

TECHNICAL SPECIALTIES

Mr. Baris' expertise includes site investigation and remediation, evaluating the necessity and appropriateness of response actions and the associated costs incurred; and evaluating the source and timing of contaminant releases. Mr. Baris has directed numerous remediation projects at petroleum service stations, terminals and refining facilities; various types of manufacturing facilities, Superfund Sites, and Brownfield redevelopment sites. He has expertise in the application of groundwater modeling and the use of risk assessments to guide decision making in remedial action selection process. He is experienced in NCP compliance, USEPA Superfund and RCRA programs; and has extensive experience in New York State and Connecticut environmental programs.

EXPERIENCE SUMMARY

Thirty-two years of experience: Executive Vice President, Headquarters Office Manager, Principal, Senior and Project Hydrogeologist with Roux Associates; Hydrogeologist for USEPA Office of Groundwater Quality Management.

CREDENTIALS

M.E.S. Groundwater Quality Management, 1986,
University of Oklahoma
B.A. Geology, 1985, Geneseo College of Arts and
Science, State University of New York
Licensed Environmental Professional, State of
Connecticut
Licensed Professional Geologist, State of New York

PUBLICATIONS / PRESENTATIONS

Assessment and Remediation of Off-Spec Asphalt Disposal Areas, Contaminated Soils, Volume 3, Amherst Scientific Publishers, 1998.
Use of a Subsurface Flow Constructed Wetlands for Collection and Removal of Water Containing BTEX, Proceedings of the 2000 Petroleum Hydrocarbons and Organic Chemicals in Groundwater Conference, National Ground Water Association.
Risk Based Sustainable Remediation at a Petroleum Distribution Site in the New England. Coulon, K.S., Ludlow, A.B., Baris, A. 8th International Phytotechnology Society Conference. Portland, OR. September 15, 2011.

PROFESSIONAL AFFILIATIONS

National Groundwater Association
Association of Groundwater Scientists and Engineers
Environmental Professionals Organization of Connecticut

KEY PROJECTS

- Program manager for portfolio of remediation projects for a major oil company. Portfolio comprised of over 20 major projects, including oil terminals, former refineries, service stations, and special assignment projects; with annual spending typically ranging between 20 and 30 million dollars. Responsible for technical team development, implementing programs

to satisfy client safety and control system requirements, and overall program management.

- Project Principal for the comprehensive investigation and remediation of an 850-acre former refinery, and active petroleum storage and pipeline transfer facility in Providence, Rhode Island. Areas of concern include former refinery process areas; active and former tank farms; active and abandoned oil/water separators; and drum, refinery sludge, acid waste and tank bottom disposal areas. Technical aspects include design and implementation of a 600-gpm groundwater extraction and treatment system to prevent off-site migration, geophysical surveys, groundwater and separate phase product modeling, human health and ecological risk assessments, wetland delineation and restoration, product recovery system design and implementation, phytoremediation, and large-scale excavation and disposal projects.
- Project Principal of an RI/FS, building decon and demolition activities and site remediation at a former manufacturing facility in Bridgeport, Connecticut. Environmental investigations were performed to support divestment negotiations and to provide the data necessary to evaluate future redevelopment scenarios for this shorefront property. With a two-month transaction deadline, accomplished Phase I audits of all facility buildings, a sewer investigation, a soil boring and sampling program, monitoring well installation program (including indoor wells on the manufacturing floor), a groundwater investigation, a tidal influence evaluation and an asbestos containing material assessment. Presented findings to client and counsel on a daily basis to support transaction negotiations. Prepared summary report documenting findings, identification of all potential environmental liabilities, remedial alternatives, and estimated costs for the remediation of the entire site.
- Project Principal and Project Manager for the RI/FS at a 1,300-acre aluminum smelter facility/Superfund Site in Columbia Falls, Montana. Responsible for evaluation of EPA hazard ranking system scoring of the Site, scoping of the RI/FS, development of the RI/FS Work Plan, implementation of Phase I and II Site Characterization programs, human health and ecological risk assessments. The technical scope of work includes geophysical survey of the Site, soil gas surveys, use of incremental sampling methodology for soil sampling, drilling installation of 50 monitoring wells, including 17 deep monitoring wells up to 300 feet in depth. The program includes collection of over 1000 samples for laboratory analysis from various media, including soil, sediment, surface water and groundwater; as well as a baseline human health and ecological risk assessment. Areas of concern being

addressed by the RI/FS include the manufacturing area, wastewater percolation ponds, six onsite landfills, and various surface water features.

- Project Principal for the investigation and remediation of a 400-acre former alumina refinery in Texas. Work was conducted pursuant to the Texas Risk Reduction Program (TRRP) requirements, including preparation of an Affected Property Assessment Report (APAR) and various Response Action Plans for various areas of concern. This included investigation of over 30 areas of concern, and completion of soil borings and monitoring wells throughout the facility, as well as assessment of offsite sediment and developed of a Tier 2 ecological risk assessment. In addition, the project includes closure of a 25-acre industrial waste landfill.
- Project Principal for the assessment and remediation of a petroleum bulk storage terminal at JFK National Airport in New York City. The project included assessment of site conditions to delineate the extent of free product, impacted soil, and dissolved-phase groundwater impacts. Upon discovery of free product, recovery efforts were initiated using automated pumps. A risk-based analysis was performed to develop alternative cleanup criteria for soil and groundwater. As a result, only localized excavations were required to address soil contamination, and no remediation was required for groundwater. The risk-based analysis and corrective action plan were accepted without any revisions required by the NYSDEC. The remediation has since been completed and approved by NYSDEC.
- Project Principal for the investigation and remediation of a multi-million-gallon release of petroleum hydrocarbon product from a former refinery and petroleum storage terminal in New York City. The project involved numerous consent order and consent decree deadlines for investigation activities, reports, and design submittals, with significant penalty stipulations if work was not performed on schedule and according to specifications. Technical and management responsibilities included oversight of field investigations, remediation system design and construction, data analysis, report preparation, and permitting negotiations with NYSDEC, NYCDEP, NYCDOB, NYCDOT, and the NYC Fire Department. Technical aspects included detailed spill volume modeling, aquifer testing, numerical groundwater modeling, and evaluation of remedial alternatives. Remediation design and construction included a 27-well dual-phase (product and water) extraction system, force mains through NYC streets, two 500-gpm groundwater treatment plants, discharge facilities, and product storage facilities. Evaluation of soil vapor intrusion and development and

implementation of targeted soil vapor mitigation measures in a complex urban environment.

- Project Principal of the investigation and remediation of a former aerospace manufacturing facility in Bantam, Connecticut. The subsurface was impacted in multiple areas of concern due historical uses of degreasing solvents, land disposal of metal plating wastes, and releases from USTs, septic system leachfields, and drum storage areas. Included in the site assessment were overburden and bedrock groundwater investigations, aquifer pumping tests, geophysical surveys, and evaluation of potential impacts to the adjacent river. The area around the Site was also impacted due to a regional groundwater quality problem. As a result, it was demonstrated that cleanup to achieve drinking water standards was technically impracticable.
- Project Principal for conducting environmental due diligence for two aluminum smelters located in Ravenswood, West Virginia, and New Madrid, Missouri. Work included site inspections, regulatory document review, interviews, and review of technical reports to identify recognized environmental conditions (RECs); and preparation of ASTM compliance Phase I Environmental Assessment Reports (Phase I ESAs).
- Project Manager for the RI/FS and Site remediation at a chromium (Cr) impacted Superfund site in Queens, New York. Identified and delineated source area and developed risk-based soil cleanup criteria to prevent future migration hexavalent Cr to groundwater. Performed an off-site investigation in NYC residential neighborhood to delineate the extent of impacted groundwater. Negotiated the approval of natural attenuation for the remediation of the off-site Cr plume in groundwater. A groundwater extraction system was designed and installed onsite to capture the hexavalent Cr migrating from the Site. Responsible for permitting negotiations with NYSDEC and NYCDEP which enabled attainment of a permit to discharge to extracted groundwater to the NYC sewer without treatment. The remediation has been completed and the State issued a declaration of No Further Action for the Site.
- Project Principal of the investigation and remediation of a former lube plant and active petroleum terminal in Albany, New York. The 75-acre site has multiple areas of separate phase product, impacted soil and groundwater, and an area of separate-phase product seepage to the Hudson River. Work performed to date includes sitewide assessment of soil and groundwater quality, delineation of separate phase product, and installation and operation of a separate-phase product removal system.

- Project Principal of the investigation and remediation of the largest petroleum terminal in New York State. The 450-acre facility was located on Staten Island in New York City. The project was performed to satisfy both Consent Order requirements imposed by NSYDEC and the extremely aggressive schedule associated with the divestiture and redevelopment plan for the property. Unique technical challenges free product recovery in low permeability settings, assessment and remediation of storm water drainage canals and large tracts of associated wetlands, and negotiating alternative cleanup levels for soil and groundwater. Remedial measures have been implemented in for several areas of concern, with the highest priority areas being those on the critical path schedule for completing the site redevelopment. Technologies either utilized or evaluated for site applications include in-situ and *ex situ* bioremediation, dig and haul, and thermal desorption. A remediation by natural attenuation demonstration program was developed to satisfy regulatory requirements for groundwater.
- Project Principal of an evaluation of environmental conditions and a focused groundwater investigation at a former aerospace manufacturing facility in Wallingford, Connecticut to verify that remediation has been performed at certain release areas in accordance with the RSRs adopted by the CTDEP. The evaluation of environmental conditions and focused groundwater investigation was performed under the LEP Program. Former operations at the facility were primarily related to the manufacturing and testing of flow meters. Based on the results of the focused groundwater investigation, LEP verification was provided to the CTDEP that the former release areas at the site have been remediated in accordance with the RSRs adopted by the CTDEP.
- Project Principal for the feasibility study to identify the most cost-effective and expeditious alternative to recover a 400,000-gallon benzene LNAPL plume in Brazil. The FS concluded that the goal of site remediation in three years could be achieved by a vapor extraction system coupled with vacuum-enhanced recovery of benzene in the liquid phase. Roux Associates completed the design of the remediation system and subsequently coordinated with the Brazilian plant personnel during the equipment procurement and construction phase of the project. Following construction, onsite startup and pilot testing services were provided. The results indicate that the system is meeting all design expectations.
- Project Principal of the Site investigation of a major electrical substation and gas turbine generating station in Brooklyn, New York. The work was triggered by the discovery of free product seepage from the facility bulkhead. The subsequent investigation delineated the area of free product. A more comprehensive evaluation was subsequently conducted to prepare the Site for divestiture. Areas impacted by PCBs were identified and quantified so as not to impact the divestiture process.
- Project Principal for the comprehensive investigation and remediation of a 90-acre former refinery, and active petroleum storage terminal in Buffalo, New York. A comprehensive historical evaluation was conducted to identify potential areas of concern that may have resulted from refinery operations conducted from the 1880s to the 1980s. Areas of concern include former refinery process areas; active and former tank farms; active and abandoned oil/water separators; and tank bottom disposal areas. Offsite migration has impacted neighboring residential property as well as the Buffalo River. Priority actions included rehabilitation and upgrade of a well point system and treatment system that are required to operate to prevent discharge of free product to the river. In addition, a storm sewer investigation was given high priority due to the facility's non-compliance with storm water discharge permit requirements.
- Project Manager and Project Principal for the investigation and remediation at approximately 400 service stations in the New York City metropolitan area. Retained by the client to manage all aspects of work plan preparation, investigation, remediation, service station reconstruction, and regulatory negotiations. Established an office at the client's headquarters for the duration of the project to maintain strict project control. The work was performed under a consent order issued by USEPA. All aspects of the project were completed within required timeframes. The project involved cleanup of the grossly contaminated material, delineation of residual soil and groundwater impacts, and performing necessary remediation. A waste management system was established to enable real-time "cradle to grave" tracking of the large volume of wastes generated during the project.
- Project Principal of the investigation and evaluation of soil vapor intrusion concerns related to a service station in Maryland. Developed sampling strategy and conducted data evaluation to demonstrate that impacted were not causing soil vapor intrusion into residences overlying the separate-phase product and dissolved phase groundwater contamination plume.
- Hydrogeologist for USEPA Region 2, Water Management Division, Office of Groundwater Management. Responsible for implementation of the sole source aquifer program, development of the well head protection area program, and providing technical

support to the Superfund program. Superfund responsibilities included review and technical evaluation of RI/FS documents, such as work plans, RI reports, Risk assessments, and FS reports, in order to develop and provide appropriate recommendations to Superfund project managers.

REPRESENTATIVE EXPERT RETENTIONS

- Retained as an expert witness for a confidential petroleum hydrocarbon case in New York City. The case involved a former oil terminal that was condemned and taken by the City of New York for purposes of constructing a municipal wastewater treatment facility. The site environmental conditions as of the taking date were evaluated to develop opinions with respect to environmental remediation and associated costs that would have been necessary and appropriate prior to the City's taking of the property. Developed expert reports and presented technical opinions during mediation that resulted in favorable settlement.
- Retained as an expert witness on behalf of a petroleum product delivery company alleged to have caused contamination at a service station due to tank overflow incidents. The work involved review of the site assessment and remediation activities at the Site to differentiate the contamination caused by tank overfills versus releases from leaking underground storage tanks and associated piping. Developed opinions regarding source apportionment and associated remediation costs. Prepared expert report that resulted in favorable pre-trial settlement.

- Retained as a consulting expert on behalf of one of the defendants in a multi-million-dollar class action suit against multiple industrial property owners and operators in Nassau County. The complaint alleges personal injury and property diminution due to groundwater contamination and impact to the water supply aquifer. Primary contaminants of concern are chlorinated solvents.
- Retained as a technical expert to provide strategic consulting for evaluation of site investigation and remediation strategy at former petroleum storage terminal in the Los Angeles area. Performed review of all data and reports prepared by the primary consultant and provided strategic recommendations to reduce both project implementation costs and long-term risk/liability.
- Retained as expert witness in a confidential case involving apportionment of contamination at a former alumina refinery site, evaluating the standard of care in constructing the waste disposal areas at the refinery, and evaluating the appropriateness of proposed remedial measures and costs. Prepared expert reports and provided testimony at deposition.