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MAX MAIN\*  
DWIGHT A. GUBBRUD\*  
\*LICENSED IN SOUTH DAKOTA AND WYOMING

EST. 1908

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RETIRED  
DONN BENNETT

August 23, 2013

**RE: Powertech (USA) Inc. Water Permit Applications 2685-2 and  
2686-2, and 2012 Groundwater Discharge Plan Application  
submitted by Powertech (USA) Inc.**

TO: All Members on Service List (See Certificate of Service).

Many of the Powertech experts disclosed in the above-referenced matter were previously disclosed as experts in the LSM Permit Application matter. We are not enclosing copies of the curricula vitae for those experts for persons who have already received them.

Sincerely,

BENNETT, MAIN & GUBBRUD, P.C.



Max Main

MM/ra

Encs.

cc: Eric Gronlund

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STATE OF SOUTH DAKOTA  
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
WATER MANAGEMENT BOARD

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IN THE MATTER OF WATER PERMIT  
APPLICATIONS 2685-2 AND 2686-2,  
POWERTECH (USA) INC.

POWERTECH'S  
DISCLOSURE OF EXPERT  
WITNESSES

IN THE MATTER OF THE 2012  
GROUNDWATER DISCHARGE PLAN  
APPLICATION SUBMITTED BY POWERTECH  
(USA) INC.

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Powertech (USA) Inc. ("Powertech") hereby discloses its potential expert witnesses. All of the disclosed expert witnesses may not testify, and some of them may also give non-expert testimony. Powertech reserves the right to designate additional expert witnesses. Powertech also reserves the right to call rebuttal expert witnesses that are not disclosed herein. The disclosed expert witnesses do not have separate reports apart from their contributions to Powertech's water rights and groundwater discharge plan applications. References are made to sections of the water rights and groundwater discharge plan applications to which the experts contributed. A copy of each expert's curriculum vitae is attached.

Richard Blubaugh

Inyan Kara water right application report Sections 1 (all), 2.1, 2.2  
Madison water right application report Sections 1 (all), 2.1, 2.2  
GDP application Sections 1, 2 (all)

Mark Hollenbeck

Inyan Kara water right application report Sections 1 (all), 2.1, 2.2  
Madison water right application report Sections 1 (all), 2.1, 2.2  
GDP application Sections 1, 2 (all)

John Mays

Inyan Kara water right application report Sections 1 (all), 2 (all), 4 (all), 5 (all), 6 (all),  
Plates 2-1, 2-2  
Madison water right application report Sections 1 (all), 2 (all), Appendix A, Appendix B  
GDP application Sections 1, 2 (all), 5 (all), 6.1.2, 6.1.3, 6.1.4, 6.2, 6.3

Frank Lichnovsky

Inyan Kara water right application report Section 3.1, Plates 3-1 through 3-7

Madison water right application report Section 3.1

GDP application Section 3.6, Plates 3.6-1 through 3.6-10, Appendix 3.6-A

Doyle Fritz

Inyan Kara water right application report (all)

Madison water right application report (all)

Errol Lawrence

Inyan Kara water right application report Sections 3.2 and 4.2.3, Appendices A and D

Madison water right application report Section 3.2

Jack Fritz

GDP application (all)

Jim Bonner

Inyan Kara water right application report Table 1-1, Section 3.1, Plates 3-1 through 3-7

Madison water right application report Table 1-1, Section 3.1

GDP application Section 2.6, Plates 3.6-1 through 3.6-10, Appendix 3.6-A

Dick Clement

Inyan Kara water right application report Sections 1 (all), 2.1, 2.2

Madison water right application report Sections 1 (all), 2.1, 2.2

GDP application Sections 1, 2 (all)

Lisa Scheinost

Inyan Kara water right application report Section 4.2.2, Plate 4-1, Appendices B and C

GDP application Section 4 (all), 6.1.1, Appendices 3.7-A, 3.7-B, 4.1-A, 4.1-B, 4.2-A, 4.2-B

Brenda Schladweiller

GDP application Sections 3.2, 3.3, Plates 3.2-1 and 3.3-1, Appendices 3.2-A, 3.3-A

Gwyn McKee

GDP application Sections 3.4.2, 3.4.3, 8.5

DATED this 23rd day of August, 2013.

BENNETT, MAIN & GUBBRUD, P.C.  
Attorneys for Powertech

By Max Main

Max Main  
618 State Street  
Belle Fourche, SD 57717-1489  
(605) 892.2011

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STATE OF SOUTH DAKOTA  
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
WATER MANAGEMENT BOARD

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IN THE MATTER OF WATER PERMIT  
APPLICATIONS 2685-2 AND 2686-2,  
POWERTECH (USA) INC.

CERTIFICATE OF SERVICE

IN THE MATTER OF THE 2012  
GROUNDWATER DISCHARGE PLAN  
APPLICATION SUBMITTED BY POWERTECH  
(USA) INC.

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I, MAX MAIN, as one of the attorneys for Powertech (USA) Inc., do hereby certify that on the 23rd day of August, 2013, I caused the original of the following documents:

1. **POWERTECH'S DISCLOSURE OF EXPERT WITNESSES;** and
2. **CERTIFICATE OF SERVICE,**

to be filed with:           Eric Gronlund  
  DENR  
  Foss Building, 523 E. Capitol Ave.  
  Pierre, SD 57501-3182

and full, true and complete copies of said documents to be served upon the following named persons at their last known mailing addresses, as follows:

Roxanne Giedd  
Deputy Attorney General  
Office of the Attorney General  
1302 E. Hwy. 14, Ste. 1  
Pierre, SD 57501-8501

Michael M. Hickey  
Attorney for Black Hills Wild Horse  
Sanctuary, Dayton Hyde & Susan Watt  
P.O. Box 2670  
Rapid City, SD 57709-2670

Diane Best  
Assistant Attorney General  
Office of the Attorney General  
317 N. Main Ave.  
Sioux Falls, SD 57104

Sabrina King  
917 Wood Ave.  
Rapid City, SD 57701

Gary E. Heckenlaible  
P. O. Box 422  
Rapid City, SD 57709

Bruce Ellison  
Attorney for Clean Water Alliance  
P. O. Box 2508  
Rapid City, SD 57709

Rebecca R. Leas  
6509 Seminole Lane  
Rapid City, SD 57702

Rick Summerville  
6509 Seminole Lane  
Rapid City, SD 57702

Andy Johnson  
610 Nellie Lane  
Spearfish, SD 57783

Cindy Gillis  
Attorney for Oglala Sioux Tribe  
522 7th Street, Suite 202  
Rapid City, SD 57701

Cheryl A. and Roger Rowe  
7950 Dark Canyon  
Rapid City, SD 57702

Douglas C. Uptain  
3213 W. Main #112  
Rapid City, SD 57702

Lilias Jones Jarding  
418 N. 44th St.  
Rapid City, SD 57702

Gena M. Parkhurst  
P. O. Box 1914  
Rapid City, SD 57709

Marvin Kammerer  
22198 Elkvale Rd.  
Rapid City, SD 57701

Cindy Brunson  
11122 Fort Igloo Rd.  
Edgemont, SD 57735

Rodney G. Knudson  
P. O. Box 25  
Hulett, WY 82720

Rebecca M. Lord  
P. O. Box 952  
Hill City, SD 57745

Mark Boddicker  
13850 Battle Creek Rd.  
Hermosa, SD 57744

Dahl H. McLean  
11853 Acorn Ridge Rd.  
Spearfish, SD 57783

Brenda Gamache  
2337 Wilson Ave.  
Hot Springs, SD 57747

Susan R. Henderson  
11507 Hwy 471  
Edgemont, SD 57735

Attn: Doris Ann Mertz  
Custer County Library  
447 Crooks St., Ste. 4  
Custer, SD 57730

Attn: Michelle May  
Woksape Tipi  
Oglala Lakota College  
P. O. Box 310  
Kyle, SD 57752

Attn: Ashley Cortney  
Edgemont Public Library  
P. O. Box A / 412 2nd  
Edgemont, SD 57735

Attn: Jason Walker  
Rapid City Public Library  
610 Quincy Street  
Rapid City, SD 57701

Attn: Cindy Messenger  
Hot Springs Public Library  
2005 Library Drive  
Hot Springs, SD 57747

Angelia Baldwin  
P. O. Box 1914  
Pierpont, SD 57468-0191

Frank Kloucek  
29966 423 Avenue  
Scotland, SD 57059

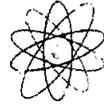
Jill Anawaty  
2804 Willow Avenue  
Rapid City, SD 57701

Richard Draeger  
617 Saint Cloud  
Rapid City, SD 57701

Gwen E. Kaneshiro &  
William M. C Ing  
1446 Evanston Ave.  
Hot Springs, SD 57747

by depositing the same in the United States Mail in Belle Fourche, South Dakota with first class postage thereon fully prepaid, in envelopes addressed as above.

  
MAX MAIN



**POWERTECH (USA) INC.**

Richard F. Clement, Jr., President and CEO

Powertech (USA) Inc. 8910 Adams Street NE Albuquerque, NM 87113  
E-mail: rfclement@powertechuranium.com (505) 821-6007

#### EDUCATION

- B.S., Geology, 1965, Boston College
- M.S., Geology, 1967, University of Vermont

#### SPECIALIZED TRAINING

- Post-graduate courses in Uranium Geology, Exploration Geology, Economic Evaluations and Decision Methods, Colorado School of Mines, 1971-1972
- Post-graduate courses in Hazardous Waste Management, Southern Methodist University, 1990-1993

#### PROFESSIONAL REGISTRATION AND MEMBERSHIPS

- Professional Geologist, Wyoming (1819)
- American Institute of Professional Geologists, Professional Member
- Society for Mining, Metallurgy and Exploration, Inc., Professional Member
- American Association of Petroleum Geologists

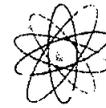
#### PROFESSIONAL EXPERIENCE

- (2006 - Present): Powertech Uranium Corporation and Powertech (USA) Inc., President/CEO
- (2003 - 2006): Lone Mountain Archaeological Services, Inc., Owner/President
- (2000 - 2003): Retired
- (1995 - 2000): HRI, Inc., Albuquerque, NM, President
- (1983 - 1995): Uranium Resources, Inc., V.P. Exploration
- (1967 - 1983): Mobil Oil Corp., including:
  - 1983: Special Projects O&G, Dallas, TX
  - 1978-82: VP Exploration, Mobil Energy Minerals Australia, Inc.
  - 1976-78: Planning Associate, New York City, NY
  - 1975-76: Operations Coordinator, Uranium - all U.S.
  - 1972-74: Associate Regional Geologist, Uranium
  - 1969-71: Senior Field Geologist, Uranium
  - 1967-69: Petroleum Geologist, Oklahoma City, OK
- While serving as V.P. Exploration for Uranium Resources, Inc., supervised geological staff designing drill programs and implementing same for Kingsville Dome ISR Project, Kingsville, TX and Rosita ISR Project, Duval County, TX. During that time the V.P. of Environmental Resources reported to Clement, and during which time the Benevides and Longoria ISR projects were reclaimed and the Kingsville Dome and Rosita Projects were permitted and brought into production.
- While serving as President of HRI Inc., the permitting of the Crownpoint/Churchrock ISR Projects in New Mexico was completed under Clement's direction.
- Throughout Clement's career he was a pioneer in geological interpretation of sedimentary uranium ore bodies. From this basic data the design of efficient and safe wellfields were determined and implemented. This interpretation included the Crownpoint Uranium Project ISR Pilot of Mobil Oil Corp. as a joint venture with the U.S. Tennessee Valley Authority. It also included Uranium Resources, Inc.'s Kingsville Dome and Rosita projects that were mined via the ISR method from 1988 until he left in 2000.

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POWERTECH (USA) INC.

Richard Blubaugh, Vice President of Health, Safety and  
Environmental Resources

Powertech (USA) Inc. 5575 DTC Parkway, Suite 140 Greenwood Village, CO 80111  
E-mail: rblubaugh@powertechuranium.com (303) 790-7528

#### EDUCATION

- B.S., Biology, 1972, University of New Mexico
- MAPA, 1976, University of New Mexico
- Health Physics Certificate, 1977, Associated Universities of Oak Ridge, TN
- University of California, Berkeley, 1970-1971
- New Mexico State University, 1971

#### SPECIALIZED TRAINING

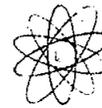
- Numerous conferences, short courses and RSO refresher training courses

#### PROFESSIONAL REGISTRATION AND MEMBERSHIPS

- Radiation Safety Officer (RSO)

#### PROFESSIONAL EXPERIENCE

- (2006 - Present): Powertech (USA) Inc., V.P. of Health, Safety & Environmental Resources
  - (2004 - 06): George C. Brandt, Inc., Denver, CO, Sales
  - (2002 - 04): Atlas Minerals Inc., Denver, CO, Director of Business Development & Governmental Affairs
  - (2000 - 2002): Richard Blubaugh Consulting, Denver, CO, Consultant
  - (1981 - 2000): Atlas Corporation/Atlas Minerals/Atlas Precious Metals, including:
    - 1998 - 2000: Executive Vice President/Director, Denver, CO
    - 1989 - 2000: Vice President - Environmental Health and Safety, Denver, CO
    - 1985 - 1989: Regulatory Affairs Manager, Grand Junction, CO
    - 1981 - 1985: Regulatory Affairs Manager, Moab, UT
  - (1980 - 1981): Federal-American Partners, Riverton, WY, Environmental Manager
  - (1980): Espey, Huston & Associates - Denver, CO, Project Manager
  - (1978 - 1980): Chevron Resources - Panna Maria, TX, Environmental/Safety Coordinator
  - (1977 - 1978): United Nuclear - Churchrock and Grants, NM, Radiation Safety Officer
  - (1972 - 1977): State of New Mexico, Environmental Improvement Agency, Environmental Scientist and Environmental Supervisor, Las Cruces, Roswell, Albuquerque and Grants, NM
- Mr. Blubaugh had formal training in health physics in a concentrated 10-week course at Oak Ridge Associated Universities, sponsored by NRC and the State of NM, and over 25 years practical experience.



**POWERTECH (USA) INC.**

James A. Bonner, Vice President of Geology and Exploration

Powertech (USA) Inc. 8910 Adams Street NE Albuquerque, NM 87113  
E-mail: jbonner@powertechuranium.com (505) 821-6007

#### EDUCATION

- B.S., Geology, University of Wyoming

#### SPECIALIZED TRAINING

- Rocky Mountain Energy Company in-house training on ISR technology

#### PROFESSIONAL REGISTRATION AND MEMBERSHIPS

- Professional Geologist, Wyoming (906)
- American Institute of Professional Geologists, Certified Professional Geologist

#### PROFESSIONAL EXPERIENCE

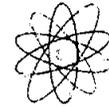
(2006 - Present): Powertech (USA) Inc., V.P. of Geology and Exploration

(2003 - 2006): Gordon Environmental Engineers, Senior Geologist

(1988 - 1998): S.M. Stoller Corporation, Manager

(1971 - 1985): Rocky Mountain Energy Company, a subsidiary of Union Pacific Railroad,  
Exploration Manager

- While at Powertech (USA) Inc., Mr. Bonner directed exploration drilling and land acquisition for projects in New Mexico, Colorado, South Dakota, and Wyoming.
- While at S.M. Stoller Corporation, Mr. Bonner provided regulatory compliance services to government and private sector clients.
- Worked on uranium exploration and development programs for Rocky Mountain Energy Company, a subsidiary of Union Pacific Railroad, including:
  - o Involved in the discovery and development drilling of the deposit that became the Bear Creek Uranium Mine, Converse County, Wyoming, in 1977.
  - o Involved in exploration drilling on multiple ISR projects including Reno Creek, Wyoming, which is currently being permitted through the U.S. Nuclear Regulatory Commission as an ISR facility.
  - o Provided discovery, development drilling and geologic input into the design and well field construction of an experimental ISR pilot program on the Nine Mile Lake Project, Natrona County, Wyoming.
  - o As Regional Exploration Manager for the Southwest United States, directed breccia pipe exploration programs in Utah and Arizona.
  - o While in the same position, directed discovery and exploration drilling of the Centennial Uranium Deposit in northeastern Colorado.



**POWERTECH (USA) INC.**

**Mark Hollenbeck, Project Manager**

Powertech (USA) Inc. 310 2<sup>nd</sup> Avenue Edgemont, SD 57735  
E-mail: mhollenbeck@powertechuranium.com (605) 662-8308

**EDUCATION**

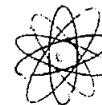
- B.S., Chemical Engineering, South Dakota School of Mines and Technology

**PROFESSIONAL REGISTRATION AND MEMBERSHIPS**

- Professional Engineer, South Dakota (4516)
- National Society of Professional Engineers (Member and Past Legislative Director)
- South Dakota Engineering Society (Member and Past Legislative Director)
- Rapid City Jaycees (Past President)
- Black Hills Engineering Society
- Edgemont Chamber of Commerce (Past President)
- Southern Hills Economic Development Corporation (Director)

**PROFESSIONAL EXPERIENCE**

- (2007 - Present): Powertech (USA) Inc., Project Manager
- (2000 - Present): Self-Employed Rancher
- (2000 - 2007): Self-Employed Construction
- (2001 - 2006): City of Edgemont, SD, Mayor
- (1996 - 2006): Lobbyist
- (1998 - 1999): American Petroleum Institute, SD Office, Executive Director
- (1993 - 1998): City of Fort Pierre, SD, Director of Public Works
- (1982 - 1993): Montana Dakota Utilities, Black Hills Division, including:
  - 1985 - 1993: Division Engineer
  - 1982 - 1985: Project Engineer



**POWERTECH (USA) INC.**

**John Mays, Vice President of Engineering**

Powertech (USA) Inc. 5575 DTC Parkway, Suite 140 Greenwood Village, CO 80111  
E-mail: jmays@powertechuranium.com (303) 790-7528

### EDUCATION

- B.S., Chemical Engineering and Petroleum Refining, 1992, Colorado School of Mines

### SPECIALIZED TRAINING

- "Introduction to MICROMINE" – 2009, Micromine
- "Eleventh Annual Resources Drilling Fundamentals Training Seminar 2007" – GEFCO, Enid, OK
- "Applied Groundwater Flow & Contaminant Transport Modeling" – Waterloo Hydrogeologic
- "Techbase –Basic Training Course" – Techbase International
- "The MODFLOW Course and Model Calibration using PEST" – National Ground Water Association

### PROFESSIONAL REGISTRATION

- Professional Engineer, South Dakota (11295)
- Professional Engineer, Colorado (45996)

### PROFESSIONAL EXPERIENCE

- (2008 - Present): Powertech (USA) Inc., V.P. of Engineering
  - (2006 - 2008): UrAsia Energy Ltd. (Akdala and South Inkai Projects [Joint Venture Betpak Dala] and Kharasan-1 Project [Joint Venture Kyzylkum), Almaty, Kazakhstan, Chief In Situ Mining Engineer/Vice President
  - (2003 - 2006): Searles Valley Minerals, Trona, CA, Senior Mining Engineer/Superintendent of Lake Development
  - (2002 - 2003): Power Resources, Inc. (Smith Ranch/Highland Uranium Project), Douglas, WY, Superintendent of Well Field Construction
  - (2001 - 2002): Rio Algom Mining Corp. (Smith Ranch Facility), Douglas, WY, Well Field Engineer
  - (2000 - 2001): Rio Algom Mining Corp. (Smith Ranch Facility), Douglas, WY, Restoration Engineer
  - (1996 - 2000): Rio Algom Mining Corp. (Quivira Mining Co.), Grants, NM, Production Engineer
  - (1995 - 1996): Energy Fuels Nuclear, Inc. (White Mesa Mill), Blanding, UT, Plant Operator
  - (1993 - 1995): Energy Fuels Nuclear, Inc. (Reno Creek Project), Gillette, WY, Junior Engineer
  - (1992): Colorado School of Mines, Department of Economic Geology, Assistant
  - (1988): Everest Minerals Co., Highland Uranium Project, Maintenance Technician
  - (1986): Everest Minerals Co., Corpus Christi, TX, Lab Technician
- Extensive, direct experience in construction, operation and reclamation of ISR facilities.
  - Mr. Mays at times has been directly responsible for managing ISR well field operations to maintain compliance with groundwater monitoring requirements.

# DOYL M. FRITZ, P.E.

## SENIOR TECHNICAL ADVISOR

### REGISTRATIONS

#### Professional Engineer

Wyoming No. 1467  
Colorado No. 11589

### EDUCATION

M.S., Civil Engineering, Arizona State University, 1969

B.S., Civil Engineering, University of Wyoming, 1968

### PROFESSIONAL

#### MEMBERSHIPS

National Advisory Board, College of Engineering and Applied Sciences, University of Wyoming, 2008-2012, term Chairman, 2010-2012

Life Member, American Society of Civil Engineers

#### HONORS AND AWARDS

Wyoming Chapter of Tau Beta Pi, Wyoming Eminent Engineer, 2001

3-time recipient of Wyoming Mining Association Professional of the Year

Partner in Environmental Excellence, Jacobs Patch Mine

#### SPECIALIZED TRAINING

NRCSC Certified Technical Service Provider

Partnering in Construction Loss Preventor Training

#### PRESENTATIONS AND

#### PUBLICATIONS

Environmental Data Management, Society of Mining Engineers, Phoenix, Arizona

Probable Hydrologic Consequences and Hydrologic Reclamation, OSM Interactive Forum on Bond Release

Permitting of Drainage Reservoirs, Strategic Research Institute Seminar on CBM Water Management Strategies

Doyl M. Fritz has over 40 years' professional experience in civil engineering, hydrologic investigations, hydraulic design, water rights, water supply and wastewater disposal studies, and surface mine permitting and regulation. Mr. Fritz has broad experience managing a variety of civil and environmental engineering projects. He co-founded WWC and has helped the firm grow into one of Wyoming's largest consulting engineering firms. He is past president of American Council of Engineering Companies of Wyoming, former National Director of American Council of Engineering Companies, and past president of Wyoming Section American Society of Civil Engineers.

#### PROFESSIONAL EXPERIENCE

Senior Technical Advisor, WWC Engineering, Sheridan, Wyoming, 2011 - Present

Principal, WWC Engineering, Sheridan, Wyoming, 1980 - 2011

Principal, Hydrology Associates, Inc., Sheridan, Wyoming, 1978 - 1980

District Engineer for Northeastern Wyoming, Wyoming Department of Environmental Quality, Land Quality Division, Sheridan, Wyoming, 1976 - 1978

Consulting Engineer, HKM Engineers, Billings, Montana, 1973 - 1976

Water Resource Engineer, Wyoming State Engineer's Office, Water Planning Program, Cheyenne, Wyoming, 1970 - 1973.

Research Engineer, International Plastics, Inc., Tempe, Arizona, Summer 1969

#### PROJECT EXPERIENCE

Expert witness in trials and administrative hearings on matters dealing with water rights, engineering design, hydraulic structures for roads and railroads, mineral disputes, environmental and hydrologic impacts, and regulatory enforcement actions.

Prepared and defended in administrative hearings various petitions to the Wyoming Board of Control to change use, place of use, point of diversion and means of conveyance for water rights, including redescription of territorial blanket appropriations.

Design engineer on twenty major earthfill dams.

Calculated state allocations of unappropriated and developable water under the terms of the Yellowstone River Compact for the Tongue and Powder Rivers. Mapped irrigated lands in Wyoming's portion of these basins and estimated consumptive uses of water.

Primary author of numerous NEPA compliance documents (Environmental Impact Statements and Environmental Assessments) working as a third-party contractor for various federal agencies, including the Bureau of Land Management and the Interstate Commerce Commission.

Designed hydrologic control structures for surface mines, including flood control dams, sediment control facilities, aquifer dewatering systems, and post-reclamation drainage systems.

Project manager for design of mine plans and reclamation plans for numerous major surface coal mines in the Powder River Basin in Wyoming and Montana.

Primary author of a report for U.S. Congress Office of Technology Assessment on hydrologic evaluation and reclamation technologies for western surface coal mining.

Principal in charge of road design projects for state, county, and private clients.

Principal engineer for hydrology, hydraulics, scour analyses and structure selection reports for new bridges and bridge replacements.

Principal investigator on Alluvial Valley Floor investigations in the western U.S. and Australia, including studies to quantify presence and extent of AVFs, identify hydrologic functions, and prepare plans and designs for the protection and restoration of essential hydrologic functions

Prepared numerous water management plans and discharge permit applications for coal bed natural gas operations.

# JACK W. FRITZ, P.E.

## SENIOR ENVIRONMENTAL ENGINEER/PROJECT MANAGER

### REGISTRATIONS

#### Professional Engineer

Wyoming No. 10092

Idaho No. 12096

South Dakota No. 11037

### EDUCATION

B.S. with Honors

Chemical Engineering

University of Wyoming, 1998

### HONORS AND AWARDS

Project Manager and Lead

Designer for a novel

wastewater treatment and

disposal project awarded

honorable mention for 2006

Wyoming Engineering Society

President's Project of the Year

Award

### SPECIALIZED TRAINING

NRC/NMA Uranium Recovery

Workshops, 2009-2012

Section 106 Navigator, 2014

NRC SEIS Lessons Learned

Workshop, 2011

UW Public Forum on Uranium

ISR, 2010

Essentials of Hydraulics for Civil

Engineers and Designers, UW

Madison, 2008

Vadose Zone Hydrology:

Principles and Practice, 2007

Produced Water Workshop,

2006

Current HAZWOPER (OSHA) and

MSHA certification

Jack Fritz is a professional environmental engineer specializing in environmental permitting. Mr. Fritz has served as lead author and project manager on permit applications submitted to the U.S. Nuclear Regulatory Commission, Bureau of Land Management, U.S. Environmental Protection Agency and state regulatory agencies in Wyoming, Idaho, Montana and South Dakota. Mr. Fritz has extensive experience in uranium *in-situ* recovery permitting, coal bed natural gas permitting, and designing and permitting public water supplies and wastewater treatment and disposal systems.

### PROFESSIONAL EXPERIENCE

Senior Environmental Engineer/Project Manager, WWC Engineering, Sheridan, Wyoming, 2000 - Present

Environmental Engineer, SECOR International Incorporated, Fort Collins, Colorado, 1998 - 2000

Research Assistant, UW Coal Utilization Research Group, 1997

### PROJECT EXPERIENCE

Project manager/permit coordinator for an ISR uranium permit application on the western flank of the Black Hills Uplift. Responsible for leading an interdisciplinary team to prepare technical comment responses to the NRC, modifying the NRC Technical Report and EPA Class III UIC permit applications, and preparing numerous state permit applications.

Lead author of an Environmental Report supporting an NRC license application for an ISR uranium permit application in northeastern Wyoming. Responsibilities included evaluating the affected environment and potential impacts, incorporating environmental baseline studies, preparing an electronic document meeting NRC criteria for electronic submission, and serving as primary author for responses to requests for additional information.

Project manager or lead designer for 13 public water supply projects in Wyoming, Idaho and Montana. Responsibilities included aquifer testing, specifying well pumps, and designing and permitting water treatment, storage and distribution systems. Water treatment systems included ultraviolet or chlorine disinfection, methane gas removal, hydrogen sulfide treatment, iron removal, and corrosion control.

Project manager for methane gas evaluation in public water supply wells in the Federal District of Mexico. Responsibilities included sampling free and dissolved methane in the gathering system and treatment plant, evaluating the methane safety and operational risks, and recommending 16 potential solutions. Portions of design report were used in a presentation to the President of Mexico.

Project manager or lead designer for 17 commercial or public domestic wastewater projects in Wyoming, Idaho and Montana. Treatment systems included septic tanks, aerated lagoons, recirculating sand or geotextile filters, and extended aeration package plants. Effluent disposal included gravity drainfields, pressure-dosed or mounded drainfields, managed irrigation, and surface discharge to streams or constructed wetlands.

Project manager for hydraulic analysis of a major produced water pipeline network. The project involved evaluating pipeline materials, alignments, and pumping, pressure reducing, and air vent locations under various flow scenarios using WaterCAD.

Designed, permitted and tested produced water treatment facilities that achieved long-term compliance for sodium adsorption ratio (SAR) and barium effluent limits.

Quality Assurance/Quality Control Manager for water sampling database. Responsibilities included evaluating and recommending changes to database organization, migrating data into a new environmental data management system, reviewing database content and monitoring quality control in client updates.

Assessed potential impacts of surface coal mines and natural gas extraction facilities for NEPA compliance documents including Environmental Assessments (EAs) and Environmental Impact Statements (EISs).

**Frank Lichnovsky, P.G.**  
***Chief Geologist***

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Mr. Lichnovsky has been involved in uranium exploration and development activities for more than 40 years in both the United States and Australia. During the course of his career, he has directed geology and well field work at a total of eight in situ uranium mines, seven in the United States (Lamprecht, Bruni, Irrigary, Trevino, Kingsville, La Rosita, and Vasquez) and one in Australia (Beverley). His responsibilities have included conducting and overseeing exploration, drilling, casing, electrical, piping, and grade control activities for two to five well fields per mine, with between approximately 40 and 300 wells per well field. Mr. Lichnovsky has supervised all phases of field activities, including drilling programs, design and installation of groundwater monitoring systems, and assessment of geologic parameters. He is a Registered Member of the Society of Mining, Metallurgy, and Exploration, a Registered Professional Geologist in Wyoming, 2002, and a Registered Professional Geoscientist in Texas, 2003. He received his BSc. in Geology in 1967 from Sul Ross State University in Alpine, Texas. Mr. Lichnovsky is the Chief Geologist at Powertech (USA) Inc.

# ERROL P. LAWRENCE, P.G.; SENIOR HYDROLOGIST

Petrotek Engineering Corporation 5935 South Zang St., Suite 200 Littleton, Colorado 80127 USA  
E-mail: [elawrence@petrotek.com](mailto:elawrence@petrotek.com) Voice: (303) 290-9414 ext. 18 Fax: (303) 290-9580

## EDUCATION

- M.S., Engineering Geology, Colorado School of Mines
- B.S., Geology, Northern Arizona University

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## PROFESSIONAL REGISTRATION AND MEMBERSHIPS

- Registered Professional Geologist, Wyoming and Texas
- National Ground Water Association
- American Institute of Professional Geologists
- National Water Well Association

## AREAS OF EXPERTISE

- Groundwater Flow and Contaminant Transport Modeling
- Injection Well Transport Modeling and Permitting
- Groundwater Contamination Investigation and Analysis
- Nuclear Regulatory Commission and State Permits for Insitu Recovery (ISR) Uranium Operations
- Environmental Litigation Support
- Groundwater Remediation System Design & Evaluation
- Aquifer Monitoring System Design
- RCRA, including: RCRA Facility Investigation (RFI), Interim Corrective Measures (ICM); Corrective Measures Study (CMS)

## PROFESSIONAL EXPERIENCE

(2004 - Present) Petrotek Engineering Corporation, *Senior Hydrogeologist/Permitting Specialist*  
(1997 - 2005) HydroSolutions, Lakewood, CO, *Hydrogeologic Consultant*  
(1990 - 1996) Geraghty & Miller, Inc., Denver, CO, *Project Scientist*  
(1988 - 1990) U.S. Geologic Survey, Lakewood, CO, *Geologist*  
(1980 - 1987) Pogo Producing Company, Houston, TX, *Exploration Geologist*  
(1979-1980) Dresser Atlas, Houston TX, *Wireline Engineer*

- Senior Hydrogeologist for existing and developing uranium ISR projects in Nebraska, Texas, Wyoming and South Dakota, US and Kazakhstan, Paraguay and Turkey. Design and perform pump tests to assess site hydrogeology. Perform numerical modeling for wellfield layout, pattern optimization and water balance. Prepare geologic and hydrologic sections for NRC (Technical and Environmental Reports) and State Permits. Support permits/renewals for current ISR operators and junior development projects. Perform numerical modeling to assess and optimize groundwater restoration operations in Texas and Wyoming.
- Perform investigations of flow and contaminant transport at injection well facilities. Perform numerical modeling in support of no-migration petitions for deep injection.
- Provided consulting services for hydrologic investigations and groundwater flow and contaminant

***Petrotek***

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transport modeling including the development of groundwater compliance programs for several mining/milling facilities, development of numerical models in support of Alternate Concentration Limit applications, review and assessment of groundwater remediation programs, development of soil screening guidelines for the state of New Mexico, and third party review of groundwater flow models.

- Management, design and implementation of site investigations, groundwater monitoring programs, and remedial actions for numerous projects. Developed analytical and numerical groundwater flow and contaminant transport models for evaluating remedial alternatives, risk assessments and litigation support. Primary author on numerous site characterization and assessment reports and workplans. Routinely involved in negotiations with state and federal regulatory agencies and presentations to the public regarding groundwater investigation, assessment and remediation.
- Conducted research to evaluate hydrologic, geologic and geochemical controls of the occurrence of radon and its parent radionuclides in fractured groundwater systems. Key components included conductance and analysis of pumping tests, modeling of geochemical reactions along groundwater flow paths and development of a model for estimating radon contribution to indoor air from domestic water supplies
- Identified and delineated oil and gas prospects using well logs, seismic data and reservoir engineering techniques and presented prospects to management, partners and potential investors for approval of lease acquisitions. Served as an expert witness in unitization proceedings involving oil and gas properties.

### PUBLICATIONS/PRESENTATIONS

- Lawrence E.P., "Groundwater Restoration Issues for the Uranium Industry", presentation at the National Mining Association Uranium Recovery Workshop, May, 2013.
- Lawrence E.P., Cooper, K.J., Demuth, H.P., Demuth, H.P., "A Method for Calculating an Aquifer Exemption Boundary for Uranium Insitu Recovery Projects' presented at the U2011 Uranium Symposium and Trade Show, Casper, Wyoming, September 21, 2011.
- Lawrence E.P., Demuth, H.P., Cooper, K.J., "Application of Numerical Groundwater Flow Models to Uranium ISR Projects...What Can We Learn From Them?" presentation at the National Mining Association/Nuclear Regulatory Commission Uranium Recovery Workshop, May 25, 2011.
- Lawrence E.P., Demuth, H.P., Cooper, K.J., Wichers, D., "Use of Hydrologic Tests and Numeric Models to Predict Hydraulic Behavior of an Unconfined Aquifer During Insitu Recovery of Uranium" presentation at the *National Groundwater Association 2010 Groundwater Summit*, Denver, Colorado, USA. April 2010.
- Lawrence E.P., Cooper, K.J., Demuth, H.P., "Groundwater Modeling Application to Uranium Insitu Recovery Projects: Relationship of Sweep Efficiency to Pore Volume Removal" presentation at the *Global Uranium Symposium 2009*, Keystone, Colorado, USA. May 2009.

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- Heili, W. and Lawrence E.P., 2008. "Groundwater Restoration Results and Long Term Protection of USDW's: A Case Study of the Irigaray Uranium Project" presentation at the Colorado State University Health Physics Uranium Symposium, Ft. Collins, Colorado. February 2, 2008.
- Cooper, K.J., Demuth, H.P., and Lawrence, E.P., 2008. "Overview of Operational Issues Associated with Groundwater, Restoration, and Wastewater Management at ISR/ISL Facilities" presentation at the 2008 Ground Water Protection Council Winter Underground Injection Control Meeting, January 15, 2008; New Orleans, Louisiana.
- Lawrence, E. P., Wichers, D. 2007. "Groundwater Modeling Supporting Aquifer Restoration at a Uranium ISR Facility, Wyoming." In Proceedings of the *Global Uranium Symposium 2007*, Corpus Christi, Colorado, USA. May 2007
- Lawrence, E. P., Erskine, D.W., Yancey, C.L. and Sealy, C.O., 1998. "Evaluation of Groundwater Conditions at a Vanadium Mine Site near Hot Springs, Arkansas." in Proceedings of the Fifth International Conference on Tailings and Mine Waste '98, Ft Collins, Colorado. January 26-28, 1998.
- Lawrence, E. P., Erskine, D.W. and Sealy, C., 1997. "Evaluation of Groundwater Remediation at a Colorado Uranium Mill Site." in Proceedings of the Fourth International Conference on Tailings and Mine Waste '97, Ft Collins, Colorado. January 13-17, 1997.
- Lawrence, E. P., Wanty, R. B., and Briggs, P. H., 1989. "Hydrologic and Geochemical Processes Governing the Distribution of U-238 Series Radionuclides in Ground Water near Conifer, Colorado." Presented at the Geological Society of America annual meeting in St. Louis, Missouri, 1989. Abstracts with Programs 21(6), a144.
- Lawrence, E. P., Wanty, R. B., and Nyberg, P., 1990. Contribution of Radon-222 in Domestic Water Supplies to Radon-222 in Indoor Air in Homes in Conifer, Colorado. Health Physics, Vol. 62, No. 2, 1992. This paper received first place in the Geraghty & Miller Technical Paper Award Program, 1992.
- Lawrence, E. P., and Wanty, R. B. "Hydrogeology and Aqueous Geochemistry, Conifer, Colorado", U.S.G.S. Miscellaneous Field Studies Map, MF 2165, 1991.
- Lawrence, E. P., 1990. "Hydrogeologic and Geochemical Processes Affecting the Distribution of Radon-222 and its Parent Radionuclides in Ground Water, Conifer, Colorado". Colorado School of Mines Master's Thesis T-3923.
- Lawrence, E. P., Poeter, E., and Wanty, R. B., 1991. "Geohydrologic, Geochemical and Geologic Controls on the Occurrence of Radon in Ground Water near Conifer, Colorado, USA." Journal of Hydrology, Vol. 127, 1991, pp. 367-386. This paper received third place in the Geraghty & Miller Technical Paper Award Program, 1991.
- Wanty, R. B., Lawrence, E. P., and Gunderson, C. S., 1990. "A Theoretical Model for the Flux of Radon-222 from Rock to Ground Water", Geological Society of America, Special Papers Series, 1990.
- Erskine, D.W., Yancey, C.L., Lawrence, E. P., and Sealy, C.O., 1998. "Naturally Occurring Acidity in the vicinity of a Sulfide Ore Deposit: Wilson Springs Mine, Hot Springs, Arkansas." in

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Proceedings of the Fifth International Conference on Tailings and Mine Waste '98, Ft Collins, Colorado. January 26-28, 1998.

- Erskine, D.W., Lawrence, E. P., and Yancey, C.L., 1997. "Natural Attenuation of Hazardous Constituents in Groundwater at Uranium Mill Tailing Sites." in Proceedings of the Fourth International Conference on Tailings and Mine Waste '97, Ft Collins, Colorado. January 13-17, 1997.

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## GWYN MCKEE

Gwyn is the President of and Principal Wildlife Biologist for Thunderbird Wildlife Consulting, Inc. She serves as a primary contact for both the energy industry and regulators (local, state, federal) in the Northern Great Plains regarding project requirements and design, impact assessment, and mitigation strategies. Projects range from small, single-day site assessments to large, multi-year efforts. Gwyn prepares and/or reviews technical reports and documents used by agencies during the permitting process, including contributing to and/or managing environmental impact statements (EISs) and environmental assessments (EAs). She also occasionally serves as a peer review referee or co-author for professional journals, or an invited speaker at professional meetings.

Gwyn manages a staff of biologists that provides wildlife inventory, monitoring, and other consulting services to several energy clients. She has extensive experience conducting aerial and ground surveys for a wide variety of wildlife species in the Northern Great Plains, Midwest, and the Alaskan wilderness. In addition, her specialized experience includes: raptor ecology and mitigation; trapping, radio-marking, and tracking various grouse and raptor species; and conducting clearance surveys for black-footed ferrets and swift fox.

Her recent relevant experience includes: data collection, resource assessments, impact analyses, and/or project management for multiple Bureau of Land Management (BLM) and US Forest Service (USFS) National Environmental Policy Act (NEPA) documents; mitigation planning and implementation; and participation in development of a joint Candidate Conservation Agreement with Assurances/Candidate Conservation Agreement (CCAA/CCA) for the greater sage-grouse and seven other species of concern in northeast Wyoming. Gwyn is well versed in the regulatory processes associated with the Endangered Species Act, Migratory Bird Treaty Act, and Bald and Golden Eagle Protection Act. Her service on numerous local and statewide boards has further enhanced her knowledge and expertise regarding impact analysis and mitigation options for terrestrial habitats and species.

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### Years of Professional Experience

- Total: 27 years
  - With TWC: 20 years
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### Current Location

- Gillette, Wyoming
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### Education

- MS, Wildlife Management/Ecology, University of Missouri, Columbia, 1995
  - BS, Wildlife Management, University of Missouri, Columbia, 1982
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### Professional Standing(s) and Certifications

- Considered a Qualified Third Party NEPA Contractor by the BLM and US Forest Service
  - Considered a Qualified Wildlife Biologist by the USFWS, USFS, BLM, and WGFD
  - Published author/co-author in, and peer reviewer for, professional journals
  - Member of The Wildlife Society & Raptor Research Foundation
  - Black-footed ferret surveys, USFWS
-

## PROJECT EXPERIENCE

### **EISs and EAs, Casper High Plains District Office—BLM, WY and Douglas Ranger District—USFS, WY**

Principal Biologist/Project Manager. Third-party Project Manager for a recently completed coal lease EIS with the BLM High Plains District Office in Casper, Wyoming and for multiple coal-related EAs and an EIS with the USFS Douglas Ranger District in Douglas, Wyoming. For all projects, coordinated and led all agency assigned aspects of the process from initial kick-off meetings through printing of the final documents, including: regular communications with resource specialists (internal and subcontractors), agency project managers, and project applicants; identifying and addressing data gaps (either directly or by engaging internal or subcontractor resource specialists); and either reviewing/co-editing (BLM) or preparing/editing (USFS) the entire document to ensure completeness and “one-voice”, among others. Collected and/or supervised collection of wildlife field data for all projects following current agency protocols and prepared the associated resource assessments and impact analyses (i.e., text and maps) for NEPA documents, including any necessary supporting summary reports.

#### **EIS/EA Project Manager List:**

**North Antelope Rochelle Mine: Mackey Road Relocation-USFS EIS, Campbell County, WY 2013**

**Antelope Mine: Plant Expansion (Railroad Spur)-USFS EA, Converse County, WY 2013**

**School Creek Mine: Ancillary Facilities—USFS EA, Campbell County, WY 2012**

**Buckskin Mine: Hay Creek II Coal Lease by Application—BLM EIS, Campbell County, WY 2011 (BLM plans to use EIS as future template for coal projects)**

**North Antelope Rochelle Mine North Pit 69kV Power Line Relocation and School Creek Mine 69kV Power Line Spur-USFS EA, Campbell County, WY 2010**

**North Antelope Rochelle Mine: Antelope Road Relocation-USFS EA, Campbell County, WY 2009**

Also provided wildlife resource text and impact analyses for six (6) additional BLM coal EISs and one (1) additional BLM coal EA, and reviewed wildlife text and analysis prepared by a different contractor for one (1) BLM coal EIS (2000-present). These projects are not listed above but are available on the BLM Wyoming NEPA web link for the Casper region.

**NEPA-Related Documents: Buffalo, Lander, and Casper Field Offices—BLM, WY; Buffalo Field Office—USFWS, WY; Douglas Ranger District—USFS, WY; Nuclear Regulatory Commission-WY, SD; Rural Utility Services-WY**

Principal Biologist/Data Collection and Impact Analysis

Collects relevant field data and prepares and/or reviews text and maps used in numerous NEPA support documents such as Biological Assessments, Biological Evaluations, Management Indicator Species appraisals, and Technical and Environmental Reports. These documents are incorporated into permit application packages submitted to the BLM, USFWS, USFS, Nuclear Regulatory Commission, and Rural Utility Services for a variety of energy-related and utility projects. 2000 to present.

**Surface Mine Wildlife Monitoring and Reporting—WY, SD, MT**

Principal Biologist/Data Collection and Reporting

Gwyn designs, manages, and conducts baseline wildlife inventories and annual wildlife monitoring at new and existing surface mines, respectively, and for expansions of existing mine properties. The overall coverage area has included more than 700 mi<sup>2</sup> at multiple surface coal, bentonite, and gold mines and in situ uranium projects in Wyoming, South Dakota, and Montana. Surveys encompass a variety of terrestrial vertebrates, including threatened and endangered and sensitive species (USFWS, BLM, USFS, and WGFD species), big game, lagomorphs, small mammal trapping, raptors, sage-grouse and other upland game birds, waterfowl, shorebirds, songbirds, and herptiles. Baseline and annual reports are submitted to federal and state agencies as part of permit application or amendment packages. 1994-present.

**Impact Assessments, and Mitigation Planning and Implementation for Terrestrial Wildlife—WY, SD, MT**

Principal Biologist/Data Collection and Impact Analysis

Gwyn routinely prepares USFWS-approved Avian Monitoring and Mitigation Plans for surface coal operators in northeast Wyoming, and similar mitigation plans for other energy-related projects in Wyoming, Montana, and South Dakota. She develops, modifies, and/or implements specific mitigation measures designed to minimize or mitigate impacts on wildlife from a wide variety of surface mine and utility projects. Recent special projects include management of sage-grouse telemetry projects in the Powder River and Big Horn basins, and prairie dog translocations to recreate mountain plover nesting habitat at a surface coal mine in northeast Wyoming. Gwyn also works with a group of private landowners as both a field biologist and in an advisory role during their ongoing development of a landscape-scale CCAA/CCA for the greater sage-grouse and seven other vertebrate species of concern in northeast Wyoming. These efforts have contributed to numerous state, regional, and national awards for the project proponents. 2000-present.

**Electric Transmission and Distribution Projects—Powder River Energy Corporation (primary contractor) and Basin Electric (subcontractor), Powder River Basin, Wyoming**

Principal Biologist/Data Collection, Reporting, and Impact Analysis. Manage and conduct biological inventories, habitat assessments, monitoring, and mitigation projects for T&E species and other vertebrates of concern for various transmission and distribution line projects for two electric coops operating in northeast Wyoming. Project size has ranged from 0.5 to 75 right-of-way miles. Develop and implement mitigation strategies for active and inactive raptor nests during and post construction. Prepare technical reports (including impact assessments) and mitigation plans; obtain, implement, and manage necessary state and federal permits. 2002 to present.

**Sage-grouse Research—North Antelope Rochelle Mine, Campbell and Weston Counties, Wyoming**

Principal Biologist/Project Manager. Captured, radio-collared, and tracked greater sage-grouse for voluntary, multi-year project in southern Campbell County and southwestern Weston County, Wyoming. This project provided current data regarding the home range, survival, nesting success, and general habitat use of grouse in a landscape heavily impacted by coal mining and oil and gas development. Efforts were expanded onto nearby private lands to assist ranchers with proactive management practices for this species. Results were summarized annually in a technical report provided to all interested entities (corporate, government) in the region. 2004-2008; project ongoing and expanded under ICF.

**Black-tailed Prairie Dog Translocations for Mountain Plover Habitat Mitigation—Antelope Coal Mine, Converse County, Wyoming**

Principal Biologist/Project Manager. Initiated and implemented a project to create mountain plover habitat in reclamation to mitigate the loss of habitat during surface coal mining. Constructed burrow chambers in artificial prairie dog colonies covering approximately 10 non-contiguous acres. Translocated 138 prairie dogs (males, females, juveniles) into the colonies over 5-year period; project is ongoing. Monitor prairie dog presence, reproduction, and expansion in the colonies annually, and survey for mountain plovers. This project garnered four state awards and one national award for the Antelope Coal Mine, including the Excellence in Surface Coal Mining & Reclamation National Award from the Office of Surface Mining in 2003. 2000-present.

**Breeding Bird Surveys and Aerial Raptor Nest Searches—Thunder Basin Grasslands Prairie Ecosystem Association (Association), Powder River Basin, Wyoming**

Managed and conducted annual breeding bird surveys at multiple properties for members of the Association using point count and belt transect methods. Conducted aerial raptor nest searches in targeted years. Project areas encompassed a sizeable portion of northern Converse County. Prepared maps and technical reports summarizing survey results for targeted project areas and incorporating results from comparable survey efforts elsewhere in the region. 2009-2012.

### **Black-footed Ferret Surveys—Multiple Clients (Coal, Pipelines, Railroad), Wyoming and Montana**

Senior Biologist/Project Manager. Supervised and conducted snow tracking and spotlight surveys for black-footed ferrets prior to potential habitat disturbance. Projects have included surface coal and bentonite mines, natural gas pipelines, CO<sub>2</sub> pipelines, a railroad, and a coal-fired power plant in Wyoming and southeast Montana. Related survey work includes mapping prairie dog colonies and determining burrow density, coordinating with federal regulating agencies, and report preparation. USFWS certified for black-footed ferret surveys. 1994-2004 (surveys no longer required in NE Wyoming by early 2004).

### **Swift Fox Surveys—National Forest System Lands, NE Wyoming**

Principal Biologist/Project Manager. Considered by the USFS as qualified to conduct track plate and nocturnal spotlight surveys for swift fox. Projects have included clearance surveys for overhead power line projects and surface coal mines on the TBNG in northeast Wyoming. Survey efforts and results were fully documented in the Biological Evaluations submitted to the Douglas Ranger District of the USFS. In addition to conducting the surveys, efforts included coordinating with the USFS, the local WGFD game warden, and the local Sheriff's Department to notify all relevant parties of spotlighting activity. 2002-present, as required.

### **Road and Utility (Water/Sewer) Projects and Water Treatment Plant—Northeast Wyoming**

Supervised and conducted all required wildlife surveys and habitat assessments for vertebrate T&E species and other wildlife species of concern prior to construction of various water, sewer (collection and trunk lines), road, and water treatment plant projects in the cities of Gillette and Pine Haven in northeast Wyoming. Prepared summary reports and maps for submittal to state and federal regulators. 1994-present.

### **Coal Bed Natural Gas Biological Inventories—Multiple Clients, Powder River Basin, Wyoming**

Principal Biologist/Project Manager. Supervised and conducted biological inventories, habitat assessments, wildlife inventories and monitoring, and mitigation projects for coal bed natural gas developments in northeast Wyoming. Target species included bald eagles, sage-grouse, raptors, mountain plovers, prairie dogs, and a variety of other BLM special-status species. Prepared appropriate reports for agency review. BLM used report format as model for other contractors to follow. 2002-2004.

### **Stormwater Management—Natural Gas Clients, Powder River Basin, Wyoming**

Conducted pre-construction wildlife clearance surveys as well as monitoring for all phases of pipeline construction to document proper use of stormwater management structures and post-construction re-vegetation. Prepared stormwater plans, installed and maintained stormwater control structures. 2007-2008.

### **Other Related Experience (1980-present)**

Worked for and with various organizations across multiple states: trapped more than 150 migrating and resident raptors of 7 species using 5 different methods; banded more than 300 raptors; radio-collared/tracked more than 50 raptors; supervised reintroduction programs for more than 150 raptors (bald eagles and barn owls) in two states; identified/counted more than 1,350 migrating raptors of 17 species over 5 volunteer days; raptor rehabilitation, rearing, reintroduction, flight training, handling (eagles, vultures, hawks, falcons, accipiters, owls); trapped, banded, collared, radio-tracked more than 70 prairie grouse of 2 species; time-budget observations of nesting bald and golden eagles; vegetation sampling using various techniques in habitats ranging from the Northern Great Plains to the boreal forest of central Alaska; basic water chemistry and aquatic invertebrate sampling. Assisted local electric cooperative with creating voluntary raptor and sage-grouse protection plans. Currently assisting local group of property owners with development of a landscape scale joint CCAA/CCA for the greater sage-grouse and seven other species of concern encompassing six counties in northeast Wyoming and southeast Montana.

### **PUBLICATIONS AND PRESENTATIONS (in descending order)**

- Fedy, B.C., K.E. Doherty, C.L. Aldridge, M. O'Donnell, J.L. Beck, B. Bedrosian, M.J. Holloran, G.D. Johnson, N.W. Kaczor, C.P. Kirol, C.A. Mandich, D. Marshall, G. McKee, C. Olson, A. Pratt, and C.C. Swanson. 2013. Habitat Prioritization Across Large Landscapes, Multiple Seasons, and Novel Areas: An Example Using Greater Sage-Grouse in Wyoming (in review).
- McKee, G., P. Griswold, and M. O'Rourke. 2013. Sustaining Raptor Populations at the North Antelope Rochelle Mine in Northeast Wyoming. Oral Presentation at the 2013 National Meeting of the American Society of Mining and Reclamation, Laramie, WY Reclamation Across Industries, June 1-6, 2013. R.I. Barnhisel (Ed.) Published by ASMR, 3134 Montavesta Rd., Lexington, KY 40502.
- McKee, G. 2010. Long-term Trends for Nesting Raptors and Prey Populations Relative to the Effects of Surface Coal Mining on Nesting Raptors in Northeast Wyoming. Invited presentation for the annual Raptor Research Foundation meeting. September 2010. Ft. Collins, CO.
- \_\_\_\_\_. 2007. Wildlife Mitigation Techniques at Surface Coal Mines in Northeast Wyoming. National meeting of American Society of Mining and Reclamation. June 2007. Gillette, WY.
- \_\_\_\_\_. 2007. Nesting Issues and Solutions. Invited presentation for 6th Avian Electrocution & Collision Prevention Workshop. February 2007. Albuquerque, NM.

- \_\_\_\_\_. 2006. Nesting Issues and Solutions. Invited presentation for 11th International ESMO Symposium. October 2006. Albuquerque, NM.
- \_\_\_\_\_. 2006. Raptor Identification, Mitigation, and Regulation in Northeast Wyoming. Presentation at the Avian Protection Plan Public Forum hosted by Powder River Energy Corporation. March 2006. Gillette, WY.
- \_\_\_\_\_. 2006. Wildlife Issues in Reclamation. Presentation for a course on Reclamation Basics in the State of Wyoming at the Gillette Campus of the Sheridan Community College. February 2006. Gillette, WY.
- McKee, G., K.M. Clayton, H.R. Postovit, and B.C. Postovit. 2001. Long-term trends of wildlife use in native and reclaimed habitats in the Powder River Basin of northeastern Wyoming. Paper presented at the Interactive forum on surface-mining reclamation approaches to bond release: wildlife habitat construction and wildlife use of reclaimed lands in the arid and semi-arid west. August 2001. Gillette, WY.
- Clayton, K.M., G. McKee, B.C. Postovit, and H.R. Postovit. 2001. Consequences of mining, reclamation, and mitigation for raptors in the Powder River Basin of Wyoming. Paper presented at the Interactive forum on surface-mining reclamation approaches to bond release: wildlife habitat construction and wildlife use of reclaimed lands in the arid and semi-arid west. August 2001. Gillette, WY.
- McKee, G., M.R. Ryan, and L.M. Mechlin. 1998. Predicting greater prairie-chicken nest success from vegetation and landscape characteristics. *Journal of Wildlife Management* 62 (1): 314-321.
- McKee, G. 1995. Ecology of greater prairie-chickens in relation to habitat characteristics in southwestern Missouri. M.S. Thesis, University of Missouri-Columbia. Columbia, MO.
- Marshall, J.D., C.H. Hager, and G. McKee. 1986. The barn owl egg: weight loss characters, fresh weight prediction and incubation period. *Raptor Research*. Vol. 20, #3-4: 108-112

## PEER REVIEWER ARTICLES

Gwyn has served as a peer reviewer for the following articles submitted to professional journals for publication.

- Atamian, M.T., Sedinger, J.S., Heaton, J.S. 2008. Landscape level assessment of brood-rearing habitat for greater sage-grouse in east-central Nevada. *Journal of Wildlife Management* 00 (0): 000-000 (to be published). Reviewed January 2008.
- Nguyen, L.P., Nol, E., Abraham, K.F. 2007. Using digital photographs to evaluate the effects of egg crypsis on survival of artificial and natural semipalmated plover nests. *Journal of Wildlife Management* 00 (0): 000-000 (to be published). Reviewed December 2006.
- Gregg, M.A., Dunbar, M.R., Crawford, J.A. 2006. Use of implanted radio transmitters to estimate survival of greater sage-grouse chicks. *Wildlife Society Bulletin* 00 (0): 000-000. Reviewed August 2005.
- Niemuth, N.D. Published year unknown. Characteristics of landscapes harboring primary and secondary populations of Greater Prairie-Chickens in Wisconsin. *American Midland Naturalist* 00 (0): 000-000. Reviewed February 2004.

## RECENT VOLUNTEER COMMUNITY ACTIVITIES

Wyoming Wildlife and Natural Resource Trust Account Board – Appointed by the Governor of Wyoming to sit on the citizen board of the State's first Wildlife Trust Fund: March 2005-present.

Wyoming Wildlife Federation: Member 1997-present; Board of Directors – 2001-2011  
(President 8/02-5/04, Secretary 5/05-5/07; volunteer on several projects).

Mallo Outdoor Education Camp for Campbell County 5<sup>th</sup> grade students: Botany Instructor – 2000-2012.

Campbell County Jr. High School Intramural Soccer program: Coach - 1998-2003.

Gillette Lions Club: Member – 1998-present; Board of Directors – 2001-2005  
(Chair Eyeglass Collection - 5 years, Chair Early Vision Screening Program - 1 year).

NEW Bird Rescue and Rehab: Board of Directors – 2001-2010 (former Secretary).

Campbell County High School Mentoring Program: Mentored 2 students interested in careers in biology/wildlife for 1 semester each – 2001-2002.

Physically Challenged Bowhunters of America: Helped arrange hunting opportunities and guide antelope hunters in Campbell County – 2003-2004.

Donkey Creek Pathways Committee: Charter member of citizen's group working to establish a walking/bike path around the City of Gillette – 2004-2010; Board Vice President June 2005-2008.

## RECENT AWARDS

### Personal Awards

Wildlife Stewardship Award – 2008 Wyoming Game and Fish Department  
Murie Audubon Society -2004 Conservation Award (nominated by USFWS Law Enforcement)  
Monarch Lion-2004 Gillette Lions Club  
Wyoming Wildlife Federation -2003 Special Merit Award  
Lion of the Year-2003 Gillette Lions Club  
Girl Scouts of Wyoming - 2002 Woman of Distinction Award

### National or Regional Corporate Awards (Direct and/or Participate in Project)

- 2012 Excellence in Surface Coal Mining and Reclamation National Award - Supervised and/or assisted in long-term raptor monitoring and mitigation efforts at the North Antelope Rochelle Mine that resulted in this national award from the DOI Office of Surface Mining Reclamation & Enforcement (OSM)
- 2012 Citizen's Conservation Achievement Award – Central Mountains and Plains Section of The Wildlife Society. Awarded to the Thunder Basin Grasslands Prairie Ecosystem Association for their proactive, collaborative work on the joint, landscape-scale CCAA/CCA for the greater sage-grouse and seven other terrestrial species of concern (member participant).
- 2003 & 2009 - Created and implemented an innovative reclamation project for mountain plovers at a local surface coal mine that resulted in four awards at the state (three) and national (one) level for the mine during 2003, including the OSM's prestigious Excellence in Surface Coal Mining and Reclamation National Award. This project won a second award from the Wyoming Game and Fish Department in 2009 for Industry Reclamation and Wildlife Stewardship.

One coal mine and one electric utility corporation also have won awards from a statewide sportsmen's group for their innovative approaches to wildlife management in recent years.



BKS Environmental  
Associates, Inc.

BRENDA SCHLADWEILER, PRESIDENT  
President  
Principal Scientist  
bschladweiler@bksenvironmental.com

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BKS Environmental Associates, Inc.  
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**SPECIALTIES**

Overall site resource interpretations, soil and vegetation assessments, reclamation design and monitoring, wetland delineations, threatened and endangered (T&E) plant species and habitat surveys, and environmental compliance.

**WORK ACTIVITIES**

- Directing and maintaining initial and ongoing operation soils and vegetation assessments on various energy development projects.
- Compiling reclamation plans for various proposed, existing or abandoned mining and oil and gas projects.
- Administering and coordinating construction management and monitoring on various mining and oil and gas reclamation projects.
- Conducting environmental audits or Phase I assessments of various industrial sites.
- Reclamation skills training for interested parties, including topsoil management.
- Due diligence: carrying out desk-based research to review previous investigations of a site, and possibly undertaking field work, to identify ongoing activities on the site.

**EXPERIENCE**

<b>President</b>	1982 - Present
<i>BKS Environmental Associates, Inc., Gillette WY, Rock Springs, WY and Dickinson, ND</i>	
<b>Wyoming Reclamation and Restoration Center Liaison</b>	2011 - Present
<b>University of Wyoming Adjunct Professor</b>	2013
<b>Project Coordinator</b>	1982
<i>Anaconda Minerals Company</i>	
<b>Associate Environmental Coordinator</b>	1980 - 1982
<i>ARCO Coal Company, Coal Creek Mine, Wright, WY</i>	
<b>Range Scientist</b>	1980
<i>Energy Fuels, Kerr Coal Company Walden, CO</i>	
<b>Environmental Technician</b>	1979
<i>Thunder Basin Coal Company, Black Thunder Mine, Wright, WY</i>	

**EDUCATION**

<b>PhD, Soil Science, University of Wyoming; Laramie</b>	
Dissertation: Soil and Plant Responses to Variable Topsoil Replacement Depths at a Coal Mine in Northeastern Wyoming. Research was conducted at the North Antelope/Rochelle Mine southeast of Wright, Wyoming	
	2003
<b>M.S., Soil Science University of Wyoming; Laramie</b>	
Thesis: Relationship Between Soil Selenium Concentration and Selenium Uptake by Vegetation on Surface Coal Mine Lands in Wyoming	
	1995
<b>B.S., Range Management (Land Rehabilitation), Colorado</b>	
State University; Fort Collins	1980

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(307) 686-0880 Fax

P.O. Box 3017  
Rock Springs, WY 82902-3017  
(307) 382-2443

P.O. Box 1930  
Dickinson, ND 58602  
701-300-0672

<b>CERTIFICATIONS &amp; TRAINING</b>	Safeland USA Training	<i>May 2010</i>
	Mine Safety and Health Administration; Experienced Miner Annual Refresher, (MSHA)	<i>December 2012</i>
	NRCS Technical Service Provider for Nutrient and Pest Management	<i>April 2011</i>
	NRCS Technical Service Provider for Grazing Plans Leadership Wyoming Class of 2010	<i>May 2010</i>
	Hazwoper- Hazardous Waste Site Worker Refresher	<i>January 2013</i>
	T & E Plant Surveys, State of Wyoming Abandoned Mine Program	
	Wetland Delineator, Omaha and Sacramento Districts, U.S. Corps of Engineers	
	OSHA Hazardous Waste/Supervisor	
	Certified Professional Soil Scientist, ARCPAC	
	Registered Professional Soil Classifier (MN)	
Certified Professional in Rangeland Management (CPRM)		
Certified Carbon Verifier		
Commercial Pesticide Applicator		

**MEMBERSHIPS**

Soil and Water Conservation Society  
 Soil Science Society of America  
 Society for Range Management  
 American Society of Mining and Reclamation  
 Society for Mining, Metallurgy, and Exploration, Inc.  
 Western Society of Soil Science  
 Association of Women Soil Scientists  
 National Society of Consulting Soil Scientists  
 (now part of SSSA)  
 Wyoming Weed Management Association  
 SSSA Council of Soil Science Examiners  
 Wyoming Native Plant Society

**COMMITTEE PARTICIPATION**

Campbell County Conservation District (CCCD) Board of Supervisors  
 Energy Mineral Counties Coalition  
 Camp Wyoba Board  
 Campbell County Five-Year Strategic Planning Committee  
 Campbell County Five-Year Strategic Planning Implementation  
 Campbell County Outdoor Classroom Planning Committee  
 National Executive Committee- American Society for Mine and Reclamation  
 Soil and Water Conservation Society, Northeast Wyoming Area Director  
 Leadership Wyoming- Alumni  
 Liaison for Wyoming Reclamation and Restoration Center

## PUBLICATIONS

- Schladweiler, B.K. and D.M. Gardner. 2011. *Determining reclamation potential for steep oil and gas sites in the Powder River Basin, Wyoming*. National Meeting of the American Society of Mining and Reclamation, Bismarck, ND. Reclamation: Sciences Leading to Success June 11-16, 2011.
- Schladweiler, B. and C. Adams. 2010. *Comparison of Three Vegetation Sampling Methods on Oil and Gas sites in Southwestern Wyoming*. Presented at the 2010 National Meeting of the American Society of Mining and Reclamation, Pittsburgh, PA, Bridging Reclamation, Science, and the Community. June 8, 2010.
- Schladweiler, B.K. 2009. *Comparison of Coal Mine Reclamation under the Surface Mining Control and Reclamation Act of 1977 and Oil and Gas Sites in Wyoming*. American Society of Mining and Reclamation. Billings, Montana
- Schladweiler, B.K. 2007. *Ongoing Evaluation of Effects from Variable Topsoil Depths at a Coal Mine in Northeastern Wyoming* American Society of Mining and Reclamation. Gillette, Wyoming
- Schladweiler, B.K., G.F. Vance, D.E. Legg, L.C. Munn, and R. Haroian. 2005. *Topsoil Depth Effects on Reclaimed Coal Mine and Native Area Vegetation in Northeastern Wyoming*. Rangeland Ecology & Management 68:167 - 176
- Schladweiler, B.K., G.F. Vance, D.E. Legg, and S. Belden, 2005. *Ongoing Evaluation of Effects from Variable Topsoil Depths at a Coal Mine in Northeastern Wyoming*. 2005. National Meeting of the American Society of Mining and Reclamation.
- Schladweiler, B.K., G.F. Vance, D.E. Legg, L.C. Munn, and R. Haroian. 2004. *Influence of Variable Topsoil Replacement Depths on Soil Chemical Parameters within a Coal Mine in Northeastern Wyoming*. Arid Land Research and Management. Vol. 18:347 – 358
- Schladweiler, B.K., G.F. Vance, and R. Haroian. 2002. *Influence of Variable Topsoil Replacement Depths on Soil and Plant Characteristics at a Coal Mine in Northeastern Wyoming*. American Society of Mining and Reclamation. Lexington, Kentucky. Pg. 1157
- Schladweiler, B.K., and G.F. Vance. 1996. *Vegetation diversity within Native and Reclaimed Coal Mine Sites: Environmental Factors and Seasonal Variability*. American Society of Surface Mining and Reclamation Proceedings, Knoxville, Tennessee Vol. 13:472 – 483
- Schladweiler, B.K., G.F. Vance, D.E. Legg, and C. Bilen. 1995. *Regression Analysis to Predict Selenium Levels at Two Surface Coal Mines in the Powder River Basin, Wyoming*. Decades Later: A Time for Reassessment. American Society of Surface Mining and Reclamation, Princeton, WV. Vol. I: 246 – 257
- Schladweiler, B.K., G.F. Vance, R.N. Pasch, P.K. Carroll, M.S. Page, D.L. Bonett, S. E. Williams. 1993. *Relationship between Soil Selenium Concentrations, & Selenium Uptake by Vegetation on Surface Coal Mine Lands in Wyoming*. Billings Reclamation Symposium. Office of Surface Mining. Vol. I: 119 – 130.
- Schladweiler, B.K., G.F. Vance, R.N. Pasch, P.K. Carroll, M.S. Page, D.L. Bonett, & S.E. Williams. 1993. *Comparison of Selenium Uptake by Vegetation on Surface Coal Mine Lands in Wyoming and Seasonal Variability of Uptake*. American Society of Surface Mining and Reclamation. Vol. II: 828 – 838.
- Schladweiler, B.K., G.F. Vance, D.E. Legg, and S. Rexroat. 1997. *Hydric soils and their relationship to plant biodiversity within reclaimed stream channels in semi-arid environments*. Agronomy Abstracts, 89:315
- Schladweiler, B.K., G.F. Vance, R.N. Pasch, P.K. Carroll, M.S. Page, D.L. Bonett and S.E. Williams. 1995. *Relationship between Soil Selenium*

- Concentrations and Selenium Uptake by Vegetation on Surface Coal Mine Lands in Wyoming.* American Society of Surface Mining and Reclamation Abstracts, p.861
- Schladweiler, B.K., G.F. Vance, P.K. Carroll, M.S. Page, AP. Wanek, D.L. Bonett, R.N. Pasch, and S.E. Williams. 1993. *Comparison of Selenium Uptake by Vegetation on Surface Coal Mine Land in Wyoming and Seasonal Variability of Uptake.* American Society of Surface Mining Reclamation Abstracts. P. 36
  - Vance, G.F., R.N. Pasch, D.L. Bonett, B.K. Schladweiler, P.K. Carroll and M.S. Page. 1992. *Evaluation of Various Selenium Extraction Methods for Correlating Soil/Backfill Levels to Plant Concentrations.* Agronomy Abstracts, p.246.
  - Vance, G.F., C.P. Skinner, B.K. Schladweiler, and J. A. Young. 1997. *Selenium in the Environment: Soil/Geology, Vegetation, and Animal Science Research.* U.S. Army, Fort Carson DECAM Research Report, Colorado Springs, CO. 45pp.
  - Vance, G.F., R.N. Pasch, P.K. Carroll, M.S. Page, and B.K. Schladweiler. 1991-1994. *Relationship between Soil Selenium Concentrations and Selenium Uptake by Vegetation on Surface Coal Mine Lands in Wyoming.* Proceedings of the First, Second, Third, Fourth, Fifth, and Sixth Abandoned Coal Mine Lands Research Meeting. Sheridan, Gillette, Kemmerer, and Laramie, Wyoming, 24 pp.
  - Pasch, R.N., G.F. Vance, S.E. Williams, M.S. Page, P.K. Carroll, and B.K. Schladweiler. 1992. *Relationship between Soil Selenium Concentrations and Selenium Uptake by Vegetation on Surface Coal Mine Lands in Wyoming.* Abandoned Coal Mine Lands Research Meeting, Gillette, Wyoming

#### PRESENTATIONS

- Schladweiler, B., C. Adams, and M. Kasten. 2013. *Long-term Comparison of Vegetation Reference Area on Reclaimed Coal Mines in Northeastern Wyoming.* National Meeting of the American Society of Mining and Reclamation, Laramie, WY. Reclamation: Sciences Leading to Success June 1-6, 2013.
- Gardner, D., B. Schladweiler, and M. Kasten. 2013. *Comparison of Vegetation Cover vs. Precipitation on a Reclaimed Coal Mine in Northeastern Wyoming.* National Meeting of the American Society of Mining and Reclamation, Laramie, WY. Reclamation: Sciences Leading to Success June 1-6, 2013.
- Cox, L., M. Kasten, and B. Schladweiler. 2013. *Soil Amendment Applications During Drought Periods on Oil and Gas Sites in Wyoming.* National Meeting of the American Society of Mining and Reclamation, Laramie, WY. Reclamation: Sciences Leading to Success June 1-6, 2013.
- Adams, C. and B.K. Schladweiler. 2013. *Comparison of Basal and Aerial Cover for Total Vegetation Cover and Total Ground Cover on Oil and Gas Sites in Wyoming.* National Meeting of the American Society of Mining and Reclamation, Laramie, WY. Reclamation: Sciences Leading to Success June 1-6, 2013.
- Brenda K. Schladweiler. 2013. *Soil Management- Linear Disturbances.* Pipeline Reclamation Workshop, Sidney, MT.
- Brenda K. Schladweiler. 2013. *It Begins with the Soil.* Wyoming Weed Management Association, Casper, WY.
- Brenda K. Schladweiler. 2012. *Topsoil Management Issues Related to Energy Development.* Colorado Oil and Gas Association, Denver, CO.
- Brenda K. Schladweiler. 2012. *Soil Amendment Applications During Drought Periods.* Petroleum Association of Wyoming, Casper, WY.
- Brenda K. Schladweiler and Lisa Cox. 2012. *Reclamation Implication of Overlapping Industries in Southern Campbell County, WY.* American Society of Mining and Reclamation, Tupelo, MS.

- Brenda K. Schladweiler and Dawn. M. Gardner. 2011. *Determining Reclamation Potential for Steep Oil and Gas Sites in the Powder River Basin, Wyoming*. American Society of Mining and Reclamation, Bismarck, ND.
- Schladweiler, B. and C. Adams. 2010. *Comparison of Three Vegetation Sampling Methods on Oil and Gas sites in Southwestern Wyoming*. American Society of Mining and Reclamation, Pittsburgh, PA.
- Adams C. and B.K. Schladweiler. 2009. *Comparison of Three Vegetation Sampling Methods*. PAW Second Annual Reclamation Conference, Casper, WY
- Schladweiler, B.K. 2009. *Comparison of Coal Mine Reclamation under the Surface Mining Control and Reclamation Act of 1977 and Oil and Gas Sites in Wyoming*. American Society of Mining Reclamation. Billings, MT
- Schladweiler, B.K. 2009. *Abandoned Mine Land Uranium Reclamation and Research in Wyoming*. U2009 Global Uranium Symposium. Denver, CO
- Schladweiler, B.K. 2008. *Reclamation in Northeastern Wyoming*. Society for Range Management/Society for Soil Water Conservation Society combined state meeting. Cheyenne, WY.
- Schladweiler, B.K. 2008. *Topsoil Management Issues Related to Oil and Gas Development*. PAW Reclamation Conference. Casper, WY.
- Schladweiler, B.K. 2007. *Ongoing Evaluation of Effects from Variable Topsoil Depths at a Coal Mine in Northeastern Wyoming*. American Society of Reclamation. Gillette, WY.
- Schladweiler, B.K. 2007. *Vegetation and Soils Recovery for Post-CBNG Co-produced Water Discharge*. Wyoming BLM, Buffalo Field Office, Best Management Practices.
- Schladweiler, B.K. 2006. *Vegetation and Soils Recovery for Post-CBNG Co-produced Water Discharge*. Coalbed Methane Education Fair.
- Schladweiler, B.K. 2006. *Reclamation Class, Wyoming Workforce Development, Gillette Campus*.
- Schladweiler, B.K. 2006. *A Survey of Successful Mineland Revegetation Techniques*. Billings Land Reclamation Symposium.
- Schladweiler, B.K. 2005. *Topsoil Management Workshop, Part 1*. Coalbed Methane Education Fair.
- Schladweiler, B.K. 2005. *A Survey of Successful Mineland Revegetation Techniques*. SRM/SWCS Combined Annual Meeting.
- Schladweiler, B.K. 2004. *Environmental Assessments Related to CBNG Activity*. Wyoming Water Well Association.
- Schladweiler, B.K. 2004. *Overview of Natural Resources in the Powder River Basin*. Wyoming L.E.A.D. Seminar.
- Schladweiler, B.K. 2001. *Effect of CBM Water on Soils and Vegetation*. Coalbed Methane Education Fair.

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PROGRAM

POWERTECH (USA) INC.

**Elizabeth (Lisa) A. Scheinost**

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Powertech (USA) Inc.  
5575 Denver Tech Center Parkway, Suite 140  
Greenwood Village, Colorado 80111  
escheinost@powertechuranium.com  
(303) 790-7528

**Education**

- B.S. Geological Engineering, South Dakota School of Mines and Technology, 1986

**Professional Registration and Memberships**

- Engineer in Training 142742T
- National Mining Association

**Areas of Expertise**

- Sample planning, collection and data management
- Monitoring well design, construction and sampling
- Environmental site characterization studies and groundwater investigations
- CERCLA RI/FS
- Landowner, community and government relations

**Professional Experience**

2013 – Present: Powertech (USA) Inc., Greenwood Village, Colorado, *Data Manager*  
2008 – 2013: Powertech (USA) Inc., Edgemont, South Dakota, *Office Manager*  
2002 – 2004: ETI Professionals, Las Vegas, Nevada, *Geological Assistant*  
2002: IT Corporation, St. Paul, Minnesota, *General Manager*  
2000 – 2001: IT Corporation, St. Paul, Minnesota, *Environmental Engineer/Scientist III*  
1988 – 1996: IT Corporation, St. Paul, Minnesota, *Environmental Engineer/Scientist III*  
1987 – 1988: AeroVironment, Inc., Monrovia, California, *Data Technician and Field Geologist*  
1985 – 1986: Ellsworth Air Force Base, Rapid City, South Dakota, *Missile Engineering Aid*  
Summer 1985: Department of Water and Natural Resources, Mining and Exploration Program, Pierre, South Dakota, *Engineering Intern*

**Professional Training**

8-Hour Enviro Data Training, Geotech Computer Systems, Inc., Centennial, Colorado  
12-Hour Microsoft Project Training Workshop, SkillPath Seminars, Rapid City, South Dakota  
40-Hour Fundamentals of Engineering Project Management, IT Corporation, Pittsburgh, Pennsylvania  
40-Hour Short Course, DNAPLs in Porous and Fractured Media, University of Waterloo, Toronto  
8-Hour Site Supervisor Training, IT Corporation, St. Paul, Minnesota  
8-Hour OSHA Annual HAZWOPER Refresher Courses, IT Corporation, St. Paul, Minnesota  
40-Hour OSHA HAZWOPER, IT Corporation, St. Paul, Minnesota

**Publications**

Scheinost, E. and A. Desai, "Performance Assessment of a Groundwater Recovery System Designed Using Geoflow – A Case Study," IT Technology Exchange Symposium, Proceedings, Scottsdale, Arizona, 1992.

**Elizabeth (Lisa) A. Scheinost**

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**Project Experience**

Data Manager, Powertech (USA) Inc., Dewey-Burdock In Situ Uranium Recovery Project, Fall River and Custer Counties, South Dakota. Manage baseline environmental data, water well inventories and field sampling programs for U.S. NRC Materials License, U.S. EPA Underground Injection Control Class III and V permit applications, and SD DENR Large Scale Mine, Water Rights and Groundwater Discharge Plan permit applications. Support landowner, community and government relations activities.

Project Engineer and Geologist, U.S. Department of Energy, Nevada Test Site, Underground Test Area, Las Vegas, Nevada. Prepared well completion reports summarizing geophysical, geochemical, hydrogeologic, lithologic, drilling, and well construction data. Created summary tables, boring logs, location drawings, and well construction diagrams. Analyzed formation fractures using downhole borehole imaging software. Prepared standard operating procedures for collecting groundwater samples and conducting RCRA facility investigations. Outlined requirements for preparing data quality objectives (DQOs) including the need to identify the decisions to be made, data uses and data collection, and storage and retrieval systems. Suggested formation of technical review committee, development of groundwater hydrogeologic model, and records search to aid DQO development. Wrote background sections of UGTA RI/FS work and field sampling plans.

Project Manager, USDA Forest Service, Laona, Wisconsin. Completed Engineering Evaluation and Cost Analysis (EE/CA) for closure of a 3.3-acre landfill using CERCLA Non-Time Critical Removal Action (NTCRA) principles. Coordinated multidisciplinary team of engineers, risk assessors and scientists to complete human health and ecological risk assessments, conduct field investigations, evaluate and select the closure alternative, prepare an action memorandum, achieve community, Forest Service and State acceptance, design a cap at 35%, 95% and 100% review intervals, prepare construction specifications, drawings, schedules of items and contract bid documents, and estimate construction costs.

Project Controls Engineer and Project Manager, Canadian Pacific Railway, Shoreham Facility, Minneapolis, Minnesota. Cost/revenue manager for multi-site, multi-task investigation. Implemented, with client's counsel and project manager, a detailed work breakdown structure capturing and assigning investigation costs to multiple PRPs, each with varying site liability, to support client's cost-recovery litigation. Responded to Minnesota Pollution Control Agency (MPCA) comments on Stage 1 Phase II RI Work Plan. Managed excavation, survey, laboratory, and IDW disposal contracts. Supervised field geologist, field health and safety officer, field technician, and data manager during site work, data validation and completion of draft report.

Task Manager and Field Team Leader, Navy IR Program, Naval Air Station Miramar, San Diego, California. Field supervisor and report task manager for Navy CLEAN hydrogeologic assessment report (HAR) for fire fighter drill pits located adjacent to NAS Miramar runway. Supervised mud and air rotary drilling crews and field technicians, and completed, developed and sampled monitoring wells. Prepared HAR for Regional Water Quality Management Board. Presented preliminary results to CERCLA Technical Review Committee. Responded to questions regarding field methods and analytical results. Responded to agency comments on HAR. Assisted with preparation of RI/FS Work Plan and groundwater Solid Waste Assessment Test (SWAT) work plan. Directed assembly of CERCLA administrative record and site management plan. Coordinated project health and safety requirements, flight-line clearances, budgeting and schedules with Jacobs Engineering Group, the lead consultant.

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Task Manager, USACE Omaha Installation Restoration Program (IRP) Formerly Used Defense Sites (FUDS) CERCLA RI/FS, Former Air Force Airfield and BOMARC Missile Site, Raco, Michigan. Prepared Stage I RI quality control and field sampling plans for eight sites including a wastewater treatment lagoon, 28 missile silos, a transformer pad, and underground storage tank areas. Led RI Report preparation. Incorporated Michigan Act 307 Rules to assess site cleanup needs. Addressed USACE and Michigan DNR comments to achieve report acceptance.

Project Engineer and Field Team Leader, USACE Omaha IRP/FUDS CERCLA RI/FS, Former Sault Ste. Marie Radar Base, Sault Ste. Marie, Michigan. Prepared RI quality control and field sampling plans for investigation of old auto hobby shop, a landfill and a drain field. Supervised drilling crew, logged discharge line soil and rock samples, supervised wireline coring, installed bedrock monitoring wells, and collected groundwater and surface soil samples. Prepared Stage 1 RI Report. Responded to Michigan DNR and USACE comments. Prepared invoice summaries and Primavera project schedule updates.

Field Team Leader and Project Engineer, Navy IR Program, Marine Corps Logistics Base, Barstow, California. Supervised drilling crew during Phase I, Stage A, CERCLA RI field program. Collected and logged soil samples. Supervised monitoring well construction and piezometer installation. Assisted with assembly, wiring and installation of Grundfos submersible pumps. Assisted with step-drawdown and recovery tests. Used Hermit data logger. Purged wells, measured field parameters and collected groundwater samples. Prepared descriptions of field sampling and aquifer test procedures. Prepared site-wide groundwater contour maps. Measured infiltration rates across 3-acre area, at two depths, to assess feasibility of site for land application of treated groundwater. Prepared detailed cross-sections and fence diagrams. Assisted with preparation of Navy CLEAN Phase II Field Sampling Plan for MCLB Barstow Operable Units 1 and 2.

Project Engineer, Navy IR Program, Naval Amphibious Base Coronado, San Diego, California. Assisted with CERCLA Site Inspection (SI) Report and groundwater SWAT Report. Used IT Environmental Management System (ITEMS) to manage and report laboratory data.

Assistant Hydrogeologist and Field Team Member, USACE Omaha IRP, Ellsworth Air Force Base, Rapid City, South Dakota. Prepared CERCLA RI/FS Stage 2 field sampling and quality control plans for eight sites including a fire protection training area, landfills, flight-line refueling systems, and oil/water separators. Wrote field procedures and data reduction instructions for packer testing the Pierre Shale. Designed a specialty flow meter capable of measuring  $10^{-6}$  to  $10^{-9}$  hydraulic conductivities. Performed packer and slug tests. Reduced data, calculated hydraulic conductivities, vertical and horizontal gradients, groundwater flow rates, and groundwater travel times. Collected split-spoon samples, logged borehole samples, installed monitoring wells, developed wells, collected groundwater samples, and supervised drilling rig decontamination at approximately 40 borehole locations. Collected surface water and sediment samples. Performed soil gas surveys using on-site gas chromatograph for analysis. Assisted with preparation of Stage 2 RI Report. Described field procedures and summarized hydrogeologic data for each site. Described contaminant nature, extent, fate, and transport. Assisted with presentation of FS alternatives to USACE.

Project Engineer, USACE Omaha IRP CERCLA RI/FS, Grand Forks Air Force Base, Grand Forks, North Dakota. Assisted with RI report for four sites including a landfill, a fire training area, exploded ordnance disposal area, and a fuel leak area. Evaluated field data, compiled laboratory data, prepared figures, and



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wrote RI sections summarizing analytical results. Responded to USACE comments to gain RI report acceptance. Prepared invoice summaries and Primavera project schedule updates.

Task Manager, USACE Omaha IRP CERCLA RI/FS, Wright-Patterson Air Force Base, Dayton, Ohio. Managed completion of CERCLA RI work plan, field sampling plan and quality assurance project plan.

Field Team Member, Bluff Road CERCLA Superfund Site, Columbia, South Carolina. Collected soil and groundwater samples at former drum reconditioning and storage facility. Cleared pathways through forest for drilling and sampling equipment. Hiked to remote monitoring locations. Developed wells with nitrogen air lift system and bailers. Worked about 30% of time in Level C PPE. Organized daily drilling activities and assembled and led drilling crews, sampling technicians, EPA site inspectors, and health and safety coordinators to field locations. Supervised hollow-stem auger drilling at approximately 30 locations, collected in-situ samples for permeability testing, collected geotechnical and analytical samples, used a power hand auger to sample subsurface soils in areas inaccessible to the drilling rig, supervised crew operation of track-mounted drilling rig, and prepared boring logs. Documented activities and sample collection in accordance with the CERCLA RI/FS field sampling plan.

Task Manager, Argonne National Laboratory, Lemont, Illinois. Directed preparation of CERCLA Hazard Ranking System (HRS) scores for six separate sites at laboratory. Coordinated activities between St. Paul and Chicago offices to complete scoring worksheets in two weeks.

Project Engineer, Battelle Engineering Management Operations, Richland, Washington. Edited CERCLA preliminary assessment (PA) report and assisted with preparation of the HRS score for the US Coast Guard Station Charlevoix. Reviewed SI reports for Thunder Bay and Cheboygan Coast Guard Stations.

Project Engineer, MidAmerican Energy Company, Des Moines, Iowa. Reviewed existing site investigation, analytical and remediation data for two former manufactured gas plants and completed RI contaminant nature and extent summaries for each.

Project Manager, Deluxe Corporation, Shoreview, Minnesota. Reviewed and commented on reports prepared by outside consultants. Presented a review of the New Jersey Cleanup Responsibility Act (ECRA) to Deluxe environmental staff and attorneys. Developed soil and roof sampling program to define extent of lead contamination at the New Jersey printing facility. Directed collection of samples, reviewed results and prepared report. Summarized DNAPL fate and transport characteristics for chlorinated solvent (PCE) release.

Task Manager, Valspar Corporation, East Moline, Illinois. Responsible for preparing assessment of potential remedial technologies for paint manufacturing plant. Identified remedial action objectives consistent with State and client requirements; defined volume of media to be remediated; identified five potential soil remedial technologies and seven potential groundwater technologies; assessed the effectiveness, implementability and cost of each technology; identified general response actions; and identified additional data requirements. Prepared preliminary cost estimate for technologies appearing most appropriate.

Project Engineer, Westinghouse Feed Materials Process Center, Fernald, Ohio. Inspected process area. Received training in radioactive materials handling and decontamination. Prepared sampling methods for



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radioactive wastes stored in silos. Assisted with groundwater contaminant fate and transport modeling report.

Field Geologist, Navy IR Program Missile Facility, San Diego, California. Supervised completion of three 600-foot deep wells through conglomerate. Utilized air rotary drilling method. Logged samples. Performed field sieve analyses and moisture content testing.

Project Manager, USDA Forest Service Munising Landfill, Munising, Michigan. Prepared engineering cost estimate for capping Munising Sanitary Landfill using native materials, geotextiles, flexible membrane liners, and geosynthetic clay liners. Managed reconditioning of vandalized monitoring wells by purging using Grundfos pumps. Oversaw sample collection and containerization of purged water. Coordinated with laboratory to establish test parameters, detection limits and cost estimates.

Project Manager, Mayo Foundation, Rochester, Minnesota. Developed and implemented remediation program for contaminated soil and directed confirmatory groundwater sampling. Achieved necessary client and MPCA Voluntary Investigation Cleanup (VIC) program staff approvals for closure.

Project Manager and Field Team Leader, Reichhold Chemical, Inc., Durham, North Carolina. Lead geologist responsible for supervising drilling, soil sampling and monitoring well installation at Minneapolis facility during underground storage tank (UST) investigation. Prepared MPCA petroleum tank release reports and Minnesota Petrofund Reimbursement Application.

Task Manager, Mobil Oil, West Bloomfield, Michigan. Prepared interim site investigation report for Mobil gas station. Reviewed and summarized site history, soil boring and soil sampling procedures, monitoring well installation and groundwater sampling procedures, soil and groundwater analytical results, and the geologic and hydrogeologic characteristics of the site. Prepared data summary tables and constructed groundwater contour maps and contaminant concentration isopleth maps. Recommended additional soil and groundwater sampling prior to designing remediation system.

Project Engineer, Interlake Corporation, Duluth, Minnesota. Estimated PAH and BTEX concentrations in rainwater flowing across contaminated surface soils using modification of the universal soil loss equation and the soil/water partitioning equation in EPA's Superfund Exposure Assessment Manual. Used results in an ecological assessment to estimate risk associated with runoff entering Lake Superior. Method accepted by MPCA. Assisted with preparation of baseline risk assessment.

Project Engineer, J.T. Baker, Philipsburg, New Jersey. Assisted with preparation of a performance assessment report for a pump and treat system to comply with an ECRA Administrative Consent Order. Prepared groundwater contour maps, assembled modeling input data, checked modeling results, and assembled data tables to support assessment. Prepared isoconcentration maps, tabulated analytical data and reviewed report for data consistency.

Project Engineer, Safety Kleen, St. Paul, Minnesota. Prepared description of the hydrogeologic conditions at site and constructed a groundwater contour map.



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Project Engineer, Little Lake Butte Des Morts, Neenah, Wisconsin. Prepared sampling plan for collection of PCB contaminated sediments in lake. Utilized grid system, scuba diver and on-shore surveyor to locate sampling points.

Project Engineer, Onan Corporation, Fridley, Minnesota. Reviewed groundwater analytical results and assessed plume migration fate. Prepared annual report evaluating groundwater monitoring data. Compared data with past sampling events. Contoured two separate plumes for various times to show continuous plume migration toward property-line creek.

Field Team Leader, Ideal Security Hardware, Minneapolis, Minnesota. Supervised installation of three borings and one shallow groundwater monitoring well using a hollow-stem auger drilling rig. Collected soil samples, developed wells, sampled wells, prepared chain-of-custody documentation, and packaged samples for shipment to laboratory.

Field Team Member, University of Minnesota, Rosemount, Minnesota. Collected groundwater samples during MCPA field audit with no errors.

Field Team Member, Armstrong Rubber Company, Des Moines, Iowa. Prepared a field sampling plan and assisted with preparation of a health and safety plan. Performed field work including drilling, logging, installing, and sampling groundwater monitoring wells. Performed percolation tests in an area proposed for land treatment of contaminated creek sludge. Reviewed the land application permit and recommended a schedule of aerating soil by tilling to increase volatilization of fuel compounds. Also recommended applying nutrients such as nitrogen, phosphorous, sulfur, and/or moisture to increase biodegradation rates.

Project Engineer, US Postal Service, Central Region Contract, St. Paul, Minnesota. Summarized RCRA requirements for mail facilities in all 50 states as part of a comprehensive environmental compliance handbook.

Project Engineer, Federal Cartridge Company, New Brighton, Minnesota. Assisted with preparation of soil washing and soil excavation plans.

Field Geologist and Project Engineer, USDA Forest Service, Wisconsin. Prepared sampling and analysis plan (SAP) and site-specific health and safety plan (HSP) for CERCLA SI at Bay Mills Landfill in Hiawatha National Forest. Supervised completion of the SAP and HSP for the Florence Warehouse SI in Nicolet National Forest. Responded to agency comments. Managed Bay Mills and Florence Warehouse field investigations. Prepared SAP and HSP for DDT drum burial investigation in Chequamegon National Forest. Supervised field program. Collected soil samples, logged boreholes, and installed, developed and sampled groundwater monitoring wells. Reviewed and provided comments on Rhinelander landfill cap design, construction documents and quality control plans.

Task Manager, Amoco Chemical Corporation, Joliet, Illinois. Prepared CERCLA RI/FS work plan for investigation of on-site wastewater treatment lagoons and industrial waste landfill.

Field Geologist, Marvin Windows, Warroad, Minnesota. Measured groundwater levels, purged wells and collected groundwater samples from approximately 40 monitoring wells.



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Project Engineer, Witco Corporation, Chicago, Illinois. Prepared Phase I and II environmental assessment reports for two oil blending facilities. Incorporated State cleanup criteria.

Field Team Leader, Air Quality Control Board, San Bernardino and Los Angeles Counties, California. Prepared work plans and reports for ambient air and soil gas monitoring at 29 solid waste disposal facilities as part of air SWAT field investigations. Led field sampling teams. Operated portable meteorological stations. Assisted with design of landfill gas and ambient air monitoring equipment.

Field Team Member, Air Resources Board, Los Angeles, California. Operated air monitoring equipment and samplers, including high-volume air samplers, at locations across the Los Angeles basin during the Southern California Air Quality Study.

**Other Education**

2004 – 2007: Accounting – 38 of 72 credit hours toward B.S., St. Cloud State University, St. Cloud, Minnesota

**Other Work Experience**

1996 – 2000: Northwest Airlines, Minneapolis/St. Paul, Minnesota, *Domestic, International, Elite, Group, and City Ticket Office Reservation Sales Agent*

**Other Certifications**

2001 - 2002: American Sailing Association 101, 103 and 104 certifications

2001: Scuba diver certification

1994: Private pilot, single engine land

**Community Involvement and Leadership**

2011 – Present: Chair, City of Edgemont Planning and Zoning Board

2010 – 2011: Co-Chair, Southern Hills United Way Campaign

2008 – 2012: Edgemont YMCA Cardio Room Volunteer

2008 – 2011: Secretary, Edgemont Area Chamber of Commerce