

**BEFORE THE OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF COLORADO**

IN THE MATTER OF THE PROMULGATION)	
AND ESTABLISHMENT OF FIELD RULES TO)	CAUSE NO. 191
GOVERN OPERATIONS IN THE MAMM)	
CREEK FIELD, GARFIELD COUNTY,)	DOCKET NO. 1010-SP-37
COLORADO)	

APPLICANT'S EXPERT WITNESS LIST

COMES NOW Applicant, Antero Resources Piceance Corporation ("Antero"), by and through its undersigned attorneys, and provides a list of expert witnesses, and their related exhibits, that (pending decisions on any motion that Antero may file to limit testimony on behalf of Garfield County), will be called at the hearing currently set for February 22, 2011, in the captioned matter.

(Exhibits in bold)

<u>Name, Address</u>	<u>Anticipated Length of Testimony</u>
Kevin J. Kilstrom Vice President of Production Antero Resources 1625 17th Street, Suite 300 Denver, CO 80202	15 Minutes

Mr. Kilstrom will address Antero's operational practices in Garfield County, including its best management practices pursuant to the "**Rifle, Silt and New Castle Community Development Plan.**" In addition, Mr. Kilstrom will review **maps of the application area**, including in relation to citizen witnesses identified by Garfield County, as well as showing the extent of 10-acre bottomhole well density in the area.

Lars Inman
Development Geologist
Antero Resources
1625 17th Street, Suite 300
Denver, CO 80202

15 Minutes

Mr. Inman will address Antero's involvement with the community in regard to planning and operations, as well as discuss best management practices not addressed by other witnesses, and the overall geologic makeup of the subject area. He may present several exhibits relating to his testimony which including **copies of community presentations, maps and geologic cross sections.**

Rick Blankenship
Manager of Health and Safety
Gerald Alberts
Antero Resources
Environmental and Regulatory Manager
1625 17th Street, Suite 300
Denver, CO 80202

20 Minutes

This panel presentation will address Antero's environmental, health and safety practices in the area, and may include relevant exhibits, such as **community presentations.**

Bryan Grigsby & Brad Bessinger, PhD
S.S. Papadopulos & Associates, Inc.
3100 Arapahoe Avenue, Suite 203
Boulder, Colorado 80302

30 Minutes

This panel presentation will address the hydrogeologic studies of the area, including the **"Piceance Basin Phase IV Baseline Water Quality Study – Garfield County, Colorado,;** and serve as **rebuttal witnesses to Dr. Geoffrey Thyne and to Lindsay George. PE.**

Dollis Wright
Quality Environment Professional Associates, Inc.
2966 East 135th Way
Thornton, Colorado 80241

30 Minutes

Ms. Wright will address the **"Pathway Analysis and Risk Assessment"** conducted for the Colorado Oil & Gas Association, and submitted into the hearing record for the COGCC regulatory revision in 2008. Ms. Wright will also serve as a **rebuttal witness to Dr. Witter and Mr. Rada, including analysis of the comments to the Draft Health Impact Analysis.**

Kent Kuster
Oil and Gas Consultation Coordinator
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South, Building C
Denver, Colorado 80246

10 minutes

Mr. Kuster will address the CDPHE consultation process regarding public health, safety and welfare issues relating to oil and gas development, and, in particular its **letter dated November 16, 2010, responding to the Antero application.**

Kate Fay, Energy Manager
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246

10 minutes

Ms. Fay will address the CDPHE critique of the Draft Health Impact Assessment, and **will be asked to address her letter, dated November 15, 2010 to Mr. Rada** in this regard.

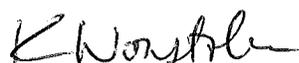
Applicant reserves the right to call any expert named by the Board of County Commissioners of Garfield County, Colorado.

Applicant reserves the right to call other experts necessary for rebuttal and impeachment.

DATED: January 5, 2011

Respectfully submitted,

BEATTY & WOZNIAK, P.C.



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ATTORNEYS FOR ANTERO RESOURCES
PICEANCE CORPORATION

RESUMES

Kevin J. Kilstrom, VP of Production, has been with Antero since June 2007. Kevin has been responsible for building much of Antero's engineering and operations team in the Arkoma and Piceance Basins. Prior to Antero, Kevin was with AGL Energy as a Manager of Petroleum Engineering for an Australian coal bed methane project from April 2006 to May 2007. Prior to AGL, Kevin was with Marathon Oil as an Engineering Consultant and Asset manager between 2003 and April 2006, for Marathon North Sea Production from three Marathon-operated platforms with gross operated production of over 160,000 Boe/d and a Business Unit Manager for Marathon's Powder River coal bed methane assets from October 2001 to October 2003. Kevin was with Pennaco Energy as a Operations Manager and reserve engineer from July 1999 until October 2001 and Amoco prior to that for 23 years, focused on economic evaluation, planning, project development and engineering. Kevin holds a B.S. in Engineering from Iowa State University and an M.B.A. from DePaul University.

Larsen R. Inman, Development Geologist, has been with Antero Resources as a Development Geologist since 2008, focusing primarily on Piceance Basin federal acreage development strategies and identifying drilling locations within sensitive urban environments. Lars is actively involved in the COGCC Comprehensive Drilling Plan (CDP) process. Prior to joining Antero, Lars was with Williams in their Piceance Basin Operations as a Geologist for 5 years. With Williams he worked as part of the Piceance Valley Asset team and led the drilling of over 300 wells in the Parachute Field in Garfield County, Colorado. Prior to Williams, Lars was with Calpine Natural Gas as a Sacramento Basin Consulting Geologist for one year focused on identifying bypassed pay within numerous reservoirs of the Rio Vista Natural Gas Field in Solano County, California. Lars also spent time with SI International as a staff Geologist for 7 years focused primarily on equity redetermination for the Elk Hills Field in the San Joaquin Basin of southern California and identifying bypassed pay in the Lagunillas Field in the Maracaibo Basin, Venezuela. Lars holds a B.S. in Geology and Environmental Science from The University of Pennsylvania.

Rick Blankenship, Manager of Health and Safety, has over 25 years experience in EHS: onshore and offshore, international and domestic, upstream and downstream, R&D, private and public service. He has been with Antero since 2007 overseeing Health and Safety program development and implementation. Prior to Antero, Rick was with EnCana Oil and Gas for 2 years in leadership and management of EHS programs for Jonah, Wind River and Green River Assets in Wyoming where he served on EHS Senior Management Committee, which established EHS policies for EnCana USA. Rick also spent time with Marathon Oil as Manager EHS, for 10 years in a variety of positions including international / domestic EHS technical assignments, R&D facilities management, audits and assessments and due diligence. Prior to Marathon, Rick worked with Ashland, Inc. as Director of Compliance, EHS, for 10 years in a variety of positions including corporate manager of EHS compliance and reporting; oversight of EHS programs in refining, construction, chemicals, E&P, retail, coal, and lube oil divisions; audits/assessments; technical studies; and program development. Rick holds a Bachelor of Engineering from Vanderbilt University and an M.B.A. from Webster University.

Gerald Alberts, Environment and Regulatory Manager, has a Bachelor of Arts degree in Environmental, Population & Organismic Biology from the University of Colorado at Boulder, and a Master of Environmental Policy & Management degree from the University of Denver. He has over 13 years of direct experience in the oil & gas sector with particular expertise in upstream and midstream oil and gas permitting involving gas plants, compressor stations, water treatment and storage ponds, and wellhead production in the Piceance Basin. Mr. Alberts worked in the midstream sector with Duke Energy Field Services, in the upstream/midstream sector with Williams Production RMT and currently in the upstream sector with Antero Resources. Mr. Alberts acted as the Team Lead on projects to permit produced water discharges from CMB wells in the Raton Basin, air emissions from the largest gas processing and gathering system in the Piceance Basin, and presented at numerous EPA Natural Gas Star Workshops on green completion technologies including the U.S. State Department Methane to Markets

Seminar in Bogota, Colombia on reduced emission well completions. He has acted as a Manager, Team Lead, Principal Environmental Scientist and Senior Environmental specialist, of projects and staff involving a broad spectrum of environmental work including: Title V permits, Greenhouse Gas Inventory Management Plans, EPA Natural Gas Star Reporting, SPCC and Stormwater program development, NPDES permit compliance, management of E&P exempt wastes, reclamation plan development and noxious weed management plans. Mr. Alberts has worked on environmental projects in multiply basins in Colorado including the Raton, San Juan, Piceance and the Denver Julesburg (OJ) Basins. He has midstream and upstream environmental permitting experience in Colorado, Utah, Wyoming, Texas, Oklahoma, and Louisiana.

William J. Pierini, Division Landman, has been with Antero since 2004 and has led Antero's acquisition of over 58,000 net acres of producing and non-producing properties in the Piceance Basin of Colorado. Prior to Antero, Bill was with Kinder Morgan CO2 Pipeline Company as a Manager, Business Development, from 2002 – 2004 where he performed cash flow analysis for the acquisition of a \$250 million oil property and a 100,000 BOPD oil pipeline. Bill was with Landmark Graphics Corporation as Principal Consultant from 2000 – 2002 and performed stochastic cash flow modeling for Marathon Oil Company's North Sea assets. Bill was a landman with Amoco for 16 years. Bill holds a B.B.A. in Petroleum Land Management from The University of Texas at Austin and an M.B.A from The University of Houston.

F. BRYAN GRIGSBY

Hydrogeologist

EDUCATION **MS** Geology, 1986, Oregon State University, Corvallis, Oregon
 BS Geology, 1979, Texas Christian University, Fort Worth, Texas

REGISTRATIONS **Professional Geologist**, California No. 5968
 Professional Geologist, Wisconsin No. 993

PROFESSIONAL HISTORY **S.S. Papadopoulos & Associates, Inc.**, Boulder, Colorado
 Senior Hydrogeologist, 1995-present
 GeoTrans, Inc., Boulder, Colorado
 Hydrogeologist, 1994-1995
 RMT, Inc., Madison, Wisconsin
 Project Manager, 1988-1994
 Wisconsin Department of Natural Resources, Madison, Wisconsin
 Environmental Scientist, Water Supply Division, 1985-1988
 Burnett Oil Company, Fort Worth, Texas
 Geologist, 1979-1981

SUMMARY OF QUALIFICATIONS Mr. Grigsby has more than 22 years experience working in the environmental and water resources fields. His expertise is in managing and conducting hydrogeologic analyses for soil and groundwater contamination investigation and remediation projects and for water resource evaluations. He has interpreted geologic and hydrogeologic conditions over a broad range of environments, from relatively simple alluvial settings to complex fractured bedrock regimes. Mr. Grigsby has designed, conducted, and evaluated aquifer tests, designed large-scale subsurface investigation and monitoring programs, supervised numerous types of well installations, and designed and conducted aqueous geochemistry sampling programs and soil gas sampling programs. Mr. Grigsby has applied analytical and numerical models to provide quantitative solutions to groundwater use and impact problems, to determine groundwater remediation requirements, and to assess remediation system performance. Mr. Grigsby has managed a variety of projects at sites located throughout the United States, including investigation of groundwater/surface-water interactions; aqueous geochemistry evaluation and interpretation, soil and groundwater contamination and remediation, RCRA Corrective Action negotiation and remediation, and has made presentations at public meetings, state government commission hearings, and regulatory agency meetings. Mr. Grigsby's background is in sedimentary and structural geology and prior to his environmental and water resources experience he worked in the mining and oil and gas industries.

F. BRYAN GRIGSBY

Hydrogeologist

Page 2

REPRESENTATIVE
PROJECT
EXPERIENCE

S.S. Papadopoulos & Associates, Inc. – Boulder, Colorado

Examples of Mr. Grigsby's expertise in geologic and hydrogeologic studies and investigations are presented below:

- For a manufacturing facility, Colorado – Serve as Project Manager and oversight consultant for a client who owns both the source property and the property directly downgradient of a former solvent dumping area where cleanup (under a Consent Order with the State of Colorado) is the responsibility of the former owner. Over the past 15 years have provided technical review and comment to the Hazardous Waste Division of the Colorado Department of Public Health and Environment (CDPHE) for reports submitted by the Responsible Party (RP). Have analyzed aquifer test data generated by the RP and constructed a groundwater flow model using MODFLOW and PATH3D to evaluate the RP's interim groundwater remediation system. Evaluated results of a source area Dense Non-Aqueous Phase Liquids (DNAPL) investigation and provided an independent Corrective Measures Study to CDPHE. Have provided oversight during and following source area excavation, and subsequently evaluated effects on the groundwater contamination plume emanating from the source area. Currently providing oversight and assistance in preparation of a Long Term Management Plan that will propose additional active remediation measures in order to expedite attaining monitored natural attenuation status for the site and the adjacent downgradient property. Also assisting in the negotiation of an Environmental Covenant for the site.
- For Region 5 of the USEPA – Serve as oversight hydrogeologist for a Superfund investigation and cleanup in Elkhart, Indiana. Have evaluated subsurface contaminant nature and extent at the site, provided comment on RP subsurface investigation and aquifer testing work plans, and participated in negotiating final scopes of the work plans with the RP group. Have provided field oversight for EPA for three phases of drilling involving cone penetrometer, direct push, and rotary sonic drilling, in-field soil and groundwater sampling, and monitoring well construction. Have also provided oversight for two phases of aquifer testing and participated in real-time evaluation of data collected during testing.
- For the Colorado Oil and Gas Conservation Commission (COGCC) and Garfield County Board of Commissioners – Project Manager and technical QA/QC for study of aqueous geochemistry conditions in an area with numerous water supply wells that is actively being drilled and developed for natural gas production. Managed design and implementation of a program involving domestic well sampling, gas well produced water sampling, and natural gas compositional and isotope sampling. Served as primary point of contact for well owners and energy companies prior to, during, and subsequent to sampling activities. Prepared a pamphlet explaining water sampling results for distribution to all property owners whose wells were sampled for the project. Evaluated an extensive set of water quality, gas composition, and gas isotope data to determine possible impacts to water supply aquifers from natural gas development activities. In a subsequent task for the COGCC, reviewed a summary report prepared by a third party that attributed hydrochemical

F. BRYAN GRIGSBY

Hydrogeologist

Page 3

REPRESENTATIVE
PROJECT
EXPERIENCE
— *continued*

characteristics in the area to effects from natural gas drilling, hydrofracturing, and production. Through statistical analysis of water chemistry parameters and detailed analysis of gas composition and isotope results showed that it was unlikely that drilling and gas production activities had affected the water supply aquifer in the area except in the area of a well known gas release. Presented finding of this evaluation at a public Oil and Gas Commissioners' Hearing.

- For a confidential natural gas producer in the Piceance Basin – Served as Project Manager and Hydrogeologist for a stream depletion analysis conducted to evaluate whether produced water from an active gas field would be tributary under Colorado statutes. For the work, constructed a conceptual site model that considered the geology in the producing horizons of the Williams Fork Formation as well as the overlying Tertiary units. Organized water production data, and collected permeability, porosity, and rock physical characteristics data from samples and tests from wells in the field. Analyzed the data using analytical methods to determine that aquifer parameters that would result in the produced water being tributary were unlikely to be realistic.
- For the Colorado Division of Water Resources (DWR), the COGCC, and the Colorado Geologic Survey – Served as Project Manager and Hydrogeologist for studies evaluating surface water depletions due to production of water from coalbed methane (CBM) wells in the Colorado portions of the San Juan and Raton Basins and in the Piceance Basin. Evaluated geologic conditions in the basins and prepared hydrogeologic conceptual models for CBM-producing intervals in each. Provided technical oversight and assistance in compiling production and aquifer characteristics data for the application of Theis and Glover-Balmer analytical modeling tools to estimate depletions due to CBM water production in the basins. Assisted in determination of appropriate coalbed hydraulic parameters using PEST where formation pressure data was available for numerical calibration. Participated in pre- and post-project public presentations explaining goals and results of the studies.
- For the COGCC – Managed a large-scale shallow soil gas sampling program for abandoned natural gas well sites located across the eastern half of Colorado. Directed sampling teams who conducted grid based sampling at former gas well locations using hand driven samplers and field gas measurement instruments to detect methane, hydrogen sulfide, oxygen, and carbon monoxide soil concentrations. Provided technical oversight and QA/QC for construction of a database combining field soil gas and GIS data for use in preparation of reports and electronic data products for COGCC staff.
- For a natural gas metering and regulation facility, Indiana – Served as Project Manager and Hydrogeologist for an Indiana Voluntary Cleanup investigation and remediation project. Directed soil and groundwater investigations involving direct-push sampling for initial site characterization and low flow sampling techniques to determine nature and extent of petroleum hydrocarbon and arsenic contamination that originated in former on-site burn pits. After evaluating site conditions and shallow groundwater flow relationship to an adjacent pond and wetlands area, prepared and submitted a Remediation Work Plan for the site that proposed limited source area investigation, focused in-situ

F. BRYAN GRIGSBY

Hydrogeologist

Page 4

REPRESENTATIVE
PROJECT
EXPERIENCE
— *continued*

- chemical oxidation treatment for near-source soil and groundwater, and a natural attenuation groundwater monitoring program.
- For the State of New Mexico and the U.S. Army Corps of Engineers – Project Manager for a large-scale drilling project and hydrogeologic investigation over a 50-mile reach of the Rio Grande. Determined drilling locations, well depth and construction details for more than 100 monitoring wells and 5 test extraction wells, provided assistance in obtaining right-of-entry agreements with landowners, provided support for preparation of Biological and Cultural Resources Assessments, designed staff-gage/datalogger installations, and coordinated project startup. Provided project management and field support for the drilling phase of the project and for subsequent aquifer pump testing on two of the extraction wells. Designed a long-term water level and water chemistry monitoring program to provide data for use in subsequent 3-D MODFLOW simulations within the Rio Grande valley.
 - For a diesel engine maintenance facility, Kansas – Managed the preparation of a Voluntary Cleanup Plan for a site impacted by Volatile Organic Compounds (VOCs). Conducted activities proposed in the Plan, including additional subsurface site characterization of a newly discovered source area and of the deep water supply aquifer beneath the site, Soil Vapor Extraction (SVE) pilot-scale testing, and extraction well rehabilitation and optimization of the existing groundwater extraction system. Developed a work plan and cost estimate to cover full cleanup of the contaminated soil and groundwater at the site.
 - For a manufacturing facility, Colorado – Designed groundwater investigation and aquifer-testing programs to evaluate a solvent plume. Directed the drilling programs for installation of groundwater monitoring wells, recovery wells, and injection wells. Directed sampling and aquifer testing field programs and analyzed aquifer test data. Reinterpreted site geology based on new data and constructed geologic maps and cross-sections, potentiometric maps, and chemical isoconcentration contour maps. Constructed site conceptual hydrogeologic model and assisted in construction of MODFLOW model used to design groundwater remediation system. Designed groundwater injection wells and operations plan for a 300-400 gpm groundwater recovery and injection remediation system and provided annual evaluation of the system after each of the first two years of its operation.
 - For the U. S. Department of Justice, Utah – Served as technical coordinator and hydrogeologist in the design and implementation of hydrogeologic study in a playa environment in the Utah desert. Supervised several phases of field activities including drilling and core sampling, well construction, hydrogeologic testing, and surface-water and groundwater sampling (including tritium and noble gas sampling) over an area covering greater than 50 square miles. Presented results in a forum with several leading geologists, hydrogeologists, and geochemists in the fields of playa hydrology and geochemistry.
 - For eight natural gas compression stations, Colorado – Served as Project Manager and Hydrogeologist for investigation and remediation activities at the sites. Designed and conducted groundwater characterizations. Directed soil-gas survey at one site and used the resulting data to establish locations for

F. BRYAN GRIGSBY

Hydrogeologist

Page 5

REPRESENTATIVE
PROJECT
EXPERIENCE
— *continued*

groundwater monitoring wells. Installed and sampled groundwater wells. Evaluated geochemical data to assess potential for biodegradation of hydrocarbons. Directed SVE pilot-scale tests at four sites and analyzed test data to evaluate feasibility of SVE as a remedial technology. Prepared Site Characterization Reports based on investigation findings for two sites. Managed the design and construction of remediation systems at four sites that included SVE and/or air sparging using both vertical and horizontal wells.

GeoTrans, Inc. – Boulder, Colorado (Temporary Position)

- For a site in Washington State – Developed a Paradox database of groundwater flow and chemistry data obtained from an ongoing acid solution injection pilot-scale test for a site characterized by metals and VOC contamination. Incorporated this data into a GIS using MapInfo to provide project graphics illustrating system cleanup progress.
- For several facilities at a CERCLA site, Southern California – Used MapInfo database/GIS software to create a database of chemical and site-use information to assist in building a liability allocation model for affected Potential Responsible Parties (PRPs).
- For a former uranium mining/milling operation, Wyoming – Evaluated site geologic and hydrogeologic conditions for preparation of a Closure Monitoring Plan. Tasks included preparing geologic cross-sections, structure- and groundwater-contour maps, and groundwater flow nets. Evaluated and modified calculations for chemical mass balance of acid tailings infiltration into the aquifer, and estimated the future extent of the groundwater plume.

RMT, Inc. – Madison, Wisconsin

- For one of RMT's top five national clients – Served as Program and Project Manager for solvent contamination and remediation investigations, air emissions permitting, and asbestos sampling at 24 sites located throughout the U.S. Responsible for client relations, program and project budgets, and overall technical and regulatory agency-related project activities.
- For a bulk chemical distribution facility, Wisconsin – Managed a RCRA Remedial Facility Investigation (RFI) of this site located on permeable glacial outwash above a fractured bedrock aquifer and a network of deep sewage tunnels. Assisted in drafting a Consent Agreement and Scope of Work as required by the Consent Order. Negotiated modifications to the scope of work to streamline the regulatory process and allow for implementation of a more cost-effective subsurface investigation. Prepared the RFI Work Plan and directed RFI shallow geophysics, drilling and monitoring well installation, and soil and groundwater sampling field activities.
- For a North Carolina site – Served as Project Manager for a groundwater investigation where residual phase and dissolved perchloroethene (PCE) and its degradation products had contaminated a faulted/fractured crystalline bedrock aquifer. Using a minimum number of multiple-screened monitoring

F. BRYAN GRIGSBY

Hydrogeologist

Page 6

REPRESENTATIVE
PROJECT
EXPERIENCE
— *continued*

wells, delineated the lateral extent of the groundwater plume. Managed the design, construction, and operation of an SVE system located in the PCE source area. Negotiated approval of the use of SVE for on-site treatment of contaminated soils recovered during drilling and construction excavation.

- For eight closed landfills in the Midwest and South – Conducted site visits, reviewed and interpreted existing data, and prepared reports for each site describing the hydrogeologic setting and evaluating potential environmental liabilities posed to the surrounding receptors.
- For an Ohio RCRA site – Statistically analyzed groundwater chemistry data according to USEPA and Ohio EPA protocols to evaluate potential releases from RCRA impoundments. Prepared a report evaluating the effectiveness of the groundwater monitoring network.

Wisconsin Department of Natural Resources – Madison, Wisconsin

As Environmental Scientist for the Water Supply Division, coordinated and conducted private, industrial, and municipal well water-sampling programs for the Southern District. Initiated groundwater investigations and corrective actions where warranted.

PROFESSIONAL
SOCIETIES

American Geophysical Union
American Water Resources Association, Colorado Section
Geological Society of America
Geothermal Resources Council
Rocky Mountain Association of Geologists

PUBLICATIONS

- Barth, G., K. MacClune, D. Hathaway, and F.B. Grigsby. 2007. Making the Most of a Simple Model: Using Extensive Data Sets and Parameter Estimation to Get Basin-Scale Insight on Outcrop Recharge. Oral Presentation at the NGWA Groundwater Summit, Albuquerque, New Mexico, April 30-May 2, 2007.
- Barth, G.R., C. Schott, K. MacClune, D. Hathaway, and F.B. Grigsby. 2007. Assessing Mountain Pine Beetle Infestation: Anticipated Hydrologic Impacts and Suggestions for Minimizing Watershed Impacts, Sustaining Colorado Watersheds. Sustaining Colorado Watersheds, Breckenridge, Colorado, October 2-4.
- Barkmann, P.E. and F.B. Grigsby. 2006. Evidence for a Regional Groundwater Flow System in the Coal-Bearing Fruitland Formation in the Northern San Juan Basin, Colorado—A New Look Using Geologic and Hydrologic Data. *Geological Society of America Abstracts with Programs*, Vol. 38, No.6, p. 10.
- Hathaway, D., G. Barth, F.B. Grigsby, and K.L. MacClune. 2006. MODFLOW ...NOT: A simple but effective solution to a regulatory question. In Proceedings of MODFLOW and More 2006 Managing Ground-Water Systems. International Groundwater Modeling Center, Colorado School of Mines Golden, Colorado, May 22-24, 2006. Vol. 1. p. 137-141.
- Grigsby, F.B., S.R. Lindblom, L. Wilcox, R.S. Bowman, and P. Pegram. 2003. Responses of Shallow Groundwater to Changes in River Stage in the Middle

F. BRYAN GRIGSBY

Hydrogeologist

Page 7

PUBLICATIONS

— *continued*

- Rio Grande Valley, New Mexico. Presented at the 2003 American Water Resources Association Annual Conference, November 3-6, 2003, San Diego, California. Oral Presentation Session 52. November 5.
- Schmidt-Peterson, R., N. Shafike, P. Pegram, D.L. Hathaway, F.B. Grigsby, R.S. Bowman, L. Wilcox, T. Newton, and K. Schafer. 2003. Groundwater/Surface Water Monitoring in the Middle Rio Grande Basin: *Southwest Hydrology*. 2, no. 1
- Pegram, P., F.B. Grigsby, R. Schmidt-Peterson, and K.T. Schafer. 2002. Investigation of Surface Water/Groundwater Interactions in the San Acacia Watershed, New Mexico. American Water Resources Association (AWRA) 2002 Summer Specialty Conference Proceedings, Ground Water/Surface Water Interactions, July 1-3, 2002, Keystone, Colorado. p. 113.
- Grigsby, F.B. 1988. Structural Development of the Ventura Avenue Anticlinal Trend at the San Miguelito and Rincon Oil Fields, Ventura County, California: Santa Barbara and Ventura Basins Tectonics, Structure, Sedimentation -- Oilfields Along an East-West Transect. In *Coast Geological Society. Field Guide No. 64*. p. 111-124.
- Yeats, R.S., G.J. Huftile, and F.B. Grigsby. 1988. Oak Ridge Fault, Ventura Fold Belt, and the Sesar Decollement, Ventura Basin, California: Santa Barbara and Ventura Basins: Tectonics, Structure, Sedimentation -- Oilfields Along an East-West Transect. In *Coast Geological Society. Field Guide No. 64*. p. 133-144.
- Yeats, R.S., and F.B. Grigsby. 1987. Ventura Avenue Anticline -- Amphitheater Locality, California. In *Decade of North American Geology Centennial Field Guide*. Vol. 1. Geological Society of America. p. 219-224.
- Grigsby, F.B., and R.S. Yeats. 1986. Active Fault Propagation Fold in the Western Transverse Ranges, California. AGU 1986 Fall Meeting and ASLO Winter Meeting, San Francisco, California, United States, December 8-12, 1986. In *Eos*. 67, no. 44. p. 1223.
- Grigsby, F.B. 1984. Geology and Associated Hanging Wall Deformation of the Padre Juan Fault, Ventura County, California: *Geological Society of America, Abstracts with Programs*. 16, no. 6: p. 524.

BRAD A. BESSINGER

Senior Project Geochemist

EDUCATION	PhD Geochemistry, 2000, University of California at Berkeley MS Rock Mechanics, 1997, University of California at Berkeley BS Engineering Geology, 1993, Stanford University
REGISTRATIONS	Registered Geologist Oregon No. G2117
PROFESSIONAL HISTORY	S.S. Papadopulos & Associates, Inc. , Portland, Oregon Vice President and Senior Project Geochemist, 2008 - present Exponent , Portland, Oregon Senior Geochemist, 2003 - 2008 URS Corporation , Oakland, California Senior Geochemist, 2000 - 2003 University of California at Berkeley , Berkeley, California Research Assistant, 1994 - 2000
PROFESSIONAL AFFILIATIONS	American Chemical Society International Society of Environmental Forensics ITRC – Contaminated Sediments Team ITRC – Attenuation Processes for Metals & Radionuclides Team National Ground Water Association Society of Environmental Toxicology and Chemistry
SUMMARY OF QUALIFICATIONS	Dr. Bessinger specializes in environmental chemistry and the fate and transport of organic compounds and metals in the environment. He has 15 years of experience designing and conducting contaminant fate and transport studies, environmental forensics investigations, and water quality assessments. His consulting services include obtaining and interpreting geochemical data, developing custom geochemical models for sediment and groundwater, preparing site treatability studies, and investigating the sources of contaminants for litigation, insurance claims, and Natural Resource Damage Assessments (NRDA).
REPRESENTATIVE PROJECT EXPERIENCE	Contaminant Fate and Transport <ul style="list-style-type: none">▪ NIEH Research Grant (2008-present) – Developed a geochemical reactive transport model to assess the effectiveness of various chemical amendments in reducing arsenic and mercury mobility and bioavailability in sediment.▪ Onondaga Lake, New York (2008-present) – Developed a geochemical reactive transport model to assess long-term effectiveness of chemical amendments for neutralizing hyperalkaline pH and mercury. Work was performed as part of site remedial activities.▪ Merced, CA (2009-2010) – Developed a geochemical reactive transport model of hexavalent chromium in groundwater to assess potential exposure. Prepared an expert report for litigation.▪ ASR Systems Modeling, WA (2009) – Developed a geochemical reactive transport model of arsenic and trihalomethanes (THMs) in an aquifer storage and recovery (ASR) system. Evaluated effects of site geochemistry and operating conditions.▪ USEPA HSSM Model (2008) – Determined biodegradation rate parameters for modeling surrogate petroleum hydrocarbon compounds

BRAD A. BESSINGER

Senior Project Geochemist

Page 2

REPRESENTATIVE
PROJECT
EXPERIENCE
— *continued*

- using the EPA's Hydrocarbon Spill Screening Model (HSSM). Also provided technical guidance on code modification.
- Confidential Client, IL (2008) – Developed models to assess potential for historical atmospheric emissions of VOCs from an industrial facility. Work was performed as part of a toxic tort case.
- Passaic River, NJ (2007-2008) – Provided technical review of the Contamination Assessment and Reduction Project (CARP) model for metals and organic contaminants in the Passaic River and Newark Bay.
- Confidential Client, NJ (2006-2008) – Summarized the scientific understanding of mercury fate, transport, methylation, and bioaccumulation for a client involved in remediation.
- Illinois River, OK (2005-2008) – Investigated the fate and transport of arsenic, nutrients, pathogens, and metals in poultry litter applied within an agricultural watershed. Results were used in a Natural Resource Damage Assessment (NRDA) lawsuit.
- Raritan River, New Jersey (2007) – Developed a geochemical reactive transport model as part of a RI/FS Investigation to predict the potential for recontamination of clean cover materials placed over arsenic-contaminated marsh sediments.
- Red Dog Mine, AK (2006-2007) – Evaluated the bioavailability of barium in soil affected by fugitive dust from mining operations. Analysis was used in an ecological risk assessment.
- CCA Geochemical Evaluation (2006-2007) – Evaluated the fate and transport of arsenic in CCA-treated wood in construction and debris landfills. Provided comments on the scientific validity of published conclusions.
- Chromium Geochemical Modeling (2005) – Evaluated the natural attenuation of hexavalent chromium in groundwater in a tidal marsh. Developed a geochemical reactive transport model to ascertain potential contamination of soil and groundwater.
- Confidential Client, WA (2004) – Determined the fate and transport of PCBs in groundwater upgradient of an impaired surface water body.
- Minneapolis, MN (2003-2004) – Designed and executed a geochemical study of arsenic fate and transport in groundwater near a pesticide manufacturing facility. Developed a geochemical reactive transport model for a RI/FS.
- Portland, OR (2002-2003) – Developed a reactive transport model of arsenic at a bulk fuel terminal for a natural attenuation study. Also managed field activities for a RI/FS to establish nature and extent of hydrocarbon contamination.
- UC Berkeley, Richmond Field Station, CA (2002-2003) – Managed a mercury treatability study for a client involved in remediation of a contaminated upland marsh. Work included geochemical reactive transport modeling of mercury in soils.

BRAD A. BESSINGER

Senior Project Geochemist

Page 3

REPRESENTATIVE
PROJECT
EXPERIENCE

— *continued*

- Martinez, CA (2002-2003) – Modeled potential groundwater and surface water contamination from copper, zinc, and acid in exposed cinder piles in a tidal marsh. Assessed alternatives for remedial design.
- Bureau of Reclamation, Sacramento, CA (2001-2003) – Managed modeling tasks for the San Luis Drain Alternatives Evaluation Project. Developed water quality models to predict changes in salinity at water treatment plant intakes and selenium bioaccumulation in ecological receptors. Work performed for NEPA/ CEQA certification.
- SFO/FAA, San Francisco, CA (2000-2003) – Managed geochemical modeling activities for the San Francisco International Airport Runway Reconfiguration Study. Developed water quality models for copper, mercury, nickel, PAHs, and PCBs in San Francisco Bay. Work performed for NEPA/CEQA certification.
- San Francisco, CA (2000-2002) – Performed water quality modeling of inorganic and organic contaminants associated with dredging and disposal of contaminated sediments.
- UC Berkeley, CA (1996-2000) – Conducted scientific research on the geochemistry of arsenic, antimony, mercury, gold, and silver. Developed thermodynamic databases and geochemical models for predicting fate and transport in hydrothermal systems.
- Yucca Mountain, NV (1994-1996) – Assessed potential migration of radionuclides in the proposed Yucca Mountain Nuclear Waste Repository. Analysis was published in a peer-reviewed scientific journal.

Environmental Forensics

- Confidential Client, CA (2010-present) – Conducted an apportionment evaluation to determine the relative contribution of VOCs in groundwater and indoor air.
- Sublette County, WY (2009-2010) – Served as technical expert on litigation over sources of arsenic and organic contaminants in groundwater. Prepared an expert report and provided a deposition.
- SeaTac, WA (2009) – Determined sources of mercury in groundwater as part of a site remediation performance assessment. Analysis included groundwater data evaluation and geochemical modeling.
- San Diego, CA (2008) – Conducted an environmental forensics investigation of sources of polychlorinated biphenyls (PCBs) in harbor sediment. Prepared a report as part of an ongoing mediation between potentially responsible parties.
- Los Angeles, CA (2008) – Investigated the sources of metals in contaminated sediment within the Port of Los Angeles. Prepared a report allocating contribution of client to observed contaminant levels.
- Pocatello, ID (2008) – Evaluated potential sources of petroleum hydrocarbons, BTEX compounds, and PAHs to groundwater and sediment. Results were used to assist client in resolving potential environmental site liabilities.
- Seattle, WA (2007-2008) – Managed an environmental forensics investigation of the sources of polycyclic aromatic hydrocarbons (PAHs)

BRAD A. BESSINGER

Senior Project Geochemist

Page 4

REPRESENTATIVE
PROJECT
EXPERIENCE
— *continued*

in sediment near a former manufactured gas plant (MGP) and tar refinery.

- Portland, OR (2007-2008) - Managed an investigation of the sources of polycyclic aromatic hydrocarbons (PAHs) in sediment in an industrial waterway near a bulk fuel terminal.
- Confidential Client, NJ (2007-2008) – Investigated sources of petroleum hydrocarbons and other organic and inorganic compounds at petroleum refineries and petrochemical facilities for a Natural Resource Damage Assessment (NRDA) lawsuit.
- Bioavailability Research (2005-2007) – Determine the sources and relative bioavailability of arsenic and lead in soil in smelter communities. Compared mineralogy to ore concentrate material, smelter emissions, soil alteration products, and other anthropogenic sources. Prepared reports to supplement human health risk assessments.
- Confidential Client, OK (2006) – Assessed potential of organo-arsenical feed additives to be preserved in poultry litter and therefore susceptible to aerial dispersion and deposition as house dust.
- Anaheim, CA (2006) – Evaluated potential sources of perchlorate to municipal groundwater wells.
- Spelter, WV (2005-2006) – Managed an investigation of the contribution of a former smelter to concentrations of arsenic, cadmium, lead, and zinc in residential soil and house dust. Prepared an expert report for a class action lawsuit.
- Tacoma, WA (2005-2006) – Evaluated sources of metals and polycyclic aromatic hydrocarbons (PAHs) to an industrial waterway. Analyzed site operations and reconstructed historical releases. Prepared report for a cost recovery lawsuit.
- Steilacoom, WA (2004) – Managed a study to assess sources of elevated groundwater phosphorus concentrations suspected of contributing to lake eutrophication. Developed geochemical reactive transport model and prepared report.
- Minneapolis, MN (2004) – Evaluated sources of arsenic in soils potentially affected by historical arsenical pesticides manufacturing. Utilized electron microprobe speciation and metal ratio techniques to identify chemical fingerprints.
- Mercury Research (2004) – Reviewed sources of mercury to the environment and the potential to use chemical fingerprinting methods to identify these sources once released. Published results as a book chapter on mercury forensics.
- Philadelphia, PA (2004) – Evaluated claims of mercury exposure caused by the removal of natural gas pressure regulators. Prepared expert report for a class action lawsuit.
- Confidential Client, TX (2003-2004) – Provided expert testimony support for a study evaluating sources of dioxin in lacustrine environments. Analysis was used to apportion contribution to sediment.

BRAD A. BESSINGER

Senior Project Geochemist

Page 5

REPRESENTATIVE Water Quality Assessments

PROJECT
EXPERIENCE
— *continued*

- Sublette County, WY (2009-present) – Conducted groundwater quality evaluations for a landfill permit renewal application.
- Gladeville, TN (2010) – Determined optimal operating conditions for a groundwater treatment system based on water chemistry.
- Plant City, FL (2009-2010) – Reviewed groundwater geochemistry data to assess the accuracy of a site groundwater model.
- SeaTac, WA (2009) – Assessed the performance of site remediation on groundwater arsenic concentrations. Provided guidance on monitoring.
- Portland, OR (2008-2009) – Evaluated groundwater quality data to determine the potential impact of slag materials on metals concentrations in downgradient monitoring wells.
- Big Rapids, MI (2008-2009) – Modeled the effects of reduced outflow from a surface impoundment on downstream water temperature.
- Portland, OR (2008) – Evaluated the effectiveness of groundwater remediation efforts on reducing concentrations of volatile organic compounds (VOCs) in groundwater. Work was conducted as part of a site remediation performance assessment.
- Santa Maria, CA (2007) – Evaluated clogging issues associated with groundwater extraction and irrigation. Results used in insurance claim.
- San Diego, CA (2007) – Assessed the performance of groundwater remediation activities at a petroleum-impacted site as part of a cost recovery lawsuit.
- Confidential Client, OK (2006) – Assessed the effects of anthropogenic activities on turbidity and trihalomethanes (THMs) in water supply.
- Santa Clara County, CA (2006) – Reviewed technical basis for establishing numeric targets for a proposed mercury TMDL for the Guadalupe River. Provided guidance on effectiveness of source control measures and methylmercury reduction plans.
- SPMD Technical Review (2004) – Critically reviewed the ability of Semi-Permeable Membrane Devices (SPMDs) to predict time-weighted average hydrocarbon concentrations in water and receptor tissues.
- Santa Clara County, CA (2004) – Analyzed the effectiveness of a proposed total maximum daily load (TMDL) for mercury in San Francisco Bay. Prepared comments on behalf of the Santa Clara Parks and Recreation Department in contention of source allocations.
- Wallula, WA (2003) – Performed a groundwater quality evaluation as part of a waste discharge permit renewal application. Assessed potential impacts associated with the use of treated wastewater for irrigation.
- Deschutes County, OR (2003) – Performed groundwater monitoring and statistical analysis of water quality data for landfill permitting.
- Los Altos, CA (2000) – Evaluated water quality data to determine potential impacts of quarry operations on surface water.

BRAD A. BESSINGER

Senior Project Geochemist

Page 6

PUBLICATIONS

Books

Bigham, G., B. Henry, and B. Bessinger. 2006. Introduction to the Environmental Forensics of Mercury. In *Environmental Forensics - A Contaminant Specific Approach*. Morrison, R., and B. Murphy, editors. Amsterdam: Elsevier Academic Press. 1-17.

Bessinger, B., R. Suarez-Rivers, K. Nihei, B. Hilbert, L. Myer, and N.G.W. Cook. 2001. P-Wave Amplitude Anisotropy in Limestone. *In Advances in Anisotropy: Selected Theory, Modeling, and Case Studies*. Hood, J.A., editor. Tulsa, Oklahoma: Society of Exploration Geophysicists. 322 pp.

Articles

Bessinger, B., B. Redding, and Y.W. Lowney. 2007. Comments on "Release of Arsenic to the Environment from CCA-Treated Wood. 2. Leaching and Speciation During Disposal": *Environmental Science & Technology*. 41, no. 1: 345-346.

Shock, S.S., B.A. Bessinger, Y.W. Lowney, and J.L. Clark. 2007. Assessment of the Solubility and Bioaccessibility of Barium and Aluminum in Soils Affected by Mine Dust Deposition: *Environmental Science & Technology*. 41, no. 13: 4813-4820.

Bessinger, B., T. Cooke, B. Foreman, V. Lee, P. Mineart, and L. Armstrong. 2006. A Kinetic Model of Copper Cycling in San Francisco Bay: *San Francisco Estuary and Watershed Science*. 4, no. 1.

Mackay, C.E., M. Johns, J.H. Salatas, and B. Bessinger. 2006. Stochastic Probability Modeling to Predict the Environmental Stability of Nanoparticles in Aqueous Suspension: *Integrated Environmental Assessment and Management*. 2, no. 3: 293-298.

Bigham, G., B. Henry, and B. Bessinger. 2005. Mercury - A Tale of Two Toxins: *Natural Resources & Environment*. 19, no. 4 In ABA's Section of Environment, Energy, and Resources Issue on Highly Regulated Chemicals: 26-30.

Bessinger, B., N.G.W. Cook, L. Myer, S. Nakagawa, K. Nihei, P. Benito, and R. Suarez-Rivera. 2003. The Role of Compressive Stress in Jointing on Vancouver Island, British Columbia: *Journal of Structural Geology*. 25, no. 6: 983-1000.

Bessinger, B., Z. Liu, N.G.W. Cook, and L. Myer. 1997. A New Fracturing Mechanism for Granular Media: *Geophysical Research Letters*. 24, no. 21: 2605-2608.

Kastenbergh, W., P. Peterson, J. Ahn, J. Burch, G. Casher, P. Chambre, E. Greenspan, D. Olander, J. Vujik, B. Bessinger, N.G.W. Cook, F. Doyle, and B. Hilbert. 1996. Considerations of Autocatalytic Criticality in Geologic Repositories: *Nuclear Technology*. 115: 298-308.

Reports

Bessinger, B., and J. Apps. 2005. The Hydrothermal Chemistry of Gold, Arsenic, Antimony, Mercury, and Silver. Lawrence Berkeley National Laboratory, Report No. LBNL-57395. 52 pp.

BRAD A. BESSINGER

Senior Project Geochemist

Page 7

PUBLICATIONS

— *continued*

Bessinger, B. 2000. The Geochemistry of Gold, Arsenic and Antimony in the Carlin-Type Gold Deposits and the Mechanics of Geologic Fractures. Lawrence Berkeley National Laboratory, Report No. LBNL-46525. 326 pp.

Proceedings

D. Vlassopoulos, B. Bessinger, and P.A. O'Day. 2010. Aqueous solubility of As_2S_3 and thermodynamic stability of thioarsenites. Proceedings of the Thirteenth International Symposium on Water Rock Interaction. Guanajuato, Mexico, August 16-20, 2010.

Bessinger, B., D. Vlassopoulos, S. Serrano, and P. O'Day. 2009. Reactive Transport Modeling of Arsenic and Mercury in a Chemically Amended Sediment Cap. Proceedings of the Fifth International Conference on Remediation of Contaminated Sediments. Jacksonville, Florida, February 2-5, 2009.

Recent Conference Presentations

Bessinger, B., D. Vlassopoulos, S. Serrano, and P. O'Day. 2010. Reactive Transport Modeling of Arsenic and Mercury Fate at the Ground Water-Surface Water Interface. Presented at the 2010 Ground Water Summit, Denver, Colorado. April 11-15, 2010.

Bessinger, B., and D. Vlassopoulos. 2009. A Geochemical Reactive Transport Model of Arsenic and Trihalomethanes in Aquifer Storage & Recovery Systems. Presented at the 7th Washington Hydrogeology Symposium, Tacoma, Washington, April 27-30, 2009.

Vlassopoulos, D., B. Bessinger, V. Illera, and P.A. O'Day. 2009. Lithologic, Hydrologic and Biogeochemical Influences on Spatio-Temporal Variability of As and Hg Concentrations in Groundwater. Presented at Goldschmidt 2009, Davos, Switzerland, June 21-26, 2009.

O'Day, P.A., S. Serrano, B. Bessinger, V. Illera, and D. Vlassopoulos. 2009. Sediment Remediation of Metal and Metalloid Contaminants with Reactive Amendments. Presented at Goldschmidt 2009, Davos, Switzerland, June 21-26, 2009.

Bessinger, B., and F. Mohsen. 2008. Simulation of Tidal Effects on Contaminant Fate and Transport near the Sediment-Water Interface. Presented at Pacific Northwest Society of Environmental Toxicology and Chemistry (PNW-SETAC) Annual Meeting, Corvallis, Oregon. March 27-29, 2008.

Bessinger, B. 2006. Introduction to the Environmental Forensics of PAHs. Presented at the Northwest Environmental Conference. Northwest Environmental Business Council, Portland, Oregon, Dec. 7-8, 2006.

Bessinger, B. 2005. Source Apportionment Methods for Lead in Residential Soils Near a Former Zinc Smelter. Presented at the Pacific Northwest International Section 2005 - Air and Waste Management Association, Blaine, Washington, Nov. 8-11, 2005.

BRAD A. BESSINGER

Senior Project Geochemist
Page 8

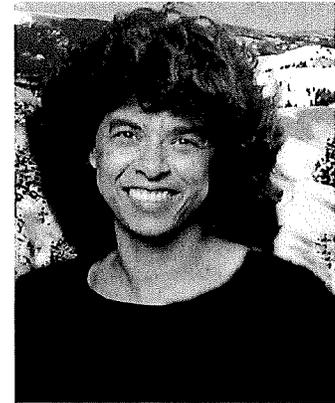
DEPOSITION AND TESTIMONY EXPERIENCE	Depositions
	2010 Sublette County v. Wyoming Department of Environmental Quality. Case No. 09-5601. January 20, 2010.

DOLLIS M. WRIGHT

President

Quality Environmental Professional Associates, Inc.

(Statement of Qualifications)



Ms. Wright is the president and co-founder of Quality Environmental Professional Associates, Inc. (QEPA). Ms. Wright served as the director of Toxicology for Quality Environmental Professionals, Inc. (QEPI) for three years. She has over twenty years of experience in Epidemiology and Toxicology. She served as staff Toxicologist for the Indiana State Department of Health (ISDH) for six years and Director of Environmental Epidemiology/Toxicology for three years. Ms. Wright conducted laboratory and field research in Reproductive Toxicology for the National Institute for Occupational Safety and Health (NIOSH) for four years. She also worked for the Centers for Disease Control (CDC) for four years. At the CDC, she was responsible for collecting epidemiological data for the Metropolitan Atlanta Congenital Birth Defects Program.

During her tenure at the ISDH, she was trained by the Agency for Toxic Substances and Disease Registry (ATSDR) to conduct public health activities for communities impacted and potentially impacted by chemicals spilled or released into the environment. Resultant activities from her professional experience are listed below.

- Review and assessing site environmental data
- Gathering new environmental data through recommended sampling
- Review and comment on site-specific information such as RI/FS, work plans, site safety plans, risk assessments, etc.
- Interaction and collaboration with U.S. Environmental Protection Agency, Indiana Department of Environmental Management, Agency for Toxic Substances and Disease Registry, Centers for Disease Control, and local health agencies
- Review and interpretation of relevant toxicological information
- Gathering and interpreting of health outcome data
- Organizing, and/or attending public meetings
- Identifying and responding to community health concerns;
- Developing and implementing educational efforts toward citizens and area health care providers;
- Developing and distributing informational materials;
- Responding to comments from other agencies, interest groups, or citizens regarding a sites public health assessment; and
- Designing and conducting additional studies to follow-up on the findings and recommendations of a sites public health assessment

Education

- Indiana University/Purdue University at Indianapolis
Coursework towards Masters in Toxicology (11 graduate credit hours)
- University of Cincinnati, Cincinnati, OH
Graduate course in Biochemistry & Physiology (9 graduate credit hours)
- Georgia State University, Atlanta, GA
Bachelors of Science in Biology Minor in Chemistry
- Andrews University, Berrien Springs, MI
Coursework towards BS in Medical Technology

Relevant Experience

1. **Quebec Oil and Gas Association (QOGA)** – Part of an Expert Panel and an Expert Witness for the Bureau des Audiences Publiques Sur l'environnement (BAPE) October 2010
2. **EPA's Review of Air Regulations Affecting the Oil and Natural Gas Industry** – Presentation of findings from Pathway Analysis and Risk Assessment activities, August 2010
3. **Colorado Oil and Gas Association (COGA) - Pathway Analysis & Risk Assessment 2008**

QEPA provided scientific and expert guidance.

QEPA prepared a summary report of the findings of the study

The purpose of the study was to:

- Fill data gaps concerning chemicals used in oil and gas activities and their risk to human health, and
- Assist in evaluating proposed modifications to the Colorado Oil & Gas Conservation Commission rules. (COGCC).

Participating COGA companies in the Piceance, Denver-Julesburg, Raton, and San Juan energy basins conducted an environmental investigation of statistically representative samples of exploration and production (E&P) media. Investigation was conducted by an independent third party consultant.¹ (URS Corporation) Environmental media were collected from:

- pit solids
- pit fluids
- fracing flowback fluids, and
- produced water,
- background soil.

4. **Garfield County Ambient Air Quality Monitoring Study**
 - QEPA performed a technical review of this document for COGA
5. **Garfield County Air Toxics Inhalation: Screening Level Human health Risk Assessment**
 - QEPA performed a technical review of this document for COGA
6. **Literature Review of Oil Industry Worker Exposure**
 - QEPA conducted the review and prepared a summary document for COGA
7. **Literature Review of Agency for Toxic Substances and Disease Registry (ATSDR) Assesments Related to the Oil and Gas Industry**
 - QEPA conducted the review and prepared a summary document for COGA
8. **Chemicals Used in Natural Gas Development and Delivery in Colorado. By, The Endocrine Disruption Exchange**
 - QEPA reviewed this document and prepared a summary document for COGA
9. **Director of Environmental Epidemiology for the State of Indiana**
 - Responsible for educating citizens exposed and potentially exposed to chemicals found at Superfund Hazardous Waste sites.
 - Responsible for preparing health assessment, health consults and reviewing risk assessments

Special Training

- Clear Writing, 1988
- Phlebotomy, Andrews University 1981
- Introduction to Risk Assessment, NIOSH, 1988
- Sperm Penetration Assay, University of Calgary Medical Genetics Clinic 1989
- Sperm Penetration Assay, Lawrence Livermore National Laboratory, 1989
- Sperm Penetration Assay, Vanderbilt University, 1989
- Medical Physiology, University of Cincinnati Medical School 1989
- 29 CFR 1910.120 40-Hour Safety Training Course, IDEM 1992
- Health Assessment Workshop for Hazardous Waste Sites. ATSDR, 1992
- Use of Health Outcome Data in Public Health Assessment, ATSDR, 1992
- Focus on Cancer and the Public Health Assessment, ATSDR, 1992
- Special Topics Module for Public Health Assessments, ATSDR, 1992
- Health Communications Module for Public Health Assessments, ATSDR, 1992
- Leadership Skills for Women Managers and Supervisors, 1993
- Dealing with Angry Citizens, ATSDR, 1994
- Handling the Press, ATSDR, 1994
- Introduction to Geographic Information Systems and Spatial Analysis Techniques, ATSDR, 1996
- Assessing Exposure and Public health (soil, sediment, biota, and surface water) ATSDR, 1996
- Effective Early Interaction Strategies, ATSDR, 1996
- Epidemiology in Action Part I, Rollins School of Public Health of Emory University and the Centers for Disease Control, 1996
- CDC Epidemiology in Action Part II, Rollins School of Public Health of Emory University and the Centers for Disease Control 1997
- Hazardous Materials and Site Investigations OSHA 29 CFR 1910.120(c)

Scientific Publications

Wright D.M.; Hardin B.D.; Goad P.W.; Chrislip D.W.: Reproductive and Developmental Toxicity of N,N, Diethyl-m-toluamide in Rats. *Fundamental and Applied Toxicology* 19, 33-42 (1992).

Wright D.M.; Kesner J.S.; Schrader S.M.; Chin N.W.; Wells V.E.; Krieg E.F., Jr: *Methods of Monitoring Menstrual Function in Field Studies: Attitudes of Working Women*. *Reproductive Toxicology*, Vol 6, pp. 401-409, 1992

Kesner J.S.; Wright D.M.; Schrader S.M.; Chin N.W.; Krieg E.F., Jr.: *Methods of Monitoring Menstrual Function in Field Studies: Efficacy of Methods*. *Reproductive Toxicology*, Vol 6, pp. 385 - 400, 1992.

Kesner J.S.; Krieg E.F.; Knecht EA.; Wright D.M.: *Power Analysis and Immunoassays for Measuring Reproductive Hormones in Urine to Assess Female Reproductive Potential in Field Studies*. *Scandinavian Journal of Work and Environmental Health* 1992; 18 Suppl 2:33-36.

Documents

Ms. Wright has directed a multidisciplinary team in completing over thirty official government documents for superfund sites, and other hazardous waste sites

Health Consultation, Meridian Road Landfill, Fortville Indiana, 1998
Exposure Investigation Report, USS Lead, East Chicago, Indiana, 1998
Exposure Investigation Report, Shelly Ditch, Crawfordsville Indiana, 1998
Health Consultation, Norris Street Battery, Anderson Indiana, July 1998
Public Health Assessment, Gary Sanitary Landfill, Gary, Indiana, October 1998
Public Health Assessment, Main Street Well Field, Indiana 1998
Health Consultation, Vickers Warehouse, Anderson Indiana, 1998
Public Health Assessment, Wayne Waste Oil, Indiana November 1998
Health Consultation, Exposure Investigation, Memorial Drive Dump, Muncie Indiana, 1997
Health Consultation, Frank Foundries, Muncie Indiana, June 1996
Health Consultation, Lawrence County Landfill, June 1996
Public Health Assessment, Carter Lee Lumber, Indianapolis Indiana, June 1996
Site Review and Update, Columbus Old Municipal Landfill, March 1996
Site Review and Update, Main Street Well Field, March 1996
Site Review and Update, Tri-State Plating, March 1996
Health Consultation for A.O. Smith, Union City Indiana 1995
Public Health Assessment, Fort Wayne Reduction Dump, Fort Wayne Indiana December 1995
Public Health Assessment, Himco Dump, Elkhart Indiana, December 1995
Public Health Assessment, Carter Lee Lumber, Indianapolis Indiana, August 1995
Public Health Assessment, Marion Bragg Dump, Marion Indiana, February 1995
Health Consultation, Ralston Street Lagoons, Gary Indiana, July 1995
Health Consultation, House's Junkyard, Gary Indiana, July 1995
Health Consultation, St. Joseph Co. Mayflower Road Site, South Bend Indianapolis, July 1995
Health Consultation, Camor Site, Westville Indiana, July 1994
Site Review and Update, Continental Steel Corporation, Kokomo Indiana, June 1994
Public Health Assessment, Envirochem Corporation, Zionsville Indiana, June 1994
Public Health Assessment, Northside Sanitary Landfill, Zionsville Indiana, June 1994
Public Health Assessment, Riley Tar & Chemical, Indianapolis Indiana, July 1994
Site Review & Update, Southside Sanitary Landfill, Indianapolis Indiana, August 1994
Public Health Assessment, Waste Inc. Landfill, Michigan City, Indiana, June 1994.
Public Health Assessment, Bloomington/Spencer Consent Decree Sites, April 1994
Health Consultation, Avanti Lead Site, Indianapolis Indiana, January 1994
Public Health Assessment for U.S.S. Lead, East Chicago Indiana, May 1993
Public Health Assessment, Fisher Calo, Kingsbury, Indiana, January 1993
Site Review and Update, Lake Sandy Joe, Gary Indiana, August 1992
Site Review and Update, Midco I, Gary Indiana, February 1993

Fact Sheets

Ms. Wright was responsible for creating and preparing site-specific fact sheets. This included adapting ATSDR chemical fact sheets to be more site specific in order to be responsive to a communities needs. By personalizing the routes of exposure and the health effects expected based on the levels of contaminants found at a site it reduced the amount of information contained in the fact sheet, and it also insured that only the information that was pertinent to the community was relayed to them. This reduced unnecessary panic over health effects and routes of exposure that did not exist at a site. Fact

sheets were also created to address concerns voiced by community members and or pertinent issues at a site.

Public Meetings

The Indiana State Department of Health hosted or was invited to over one hundred public meetings/availability sessions during 1992-1998. Ms. Wright was responsible for responding and or addressing the health concerns of citizens in attendance.

Fish Advisory

Ms. Wright served as the lead in a three-agency task force to develop the Indiana Fish Consumption Advisory based on the Great Lakes Task Force Protocol. Members from the Indiana Department of Environmental Management, the Indiana Department of Natural Resources, and the Indiana State Department of Health worked cooperatively to produce a document that provided citizens with information on contaminants found in Indiana fish.

The advisories can be viewed at the following site www.in.gov/isdh/programs/environmental/fa-links.htm

Indiana Fish Consumption Advisory 1996

Indiana Fish Consumption Advisory 1997

Indiana Fish Consumption Advisory 1998

In addition, Ms. Wright created a brochure entitled "*An Expectant Mother's Guide to Eating Indiana Fish*". The brochure was adapted from one produced by the Minnesota Department of Health.

Exposure Investigations/Studies

Ms. Wright performed additional epidemiologic studies or site-specific biological testing, when appropriate, on those sites where the public health assessment, health consultation, or public health advisory showed the greatest risk or likelihood of human exposure to hazardous/toxic substances.

Great Lakes Fish Consortium 1994-1997

Indiana was one of four states that joined in a collaborative effort to study the body burdens and health outcomes among charter boat captains and their families as part of the ATSDR Great Lakes Initiative. Ms. Wright performed the fieldwork for the Indiana endeavor. This included collecting blood samples and administering questionnaires to charter boat captains and their families.

NHEXUS Study Population-Based Exposure Measurements in EPA Region 5: A Phase I Field Study in Support of the National Human Exposure Assessment Survey 1995

Indiana was selected to be a part of the National Human Exposure Assessment Survey. This study was organized by Research Triangle Institute. Ms. Wright assisted the RTI team in developing study protocols, establishing and maintaining connections with the local health department and collecting blood samples from study participants.

Avanti, Indianapolis, Indiana, 1994 – 1995

High lead levels were discovered in and around the former Avanti foundry and lead smelting facility in 1991. There were health concerns at this site that called for residential soil removal, community blood draws to check the blood lead levels, and the connection of residences to a public water supply source. Activities were completed through the cooperation of the Avanti community with the county health department, the state and USA EPA and the state department of health. Ms. Wright was responsible for developing, and administering a community survey to address community concerns about adverse health effects connected to lead exposure at the site. She also assisted the county in coordinating blood sampling of the community. (See the website below for summary fact sheet on community survey)

www.in.gov/isdh/programs/environmental/factsheets/sitespec/mar-ssfs.htm

Shelly Ditch, Crawfordsville, Indiana 1996

While searching for a background sample for a known hazardous waste site, the state EPA discovered that the sediments in a ditch were contaminated with lead and polychlorinated biphenyls. The range of contamination was as follows: lead 34- 1600 ppm, PCBs .2 – 384 ppm. The ditch was in a residential neighborhood and it runs through the backyard of approximately twenty- five homes. An Elementary school (grades 1-6) backs up to the ditch. Ms. Wright coordinated the following activities in the community.

- Five public meetings sponsored by the Indiana State Department of Health in cooperation with the State EPA. The meetings were provided to address community health concerns and to provide community health education.
- A school presentation for the Elementary School to provide health education for the teachers and students
- Meetings with impacted businesses in the community i.e. realtors
- A census of the community to determine the willingness and the desire to participate in an exposure investigation
- An Exposure Investigation sponsored by ATSDR to provide information on whether community members had been exposed to PCBs or lead. There were 227 community members who participated and 10 dogs
- Health Professional training for physicians that service the community.

Continental Steel, Blood Lead 1997

At the request of the State EPA project manager, Ms Wright coordinated and conducted a blood lead exposure investigation for this site. Health surveys and blood samples were collected from targeted community members determined to have elevated levels of lead in their residential yards.

Memorial Drive Dump, Muncie Indiana 1997

Soils samples taken by the state EPA determined that high levels of lead were present at this site. Residential yards were adjacent to the site. At the request of the State EPA project manager, Ms. Wright coordinated and conducted a blood lead exposure investigation.

USS Lead, East Chicago, Indiana 1997

Ms. Wright was asked by the USEPA project manager for assistance in determining the impact of a lead smelter site on its surrounding community. Ms. Wright coordinated activities between the ATSDR, The County Health Department, and the State Department of Health Childhood Lead program, and the local community. Ninety- five members of the surrounding community participated in the public health activities. In addition, Ms. Wright conducted Health Professional training for the physicians that serviced this community.

National Institute for Occupational Safety and Health

Ms. Wright was responsible for developing and writing the protocol, and directing a study to monitor menstrual function in field studies of female workers for the National Institute for Occupational Safety and Health (NIOSH). She also developed the protocol and implemented a procedure used to determine

the reproductive potential of men occupational exposed to chemicals (Sperm Penetration Assay) for the NIOSH Andrology Laboratory.

Professional Presentations

- Expert Panel Review for “Methods to Detect Reproductive Potential in Females” National Institute For Occupational Safety and Health 1989
- Selecting a Career in Science, Association for Minority Health Profession Schools. Texas 1989
- Methods to Detect Reproductive Potential in Females, American Acoustical Society, Cincinnati 1991
- Shelly Ditch, Integrating Site Activities, ATSDR Annual Meeting of Cooperative Agreement States, North Carolina, 1996
- Shelly Ditch, an Exposure Investigation, ATSDR Board of Scientific Advisors, Georgia 1996
- Shelly Ditch, an Exposure Investigation, ATSDR Annual Meeting of Cooperative Agreement States 1996. Plenary Session
- Environmental Epidemiology in Indiana, Indiana Environmental Health Association, La Porte, Indiana, 1996
- American Fisheries Society Conference: The Indiana Fish Consumption Advisory Status 1996
- An Introduction to Toxicology, Indiana Department of Environmental Management 40 hour Safety Training 1996 and 1997
- Exposure Investigation Strategies, ATSDR State Meeting, Wisconsin 1997
- Building a Multidisciplinary Team, ATSDR Annual Meeting of Cooperative Agreement States, Georgia 1997
- Strategies for Involving County Health Departments in Brownfield Activities. Agency for Toxic Substances and Disease Registry Partners Meeting: Wisconsin 1997
- Brownfield’s in Indiana, Indiana Environmental Health Association, Terra Haute, 1997
- The Health of Environmental Public Health Workers in Jamaica, Jamaican Public Health Association, 1997 Keynote Speaker
- Environmental Epidemiology in Indiana, Industrial Hygiene Association, Indianapolis, 1997
- Shelly Ditch Exposure Investigation: The use of Partnerships to Conduct Public Health Activities, American Public Health Association National Meeting, Indianapolis, 1997
- Avanti, Lead Exposure Survey, American Public Health Association National Meeting, Indianapolis 1997
- Indiana Lake Management Conference. Indiana Fish Consumption, 1998
- Colorado Oil & Gas Commission 2008 Hearings – Presented results of Literature Reviews, Study Reviews and Pathways Analysis and Risk Assessment.

Awards

- Recipient of the *American Legion Award*. For Courage, Honor, Leadership, Patriotism, Scholarship and Service. Atlanta, Georgia 1979
- Recipient of *Superior Work Performance*, National Institute for Occupational Safety and Health, Cincinnati, Ohio 1989
- Recipient of *Certificate of Appreciation* for time devoted to the program activities of the NIOSH Cincinnati Federal Women’s Program, Cincinnati Ohio 1991
- Research publication nominated for the Alice Hamilton Science Award for Occupational Safety and Health 1994
- Recipient of Indiana Department of Environmental Management *Recognition Award* for Commitment and Dedication to the Shelly Ditch Site Project. Indianapolis Indiana 1996

- Recipient of the Indiana Department of Environmental Management “*Rubber Trout Award*” For Extraordinary Epidemiological Services provided for the Indiana Fish Advisory. Indianapolis, Indiana 1998

Cancer Cluster/ Health Investigations

On separate occasions, Indiana Citizens from Fortville Indiana and Union City presented overwhelming concern for the health of their community. These citizens provided Ms. Wright with health information they had gathered from their community. Through public meetings, fact sheets, and a comparison of the provided information and the State Cancer Registry, Ms. Wright was able to respond to these citizens concern.

- ❖ Cancer Cluster Investigation - Meridian Road Landfill 1997
- ❖ Health Investigation - A O. Smith Union City 1997

Health & Safety Training

Ms. Wright prepares and teaches Hazardous Materials and Site Investigation Certified classes as required by OSHA 29 CFR 1910.120 (c).. She teaches the 40 and the 8 hour refresher course nationally and locally.

Risk Communication

Ms. Wright specializes in communicating difficult scientific concepts to general audiences. She recognizes that the majority of anxiety surrounding environmental exposures is due to lack of understanding of sometimes very complex scientific concepts. She also realizes that safety is no accident. Being informed properly and prepared is the key to preventing workplace injuries.

CERTIFICATE OF SERVICE

We, the undersigned, hereby certify that true and accurate copies of the foregoing APPLICANT'S EXPERT WITNESS LIST were emailed this 5th day of January, 2011, to the following:

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