



260 Millers Run Road
Bridgeville, PA 15017
412-221-5056 Phone
412-221-5356 Fax
vmahfood@themahfoodgroup.com

January 14, 2009

Mr. Charles Bowman
State of West Virginia Department of Administration
Purchasing Division
Environmental Protection, Dept. of Environmental Remediation
601 57th Street SE
Charleston, WV 25304

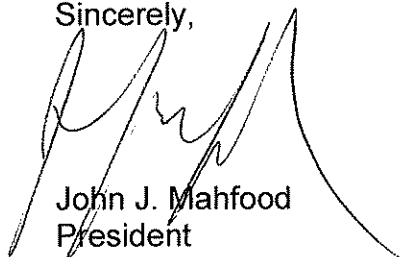
Dear Mr. Bowman:

The Mahfood Group, LLC (TMG) is proud to present our qualifications and our bid in response to West Virginia's Request for Quotation (RFQ) No. DEP14486 - Environmental Risk Assessor.

TMG, our diversified professionals and our professional services network have a distinguished track record of performing risk assessments and environmental remediations at controlled and un-controlled hazardous waste sites throughout the eastern United States (including West Virginia), under various federal and state regulatory programs. We expect that our credentials, and particularly my credentials, uniquely qualify TMG for this exciting new opportunity. We are also pleased to have Mr. Keith Johnson of Mountain State Biosurveys, LLC agree to participate in this proposal under my direction. Mr. Johnson and his employees will participate in the event that ecological risk assessment review is necessary and will conform to the enclosed bid schedule.

TMG looks forward to serving the West Virginia Department of Environmental Protection on this very important opportunity. Please don't hesitate to contact me at 412-221-5056 if you have any questions or concerns regarding this bid or any information contained herein.

Sincerely,



John J. Mahfood
President
The Mahfood Group, LLC

RECEIVED

2009 JAN 15 A 8:09

PURCHASING DIVISION
STATE OF WV

State of West Virginia - RFQ No. DEP14486

Environmental Risk Assessor

Vendor Name: The Mahfood Group, LLC

Introduction

This bid contains the following items, per instructions provided by the State of West Virginia RFQ No. DEP14486:

- DEP14486 Bid Schedule;
- State of West Virginia Purchasing Affidavit;
- State of West Virginia Vendor Preference Certificate (Not Applicable); and
- Environmental Risk Assessor Resume and Diploma (copies) Information.

The Mahfood Group, LLC (TMG) is a Pittsburgh, PA based company of environmental professionals dedicated to environmental investigation, risk assessment and remediation. TMG has conducted successful investigations, risk assessments (both human health and ecological), feasibility studies, pilot scale and full scale remediation's throughout the eastern United States, including West Virginia, under various regulatory frameworks (CERCLA, RCRA and state VRPs).

TMG is owned by Mr. John Mahfood, President and Senior Risk Assessment Specialist. Mr. Mahfood has over 28 years of site investigation, risk assessment and remediation experience. He is supported by Mr. Richard F. Hoff and Ms. Amanda Stanonik in areas of hazard assessment, exposure modeling and human health risk assessment. In addition to human health risk assessment expertise, Mr. Keith Johnson and Mr. Thomas S. Risch of Mountain State Biosurveys, LLC will provide ecological risk assessment support on an as needed basis, as requested by the State of West Virginia. If Mountain State Biosurveys' participation is required, they agree to abide by the enclosed bid schedule and all invoicing will be approved and submitted by TMG in consultation with the State of West Virginia and requirements of this RFQ.

TMG's mission is to work collaboratively with the regulatory community, industry and the public to ensure that project outcomes meet or exceed expectations of all stakeholders, so that land can be returned to its most beneficial use under any number of current and/or future use

scenarios. TMG professionals are experts in interpreting state and federal regulations, applying regulations to complex site situations and providing review and oversight of human health risk assessments, feasibility studies and remedial action plans. Additionally, TMG provides technical review and comment on new and evolving regulations for industry clients and regulatory agencies, and evaluates the impacts of changing regulations on the regulated community.

TMG is familiar with the State of West Virginia Department of Environmental Protection practices and procedures. Recently, TMG conducted baseline and residual risk assessments at the Kenova Terminal Company Property in Kenova, West Virginia. The details of this project are presented in Mr. Mahfood's resume contained herein.

To address the most complicated challenges that often arise at contaminated waste sites, TMG utilizes a successful professional subcontracting network to partner with other organizations with expertise in ecology, water resources and environmental restoration. To support West Virginia Department of Environmental Protection, TMG is proud to partner with Mountain State Biosurveys, LLC to provide ecological expertise in the event that ecological risk assessment review becomes necessary.

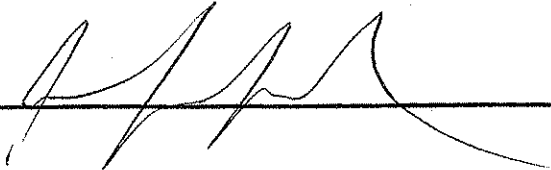
TMG also offers engineering expertise that is often integral to environmental investigation and remediation/reuse success. Mr. James Blayden, P.E. will provide engineering design, feasibility and cost assessment expertise, if necessary. Resumes for these additional resources are provided in **Attachment A** of this proposal. Attachment A, Other Resources, is provided for informational purposes and to offer additional expertise to the State of West Virginia on an as requested basis.

DEP14486 BID SCHEDULE

¹**Risk Assessor:** \$ 70.00 / Hour X 700 Hours = \$49,000.00

The Mahfood Group, LLC will absorb all travel costs associated with this contract.

Vendor Name: The Mahfood Group, LLC

Signature:  _____

Date: January 14, 2009

¹ The total number of hours listed are only used to determine the lowest cost and actual total hours may be greater or less.

STATE OF WEST VIRGINIA
Purchasing Division**PURCHASING AFFIDAVIT****VENDOR OWING A DEBT TO THE STATE:**

West Virginia Code §5A-3-10a provides that: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than one thousand dollars in the aggregate.

PUBLIC IMPROVEMENT CONTRACTS & DRUG-FREE WORKPLACE ACT:

West Virginia Code §21-1D-5 provides that: Any solicitation for a public improvement construction contract shall require each vendor that submits a bid for the work to submit at the same time an affidavit that the vendor has a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the West Virginia Code. A public improvement construction contract may not be awarded to a vendor who does not have a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the West Virginia Code and who has not submitted that plan to the appropriate contracting authority in timely fashion. For a vendor who is a subcontractor, compliance with Section 5, Article 1D, Chapter 21 of the West Virginia Code may take place before their work on the public improvement is begun.

ANTITRUST:

In submitting a bid to any agency for the state of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the state of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the state of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the state of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership or person or entity submitting a bid for the same materials, supplies, equipment or services and is in all respects fair and without collusion or fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

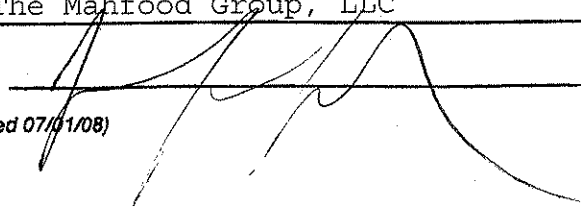
LICENSING:

Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, the vendor must provide all necessary releases to obtain information to enable the Director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

CONFIDENTIALITY:

The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendors should visit www.state.wv.us/admin/purchase/privacy for the Notice of Agency Confidentiality Policies.

Under penalty of law for false swearing (West Virginia Code §61-5-3), it is hereby certified that the vendor acknowledges the information in this said affidavit and is in compliance with the requirements as stated.

Vendor's Name: The Mahfood Group, LLCAuthorized Signature:  Date: January 14, 2009

State of West Virginia VENDOR PREFERENCE CERTIFICATE

Certification and application* is hereby made for Preference in accordance with *West Virginia Code*, §5A-3-37. (Does not apply to construction contracts). *West Virginia Code*, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the *West Virginia Code*. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Resident Vendor Preference, if applicable.

1. **Application is made for 2.5% resident vendor preference for the reason checked:**
 Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
 Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
 Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; or,
2. **Application is made for 2.5% resident vendor preference for the reason checked:**
 Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
3. **Application is made for 2.5% resident vendor preference for the reason checked:**
 Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
4. **Application is made for 2% resident vendor preference for the reason checked:**
 Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; or,
5. **Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:**
 Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; or,
6. **Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:**
 Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

Not Applicable

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: _____ Signed: _____

Date: _____ Title: _____

*Check any combination of preference consideration(s) indicated above, which you are entitled to receive.



JOHN J. MAHFOOD
Sr. Risk Assessment Specialist/Sr. Program Manager

EDUCATION

M.S. Health Aspects of Water Quality (1987)-University of Pittsburgh
B.S. Chemistry (1980)-University of Pittsburgh

FIELDS OF SPECIALIZATION

Public Health and Ecological Risk Assessments
Environmental Impact Assessments
Evaluation of Remedial Alternatives
Project Management
Analytical Chemistry
Vapor Intrusion
Residential Evaluations

EXPERIENCE SUMMARY

Mr. Mahfood has over 28 years of combined environmental experience in project management, risk assessment, and analytical chemistry. He has focused on the technical requirements under Pennsylvania's Land Recycling and Environmental Remediation Standards Act (Act 2) including the latest issues associated with potential vapor intrusion. Mr. Mahfood has also worked on a variety of state led voluntary remediation programs across the eastern United States including the West Virginia Voluntary Remediation Program. He is most recently responsible for launching "The Healthy Roots Project" which is designed to promote awareness of environmental issues in residential land development. The project focuses on soil and indoor air "health" in rural and suburban developments. The Healthy Roots Project brings together the concept of green building design and a healthy environment into one vision.

Mr. Mahfood has conducted Phase I Environmental Site Assessments, Interim Remedial Measures, and Phase II Field Investigations at over 30 former manufactured gas plant (MGP) facilities (of which at least 15 are located in Pennsylvania) with budgetary estimates totaling over one million dollars per year. These projects included all aspects of agency negotiations to solicit a phased approach outlined in a decision flow diagram. He has coordinated all activities associated with the removal of coal tar material from above ground and below ground gas holders and associated MGP structures. Mr. Mahfood has also been responsible for conducting quantitative risk assessments at many different types of industrial/commercial facilities across the country.

SELECTED PROJECT EXPERIENCE

- One of Mr. Mahfood's latest projects involves the West Virginia Voluntary Remediation Program (VRP). The site is located in Kenova, West Virginia along the Ohio River. The site was a former industrial facility that housed a variety of industrial activities over the years. Mr. Mahfood is acting as both Sr. Project Manager and Sr. Risk Assessment Specialist on the project. The site has many unique characteristics including the involvement of multiple VRP's due to environmental impacts on adjacent properties, some of which have migrated and consequently impacted the site. Activities involving Mr. Mahfood's experience at the site have

been ongoing for the past three years. Beginning with a strategy meeting with the WVDEP, a unique approach was developed to address impacts at the site. This approach included addressing the soil and groundwater impacts (vapor intrusion from shallow perched zones) first. This approach enabled progression of the site investigation activities related to the soil independent of the deep groundwater issues which were a result of other entities and are being addressed under separate VRP's.

A risk based approach was utilized at the beginning of the project to develop a conceptual site model (CSM) which

focused the program on soil and the perched groundwater (vapor intrusion only). This process was helpful in centering the remedial investigation efforts on the end use and producing analytical data necessary for the site specific risk assessment. As part of the baseline risk assessment (BRA) for the site, Mr. Mahfood developed reasonable scenarios which addressed both current site situations and the future use based on knowledge of the surrounding area and the interest of adjacent property owners in the site. The BRA used both default and site specific inputs and assumptions which resulted in a conservative approach in order to develop potential remedial action objectives (RAOs). The BRA results indicated the need to address surface soil due to excess lead in two small areas of the site.

Therefore, Mr. Mahfood oversaw the preparation of a Remedial Action Plan (RAP) that was prepared and implemented to reduce the surface soil lead concentration to an acceptable level as demonstrated by the conduct of a residual risk assessment (RRA). Mr. Mahfood worked closely with the WVDEP project manager in order to delineate the remediation area and to collect post excavation samples necessary for use in the RRA.

In the conduct of this risk assessment process along with other risk assessments performed by Mr. Mahfood, he has utilized the most recent accepted methodologies in developing CSMs, fate and transport evaluation, receptor analysis, statistical analysis, quantitative assessment and uncertainty analysis.

- Mr. Mahfood is currently program manager for a multi-site MGP program being conducted under a Consent Order and Agreement (COA) in accordance with Pennsylvania's Land Recycling and Environmental Remediation Standards Act (commonly known as Act 2). Mr. Mahfood's responsibility includes managing 8-10

MGP sites on an annual basis under this program. Project activities have included Phase I activities, Remedial Investigations, Risk Assessments, Interim Remedial Activities, Cleanup Plans and Final Report documentation.

As part of this program, generic documents (e.g., Generic Work Plan, Generic QAPP and Generic HASP) have been developed. These generic plans facilitate the use of generic procedures on a site-specific basis. The client realizes a significant cost savings by utilizing these types of generic documents.

As an important element of the multi-site program, Mr. Mahfood participates in program meetings with the Pennsylvania Department of Environmental Protection (PADEP) once a year to discuss program and technical issues. These meetings include five of the six PADEP regions and PADEPs central office. These meetings act as the forum to discuss technical issues before they become problematic on a particular project (or program wide).

- Under this program, Mr. Mahfood completed management of a site investigation and cleanup where a detailed delineation of a basal confining unit was performed in order to determine the potential for coal tar migration. This activity enabled the placement of a product recovery system in an area where coal tar accumulation was most prominent. In addition, delineation of this unit also was useful for the placement of piezometers to monitor potential migration during recovery efforts and show that the coal tar was not migrating to the point of compliance (i.e., property boundary).

The site activities have also included project objectives which have focused on reuse, including benefits for the site owner, local municipality and the local community. Mr. Mahfood has conducted a site-specific risk assessment for this property which incorporated very

specific end use activities including a little league baseball field and supporting facilities (e.g. parking lot). Based on the risk assessment findings, it was determined that an engineered control along with deed restrictions on intrusive activities and an incomplete pathway for groundwater use would satisfy Act 2 requirements for closure and offer this site for reuse to the local community. This site has recently been closed under Act 2 and a relief of liability has been granted. The site was also designated as one of PADEP's "Showcase Sites" under the Land Recycling Program.

- Mr. Mahfood was project manager for the investigation and interim remedial action (IRA) phases and senior risk assessment specialist for a former manufactured gas plant site located in Pennsylvania. This site was also evaluated under the multi-site program. The site is adjacent to a recreational surface water body and a boat ramp to access the river. Based on the results of the IRA (which included the removal of approximately 700 tons of coal tar from a below grade gas holder) and the risk assessment, the final remedy for the site included an engineered cover and natural attenuation. The natural attenuation portion was supported by groundwater modeling activities to demonstrate that there was no direct impact to the adjacent surface water body. The results of these activities invited the local municipality to purchase the property and designate the site as "green space" to help encourage additional recreational use of the river. This site received a relief of liability under Act 2.
- Mr. Mahfood was project manager and lead risk assessor for an MGP site where purifier waste was identified as the primary MGP waste. This material was distributed along the surface of the site. He lead the initial investigation activities to determine the vertical and horizontal extent of the purifier waste. Based on the site investigation Mr.

Mahfood coordinated hot spot removal of certain areas exceeding applicable Act 2 medium-specific standards and performed a residual risk assessment demonstrating acceptable site-specific risks. Subsequent to the removal and risk assessment activities the area was returned to beneficial use as a parking lot for the local gas company. A relief of liability was granted for this site under Act 2.

- Mr. Mahfood was lead risk assessment specialist for two site-specific risk assessments utilizing both U.S. EPA Region 4 and State of North Carolina Guidance for a manufactured gas plant site located in North Carolina. The site consisted of two separate parcels where very different conceptual site models were developed to account for the distinct differences in current and potential future site use. The results of the risk assessment showed that for the one parcel only surgical soil removal would be necessary to meet site use and acceptable risk levels. While the other parcel met acceptable risk levels and no remedial alternative was necessary. A key element of both risk assessments was the development of a risk-based approach with consideration of potential current and future use and the use of reasonable exposure scenarios.
- Mr. Mahfood has completed the risk assessment on a former MGP site in North Carolina where the future development will be for recreational boating activities. Based on the planned future use, Mr. Mahfood was able to develop site-specific exposure scenarios which will limit removal of historic MGP materials to those contained in below grade structures (e.g. below grade holder and tar wells).
- Mr. Mahfood worked on a site-specific risk assessment in North Carolina where historic manufactured gas plant operations were conducted and more recently the site was used as a dry cleaner. The complicating factor with

this site was the combined constituent list of manufactured gas plant residuals and dry cleaner chemicals. An office currently occupies a small portion of the site; however, the remainder of the site is unoccupied (with some vacant structures). The risk-based approach plays a very important role for redevelopment of the property. Redevelopment plans are incorporated into the risk-based approach therefore, enabling the refinement of a conceptual site model and the development of realistic potential exposure input parameters based on the future use, especially when considering potential exposure pathways such as vapor intrusion.

- As a Senior Environmental Risk Analyst, Mr. Mahfood has performed public health environmental assessments for industrial clients as part of remedial investigations and the development of various risk-based approaches. The types of sites include: coke plants, manufactured gas plants, wood treating plants, and coal tar refineries. He has provided expertise in the development of potential human exposure and environmental pathways and fate and transport analysis of site related chemicals in the environment.
- Mr. Mahfood was lead risk assessor for an industrial site where he compared the benefits of performing a deterministic risk assessment versus a probabilistic risk assessment and weighed the cost of each against a favorable outcome in order to show that implementation of a remedy was not necessary. This assessment saved the client approximately \$500,000 dollars in remediation costs.
- Mr. Mahfood historically focused his efforts on evaluating the potential for reuse of "waste" material as a product for retail sale. He performed a risk assessment under Pennsylvania's Residual Waste Regulations to establish wood ash as a coproduct for various commercial uses (e.g., as a soil amendment, road base material). The activities associated with this risk assessment required a complete understanding of the manufacturing process which generated the wood ash, potential reuse markets, chemical breakdown of the material, potential use scenarios and a unique understanding of use specific exposure parameters.
- The following technical specialties support Mr. Mahfood's efforts acting as both project manager and risk assessment specialist for many of his projects. They include public health risk and environmental impact assessments, utilizing deterministic assessments and probabilistic analysis, chemical/ analytical program development, contaminant fate and transport and statistical analysis. Mr. Mahfood performed qualitative and quantitative health risk and environmental assessments for superfund remedial investigations and feasibility studies. One of his Superfund projects included a risk assessment for a car battery reclamation site where lead was the major environmental concern. This assessment not only included an evaluation of potential exposure to lead, but an assessment of how the lead would migrate in the environment based on the acidic conditions as a result of the battery acid.
- Mr. Mahfood has been responsible for the preparation of sampling and analysis plans, including budgeting and scheduling of associated analytical activities. Mr. Mahfood's background in analytical chemistry has assisted him in selecting the appropriate analytical methods necessary to accomplish project quality objectives and to assure attainment of chemical criteria.
- Mr. Mahfood has also completed public health and environmental assessments for uncontrolled waste sites and developed comprehensive validation procedures for the evaluation of analytical data on several remedial

investigations for the U.S. Department of Defense. These sites included Air Force bases, with a focus on the risk associated with exposure to the various areas where training activities were completed (e.g., burn pits).

- As a Chemist, Mr. Mahfood coordinated the analysis and data review of water and soil samples under Superfund protocol for the analysis of pesticides, herbicides and PCBs. Mr. Mahfood has a complete analytical background in the analysis of industrial wastes by gas chromatography, including volatile compounds, PCBs, herbicides,

base/neutral, and acids. He has also analyzed water samples for inorganic ions by ion chromatography and performed a variety of wet chemical analyses for inorganic constituents.

- Mr. Mahfood has developed quality control procedures, including routine quality control charts along with a complete statistical analysis to monitor and review test results on a daily basis. He has also performed analysis on other media such as acid mine drainage, industrial effluents, home drinking water and coal samples.

SELECTED PUBLICATIONS/PRESENTATIONS

Hale, J.R., J.J. Mahfood, and R.J. Hickman, 1999. *Evaluating Natural Attenuation of Dissolved Coal Gasification Derivatives in Shallow Unconfined Aquifers*. Presented at the IGT Twelfth International Symposium on Environmental Biotechnologies and Site Remediation Technologies & Utility Industry Environmental Issues, Challenges, and Solutions. December 1999.

Hasel, Michael, J.J. Mahfood, Anthony Mazzoni. A Case Study for Cost Effective Control of MGP Site Remediation Risks with a Fabric Structure in a Residential Setting. Presented at the Gas Technology Conference & Exhibition, Orlando, Florida. January 30-February 2, 2005.

Hayes, Heidi, J.J. Mahfood, B. Shamory. Comparison of EPA Compendium Methods TO-15 and TO-17 for the Measurement of Naphthalene in Soil Gas. Presented at Business of Brownfields Conference, April 17-18, 2008.

Kotun, R.J., and J.J. Mahfood, 1994. Deriving a Practical and Cost-Effective Soil Remedial Goal for Carcinogenic PAHs. Presented at Superfund 1994, December 1994.

Kupchella, L., A. Syty, and J.J. Mahfood, 1983. Improved Apparatus for Rapid Mercury Determination by Cold Vapor Atomic Absorption Spectroscopy. *Journal of the Association of Official Analytical Chemists*, September 1983, Volume 66, pp. 1117-1120.

Mahfood, J.J., B.D. Shamory, H. Hayes, 2007. Vapor Intrusion Pathways, Evaluating Naphthalene. Presented at the Business of Brownfields Conference, April, 2007.

Mahfood, J.J., M. Ferlin, R. Contrael, Dougherty, A. Lopez, D. Shier, 2006. Stratified Soil Gas Sampling at an MGP Site for Use in a Quantitative Risk Assessment, A Case Study. Presented at Gas Technology Conference and Exhibition, Orlando, Florida, October 2006.

Mahfood, J.J., Richard E. Baker, Jr., Jennifer M. Malle. Utilizing a Risk-Based Approach to Reduce Soil Excavation Costs. Presented at the Gas Technology Conference & Exhibition, Orlando, Florida. January 30-February 2, 2005.

Mahfood, J.J., D.J. Wingerd, and R.J. Kotun, 1994. A Decision Flow Chart for Cleanup of Multiple Manufactured Gas Plant Sites. Presented at HMCRI Federal Environmental Restoration III and Waste Minimization II Conference and Exhibition, New Orleans, LA, April 1994.

Malle, J.M., J.J. Mahfood, and A.C. Swales, 2001. Co-Product Determination-Applying State Residual Waste Regulations for Re-Use of Fly-Bottom Ash Material as a Retail Product. Presented at the Gas Technology Institute 14th Annual International Conference. December 2-6, 2001.

Shamory, Craig S., J.J. Mahfood, Andrew C. Swales. An Innovative Method for Presenting and Evaluating the Hydrogeologic and Exposure Aspects of a Risk-Based Site Closure. Presented at the Gas Technology Conference & Exhibition, Orlando, Florida. January 30-February 2, 2005.

Shosky Jr., D.J., J.J. Mahfood, R.A. Brown, and M. Jackson, Jr., 1995. Emerging Technologies for Recycling MGP Sites. Pollution Engineering, June 1995, Volume 27, Number 6, pp. 62-66.

Swales, A.C., J.J. Mahfood, J.R. Hale, E. Meyer, and M.J. Hasel, 2000. Remediation, Restoration, Re-Use: Accomplishing the Three R's of MGP Site Revitalization. Presented at the Gas Technology Institute Thirteenth International Symposium on Site Remediation Technologies & Environmental Management Practices in the Utility Industry. December 4-7, 2000.



University of Pittsburgh

Pittsburgh, Pennsylvania

To all persons to whom these presents may come, Greeting

Be it known that

John Jude Mahford

having satisfied the requirements for the degree of

Bachelor of Science

is now admitted to that degree with all the rights, privileges and immunities thereto appertaining.

In Witness Whereof, we the Trustees of the University have caused our corporate seal and the proper signatures to be hereunto affixed. Given at Pittsburgh, Pennsylvania, on the thirteenth day of August in the year of our Lord one thousand nine hundred and eighty.

Ernest A. Allbraught
Chairman Board of Trustees

Robert C. Smith
Minister



Wesley W. Posvar
Chancellor

Levin Schuman
Dean, College of Arts and Sciences

University of Pittsburgh

To all persons to whom these presents may come, Greeting
We it know that

John Jude Ashford

having satisfied the requirements for the degree of

Master of Science in Hygiene

and having been recommended by the Graduate Faculty in

The Graduate School of Public Health

is now admitted to that degree with all the rights, privileges and immunities therunto appertaining.

In Witness Whereof, we the Trustees of the University have caused our corporate seal and the proper signatures to be herunto affixed.

Given at Pittsburgh, Pennsylvania on the twenty-second day of April in the year of our Lord one thousand nine hundred and eighty-seven.



J. M. Mason
Chairman, Board of Trustees

Donald M. Hudson
Vice President

Wesley W. Posvar
President

Raymond Seltzer
Dean, Graduate School of Public Health

ATTACHMENT A

A.1 Human Health Risk Assessment Resources

A.2 Ecological Risk Assessment Resources

A.3 Engineering Alternatives/Cost Assessment Resources

A.1 Human Health Risk Assessment Resources



RICHARD F. HOFF
Risk Assessment Specialist/Project Manager

EDUCATION

M.S. Chemistry Course Work – Indiana University of Pennsylvania
B.S. Accounting (2006) - Seton Hill University
M.P.M. Public Finance (1997) – Carnegie Mellon University
B.S. Chemistry (1985) – Pennsylvania State University

FIELDS OF SPECIALIZATION

Risk Assessment
Feasibility Studies
Evaluation of Innovative Remedial Alternatives
Pilot Studies/Research
Project Management
Contracts/Subcontracts/Terms and Conditions
Analytical Chemistry

EXPERIENCE SUMMARY

Mr. Hoff has 24 years of university, corporate and non-profit expertise. He combines scientific and business acumen to administer, conduct and manage environmental risk/remediation projects, as well as research intensive grants and contracts. His experience spans large federal program management, state program management, non-governmental organization and private company project management. Most recently he has organized and managed the finance group for Indiana University of Pennsylvania's (IUP) Research Institute, a 501(c)(3), State Board of Governor's Affiliate dedicated to fostering research and education opportunities. His responsibilities include contract development, budget negotiations, agency reporting, time and effort monitoring, sub-recipient monitoring and financial compliance with Federal Acquisition Regulations (FAR) and applicable OMB circulars. His technical expertise includes feasibility studies and innovative remediation technologies, risk assessment and analytical chemistry. He has worked extensively throughout U.S. EPA Region III

and provided risk assessment support under PA DEPs GTAC 2 contract. He has developed site-specific strategies under various regulatory programs incorporating elements of site-specific risk, leading to site-specific closure.

Mr. Hoff has conducted Phase I Environmental Site Assessments, Remedial Investigations, Groundwater Investigations, Feasibility Studies, full-scale pilot studies for chlorinated volatiles and energetic compounds and oversaw the use of innovative bioremediation technologies under the U.S. Navy CLEAN program. These projects included formal partnering training and facilitated interaction with U.S. EPA, NOAA, DOI, DoD, state and public stakeholders. He has coordinated all activities associated with the investigation and remediation of environmental contamination, developed and defended RODs for soil, groundwater surface water and sediment remediation.

SELECTED WORK/PROJECT EXPERIENCE

Mr. Hoff is currently project manager and risk assessment specialist for a multi-site MGP program being conducted under a Consent Order and Agreement (COA) in accordance with Pennsylvania's Land Recycling and Environmental Remediation Standards Act (commonly known as Act 2). Mr. Hoff's responsibility includes managing various technical aspects of MGP sites and oversight of risk assessment results under this program. Project activities have included Phase I

activities, Remedial Investigations, Risk Assessments, Interim Remedial Activities, Cleanup Plans and Final Report documentation.

Prior to joining the Mahfood Group, Mr. Hoff served as Project Development Officer and Director for Post-Award Services at IUP Research Institute. Mr. Hoff managed and administered large federal awards (National Science Foundation, National Institutes of Health, U.S.

Department of Labor, etc.), established direct cost rates, established and negotiated Facilities and Administration rates with the Department of Health and Human Services (DHHS). Before arriving at IUP, Mr. Hoff worked for Carnegie Mellon University, College of Engineering as Associate Director of the Pennsylvania Infrastructure Alliance (PITA) program. The PITA program was a PA DCED sponsored program, shared with Lehigh University (prime contractor) to create economic growth throughout Pennsylvania by facilitating interaction between university researchers and Pennsylvania businesses. Mr. Hoff actively managed as many as 30 such relationships and complex engineering design and education projects annually for Carnegie Mellon.

Prior to joining Carnegie Mellon University, Mr. Hoff was employed by Michael Baker Junior, Inc. as a project manager and activity coordinator under the U.S. Department of Defense, Navy CLEAN program. As activity coordinator, Hoff was responsible for investigative and restoration activities at U.S. Naval Weapons Station Yorktown and Cheatham Annex in southeastern Virginia. Both facilities were impacted by energetic compounds including TNT, RDX and HMX. His responsibilities included the management of field teams and technical teams responsible for RI/FS activities, RODs, engineering design and oversight of remedial action contractors. Because of proximity to the York River, U.S. Department of Interior property (Colonial National Historic Parkway) and the underserved community of Lackey, both human health and ecological risk assessments outcomes determined the course of action on restricted base property. Innovative investigate techniques and cost-effective methods of contaminant delineation and remediation were emphasized.

Use of bioremediation strategies were employed that utilized native microbes to metabolize nitramines and nitroaromatic compounds in soils and sediments. Complicating the process was the presence of chlorinated volatile organics and PAHs. Pilot studies were conducted with participation and oversight by Strategic Environmental Research and Development Program (SERDP). Mr. Hoff worked closely with SERDP and representatives from Atlantic Division, Naval Facilities Engineering Command (LANTDIV) to select various sites and samples to evaluate different bioremediation paradigms involving various strains of microbes. Laboratory pilot studies indicated that native

microbes were as, or more effective than strains from other nitramine/nitroaromatic contaminated sites. Peer reviewed results indicated that J.R. Simplot's Anaerobic Bioremediation (SABRE™) process was most effective on WPNSTA contaminated soil and sediment.

In July of 1998, a large pilot-scale bioreactor was constructed at WPNSTA Yorktown. Soil excavated from Site 19 was passed through a vibrating screen to remove rocks and debris larger than 5/8 inches. Water was added to the screened soil to achieve a 1 liter to 1Kg ratio and a phosphate buffer solution was added to maintain a pH level of 7.0. Starch byproducts were added to the soil-water mixture and the gantry apparatus was employed to lance the mixture, creating a slurry. The biocell was mixed daily for several weeks. All nitamines/nitroaromatic compounds were below target cleanup levels and many had achieved non-detect status. Because of the success of the biocell full-scale pilot study, Site 7 soil and sediments were also remediated. However, the clay and moisture content of these soils made cost effective remediation of some soils and sediments impractical. A second bioremediation technology, W.R. Grace Daramend™ process, was employed for higher moisture content and high clay content contaminated soils/sediments. Daramend is a landfarming technique that uses an iron catalyst and employs a proprietary amendment. Site 6 soil and sediments were remediated using the Daramend process.

As a result of the innovative techniques and strategies employed under Mr. Hoff's management, the Naval Weapons Station Yorktown facility won five awards for excellence and received one honorable mention from the DoD. These awards included:

Team and Installation awards - Chief of Naval Operations;

Team and Installation awards - Secretary of the Navy;

Team Award – Secretary of Defense; and

Honorable mention, Installation Award – Secretary of Defense.

The WPNSTA Yorktown Team was honored at the Pentagon in May 2000 for these achievements and the completion of seven records of decision at

hazardous waste sites.

In addition to his responsibilities for activities at several east coast Naval facilities, Mr. Hoff also served as discipline manager for Michael Baker's Risk Services group. As manager of the group, Mr. Hoff was responsible for 8 professionals having diverse educational backgrounds. He provided professional/technical development, annual reviews and salary adjustments and interfaced with corporate Human Resources for hiring, promotions, training, Family and Medical Leave Act (FMLA) and reductions in force. In addition to daily management activities, he was also responsible for group marketing efforts and all overhead expenditures. His expertise in risk earned him direct report responsibilities with Senior and Executive Management.

As an environmental scientist, Mr. Hoff conducted risk assessments and data validation at Superfund sites, RCRA sites for governmental and industrial clients.

As a Chemist, Mr. Hoff conducted GC and GC-MS analysis and data review of water and soil samples under Superfund protocol. Mr. Hoff analyzed samples for pesticides, herbicides volatiles, semi-volatiles, PCBs and dioxins. Mr. Hoff has also analyzed industrial wastes by gas chromatography, HPLC and IR. He also conducted method development for chemicals including butyl cellosolve and employed derivative techniques for the analysis of recalcitrant chemicals in various media.

Mr. Hoff's analytical expertise also extended to the analysis of chemicals in the field and responsibility for mobile laboratory protocols. He established laboratory capabilities on-site and analyzed groundwater soils and soil gas samples for volatiles organics in the field. In 1999, he participated in a groundwater study with United States Geological Survey (USGS) and analyzed groundwater samples for hydrogen to support other age dating techniques.

SELECTED PUBLICATIONS/PRESENTATIONS

"Use of Analytical Solutions to Determine Soil Cleanup Goals Protective of Groundwater." Hazardous Materials Control, Superfund, 1991.

"Innovative Approaches to Cleanup Level Development." Process Engineering for Pollution Control and Waste Minimization, Marcel Dekker Inc., New York, 1995.

"Bioremediation" *The Military Engineer*. November-December, 2000. Volume 92, Number 608. Pp 45-47.

"Regulatory Oversight of Two Bioremediation Technologies." TriServices Technology Symposium. June, 2001

"Identifying and Implementing Projects for a Multidisciplinary Engineering Design Projects Course at Carnegie Mellon." ASEE Conference Paper. August, 2006.



AMANDA L. STANONIK
Environmental Scientist/Risk Assessor

EDUCATION

B.A. Industrial Chemistry and Management (2006) –
Washington and Jefferson College

FIELDS OF SPECIALIZATION

Data Management
Public Health and Ecological Risk Assessments
Statistical Evaluation of Analytical Data
Site Assessments
Analytical Chemistry

EXPERIENCE SUMMARY

Ms. Stanonik has close to two years of environmental experience in areas including data management and review, risk assessment, statistical evaluation of analytical data, and site assessments. She has focused on the technical requirements under Pennsylvania's Land Recycling and Environmental Remediation Standards Act (Act 2) but has also worked under several other states' guidelines such as West Virginia and North Carolina.

SELECTED WORK/PROJECT EXPERIENCE

In her brief time in the field, Ms. Stanonik has assisted in the development of Work Plans, Remedial Investigation Reports, and Risk Assessments for several manufactured gas plant (MGP) sites. In this capacity, she has completed site assessments, statistical evaluation of analytical data, developed conceptual site models, completed toxicity assessments, and performed quantitative risk assessments. She has also assisted project managers, geologists, and engineers in the technical review of these documents.

Ms. Stanonik is currently assisting in the completion of a site-specific residual risk assessment under West Virginia's voluntary remediation program. She performed a statistical evaluation of site-specific data to use as a baseline to delineate the excavation area. This process included an iterative evaluation of the data until the excavation extents proposed met remediation clean-up goals and supported the conceptual site model. This process significantly reduced the amount of mass removed, in turn, demonstrating a cost savings.

Recently she assisted in a site-specific risk assessment in North Carolina utilizing both U.S. EPA Region 4 and the State of North Carolina Guidance for a former manufactured gas plant site.

The site consisted of several different properties. Development of a distinct conceptual site model took into consideration reasonable exposure scenarios for the potential current and future uses of each property. This allowed for the properties to be quantitatively evaluated separately and therefore meet future end use.

Ms. Stanonik recently completed a remedial investigation report under Act 2. In the completion of this report, she assisted in an ecological evaluation and development of a macro invertebrate study that was conducted to determine whether historic operations of a former MGP site have affected the benthic macroinvertebrate community in a creek adjacent to the MGP site. She also was involved in the development of the scope of work for pre-excavation samples for the proposed remediation based on the baseline risk assessment completed under Act 2.

In support of the completion of an additional remedial investigation report under Act 2, Ms. Stanonik worked with hydrogeologists and engineers to develop a conceptual site model for the fate and transport analysis of potential impacts from a MGP site into an adjacent box culvert. An important element of this model focused on an evaluation of off-site vapor intrusion.

A.2 Ecological Risk Assessment Resources

Keith Allen Johnson

6703 Ohio River Rd Lesage, WV 25537
Evening 304-762-2453 Day 304-544-5404 kjohnson@mtnstatebio.com

Education	Marshall University, Huntington, WV 25755 MS, Biology, Minor: Environmental Science	2003
	Marshall University, Huntington, WV 25755 BS, Environmental Biology, Minor: Chemistry	2001
	Hurricane High, Hurricane, WV 25526 H.S. Diploma	1992

Relevant Experience **Mountain State Biosurveys, LLC**
Leasage, WV
Owner/Chief Biologist-Operate and manage a biological consulting company specializing in surveying for benthic macroinvertebrates, fish, bats, amphibians, reptiles, and wetlands. Ten years experience in the collection, processing, and analysis of biological samples for both private and government agencies.

Publication Summary Dickson, Nancy J., Keith A. Johnson, and Thomas K. Pauley. 2001. A one-year comparison of historical Blanchard's cricket frog sites in western West Virginia to current sites in southeastern Ohio. Joint annual meetings of the Herpetologist's League and the Society for the Study of Amphibians and Reptiles 27 - 31 July: 65 (Abstract).

Dickson, Nancy J., Keith A. Johnson, and Thomas K. Pauley. 2001. A comparison of historical Blanchard's cricket frog sites in western West Virginia to current sites in southeastern Ohio. *Southeastern Biology* 48(2): 95 (Abstract).

Johnson, Keith A., Michael S. Osbourn, Thomas K. Pauley, and Mark B. Watson. 2002. Seasonal Activity Patterns of *Plethodon cinereus* and *P. hoffmani* in West Virginia. *Southeastern Biology* 49(2): 115 (Abstract).

Johnson, Keith A. and Thomas K. Pauley. Summer 2002. Calling All Spadefoots. *WV Wildlife Diversity News* 19(2): 4

Johnson, Keith A. and Thomas K. Pauley. Summer 2002. Calling Out for the Eastern Spadefoot Toad. *West Virginia Wildlife* 2(2): 10-11

Johnson, Keith A., Mark B. Watson, and Thomas K. Pauley. 2003. Comparison of inventory methods used to determine species richness and abundance of plethodontid salamanders in West Virginia. *Southeastern Biology* (Abstract).

Johnson, Keith A. 2003. Abiotic Factors influencing the breeding, movement, and foraging of the Eastern Spadefoot (*Scaphiopus holbrookii*) in West Virginia. Thesis

Marshall University

The West Virginia Higher Education Interim Governing Board
upon the recommendation of the faculty of the

College of Science

has conferred upon

Keith Allen Johnson

the degree of

Bachelor of Science

Environmental Biology

In Testimony Whereof, the signatures of the duly authorized officers of the West Virginia Higher Education Interim Governing Board and the Faculty of the University and the seal of the University have been affixed.

Given at Huntington, West Virginia, this fifth day of May, 2001.

The West Virginia Higher Education
Interim Governing Board

Cathy M. Armstrong, ESQ.
Chairman

J. Michael Miller
Chancellor



David D. Taylor
President of the University

Sabah W. Taylor
Interim Dean

Marshall University

The Marshall University Board of Governors
upon the recommendation of the faculty of the
Graduate College

has conferred upon

Keith Allen Johnson

the degree of

Master of Science

Biological Sciences

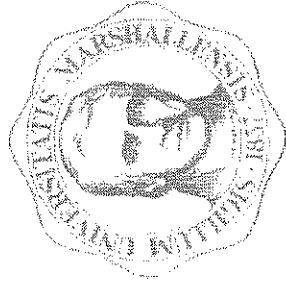
In Testimony Whereof, the signatures of the duly authorized officers of the Board of Governors and the Faculty of the University and the seal of the University have been affixed.

Given at Huntington, West Virginia, this eleventh day of July, 2003.

Marshall University Board of Governors

A. Michael Perry
Chairman

David D. Gyl
President of the University



Sarah Y. Benman
Provost and Senior Vice President
for Academic Affairs

Leonard J. Reutach
Dean

CURRICULUM VITAE

THOMAS S. RISCH

Associate Professor of Wildlife Ecology
Curator of Mammals and Graduate Program Coordinator

Department of Biological Sciences
Arkansas State University
P.O. Box 599
State University, AR 72467-0599
Phone: (870) 972-3333
E-mail: trisch@astate.edu
Fax: (870) 972-2638
<http://clt.astate.edu/biowork/risch.htm>

EDUCATION

- 1999 Auburn University, Auburn, Alabama
Ph.D. Zoology, Graduated Phi Kappa Phi
Dissertation: Significance of Litter Size and Costs of
Reproduction in Small Mammals
- 1993 Frostburg State University, Frostburg, Maryland
M.S. Wildlife Management
Thesis: An Experimental Study of the Relative Influences of
Parental Quality and Egg Mass on Chick Survival in the Herring
Gull (*Larus argentatus*)
- 1986 Stockton State College, Pomona, New Jersey
B.S. Environmental Studies

PROFESSIONAL APPOINTMENTS

- 2007-2009 Associate Professor, Curator of Mammals and Graduate Program
Coordinator
Department of Biological Sciences
Arkansas State University
- 2006-2007 Associate Professor and Curator of Mammals
Department of Biological Sciences
Arkansas State University
- 2001-2006 Assistant Professor
Department of Biological Sciences
Arkansas State University

Jan. 2000-
Aug. 2001 Post-Doctoral Research/Teaching Associate
Department of Biological Sciences
Auburn University

1998-1999 Instructor
Department of Zoology and Wildlife Science
Auburn University

AWARDS, FELLOWSHIPS & APPOINTMENTS

2008-
2010 Board of Directors, Southeastern Bat Diversity Network

2007 College of Science and Mathematics, Arkansas State University
Faculty Award for Scholarship

2006 Nominated by College of Science and Mathematics for the
Arkansas State University Board of Trustees Faculty Award for
Scholarship

2001 Beta Beta Beta - Auburn University Chapter
Teacher of the Year for the Biological Sciences

1998 American Society of Mammalogists
Alberta R. and Alma Shadle Fellowship in Mammalogy

1993-
1998 Long-term Graduate Research Fellowship
The University of Georgia's Savannah River Ecology Laboratory
Aiken, South Carolina

1997 American Society of Mammalogists
Selected as Alternate Nominee for Alberta R. and
Alma Shadle Fellowship

1996 Auburn University, Kirby L. Hays Memorial Award
for Outstanding Scholarship in Zoology

1996 American Society of Mammalogists
Selected as Alternate Nominee for Alberta R. and
Alma Shadle Fellowship

1996 Auburn University Dean Award of Excellence, Graduate Council
Recognized as One of Auburn's Ten Outstanding
Doctoral Students

- 1995 American Ornithologists' Union
Marcia Brady Tucker Travel Award
- 1995 Sigma Xi Regional Chapter - First Place Outstanding Graduate
Research: Paper entitled "Is mean litter size the most productive?
A test with Columbian ground squirrels."
- 1992 Short-term Graduate Research Fellowship
The University of Georgia's
Savannah River Ecology Laboratory
Aiken, South Carolina
- 1990 Student Membership Award
Cooper Ornithological Society
- 1989 Howard Webster Fellowship, Delta Waterfowl and Wetlands
Research Station, Portage la Prairie, Manitoba, Canada

PUBLICATIONS

- Connior, M. B., I. Guenther, T. S. Risch and S. E. Trauth. 2008. Inventory of amphibian, reptile, and small mammal associates of Ozark pocket gopher habitat in Izard County, Arkansas. *Journal of the Arkansas Academy of Science* 61: *in press*.
- Connior, M. B., and T. S. Risch. Benefits of subcutaneous implantation of radiotransmitters in pocket gophers. *Southwestern Naturalist* (*in press*).
- Connior, M. B., I. Guenther, and T. S. Risch. *Lampropeltis calligaster calligaster*, (Prairie Kingsnake), Prey. *Herpetological Review* (*in press*).
- Connior, M. B., and T. S. Risch. A simple, new live trap for pocket gophers. *Southwestern Naturalist* (*in press*).
- Medlin, R. E. Jr, and T. S. Risch. 2008. Habitat associations of bottomland bats, with focus on the Rafinesque big-eared bat and the southeastern myotis. *American Midland Naturalist* 160:400-412.
- Fokidis, H. B. and T. S. Risch. 2008. Does gliding when pregnant select for larger females? *Journal of Zoology* 275:237-244.
- Fokidis, H. B. and T. S. Risch. 2008. The burden of motherhood: gliding locomotion in mammals influences maternal reproductive. *Journal of Mammal* 89:617-625.
- Risch, T. S., G. R. Michener, and F. S. Dobson. 2007. Variation in litter size: A test of hypotheses in Richardson's ground squirrels. *Ecology* 88:306-314.

- Fokidis, H. B., T. S. Risch, and T. C. Glenn. 2007. Reproductive and resource benefits of female body size in a mammal exhibiting female-biased sexual size dimorphism. *Animal Behaviour* 73:479-488.
- Connior, M. B., I. Guenther, and T. S. Risch. 2007. *Scaphiopus hurterii* geographic distribution. *Herpetological Review* 38:478.
- Connior, M. B., I. Guenther, and T. S. Risch. 2007. *Terrapene carolina triunguis* geographic distribution. *Herpetological Review* 38:480.
- Connior, M. B., I. Guenther, and T. S. Risch. 2007. *Coluber constrictor flaviventris* geographic distribution. *Herpetological Review* 38:485.
- Connior, M. B., I. Guenther, and T. S. Risch. 2007. *Elaphe guttata emoryi* geographic distribution. *Herpetological Review* 38:486.
- Medlin, R. E. Jr, S. C. Brandebura, H. B. Fokidis, and T. S. Risch. 2006. Distribution of Arkansas's bottomland bats. *Journal of the Arkansas Academy of Science* 60:189-191.
- Brandebura, S. C., R. E. Jr Medlin, and T. S. Risch. 2006. New evidence for a maternity colony of the Indiana bat in the delta of Arkansas. *Journal of the Arkansas Academy of Science* 60:169-170.
- DeViney, S. A., R. J. Baxter, and T. S. Risch. 2006. Observation of an unusual prey item delivered to an Eastern Bluebird nest. *Journal of the Arkansas Academy of Science* 60:168.
- Medlin, E. C. and T. S. Risch. 2006. Decoration or deterrent? An experimental test of snake skin use in artificial bird nests. *Condor* 108:963-965.
- Fokidis H. B., C. Robertson, and T. S. Risch. 2006 Keeping tabs: are redundant marking systems needed for rodents? *Wildlife Society Bulletin* 34:764-771.
- Risch, T. S. and T. J. Robinson. 2006. First observation of cavity nesting by a female Blue Grosbeak. *Wilson Journal of Ornithology* 118:107-108.
- Fokidis H. B., S. C. Brandebura and T. S. Risch. 2005. Distributions of bats in bottomland hardwood forests of the Arkansas Delta region. *Journal of the Arkansas Academy of Science* 59:51-56.
- Fokidis, H. B., and T. S. Risch. 2005. The use of nest boxes to sample arboreal vertebrates. *Southeastern Naturalist* 4:447-458.
- Broussard, D. R., G. R. Michener, T. S. Risch, and F. S. Dobson. 2005. Somatic

- senescence: evidence from female Richardson's ground squirrels. *Oikos* 108:591-601.
- Robinson, T. J., L. M. Siefferman, and T.S. Risch. 2005. A quick, inexpensive trap for use with nest boxes. *North American Bird Bander* 29:115-116.
- Risch, T. S., and S. C. Loeb. 2004. Monitoring interactions between Red-cockaded Woodpeckers and southern flying squirrels. Pages 504–505 in R. Costa and S. J. Daniels, editors. *Red-cockaded Woodpecker road to recovery*. Hancock House Publishers, Blaine, Washington, USA.
- Fokidis, H. B., N. A. Schable, C. Hagen, T. C. Glenn, and T. S. Risch. 2004. Characterization of microsatellite DNA loci for the southern flying squirrel (*Glaucomys volans*). *Molecular Ecology Notes* 3:616-618.
- Broussard, D. R., T. S. Risch, F. S. Dobson, and J. O. Murie. 2003. Senescence and age-related reproduction of female Columbian ground squirrels. *Journal of Animal Ecology* 72:212-219.
- Brady, M. J., T. S. Risch, and F. S. Dobson. 2000. Availability of nest sites does not limit population size of southern flying squirrels. *Canadian Journal of Zoology* 78:1144-1149.
- Risch, T. S., and F. C. Rohwer. 2000. Effects of parental quality and egg size on growth and survival of Herring Gull chicks. *Canadian Journal of Zoology* 78:967-973.
- Dobson, F. S., T. S. Risch, and J. O. Murie. 1999. Increasing returns in the life history of Columbian ground squirrels. *Journal of Animal Ecology* 68:73-86.
- Brisbin I. L., Jr. and T. S. Risch. 1997. Primitive dogs, their ecology and behavior: unique opportunities to study the early development of the human-canine bond. *Journal of the American Veterinary Medical Association* 210:112-1126.
- Risch, T. S., and M. J. Brady. 1996. Trap height and capture success of arboreal mammals: evidence from southern flying squirrels (*Glaucomys volans*). *American Midland Naturalist* 136:346-351.
- Risch, T. S., F. S. Dobson, and J. O. Murie. 1995. Is mean litter size the most productive? A test with Columbian ground squirrels. *Ecology* 76:1643-1654.
- Romanoswki, M., and T. S. Risch. 1986. Preliminary data on the effects of open salt water management on small mammal populations. *Proceedings of the New Jersey Mosquito Control Association* 73:105-112.

Resume (abbreviated)

Dr. Donald Tarter
Professor Emeritus
Department of Biological Sciences
Marshall University
1 John Marshall Drive Huntington, WV 25755

Educational Background:

B.S. in Biology and Chemistry, Georgetown College
M.A.T. Zoology, Miami University, Oxford, OH
PhD Zoology, University of Louisville

Work Experience: 32 years, Marshall University

Taught Limnology, Entomology, Animal Ecology, Ichthyology, General Biology, and Special Topics

Thesis advisor: 100+ graduate students/Aquatic Biology

Publications: 125+ in 10 different journals (5 most recent)

- (1) Tarter, D.C., D.L. Chaffee, J. Bailey, and S. Raimondo. 2007. New state records of the baetiscid mayfly *Baetisca laurentina* McDunnough for West Virginia (Ephemeroptera: Baetiscidae) and county records for *Baetisca* spp. in Kentucky and West Virginia. Entomological News (IN PRESS).
- (2) Tarter, D.C. and C.H. Nelson. 2006. A revised checklist of the stoneflies (Plecoptera) of West Virginia (USA). Proceedings of the Entomological Society of Washington 108(2): 429-422.
- (3) Tarter, D.C., D.L. Chaffee, and S.A. Grubbs. 2006. Revised checklist of the stoneflies (Plecoptera) of Kentucky (USA). Entomological News 117(1):1-10.
- (4) Tarter, D.C., D.L. Chaffee, C.V. Covell, Jr., and S. O'Keefe. 2006. New distribution records of fishflies (Megaloptera: Corydalidae) for Kentucky. Entomological News 117(1):41-46.
- (5) Tarter, D.C. and D.L. Chaffee. 2003. A checklist of the stoneflies (Plecoptera) of the Daniel Boone National Forest in Kentucky. Entomological News 114(4):224-229.

A.3 Engineering Alternatives/Cost Assessment Resources



JAMES M. BLAYDEN, P.E.
Senior Project Engineer

EDUCATION

M.S. Civil (Environmental) Engineering (1997) - State University of New York at Buffalo
B.S. Chemical Engineering (1994) - The Pennsylvania State University

PROFESSIONAL REGISTRATION

Professional Engineer, Pennsylvania
Professional Engineer, West Virginia

FIELDS OF SPECIALIZATION

Project Management Support
Statistical Evaluation of Analytical Data
Probabilistic Cost Modeling
Remediation System Modeling
Laboratory Treatability Studies
Field Work Implementation and Oversight

EXPERIENCE SUMMARY

Mr. Blayden has over 10 years of environmental experience in areas including project management support, probabilistic cost estimation, remediation system modeling and laboratory treatability studies. His experience in probabilistic cost estimation includes the development of probabilistic cost estimates for more than 265 sites including former manufactured gas plant (MGP) sites, power

generating plants, coal mines, combustion turbine generator (CTG) sites, service centers, substations, utility pole sites, former railway sites, and Superfund sites. Results from these probabilistic cost estimates have been used for internal budgeting, financial disclosure, property sale negotiations, and insurance settlement cases.

SELECTED PROJECT EXPERIENCE

In his capacity as Senior Project Engineer, Mr. Blayden has assisted with the development of Remedial Investigation Reports, Risk Assessments, Cleanup Plans, Interim Remedial Action Plans and Final Reports. He has completed the statistical evaluation of analytical data for several MGP sites and helped develop a Microsoft® Excel spreadsheet that has the ability to compare a data set to a list of chemical-specific standards. In addition, this spreadsheet completes the statistical calculations required to perform a risk assessment.

Mr. Blayden was Project Engineer for the preparation of deterministic and probabilistic cost estimates for 28 MGP sites of a Northeast Utility. Working with other members of CES, he developed a set of seven remedial alternatives for the probabilistic cost estimates that could be applied to any of the 28 sites based on the current remedial program of the state the sites are located. The

remedial alternatives selected for a given site were based on an assumed remediation objective.

Mr. Blayden was Project Engineer for the preparation of probabilistic cost estimates for 44 MGP sites of a Midwest Utility. Each year, these estimates have been revised to incorporate site-specific and/or program-specific changes.

Mr. Blayden was Project Manager/Engineer for the preparation of probabilistic cost estimates for a group of non-MGP sites for a Northeast Utility. As principal developer of the Microsoft® Excel based spreadsheet model, he was able to tailor the cost model output to fit the needs of the client.

Mr. Blayden was Project Engineer for the preparation of a probabilistic cost estimate for a former MGP site located in the Northeast. During the project, he worked with two utilities to develop

potential scenarios for site remediation. The probabilistic range of costs provided the two utilities a basis to enter into negotiations with other potentially responsible parties.

Mr. Blayden was Project Engineer for the development of GRI-INSIT, a mathematical model for simulating in-situ remediation systems. His work included programming and validating the model against analytical spreadsheet models. He then used GRI-INSIT to model a source area biosparging system that was operating at a former MGP site. The model was calibrated using available analytical data, system operating data, and hydrogeologic conditions at the site. The model demonstrated that biodegradation of the MGP residuals of interest at the site is limited by the rate at which the residuals are released to groundwater.

Mr. Blayden completed an evaluation of the in-situ biodegradation potential of subsurface light non-aqueous phase liquid (LNAPL) for a site in Pennsylvania. During this evaluation, he completed laboratory biological slurry (BioSlurry) reactor testing and laboratory soil column testing using

LNAPL-containing site soil. Based on analytical results and operational monitoring data collected during the treatability study, naturally occurring LNAPL biodegradation can be enhanced by circulating air through the contaminated soil (bioventing).

Mr. Blayden has completed field activities at several MGP and non-MGP sites. His experience includes groundwater sampling, air monitoring, and field oversight. Some of his oversight projects include remedial investigations, the installation of horizontal injection wells and the excavation of contaminated soils for an in-situ stabilization pilot study.

Mr. Blayden's graduate work focused on the development of an analytical model to predict contaminant mass removal through the cycled operation of an air sparging/soil vapor extraction (AS/SVE) system. His research involved the collection of groundwater samples and analysis for trichloroethylene (TCE), conducting soil column flushing experiments, and analyzing AS/SVE system operational data.

SELECTED PUBLICATIONS

Rabideau, A.J., J.M. Blayden, and C. Ganguly, 1999. *Field Performance of Air-Sparging System for Removing TCE from Groundwater*. Environmental Science & Technology, 1999, 33, 157-162.

Rabideau, A.J., and J.M. Blayden, 1998. *Analytical Model for Contaminant Mass Removal by Air Sparging*. Ground Water Monitoring & Remediation, 1998, 18(4), 120-130.