

## Ian M. Phillips, LSP

Principal Scientist

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### Technical Specialties:

Mr. Phillips' area of expertise includes forensic chemistry in support of contaminant source identification, cost allocation for environmental cleanup and data quality. In over 20 years of environmental consulting experience, Mr. Phillips has provided technical and regulatory direction related to the investigation, cleanup and redevelopment of contaminated properties, litigation support for cost recovery actions, and regulatory compliance services under RCRA, Superfund, the Massachusetts Contingency Plan (MCP), and the Massachusetts Solid Waste Regulations. Expert services in litigation and settlement negotiations have included regulatory compliance, contaminant sources, future remediation costs, bankruptcy, and environmental insurance matters. As an expert in data quality, he has helped the Massachusetts Department of Environmental Protection (MADEP) develop quality control guidelines for MCP investigations. Data quality expertise has been used in support of changed cleanup goals, cost recoveries, and criminal actions.

### Experience Summary:

Over 20 years experience: Principal Scientist, Roux Associates (2003 to present); Branch Manager, Senior Consultant, and Associate, GEI Consultants, Inc. (2002-2003); Environmental Division Manager, GEI Consultants, Inc. (1996-2002); Project Manager, GEI Consultants, Inc. (1991-1996); Project Chemist, Dames & Moore (1990-1991); Environmental Chemist and Field Sampling Manager, Enseco (1983-1989).

### Credentials:

M.S., Engineering in Environmental Studies, University of Lowell, 1991  
A.B., Chemistry, Vassar College, 1982

### Certifications:

Massachusetts Licensed Site Professional (No. 2963)  
40-Hour OSHA Hazardous Waste Site Activities Training  
8-Hour OSHA Supervisory Training  
Annual OSHA Refresher Training

### Key Projects:

#### Site Investigation and Remediation

**Licensed Site Professional/Massachusetts Contingency Plan:** Rendered hundreds of LSP opinions concerning the investigation, remedial actions and regulatory closure of contaminated projects in Massachusetts. Audits by the DEP have not resulted in any significant adverse audit findings.

- **Environmental Compliance Manager:** Provided oversight and management of a wide range of environmental compliance and strategic property divestiture/acquisition projects for major Massachusetts corporation. Projects have included:

- Regulatory closure of groundwater DNAPL in fractured bedrock.
- Remediation of 6,000 cubic yards of lead contaminated soil.
- Preparation of Reportable Condition maps to support future construction projects and release status determinations.
- Removal of 60 buried drums and land farming of VOC and SVOC contaminated soil.
- Property selection for warehouse construction.
- Remediation of environmental conditions to facilitate property transfers.
- Negotiation of environmental elements of Purchase and Sale Agreements.
- Technical support for insurance product purchases.

- **Marina Redevelopment and Environmental Compliance:** Provided oversight and management of a wide range of activities related to the acquisition and redevelopment of marinas throughout southeast Massachusetts. Projects include:

- Cost recovery for contamination from abutting properties.
- Due diligence for property acquisition including assessing environmental liabilities.
- Redevelopment planning to avoid areas of contamination and potential stigma impacts.
- Regulatory closure for PCB contaminated soils.
- Remediation and regulatory closure of gasoline UST-release.
- Negotiation of environmental elements of Purchase and Sale Agreements.

- **MCP Phase I/II Investigations:** LSP for the Phase I and II investigations of an active power plant. Investigations included evaluation of risk to the environment including the sampling of plant and animal tissues. Provided public presentation of Phase II results as part of PIP Site requirements. The project was also performed to address the requirements of the Solid Waste Regulations.

- **MCP Phase IV:** LSP for the submittal of a landfill cap design of an inactive landfill under the Massachusetts Contingency Plan. Regulatory negotiations allowed for closure under the MCP as a cost and time saving alternative to the Solid Waste regulations. The project was designed in a manner consistent with the requirements of the Solid Waste Regulations.

- **Baseline Assessment and MCP Compliance:** Managed Environmental Baseline Assessment of the Logan

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Airport Fuel Distribution System for airliner consortium. Project included database of existing and new data, airside subsurface investigations, and preparation of report documenting pre-existing contamination in support of the lease agreement. LSP for numerous fuel releases at Logan International Airport.

- MCP Closure: Project manager and LSP for attaining regulatory closure of bedrock groundwater contaminated site. Investigation and remediation activities included the use of Very Low Frequency (VLF) to map the water bearing fractures and fault at the site, installation of bedrock monitoring wells with packer testing to identify the containment bearing fractures, and remedial system upgrade to a single recovery well capable of controlling contaminant migration across the site. Contaminant plume was reduced over 500 feet in less than six months. An RAO was issued and audited without adverse findings.
- MCP Compliance: Environmental Project Manager/LSP for the remediation and management of contaminated soil during the demolition and redevelopment of multiple structures at a major shopping mall. The project involved the removal of underground storage tanks (USTs) ranging in size from 500 to 180,000 gallons. Remediation of soils was performed in a manner that minimized construction delays. An IRA Plan Completion Statement and RAO have been submitted.
- Release Abatement Measure: Managed the removal and disposal of over 50 buried drums with unknown chemicals. Historic releases in the area also required ex-situ bioremediation of soils contaminated by noxious chemicals associated with the buried drums. Over 6,000 cy were treated and reused on site. A class A-2 RAO was achieved for the site. In addition, supported successful cost recovery actions against the responsible parties saving over \$1M.
- Immediate Response Action: Oversaw IRA in response to the failure of a fuel line at a marina. Installed an SVE system that removed over 150 gallons in a four-month period. The system was installed and operated without interruption to the marina operations or the operations of an adjacent restaurant with outdoor terrace.
- Release Abatement Measure: Managed the design of a remedial action to abate soil and separate phase product contamination adjacent to a building. The RAM was designed to excavate in stages TPH- and VOC

contaminated soils without undermining the building foundation. The design also incorporated a passive separate phase product collection system to remove the product from around the building foundation.

- Evaluation of Background Concentrations of Lead: Developed statistical approach to demonstrate that elevated lead concentrations are attributable to background and would not require further remedial measures. Approach was used to render a Class A RAO for the Site.
  - MCP IRA/RAO: Project Manager/LSP for the implementation of an Immediate Response Action (IRA) and RAO in the center of an active construction site. An IRA Completion Statement and RAO were completed prior to Tier Classification. The RAO has been audited with no adverse findings.
  - MCP Phase I/II, and Imminent Hazard Evaluation at Former MGP Site: As LSP investigated a Manufactured Gas Plant (MGP) site currently used as a public park and private residence. The project required close coordination with Newburyport officials, the Conservation Commission, and local residents. Activities completed to date include a RAM to remove PAH contaminated soil from a playground. The project is ongoing and includes evaluation of remedial alternatives and negotiations with residential property owners.
  - Interim Measure: Managed all phases of the investigation and removal of mercury-contaminated soils beneath former industrial building. The project involved characterization of the horizontal and vertical extent of mercury contamination and design of the remediation action.
- Superfund**: managed investigations, remediations, and regulatory negotiations for PRPs with EPA and state agencies.
- Remedial Investigation: Managed the remedial investigation of the industrial portion of the Batavia Town Landfill Superfund Site in Batavia, New York for one of the Potentially Responsible Parties. The investigation included the installation/sampling of monitoring wells, the excavation of buried drums, and the evaluation of impact of groundwater contamination to private drinking water wells.
  - Bench/Pilot Scale Remediation Evaluation: O'Connor Superfund Site, Augusta, Maine. Managed the bench and pilot scale evaluation of the innovative remediation

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technology for PCBs and PAHs. Responsibilities included the contractor oversight, design of special analytical methods, auditing, data validation, and field pilot scale remediation studies of PCB- and PAH-contaminated soils. Results were used to change cleanup goals and proposed remedy.

- Risk Assessment: Reviewed and provided comments to the EPA regarding human health and ecological risk assessments of the Aberjona River.
- Remedial Design Investigation: Managed the investigation of the MBTA Right-of-Way to evaluate whether the ballast material may be considered a cover equivalent for the proposed remedial action at the Industri-Plex Superfund Site in Woburn, Massachusetts.
- Bench Scale and Analytical Results Interpretation: Pine Street Canal Superfund Site (MGP Site), Burlington, Vermont. Reviewed the bench scale studies and chemical data generated during the Remedial Investigation to provide comments to EPA on remedy selection for the PRP Group.
- Management of Migration Monitoring: Provided the long-term groundwater monitoring of the Cannons Engineering and Tinkham's Garage Superfund Sites. Additional activities have included negotiation of an ESD, implementation of a groundwater management permit, and work plan negotiations. Additional activities have resulted in cost reductions of greater than 50% for the 20 year monitoring periods.

### Other Investigation & Remediation Projects:

- Solid Waste Landfill Closure: Completed investigation and closure design for municipal landfill. Key accomplishments included the technical demonstration that the landfill had been previously capped in 1978 and that the 1978 standards applied to the project resulting in a savings of over \$1M for the municipality.
- Solid Waste Corrective Action Alternatives Analysis: Development of technical argument that supported leaving waste materials in place that were outside of the bounds of the landfill site assignment. Technical justification involved the sampling of plant and animal tissues and an abundance and diversity study to demonstrate the functionality of potentially impacted wetlands.
- Solid Waste Corrective Action Alternatives Analysis: Developed and received regulatory approval for an alternative cap for a municipal landfill. Alternative cap included paving of portions of the landfill for reuse as a solid waste transfer station. Stormwater management systems were designed to reduce peak flow discharges during 100-year storm events to under pre-alternative cap levels.
- Plant Closure Investigation: Managed design and implementation of sampling plan for the closure of a 900-acre industrial facility. The project involved the sampling of groundwater monitoring wells, landfills, and sludge lagoons, including a 40-acre waste lagoon.
- Waste Oil Drum Investigation: Managed the sampling and analysis of 65 waste oil drums to identify source of PCB contamination.
- Facility Decommissioning: Managed in-building investigations to evaluate the adequacy of interior remediation of mercury and other heavy metal contaminated materials. Managed the generation of demolition and site redevelopment cost estimates to evaluate incremental costs associated with handling and disposing of contaminated materials.
- Roadway Development: Managed the negotiations for the soil and groundwater management programs for the expansion of Route 146 between Millbury and Worcester. Negotiated the terms with the DEP by which contaminated materials may be reused for the construction of the road. Also worked on the evaluation of the potential ecological impact of the creation of wetlands in contaminated areas.
- Free Product Mapping: Designed cost-effective field screening program to define the extent of free product contamination in groundwater to support SVE system design.
- ASTM Phase I/II ESAs: Completed ESA investigations at single and multi-site locations for acquisitions and divestitures at a wide variety of operations including restaurant chains, gas stations, industrial gas facilities, chemical and product manufacturers, and office/residential properties. ESA work included site visits, regulatory file reviews, field investigations, environmental compliance audits, and future liability assessments.

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## **Environmental Audits and Compliance**

Wide range of auditing and compliance experience that have contributed to cost effective solutions to identified issues.

- **SPCC and Facility Response Plans:** Managed and prepared the SPCC and Facility Response Plans for the tank farm and fuel distribution system at Logan International Airport. Project included the inspection of the new facility coordination with Swissport Corporation and Massport. Identified design flaws and solutions in the spill containment system.
- **Delisting Petition Verification Inspections:** U.S. EPA, Washington, D.C. Managed over 35 unannounced sampling missions to industrial RCRA facilities in support of the EPA/Office of Solid Waste Spot Check Program. Responsibilities included sampling/analytical plan design, facility auditing, laboratory quality assurance and management of field logistics. RCRA facilities inspected included oil refineries, automobile manufacturers, landfills, electroplaters, chemical manufacturers, and steel mills.
- **RCRA Facility Investigation:** As Quality Assurance Officer, provided investigation of an industrial facility under Consent Order with the U.S. EPA. He was responsible for QA plan design, analytical plan design, compliance auditing, laboratory management, data validation, and dispute resolution negotiations.

- **RCRA Facility Investigation:** As Quality Assurance Officer, provided RCRA facility investigation and interim measures study. Responsible for compliance auditing, laboratory management and data validation.
- **Laboratory Auditing:** Audited environmental testing laboratory for compliance with federal analytical protocols and laboratory specific QA Procedures and Plans. Identified deficiencies resulted in cost recovery actions.
- **Phase I/II Investigations:** As Quality Assurance Officer, provided design and implementation of QA Project Plans for the Phase I and II Investigations at two adjacent, coastal MGP sites. Significant chemical data quality corrective actions were identified and implemented prior to the release of data to the clients and regulatory agencies.

## **Advanced Chemistry Applications**

Provided expert technical services using laboratory chemistry expertise that resulted in cost reductions and corrective actions in support of investigation and remediation projects.

- **Petroleum Hydrocarbon Fingerprinting:** Provided interpretation of chromatograms and contaminate distributions to identify sources of petroleum hydrocarbons in soil and water.
- **Laboratory Auditing:** Audited environmental testing laboratory for compliance with federal analytical protocols and laboratory specific QA Procedures and Plans. Identified deficiencies that have significantly impacted the use of the data.
- **Phase I/II Investigations:** As Quality Assurance Officer, provided design and implementation of QA Project Plans for the Phase I and II Investigations at two adjacent, coastal contiguous MGP sites. Significant chemical data quality corrective actions were identified and implemented prior to the release of data to the clients and regulatory agencies.
- **RCRA Facility Investigation:** As Quality Assurance Officer, provided investigation of an industrial facility under Consent Order with the U.S. EPA. He was responsible for QA plan design, analytical plan design, compliance auditing, laboratory management, data validation, and dispute resolution negotiations.
- **Free Product Mapping:** Designed cost-effective field screening program to define the extent of free product contamination in groundwater to support SVE system design.
- **RCRA Facility Investigation:** As Quality Assurance Officer, provided RCRA facility investigation and interim measures study. Responsible for compliance auditing, laboratory management and data validity.
- **Chemical Testing:** Provided chemical testing and data validation services for PCBs, petroleum fingerprinting, and volatile organics.

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**Publications:**

- Phillips, I. (1992). "Laboratory Auditing as a Quality Control Procedure to Evaluate Achievement of Data Quality Objectives." Proceedings of the 8th Annual Waste Testing & Quality Assurance Symposium, July 13-17.
- Phillips, I. (1992). "Field Screening Techniques for Semivolatile Organics." Proceedings for Field Screening for Environmental Pollutants: Defining User Instrumentation Needs, Massachusetts Institute of Technology, October 26-27.
- Phillips, I. (1993). "Auditing and DQOs." Environmental Testing and Analysis Magazine (May/June).
- Phillips, I., Ghirardi, J., and Morin, J. (1995) "Soil Heterogeneity at the O'Connor Superfund Site and Its Impact on Data Reduction" Proceedings of Superfund Risk Assessment in Soil Contamination Studies Conference, January 1995.
- Gabis, C.I., Phillips, I.M., Race, C.D., and Walters, M.D., (1996). "An Investigation of the Containment Migration Pathway in a Bedrock Aquifer" Proceedings for Hydrology and Hydrogeology of Urban and Urbanizing Areas Conference, April 1996.
- Covel, C.L., Kaymen, D.T., Phillips, I.M., and Harrison, J.C. (1996). "Very Low Frequency Geophysics: A Case Study on Locating Bedrock Wells in Water Bearing Fracture Zones for Use in Contaminant Migration Perception" Proceedings for Environmental and Engineering Geophysical Society Conference, April 1996.
- Phillips, I.M. and Hanley, M.M. (1996). "Cleanup Standards for Brownfields Redevelopment" Proceedings for New England Environmental Expo '96, May 1996.
- Race, K.C. and Phillips, I.M. (1996). "Streamlining the Cleanup Process and Achieving Regulatory Closure for Two Industrial Sites in Massachusetts" Proceedings for NGWA 10th National Outdoor Action Conference, May 1996.
- Ghirardi, J.K., Phillips, I.M., and Gladstone, I.S. (1996). "Cost-Effective Remediation Through the Establishment of Background" Proceedings for 11th Annual Conference on Contaminated Soils, October 1996.
- Phillips, I.M. and Anastas, N.D. (2000). "Addressing Tentatively Identified Compounds in Human Health Risk Assessments" Proceedings for 17th Annual Conference on Contaminated Soils, Sediments, and Water, October 2000.
- Phillips, I.M. and Walters, M. D. (2004). "Bedrock: From Foe to Friend - A Case History of Investigation and Remediation in Fractured Bedrock from 1979 through 2003." Proceedings for USEPA/NGWA Fractured Rock Conference: State of the Science and Measuring Success in Remediation, September 2004.
- Phillips, I.M. and Walters, M. D. (2005). "Site Closure and the Cost to Cleanup - A 25 Year history of VOC Contamination in Fractured Rock." Proceedings for NGWA Conference on Remediation: Site Closure and the Total Cost to Cleanup, November 2005.
- Chapnick, S. D. and Phillips, I. M. (2006). "Evaluating Data Usability and Representativeness under the New MCP Guidelines." Proceedings for 22nd Annual Conference on Contaminated Soils, Sediments, and Water, October 2006.

**Invited Lecturer:**

Massachusetts Department of Environmental Protection Training Seminar, "Analytical Data Enhancement Program." (2002).

National Groundwater Association Workshop, "Characterization and Remediation of Contaminated Ground Water in Fractured Bedrock." Presented in Portland, Maine and Houston, Texas (2005).