BARBARA LARY, R.G., L.G.

Education

MS – Engineering Geology, Purdue University, 1993 MSEd- Science Education, Purdue University, 1987 BS – Geology, Indiana University, 1984

Professional Licenses

Registered Geologist – Oregon Licensed Geologist - Washington

Specialty Certifications

HAZWOPER 40-Hour

Professional Affiliations

National Ground Water Association

Professional Experience

Ms. Barbara Lary is a senior geologist and project manager with over 25 years of experience in environmental site assessments, site investigations, site remediation and environmental monitoring. Ms. Lary's experience in the field has resulted in a broad base of knowledge in sampling various environmental media including soil, groundwater, surface water, sediments, soil gas, indoor and outdoor air, and various solid and liquid waste products. Her experience has included Phase I and Phase II environmental site assessments on properties used for agriculture, single and multi-family residences, dry cleaners, fuel stations, chemical production, large manufacturing, metal coating facilities, transportation, mining, landfills, and lumber mills for both private and municipal clients.

As a project manager, Ms. Lary has experience from start to finish with projects, including creating a scope of work and associated cost estimate, obtaining necessary permits for drilling, coordinating subcontractors and field crews, and communicating with regulators and clients regarding ongoing work and sampling results. Her experience has included developing field sampling plans, project quality assurance plans, health and safety plans, project work plans, data review and management, regulatory review and preparation of technical reports. She has also managed site remediation projects and the decommissioning of remediation systems, underground storage tanks and monitoring wells. She has conducted large drilling programs, managed surface water sampling and conducted stream surveys.

Chemical contamination encountered in both soil and groundwater has included petroleum, heavy metals, dioxins/furons, pesticides, herbicides, PCBs, and solvents. Notable projects that Ms. Lary has been involved in are described below.

Landfills

County Landfill Monitoring and Reporting, Southwest Oregon. Project manager for groundwater monitoring program at three county-owned landfills, including a municipal waste incinerator and landfill, a construction waste landfill and a closed landfill. Ms. Lary managed the semi-annual



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groundwater monitoring, annual evaluation of incinerator ashes, and annual reporting for the three landfills, coordinating with the county and DEQ.

Abandoned Landfill at a Former Military Training Facility, SW Washington. Project manager for groundwater monitoring program at a former military base used for ordinance training. Site issues included unexploded ordinance clearance and environmental impacts from improper disposal of chemicals in a landfill. Created a site database for groundwater monitoring data and converted all wells to dedicated pumps to save on the long-term groundwater monitoring costs.

Site Investigation and Remediation

Former Pharmaceuticals Manufacturing Facility, Portland, Oregon. Field manager for large site involved in volatile organic compounds impacting groundwater, resulting from illegal dumping of liquid wastes into an abandoned drywell. Following an extensive investigation, the interim remedial action selected was electrical resistive heating, with over 50 electrodes installed in the ground. Ms. Lary's duties included conducting additional site characterization following treatment, replacement of monitoring well network (due to destruction during heating), submitting an Interim Remedial Action Measure Report and managing closure groundwater monitoring. The site received a no further action finding from DEQ in October 2005.

Electric Heater Manufacturer, Vancouver, Washington. Field manager for large manufacturing site with chlorinated solvent impacts to groundwater, both onsite and offsite into a residential neighborhood. Field efforts included installation of monitoring well network throughout the neighborhood, including several multiport wells for groundwater sampling at five depths through one well; installation of recirculating wells used to apply potassium permanganate treatment to ground water; and conducting soil gas and indoor air sampling to screen for possible human health impacts. Indoor air results required subsequent installation of residential soil vapor treatment systems on select properties.

RI/FS, Former Insecticide and Herbicide Manufacturing Facility, Portland, Oregon. Field geologist with specific responsibilities including development of work plans, drilling specifications, and field sampling plans. Contaminates of concern included insecticides, herbicides, dioxins/furans, phenols, volatile organic compounds and metals. Ms. Lary oversaw extensive drilling programs both onsite and offsite, which included supervising sonic drilling crews, logging subsurface materials, soil sampling, and groundwater sampling. Her responsibilities included onsite health and safety training, coordinating contractors and managing investigative derived waste.

Yakima Hops/Hop Union USA, Mabton, Washington. Ms. Lary was field geologist and responsible for implementing a work plan designed to address pentachlorophenol impacted soils and ground water at the site. Ms. Lary's responsibilities included installation of a monitoring well network and subsequent sampling, overseeing the removal of the impacted soils which were transported off-site as an interim corrective action and preparation of the closure report, demonstrating successful mitigation of the risk associated with exposure to contaminated soils.

Copper Mine, Pinto Valley, Gila County, Arizona. Ms. Lary was a field geologist on the environmental and geotechnical project team working on a tailings impoundment failure into Pinto Creek. Environmental cleanup, site assessment, restoration and monitoring activities were conducted under the oversight of the USDA Forest Service, US EPA and the Arizona DEQ. Site activities included surface water and ground water sampling, debris and sediment sampling, mapping of the geology and geomorphology, measuring and tracking surface water discharge, and documentation of all activities and analytical results. Ms. Lary's was involved in all sampling activities during cleanup and restoration and part of the team that put together the remediation report. She was a member of the

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yearly morphological survey crew, analyzed surface water and groundwater quality data and oversaw the yearly monitoring report. After three years of monitoring the reconstructive activities, the project was successfully completed.

Former Dry Cleaner, Vancouver, Washington. Senior field geologist overseeing field activities during the investigation of chlorinated solvent impacts to groundwater, with off-site migration over 1-mile in length. Ms. Lary's duties included overseeing drilling of borings and installation of monitoring wells, logging borings, groundwater sampling, selection and installation of pressure transducers, research and installation of passive diffusion sampling devices in wells, managing quarterly ground water sampling of over 50 wells, reviewing data and documenting monitoring events.

Operating Dry Cleaner, Hubbard, Oregon. Ms. Lary managed this project under a DEQ services contract, funded by the state dry cleaners' program. Ms. Lary reviewed site environmental history, including environmental activities conducted by others, and wrote a work plan designed to provide the needed information for site closure. Following work plan approval, Ms. Lary conducted the additional soil and ground water sampling, reviewed current and historical data and conducted a health risk screening, documented final conditions at the site and obtained a "no further action" finding for the site.

Fueling Facilities, Lambert-St. Louis International Airport, Missouri. Ms. Lary conducted a Tier 1/Tier 2 Risk Assessment for a bulk fuel facility and two concourse areas where there had been jet fuel leaks. Ms. Lary was also responsible for creating a site-wide map showing all soil and ground water sampling locations associated with fuel facilities or pipelines, in support for client lease negotiations.

Former Manufacturing Site, S. Hackensack, New Jersey. Ms. Lary managed this project involving chlorinated solvent impacts to ground water from former manufacturing activities at the site. Ms. Lary reviewed current site conditions and environmental data, designed a work plan obtained approval from NJ Department of Environmental Protection. Ms. Lary implemented the work plan, and during drilling activities, observed site conditions that were contributing to the environmental impacts to groundwater.

Publications and Presentations

Mongrain, R.A., B.E. Lary, and T.O. Looff. Evaluation of mine tailings impact to the environment in mineralized terrains. Tailings and Mine Waste '00, p. 489-498.

Lary, Barbara E. 1993 (Thesis). Erosional Analysis of the Northwest Gob Pile, Friar Tuck Mine Site, Indiana, Purdue University.