

MENG LING, PH.D., P.E.

Education

- Ph.D., Environmental Engineering, University of Houston, 2003
- M.S., Municipal Engineering, Beijing Polytechnic University, 1998
- B.S., Civil Engineering, Beijing Polytechnic University, 1994



Professional Development

- Senior Project Manager, Acton Mickelson Environmental, Inc., 2005-present
- Project Engineer, The RETEC Group, Inc., 2004-2005
- Project Engineer, Environmental Systems & Technologies, 2003-2004
- Research Assistant, University of Houston, Department of Civil and Environmental Engineering, 1999-2003
- Project Engineer, Beijing General Municipal Engineering Design & Research Institute, Beijing, China, 1998-1999
- Research Assistant, Department of Civil Engineering, Beijing Polytechnic University, Beijing, China, 1995-1998
- Project Engineer, Beijing General Municipal Engineering Design & Research Institute, Beijing, China, 1994-1995

Registrations and Professional Affiliations

- Licensed Professional Engineer, Maryland # 43341
- Licensed Professional Engineer, Texas # 98583
- Association of Ground Water Scientists and Engineers

Summary of Professional Experience

Dr. Ling is a licensed professional engineer with more than 20 years of experience in environmental and municipal engineering. He holds a M.S. degree in Municipal Engineering and a Ph.D. degree in Environmental Engineering. His professional expertise includes site characterization, assessment, remediation, and risk assessment, groundwater and non-aqueous phase liquids (NAPL) modeling, advanced visualization, litigation support, statistical and geostatistical analysis, monitoring optimization, wastewater engineering, and environmental software development. Dr. Ling has authored a variety of publications regarding groundwater modeling and monitoring, NAPL characterization and assessment, litigation support, and other technical issues. He is co-author of the Monitoring and Remediation Optimization System (MAROS) decision-support software developed for the Air Force Center for Engineering and the Environment (AFCEE). Dr. Ling is a frequent

presenter at environmental conferences. He has given many talks and organized multiple workshops for training regulators and environmental professionals. Dr. Ling is a key technical resource and his responsibilities include technical consulting, litigation support, and project management.

Representative Experience

Site Characterization, Assessment, Remediation, and Risk Assessment

- Site conceptualization and remedial design for a former truck maintenance facility in California. Identified the fractured rock/clay nature of the underlying water-bearing units, obtained fracture porosity information through literature review, and provided a reliable range of LNAPL volume estimates. Evaluated various LNAPL remedial alternatives including hot water flooding and electrical resistance heating, and recommended a less risky yet cost-effective method to achieve LNAPL recovery to the asymptote in a reasonable timeframe. Designed an in-situ chemical oxidation pilot study for treating groundwater at a localized area containing elevated VOC concentrations.
- Assessment, characterization, and remediation for a former gas plant site in Texas. Performed a thorough evaluation of the site hydrogeologic and contamination conditions by incorporating site data into a 3-D visual imagery model. Evaluated existing remedial actions and identified its lack of effectiveness. Conducted further characterization activities including LIF-ROST investigation, slug tests, aquifer yield tests, LNAPL baildown tests, LNAPL recovery assessment, and tracer dye testing. Revised the site conceptual model and implemented more cost-effective remedial actions towards a faster site closure.
- Assessment, characterization, and remedial evaluation for a Texas oil refinery along shoreline. Developed a 3-D visual imagery model integrating the upland area and the offshore area to study the geological, hydrological, and contamination conditions. Estimated the potential seepage risk along the shoreline through the evaluation of lithology, LNAPL thickness, dissolved concentrations, and tidal fluctuations. Identified preferential flow zones and classified the shoreline into different zones of risk. Assessed various remedial strategies and prioritized the remedial actions.
- Assessment, remediation support, and risk assessment for petroleum hydrocarbons contamination at a diesel bulk storage facility in the San Francisco Bay Area. Developed a 3-D visual imagery model for the site and prepared presentations for client and regulatory meetings. Delineated the areal extent and depth of remediation, evaluated remedial strategies, and assisted in remedial design. Conducted human health and ecological risk assessment for the site: identified the significant and complete routes of exposure; developed cleanup goals for protecting ecological receptors by taking into account the dilution and attenuation of groundwater concentrations due to tide-induced mixing near the Bay; calculated exposure point concentrations for comparison to regulatory screening levels and developed cleanup

- goals; and conducted quantitative calculation of the cancer and non-cancer risks for pathways rarely addressed in regulatory guidance. This risk assessment provided the basis for a subsequent site risk management plan leading to closure of the site.
- Characterization and remediation pilot test at a natural gas compressor station in Texas. Conducted additional drilling and obtained a better understanding of the site lithology and groundwater conditions. Conducted in-situ chemical oxidation (ISCO) pilot test using calcium peroxide to evaluate its feasibility. Conducted tracer dye testing at new borings and existing monitoring wells to understand field transport conditions.
 - Assessment of MTBE/TBA contamination due to truck operations at a California site where public and domestic drinking water wells were impacted or threatened. Identified potential transport pathways both horizontally and vertically, evaluated MTBE/TBA attenuation trends both temporally and spatially, and concluded that MTBE/TBA will be further attenuated within the monitoring network, posing no threat to downgradient public and domestic wells. A No Further Action request based in part on the assessment was approved and the site is now in a 60-day public comment period pending closure.
 - Assessment, characterization, and remediation of chlorinated solvents contamination at an Oklahoma chemical plant. Studied site data, identified data gaps for additional characterization, refined site conceptual model, and evaluated remedial options for the DNAPL source and dissolved plumes. Source excavation for DNAPL removal and natural attenuation for dissolved plumes were finally selected and implemented. Designed and implemented ISCO using RegenOX at one source area where excavation was not possible.
 - Remedial planning for dissolved petroleum hydrocarbons contamination at an oil refinery in California. Conducted groundwater modeling to delineate zones of hydraulic influence for the placement of pumping wells and remedial systems.
 - Assessment of well network for monitored natural attenuation (MNA) at a California oil refinery. Conducted particle tracking simulations and utilized 3-D visual imagery to evaluate the effectiveness of each monitoring well in tracking the dissolved plume.
 - Design of carbon adsorption systems for treating petroleum hydrocarbons contaminated groundwater from residential wells downgradient of a fuel terminal in Texas.
 - Assessment of petroleum hydrocarbons and heavy metals contamination at a bulk fuel terminal site along a major river in Oregon. Identified the sources, potential transport pathways, and extent and magnitude of the contamination. Developed a site conceptual model that facilitated the remedial evaluation and planning. Conducted hydrological and hydraulic analyses and provided an evaluation of the potential impact on river sediment.

- Feasibility study and remedial action planning of fuel oxygenates contamination (MTBE and TBA) at a service station site in California. Evaluated multiple remedial options and proposed action plans.
- Analysis, characterization, and risk assessment of petroleum hydrocarbons contamination at an active port facility in California. Investigated preferential pathways, tidal influence, plume stability, and soil vapor issues, and demonstrated the effectiveness of site remediation through visualization and statistical analyses. Designed and implemented a field characterization work to quantify the mixing of groundwater and seawater within aquifers caused by tidal action. Evaluated and improved the long-term monitoring program at the site. Participated in the development of risk-based cleanup goals for human health and ecological receptors at the site, identified the inappropriateness of some of the regulatory criteria, and conducted field and modeling studies to determine the appropriate cleanup goals.
- Development of site conceptual model for LNAPL contamination at an oil refinery in California. Assessed site characterization data, built a 3-D site visual imagery model, delineated LNAPL distribution in the subsurface, and identified preferential pathways.
- Assessment of mineral distribution in coal slurry impoundments for numerous mining sites across the nation. Estimated coal volume, quantity, and recovery progress and superseded traditional 2-D mapping with 3-D interactive imagery in presenting the results.
- Design of an interception/treatment system for groundwater remediation at a former Manufactured Gas Plant (MGP) site in Florida. Used groundwater modeling to determine the configuration and layout of an interceptor wall and a treatment trench.
- Assessment of sediment contamination at a harbor site in Florida and a lake site in Washington. Estimated contaminant distribution in the sediment and provided remedial calculation utilizing 3-D visualization techniques.
- Characterization, assessment, and remedial planning for various projects: LNAPL contamination at three gas plants in Texas and Minnesota, DNAPL contamination at three former MGP sites in Indiana and Florida, oil-water interaction in rock fractures at a Texas oil well field, impact of coal-bed methane at a gas well site in Kentucky, soil vapor contamination at an oil refinery site in California, and chemical contamination at two industry sites in New Jersey.

Groundwater and NAPL Modeling

- Modeling of variable-density flow using SEAWAT at an active port facility in California. Developed a 3-D cross sectional model to estimate the dilution of contaminant concentrations caused by tidal fluctuation within the aquifer near the aquifer-ocean boundary. Two scenarios were simulated: a vertical sheet pile wall

boundary and a sloping riprap boundary. The dilution factor was calculated as the ratio of total outflow to the net groundwater outflow. Simulated results of salinity distribution and groundwater fluctuations within the aquifer were used to guide the installation of two lines of monitoring wells that are perpendicular to the shoreline and at different depths. Field data are being collected to refine and calibrate the model to update the dilution factors.

- Development of a groundwater fate and transport model for heavy metals contamination at a former fertilizer manufacturing plant site in North Carolina. The modeling effort was focused on arsenic, the more mobile and prevalent metal at the site, using MODFLOW and MT3D for flow and dual-domain transport simulations. Applied the model to refine characterization of the hydrogeologic and geochemical conditions at the site and assessed the potential for future plume migration.
- Modeling of dissolved PCBs transport resulting from soil contamination at an industrial facility in New Jersey using the AT123D analytical model. Assessed the potential migration and extent of the dissolved PCBs for different combinations of source release, hydraulic, and sorption conditions.
- Development of a groundwater fate and transport model for remedial planning at a fuel terminal site in Virginia. Used MODFLOW-SURFACT to simulate the dissolution of residual LNAPL and subsequent reactive transport in vadose and saturated zones.
- Development of a groundwater flow model for remedial evaluation at a Delaware refinery. Simulated the groundwater system in connection with a river to investigate the potential impact of a proposed 550-foot sheet pile wall along the river shoreline.
- Review of a groundwater fate and transport model for MTBE and TBA contamination at a public well field in California. Performed a thorough check of model assumptions and parameters and estimated a reasonable initial mass for use in transport simulations.
- Development of a groundwater fate and transport model to evaluate natural attenuation with source control at a dry-cleaner site in Texas. Used RT3D to simulate reductive dechlorination and conducted an uncertainty analysis to assess the reliability of model predictions.
- Development of a groundwater fate and transport model to study chlorinated solvents contamination at an industrial site in South Carolina. Conducted various modeling analyses to support site assessment and remedial design.
- Key contributor to the development of a regional groundwater flow model surrounding an oil refinery in California. Developed model boundary conditions, checked calibration targets, evaluated parameter sensitivity, and assisted in model calibration.

- Development of a groundwater flow model for the design of an interception/treatment system at a former MGP site in Florida.
- LNAPL mobility analysis and recovery calculation for a California site using various LNAPL modeling tools developed by the American Petroleum Institute (API).
- Development of a numerical NAPL model to simulate fuel hydrocarbons release and the subsurface migration at a railroad site in North Dakota. Used finite-element code BIOSLURP to simulate the LNAPL migration and extent under historical site conditions.
- Development of a numerical model with BIOSLURP to evaluate the feasibility of LNAPL removal via vacuum enhanced recovery at an Oklahoma gas plant. Evaluated a number of scenarios to find the optimal number and configuration of dual phase recovery wells.
- Development of numerical model with BIOSLURP to evaluate the feasibility of an LNAPL recovery trench design at a Washington site.
- Modeling analysis for a pipeline release in Europe to simulate the fate and transport of LNAPL and dissolved plume using finite-element codes ARMOS and BIOTRANS.
- Modeling evaluation of contaminant transport, tracer test, capture zone, and aquifer characteristics for numerous projects using analytical codes such as BIOSCREEN, BIOCHLOR, SOLUTE, WHPA, TWODAN, AQETSOLV, and HSSM.

Statistical and Geostatistical Analysis

- Development of a three-component soil sampling program for an active port facility in California. The sampling program was designed to confirm if cleanup has been achieved in certain treatment areas, demonstrate the progress of remediation, and to identify potential hot spots at some historical source areas. The number of sample size and locations were determined based on the evaluation of historical sampling data, derived population statistics, and historical site information. Designed a triangular grid sampling covering the study area to obtain representative areal mean or mean-based statistics, and to provide hot-spot detection together with proposed subjective samples.
- Analysis of sheen monitoring data to assess the effectiveness of the corrective action at a diesel bulk storage/distribution facility in eliminating the intermittent appearance of sheen on San Francisco Bay water. The size of sheen, frequency of sheen occurrence, and their temporal trends were analyzed. Bubble plots were used to illustrate sheen patterns and trends over time and relative to tide levels. Composite plots integrating bubble plots and bar graphs were created to evaluate the effect of

precipitation on sheen size and occurrence. Trend analysis was utilized to reveal changes in sheen size and frequency of occurrence over time. Results were compared for both pre- and post-corrective action monitoring data and for areas within and outside of the corrective action area. In addition, animations of sheen occurrence on Bay water were generated to facilitate interaction and communication with regulators. The analysis successfully demonstrated the effectiveness of the corrective action and led to the termination of the sheen monitoring program.

- Development of a statistical evaluation method for determining the frequency of sampling at monitoring locations and a geostatistical method for optimizing a monitoring network. Applied these methods to multiple sites to evaluate their groundwater monitoring programs.
- Application of appropriate statistical analyses to a groundwater monitoring program at an airport site in Washington. Client was concerned with elevated arsenic concentrations and wanted to know if they were true exceedance. Proposed intra-well analysis using combined Shewhart CUSUM Control Chart, seasonality adjustment, and verification re-sampling. Set up the protocol for statistical analysis after the project was awarded.
- Improvement on the statistical evaluation of remedial performance at an active port facility in California. Selected Sign test for site-wide comparison to address the significant percentage of non-detects in the monitoring data and replaced linear trend test with a nonparametric test.
- Statistical analysis for LNAPL investigation at an oil refinery in California. Assessed the changes in LNAPL composition over time using an altered version of Mann-Kendall analysis and revealed the difference between samples from different depths with paired *t*-test.
- Direction of the sediment mapping of polychlorinated biphenyls in a 6-mile river section in Washington. Problems emerged when two firms presented inconsistent results using different methods (kriging vs. IDW). Identified the cause of such differences, introduced Thiessen Polygon method for additional check, examined the goodness-of-fit by cross-validation, and directed GIS specialists on how to improve the mapping.
- Statistical analysis for compliance evaluation at a number of sites and application of geostatistical uncertainty analysis to soil and groundwater characterization programs for suggesting locations of sampling.

Monitoring Optimization

- Development of a set of spatial and temporal methodologies for evaluating groundwater monitoring plans. The methodologies handle many aspects of monitoring evaluation (spatial redundancy reduction, network augmentation,

frequency optimization, and sufficiency analysis) and allow the dynamic optimization of the monitoring program as site and contaminant conditions change over time.

- Key developer of the AFCEE's decision-support software, Monitoring and Remediation Optimization Systems (MAROS), which is available to the general environmental practitioners for formulating cost-effective and scientifically-based long-term monitoring plans. Constantly provide guidance on how to use or benefit from the software for practitioners and researchers seeking suggestions.
- Evaluation of groundwater monitoring programs six sites across the nation as part of a joint U.S. EPA & AFCEE study for demonstrating innovative long-term monitoring optimization strategies and their applicability.
- Optimization of groundwater monitoring programs at numerous other sites to achieve more effective and/or efficient monitoring on a dynamic basis over the life cycle of the projects.

Litigation Support

- Technical support for a major MTBE litigation involving a State suing major oil companies. Conducted a thorough literature review on MTBE and TBA biodegradation potential, including laboratory and field evidence and emerging confirmation techniques such as stable isotope and molecular biological analyses. Compiled most recent state-wide studies on MTBE remediation and biodegradation that have clearly demonstrated the reduction in magnitude and frequency of MTBE impact once it was phased out. Conducted a retrospective review of three major MTBE litigation cases by comparing the opposite side's arguments and predictions against actual observations and recent data. The comparison demonstrated their errors in assumptions and predictions, providing a more likely scenario of the longevity and behavior of MTBE in the subsurface. Refuted the claim that MTBE resembled certain other chemicals in terms of groundwater impact by enumerating their distinct differences in many aspects with substantial supporting data. These technical analyses are crucial parts of an expert report submitted for the case.
- Technical support for a California case regarding the potential impact of rising groundwater levels due to proposed basin-scale storage program on facilities with environmental contamination. Conducted a thorough evaluation of the proposed program including a regional groundwater model for simulating the proposed storage scenario. Identified serious deviations in the proposed storage scenario from conceptual foundations on which the storage program was proposed, and clearly demonstrated that simulated rises in groundwater levels by the proposed storage scenario, claimed to be a likely maximum rise, are not even close to the worst case. Pointed out the incapability of the regional groundwater model, which lacks horizontal and vertical resolution, to accurately simulate groundwater level changes on the scale of individual facilities or sites. The technical analyses led to the opposite side agreeing to add a process to the proposed program to allow individual facilities

to assess impact and offering to model additional storage scenarios, among others. This is an ongoing case pending further actions.

- Technical analysis and visualization service for a California case involving gasoline and diesel release at a service station. Assessed potential past releases over the operating history and estimated the mass of the contaminants using advanced 3-D interpolation technique. Generated a set of convincing animations to present site hydrogeologic conditions, plume migration through time, and mass allocation results. This work led to a verdict in favor of the client.
- Technical support for a legal dispute over remediation costs for a former petroleum terminal in California. Based on site use, potential receptors, hydrogeologic conditions, and risk screening, the remedial endpoint and methods that would be considered reasonable at the time of property transfer were determined with the related costs quantified. In addition, a presentation package detailing these findings was prepared for the legal team to facilitate negotiation. This work led to a settlement that significantly reduced the client's payout.
- Technical analysis and visualization service for a California case regarding cost allocation for gasoline and diesel release in an industrial area. Reviewed site ownership and operating history, assessed forensic and hydrogeologic data, evaluated site data with a 3-D visual imagery model, conducted contaminant mass and liability allocations, evaluated remedial system performance, and proposed further remedial strategies. Proved that significant contributions of contaminants from potential offsite sources was impossible by assessing sanitary sewer and storm drain networks and by comparing the spatial distribution and concentration levels of key contaminants in site vicinity. This is an ongoing case pending further actions.
- Technical analysis and state-of-the-art visualization service for a major litigation case in North Dakota involving fuel hydrocarbons release from a railroad site. Assessed site hydrogeology and built a 3-D visual imagery model to visualize the distribution of LNAPL in a complex geologic setting with a fluctuating water table. Conducted numerical modeling to simulate the LNAPL release and migration in the subsurface. Demonstrated that it was impossible for the LNAPL reaching a certain area of concern. The technical analyses and 3-D visualization exhibition significantly strengthened the client's case, resulting in a verdict that saved the client tens of millions of dollars.
- Technical and visualization analyses for a Missouri case regarding a limestone quarry flooded by nearby river flow. Studied quarry operation history and water breakthrough events and investigated potential causes. Developed a 3-D visual imagery model to help understand the interrelationships between quarry operation, change in hydraulic conditions, nearby sinkhole occurrences, and water breakthrough. Demonstrated that it was the deepening and dewatering of the quarry that caused the subsurface channeling and subsequent flooding. The analysis led to a settlement in favor of the client.

- Technical and visualization support for a litigation case in Colorado where a river was impacted by former MGP derived coal tar DNAPL. Assessed site characterization data and developed a 3-D visual imagery model of the site. Investigated the petroleum hydrocarbons impact from a nearby service station. Evaluated the commingling of the DNAPL and the dissolved petroleum hydrocarbons plume. Conducted transport analysis to illustrate the change in DNAPL migration under the influence of dissolved petroleum hydrocarbons. A settlement was reached in favor of the client.
- Technical analysis and visualization service for a number of litigation cases involving methane vapor intrusion, petroleum hydrocarbons contamination, and heavy metals pollution at oil exploration, gas and chemical plants, refinery, bulk fuel terminals, and service station sites.

Wastewater Engineering

- Design of a 100,000 ton/day (26.5 MGD) urban wastewater treatment plant (Urban WTP) in XinJiang Autonomic Region, China. The treatment process consists of bar screening, grit removal, activated sludge treatment by oxidation ditch, sedimentation, disinfection, and sludge digestion and dewatering. Completed hydraulic calculations for the entire process, determined dimensions of major structures, selected relevant equipments, designed plant layout, and conducted hydraulic calculation and layout of major pipelines (wastewater, sludge, recycle sludge, and storm).
- Design of the aeration tank and bar screens for a 50,000 ton/day Urban WTP in northern China. Performed hydraulic calculation, determined dimensions, calculated air volume, and selected blowers and aeration equipment.
- Feasibility study of an Urban WTP for DuYun, GuiZhou Province, China. Performed a water budget calculation, estimated wastewater quantity and contaminant loadings, and considered the city's population and development blueprint. Proposed a conventional activated sludge process with a treatment capacity of 100,000 ton/day. Calculated process parameters and conducted an engineering economic analysis on the cost-benefits of the proposed project.
- Key developer of the Urban WTP Process Selection Expert System for the Ministry of Construction of China. This decision-support software selects the optimal treatment process by evaluating experts' opinions regarding capital and operation costs, land use, technical maturity, operation and maintenance difficulty, and discharge quality.

Publications

Book Chapters

- Ling, M. and J. Kuo. 2011. “Application of Statistics in the Evaluation and Optimisation of Environmental Sampling Plans.” *Practical Environmental Statistics and Data Analysis*. Ed. Y. Rong, ILM Publications, Hertfordshire, UK. ISBN 978-1-906799-04-5. Page 141-162.
- Rifai, H. S., M. Ling, C. J. Newell, S. L. Ita, and M. Faile. 2000. “Development of Decision Support Tools for Designing Long Term Monitoring Plans (LTMPs).” *Groundwater Research*. Eds. Rosbjerg et al, Balkema, Rotterdam. ISBN 90-5809-133-3.
- Aziz, J. J., C. J. Newell, H. S. Rifai, M. Ling, and J. Gonzales. 2000. “Decision Support Software for Designing Monitoring Plans, Risk, Regulatory, and Monitoring Considerations.” *Remediation of Chlorinated and recalcitrant Compounds*. Eds. G. B. Wickramanayake, A. R. Gavaskar, M. E. Kelley, and K. W. Nehring, Battelle Press, Columbus, Richland. Pages 319-325.

Journal Articles

- Ling, M. and J. Chen. 2014. “Environmental Visualization – Applications to Site Characterization, Remedial Programs, and Litigation Support.” *Environmental Earth Sciences*, 72(10), 3839-3846. DOI: 10.1007/s12665-014-3220-y.
- Ling, M. and H. S. Rifai. 2007. “Modeling of Natural Attenuation with Source Control at a Chlorinated Solvents Dry-Cleaner Site.” *Ground Water Monitoring and Remediation*, 27(1), 108-121.
- Ling, M., H. S. Rifai, and C. J. Newell. 2005. “Optimizing Groundwater Long-Term Monitoring Networks Using Delaunay Triangulation Spatial Analysis Techniques.” *Environmentrics*, 16(6), 635-657.
- Ling, M., H. S. Rifai, J. J. Aziz, C. J. Newell, J. R. Gonzales, and J. M. Santillan. 2004. “Strategies and Decision-Support Tools for Optimizing Long-Term Groundwater Monitoring Plans – MAROS 2.0.” *Bioremediation Journal*, 8(3-4), 109-128.
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Conference Proceedings

- Ling, M. and J. Chen. 2013. “Environmental Visualization – Applications to Site Characterization, Remedial Programs, and Litigation Support.” *Proceedings of the Eurographics Conference on Visualization (Visualization in Environmental Sciences Special Event)*, June 17-21, 2013, Leipzig, Germany. 5 pages.
- Johnson, J., M. Ling, D. Edwards, and A. Chin. 2011. “Technical Considerations in Evaluating Seepage along a Shoreline.” *Proceedings of the Sixth International Conference on Remediation of Contaminated Sediments*, February 7-10, 2011, New Orleans, LA. ISBN 978-0-9819730-3-6. Paper A-21, 8 pages.
- Johnson, J. and M. Ling. 2009. “Spatial Evaluation of Contaminant Seepage Risk along a Shoreline: A Quantitative Approach.” *Proceedings of the 2009 Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection, and Remediation Conference*, November 2-3, 2009, Costa Mesa, CA, 15 pages.
- Ling, M., J. Johnson, and X. Lin. 2007. “Contamination Distribution and Mass Estimate via Kriging: Pitfalls and Lessons.” *Proceedings of the 2007 Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Assessment, and Remediation Conference*, November 5-6, 2007, Houston, TX, 12 pages.
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- Ling, M. and J. Johnson. 2005. “Improve Hydrocarbon Contamination Assessment and Conceptualization Using Visual Imagery Technology and LIF Data.” *Proceedings of the 12th Annual International Petroleum Environmental Conference*, November 8-11, 2005, Houston, TX, 14 pages.
- Johnson, J. and M. Ling. 2005. “Evaluating the Reliability of LNAPL Thickness Measurements and the Conditions that Produce Non-Representative Values.” *Proceedings of the 2005 Petroleum Hydrocarbons and Organic Chemicals in Ground Water, Prevention, Assessment, and Remediation Conference*, August 17-19, 2005, Costa Mesa, CA, 44-56.
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- Johnson, J., M. Ling, and T. Maldonato. 2004. “Application of Computer Visual Technology to Improve Site Characterization and Remediation.” *Proceedings of the National Petrochemical & Refiners Association (NPRA) 2004 Environmental Conference*, September 27-28, 2004, San Antonio, TX, 9 pages.
- Ling, M., J. Aziz, C. Newell, H. Rifai, and J. Gonzales. 2003. LTM: Spatial/Temporal Data Management, Analysis, and Visualization. *Proceedings of the 2003 World Water and Environmental Resources Congress*, June 22-26, 2003 Philadelphia, PA, 10 pages.
- Ling, M., and H. Rifai. 2003. “Assessing Uncertainty in Groundwater Model Predictions at a Chlorinated Solvents Contaminated Site.” *Groundwater Quality Modeling and Management under Uncertainty – Proceedings of the Symposium*, June 23-25 Philadelphia, PA, 34-41.
- Ling, M., H. Rifai, J. Aziz, C. Newell, and J. Gonzales. 2002. “An Integrated Optimization Methodology for Designing Groundwater Monitoring Plans.” *Proceedings of the Water Resources Planning & Management – First Annual Symposium on Environmental & Water Resources Systems Analysis*, May 19-22, 2002, Roanoke, VA, 10 pages.

Software

- J. Aziz, C. Newell, M. Ling, H. Rifai, and J. Gonzales. 2002. *Monitoring and Remediation Optimization System (MAROS) Version 2.0 and Software Users Guide*. Air Force Center for Engineering and the Environment. <http://www.afcee.brooks.af.mil/products/rpo/lrm.asp>.
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Trainings, Workshops, and Presentations

- Twiford, J., J. Heglie, D. Sweet, B. Mickelson, and M. Ling. 2012. “Ethanol Release and its Consequences at an Active Petroleum Terminal Site.” *The 19th International Petroleum Environmental Conference*, October 30 – November 1, 2012, Denver, CO. http://ipec.utulsa.edu/Conf2012/Papers_Presentations/Ling_EthanolRelease.pdf

- Ling, M. 2012. *Understanding LNAPL Distribution – Evolution and Its Impact on “Extent Practicable”*. 14th California Unified Program Annual Training Conference, February 6-9, 2012, San Francisco, CA. Track F – Clean Up; Session – Remediation. http://www.youtube.com/watch?v=BqQQYUIMeA4&feature=player_embedded&list=PL3BC9D7A48A248FF7
- Ling, M. 2012. *LNAPL Distribution and Mobility – Identification of Non-Representative Conditions and Use of Baildown Test*. 14th California Unified Program Annual Training Conference, February 6-9, 2012, San Francisco, CA. Track F – Clean Up; Session – Site Assessment.
- Ling, M. 2012. *LIF-ROST Technology & Visualization – Facilitate Environmental Assessment, Communication, and Negotiation*. 14th California Unified Program Annual Training Conference, February 6-9, 2012, San Francisco, CA. Track F – Clean Up; Session – Site Assessment.
- Johnson, J., M. Ling, and R. Yilmaz. 2008. *Workshop – Approaches to Predicting NAPL Behavior to Improve Characterization and Lower Remediation Costs*. Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection, and Remediation Conference - Post Conference Workshop, November 5, 2008, Houston, TX.
- Johnson, J., R. Yilmaz, and M. Ling. 2006. *Workshop – NAPL Environments: How Hydrogeologic Conditions Influence NAPL Distribution, Mobility, and Remediation*. Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Assessment, and Remediation Conference - Post Conference Workshop, November 8, 2006, Houston, TX.
- Johnson, J., R. Yilmaz, M. Beard, M. Ling, and Y. Zheng. 2005. *Workshop – Environmental Logistics: Applying Technology to Facilitate Management of Petroleum Impacted Sites*. 12th Annual International Petroleum Environmental Conference, November 8-11, 2005, Houston, TX.
- Ling, M., H. Rifai, J. Aziz, C. Newell, J. Gonzales, and J. Santillan. 2003. *Decision Support Software for Designing Groundwater Monitoring Plans*. 10th International Petroleum Environmental Conference (IPEC), November 11-14, Houston, TX.
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- Aziz, J., C. Newell, M. Ling, H. Rifai, and J. Gonzales. 2002. *Optimizing Groundwater Monitoring: Application to Fort Lewis Logistics Center*. Federal Remediation Technologies Roundtable (FRTR), December 18, Washington, D.C.
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