a Technicon Autoanalyzer, required knowledge and implementation of QC/QA protocol and EPA methodologies.

U.S. Bureau of Mines
Salt Lake City., Utah
Physical Science Aid, 1991 - 1993

Conducted experiments with goal of recycling advanced materials, prepared samples, kept meticulous lab notebook, wrote monthly progress report; also conducted mineral identification in thin section under polarizing microscope.

PUBLICATIONS AND PRESENTATIONS

Spalding, R.F., Larsen, P.L., Exner, M.E., Green, J.D., 1998, Nebraska strategy for coping with increased mandated pesticide sampling and analyses in state management plans, ACS Symposium "Guidance for Field-Scale Ground-Water Monitoring Studies". Presented at American Chemical Society National Meeting, Boston, MA, Aug. 27, 1998.

Nebraska Well Drillers Association Conference on Environmental Water Well Sampling and Construction, Kearney, NE, Oct. 22-23, 1996.

1998 Natural Resource Districts Water Programs Conference, Kearney, NE, March 6, 1998.

Bierman, P.R., Davis, P.T., Marsella, K., Colgan, P., Mickelson, D.M., Larsen, P.L., Caffee,M., 1998, What do glaciers take away? What do they leave behind? Cosmogenic dating symposium, GSA Annual Meeting.

Larsen, Patrick L., Bierman, P. R, Caffee, M, 1995, Cosmogenic ^{26}Al chronology of the Late Wisconsinan glacial maximum in North-Central New Jersey, NEGSA Abstracts with Programs, vol. 27, no. 1, p.63.

Larsen, Patrick L., Bierman, P. R, Caffee, M, 1995, Preliminary in-situ production rates of ^{10}Be and ^{26}Al over the last 22 ky from the terminal moraine of the Laurentide ice sheet, north-central New Jersey, presented at Geological Society of America National Meeting, Nov. 6-8, 1995.

Larsen, Patrick L., Bierman, P. R, Stone, B., Caffee, M., In review, Production rate estimates for ^{10}Be and ^{26}Al from erratics and bedrock near the Wisconsinan glacial terminus in New Jersey, GSA Bulletin.

Baldwin, L., Bierman, P., Schwartz, A., Church, A., Larsen, P., 1995, The effects of colonial disturbance and subsequent reforestation on the Vermont landscape, NEGSA Abstracts with Programs, vol. 27, no. 1, p.28.

Clark, D.H., Bierman, P.R., Larsen, P.L., 1995, Improving *In Situ* Cosmogenic Chronometers, Quaternary Research, vol. 44.

Clapp, E., Bierman, P., Church, A., Hanzas, J., Larsen, P., Schuck, R., 1995, Teaching Geohydrology Through the Analysis of Groundwater Resources and Glacial Geology in Northwestern Vermont, Journal of Geological Education.

CERTIFICATIONS

State of Vermont Licensed System Designer 504B

Presby Environmental, Inc. Enviro-Septic Leaching Systems Certificate No: 1872VTES

OSHA 40-hour training including yearly 8-hour refresher course

EPA Worker Protection Training - Certified Pesticide Handler, (identification # H0448280). Presented by the Vermont Dept. of Agriculture, November 9, 1999.

ADDITIONAL EDUCATION

Function, theory, design, O&M, choosing the optimal technology, Randolph, VT, September 13, 2007, taught by New England On-Site Wastewater Training Center

Soils Training, Springfield, VT April 6, 2006 Sponsored by VT Agency of Natural Resources

Innovative/Alternative System Conference, Randolph, VT July 6, 2006 Sponsored by VT Agency of Natural Resources

Good Laboratory Practices Practical Approach Seminar. Presented by the West Coast Quality Training Institute, Montpelier, Vermont, March 30, 2000.

RECENT HONORS

Best poster presentation, Groundwater Risk Assessment for Malibu, CA. USDA CSREES watershed conference, San Diego, CA, February 7-10, 2005

PROFESSIONAL AND COMMUNITY ACTIVITIES

VINS Nature Program Volunteer, Hardwick Elementary School, 2005-Present

Caledonia West Little League Baseball, Board of Directors and Coach, 2004-Present

Pro-bono environmental consulting for Hardwick Area Playground Project

Vermont Beekeepers Association Education Committee, 2004

Nebraska Groundwater Pesticide Clearinghouse Steering Committee, 1996-1999

Nebraska Groundwater Pesticide Clearinghouse Technical Committee, 1996-1999

PROJECT EXPERIENCE

On-site wastewater and water supply designs (>100)

Projects completed throughout the state of Vermont on a wide variety of soil types and hydrogeologic conditions. Many of the designs done in high water table soils (<18" to eshwt) and included desktop mounding analysis.

Groundwater and Soil Sampling
Sample monitoring wells in Florida for EPA pesticide monitoring project, sample groundwater for VOC's using profiling technique with direct-push drill rig in Connecticut, sample water and soil for multiple contaminants as part of due diligence process for property transfer in Vermont.

Water Quality and Flow Monitoring on a Tributary of the Mad River, Warren, VT.
Project Manager
Evaluate background water quality and flow conditions in vicinity of an indirect discharge wastewater system (>6500 GPD).

Wastewater Needs Assessment, Georgia VT
Project Manager
Evaluate study area as to the suitability of off-site cluster systems or other means of dealing with existing local wastewater flows. Used GIS as primary evaluation tool.

Wastewater Needs Assessment, Georgia Shores, VT
Project Manager

Evaluate study area as to the suitability of off-site cluster systems or other means of dealing with existing and anticipated wastewater flows. Used GIS as primary evaluation tool.

Hydrogeologic Characterization, Seekonk MA
Project Manager
Evaluate soil, groundwater, and field conditions to estimate potential for hydrogeologic capacity for a 60,000 GPD groundwater discharge permit.

Retrospective Groundwater Monitoring Study, Florida
Project Manager
Wrote proposal and budget. Collaborated with client and Florida Department of Agriculture to develop study design. Worked with growers and pesticide sales reps to identify sites for monitoring wells. Conducted extensive soil and water table characterization.

Six-State Retrospective Groundwater Monitoring Study
Project Manager
The study is designed to develop baseline monitoring data for a widely used herbicide in ground water. The study's purpose is to monitor shallow ground water down gradient of historic applications. Water samples are being collected from a combination of new and existing monitoring wells in each of the states having the highest use of this particular herbicide.
Location: Montana, North Dakota, Texas, Kansas, Nebraska, and Oklahoma

Four-State Surface Water Monitoring Study
Project Manager
Study assesses the potential exposure to a common winter wheat pesticide by monitoring surface water supplied community water systems in areas of high pesticide use.
Location: Montana, North Dakota, Idaho, and Kansas

Multiple Prospective Groundwater Studies
Project Staff
Performed site selection, soil texture and color analysis, monitoring well installation and development, lysimeter installation, hydraulic conductivity testing, soil, water, and soil pore water sampling, and data management.
Locations: New Jersey, Indiana

Retrospective Groundwater Monitoring Study, Pacific Northwest
Site Selection field manager, northwest region
Managed site selection efforts for retrospective tap-water study in Washington and Oregon. Using soil surveys, local pesticide applicators, local residents, and field reconnaissance, chose and obtained permission to sample appropriate potable wells for pesticide residues.