

MAY 21 2013

BEFORE THE ENVIRONMENTAL QUALITY COUNCIL
STATE OF WYOMING

Jim Ruby, Executive Secretary
Environmental Quality Council

IN THE MATTER OF THE OBJECTIONS TO)
THE MINE PERMIT APPLICATION) DOCKET 13-4802
OF McMURRY READY MIX COMPANY,)
TFN 5 1/237)

McMURRY READY MIX COMPANY'S
EXPERT WITNESS DESIGNATION

McMurry Ready Mix Company (McMurry), by and through its attorneys, Hageman Law P.C., and pursuant to the Environmental Quality Council's (EQC) Order of Schedule, hereby designates the following expert witnesses to testify at the hearing in the above-captioned matter.

INTRODUCTION

On June 21, 2011, McMurry filed with the Department of Environmental Quality (DEQ) Land Quality Division (LQD), two copies of an Application for a Permit to Mine (Application). McMurry's Application (designated "TFN 5 1/237") was prepared in accordance with Wyo.Stat. § 35-11-406, the LQD *Non-Coal Rules and Regulations*, and the associated guidelines. McMurry seeks a Regular Mine Permit in order to expand its existing sand and gravel operations near Boulder, Wyoming in Sublette County (LMO 1423ET). The location of McMurry's operation

is often referred to as the “East Fork Ranch Pit.” The State of Wyoming and Sublette County each own a sand and gravel operation in the same vicinity, using the same access and roads for hauling gravel.

The DEQ/LQD issued a letter on January 25, 2013, notifying McMurry that its Application “is technically complete and that second public notice is authorized.” On February 4, 2013, and pursuant to Wyo.Stat. § 35-11-406(j), McMurry provided the required “Notice of Mining Application” to Donald and Merilyn Jensen, Sublette County, Eastfork Livestock, Joel Bousman, Eastfork Limited Partnership, the Bureau of Land Management, and the Wyoming Oil and Gas Commission. McMurry also caused the required Public Notice to be published for four (4) consecutive weeks in the Pinedale Roundup – beginning on February 1, 2013.

David and Sandra Goodwin, Denise and Harv Hastings, Debra White and David Payne, Randy Simpson, and Kelly Garside have objected to McMurrys Application. Their objections are primarily focused on three (3) issues: (1) McMurry’s hours of operation; (2) truck use of State Highway 353, County Road 133, and County Road 113; and (3) sage grouse impacts and monitoring.

McMURRY’S EXPERT WITNESSES

The EQC has scheduled the hearing in the above-captioned matter to take place on May 30 and 31, 2013, in Cheyenne, Wyoming. Pursuant to the Order of Schedule

and Wyo.R.Civ.P. 26(a)(2), McMurry hereby designates the following expert witnesses to testify at such hearing:

Steve Stresky
Aqua Terra Consultants
2624 Heartland Drive
Sheridan, Wyoming 82801
307-672-7133

Mr. Stresky was responsible for preparing McMurry's Application, and compiling all of the information set forth therein. He will be called to testify regarding the information and documents contained in the Application, including the technical work that was completed, the on-site activities undertaken, and the studies performed. He will be called to testify regarding each Section of the Application, including but not limited to the Mine Plan, the Wildlife Inventory, the Sage Grouse work, and the Adjudication section. He will be called to testify regarding the purpose of each of the Application sections, and the manner in which they were completed and filed in compliance with Wyoming statutory law, as well as the applicable Rules and Regulations.

Mr. Stresky will be called to testify regarding the work that he did in compiling the Application, the work that was undertaken by McMurry and on McMurry's behalf to properly complete the Application, and the efforts that were made to meet each of the statutory and regulatory requirements for obtaining a Regular Mine Permit. He

will be called to testify as to the activities and efforts that were undertaken to address the EQC's concerns as set forth in the previous "Findings of Facts and Conclusions of Law" issued in Docket No. 10-4803. He will be called to testify as to the changes that were made to McMurry's Application following the previous EQC hearing, and the fact that those changes were designed to resolve the outstanding issues as identified by the EQC.

Mr. Stresky will testify as to his interaction with the DEQ/LQD to ensure that the Application complied with Wyoming law. He will testify that the Application meets the requirements of and complies with Executive Order 2011-5, "Greater Sage-Grouse Core Area Protection," (EO 2011-5), and will describe the on-the-ground work that was done in relation thereto. He will testify to his interaction with the Wyoming Game and Fish Department (WGFD) to ensure such compliance. He will testify as to the DDCT evolution, and what it means in relation to the EO 2011-5 requirements.

Mr. Stresky will testify to the correspondence that he exchanged with the DEQ/LQD, WGFD, and any other State and/or Federal Agency on the issues surrounding the Application. He will testify to the mapping that he completed, including the mapping that is included in the Application.

Mr. Stresky will testify that the Application meets the requirements of

Wyo.Stat. § 35-11-406 and the DEQ/LQD's Rules and Regulations. Mr. Stresky will testify that the Application complies with EO 2011-5. Mr. Stresky will testify that McMurry's Application meets the EQC's request for amendments to McMurry's East Fork Ranch operations for obtaining a Regular Mine Permit. Mr. Stresky will testify to the work that he did (and that others did on his behalf) and the information that he compiled to support these opinions and this testimony.

Mr. Stresky will testify regarding his research as to the location of "Mathis Lane," and whether it provides a viable alternative to the existing Highway and County Roads.

The basis and reasons for Mr. Stresky's opinions are included in the Application and the related correspondence and documents. Mr. Stresky's opinions are also based upon his personal observations of the East Fork Ranch Pit and surrounding area. The data or other information considered by Mr. Stresky in forming his opinions are set forth in the Application. Mr. Stresky has also reviewed photographs of the area, which photographs have been produced to the Objectors. McMurry may use any of part of the Application or photographs as exhibits to support Mr. Stresky's testimony.

Mr. Stresky received a B.S. in Geology and Geophysics from the University of Wyoming in 1980. He received an M.S. in Hydrology from the University of New

Hampshire in 1990. His Resume was previously produced to the Objectors, and is attached hereto. Mr. Stresky will testify about his education, training and experience, including his experience in preparing similar applications in the past. As a Principal in the firm of Aqua Terra Consultants, Inc. (Aqua Terra) he charges \$ 95.00 per hour, plus expenses. The Aqua Terra Rate Schedule was also previously provided to the Objectors. Mr. Stresky was last called to testify as an expert witness at the EQC hearing related to McMurry's previous LQD Application (held in December, 2010).

Mark Eatinger
Rio Verde Engineering
P.O. Box 642
Pinedale, Wyoming 82941
(307) 367-2826

Mr. Eatinger may be called to testify regarding the State Highway and County Road construction and maintenance in the area, including traffic, usage, site distances, and compliance with State and County standards. He may also be called to testify regarding the newly-constructed and widened approach from the East Fork Ranch gravel operations onto Highway 353. He may be called to testify regarding the safety of truck usage of these roads.

It is Mr. Eatinger's opinion that Highway 353 and County Roads 133 and 113 have been constructed and maintained to safely handle the truck traffic that can be expected on these roads in conjunction with McMurry's East Fork Ranch sand and

gravel operations, as well as the existing and future use in the area. It is Mr. Eatinger's further opinion that these roads are of sufficient width, have adequate site distance, were constructed of appropriate material, and are safe for the type and volume of use to which they will be put after McMurry's operations are approved. It is also Mr. Eatinger's opinion that use of a public road by trucks and automobiles is not a public nuisance and would not endanger the safety of the traveling public.

Mr. Eatinger may also be called to testify that the Sublette County Road and Bridge Department proactively manages and maintains the County road system, including Roads 133 and 113, to ensure that they are safe and usable for the expected traffic in terms of both volume and type. He may be called to testify that the County Roads have been constructed and maintained to handle whatever traffic would be expected. He may testify as to the County's maintenance program, and its efforts to monitor areas to ensure that the roads remain in good repair to handle truck and automobile traffic. He may testify regarding the County's program to use magnesium chloride to control dust, as well as its effectiveness for doing so. It is Mr. Eatinger's opinion that the speed limit and "no jake brake" requirement on the roads in question are appropriate and provide a safe environment for travel.

It is Mr. Eatinger's opinion that County Roads 133 and 113 are in compliance with the "County Road Fund Manual" adopted by the Wyoming County Road

Standards Committee. It is Mr. Eater's opinion that the access/approach onto Highway 353 from the McMurry, State and County sand and gravel pits meets the requirements of the WYDOT Access Manual (Rules and Regulations and Policy for Accesses to Wyoming State Highways). He may further opine that the access/approach is adequate for the purposes for which it will be used, is in good shape, has an appropriate road base, is sufficiently wide, and has a sufficient site distance for the area and traffic.

Mr. Eater may be called to testify as to his opinions regarding the changes to the approach/entrance onto Highway 353 from the McMurry, State and County sand and gravel operations. It is his opinion that such changes improved the situation for trucks to enter and exit the gravel operations. He may also be called to testify regarding the types of trucks that typically access these operations.

Mr. Eater may be called to testify regarding the accident history on the roads in question, including the fact that there has been a history of very few accidents on Highway 353 and County Roads 133 and 113. He will testify that such lack of accident history demonstrates that the roads have been properly constructed and maintained, and that they are safe for public use and travel.

Mr. Eater may be called to testify regarding the Wyoming High Risk Rural Roads program, and that neither of the County Roads here (133 and 113) fall within

that category. Mr. Eatinger may be called to testify regarding his discussions with WYDOT personnel regarding the Roads in question, and how the information regarding their safety has been compiled.

Mr. Eatinger may be called to testify regarding the traffic counts for Highway 353 and County Roads 133 and 113. He may be called to testify as to how those numbers compare with other roads in Sublette County in terms of usage.

Mr. Eatinger may be called to testify as to any of the documents produced by McMurry to the Objectors and that relate to road use, standards, transportation facts, road signage, truck traffic related to McMurry's sand and gravel operations, and on-site dust control measures.

Mr. Eatinger may be called to testify regarding construction of "Mathis Lane," and whether it is viable or appropriate to do so. He may also be called to testify regarding how "Mathis Lane" compares to the existing roads, and the fact that it would cross federal land, and its distance to the State Highway.

The basis and reasons for Mr. Eatinger's opinions include his personal observations, experience with the Sublette County Road and Bridge Department, his knowledge of the area, his measurements, his photographs, and his education, training and experience. The data or other information considered by Mr. Stresky in forming his opinions are set forth in the WYDOT, transportation, usage, and road documents

produced to the Objectors. Mr. Eatinger has also reviewed the truck load out history for McMurry's operations and the related truck trips related thereto. Mr. Eatinger has also reviewed photographs and maps of the area, which documents have been produced to the Objectors. McMurry may use any of part of the Application or the other documents identified and/or produced as exhibits to support Mr. Eatinger's testimony.

Mr. Eatinger received a B.S. in Civil Engineering from Montana State University in 1982. His Resume was previously produced to the Objectors, and is attached hereto. Mr. Eatinger will testify about his education, training and experience, including his experience in designing, constructing and maintaining highways and roads, road usage, and safety. As a Consulting Principal in the firm of Rio Verde Engineering (Rio Verde), he charges \$ 110.00 per hour, plus expenses. The Rio Verde Rate Schedule was also previously provided to the Objectors. Mr. Eatinger has not testified as an expert witness in the past four (4) years.

RESERVATION OF RIGHTS

McMurry reserves the right to supplement the foregoing opinions and/or designations, or to rely on any demonstrative evidence or exhibits produced or used by any party during discovery or the hearing in this action. McMurry reserves the right to amend these opinions to conform to the evidence that may arise subsequent

to the filing of this Expert Witness Designation.

McMurry reserves the right to ask any of the foregoing witnesses questions about exhibits produced by any other party to these proceedings.

McMurry reserves the right to ask any of the fact witnesses at the hearing to provide opinions as provided for in Wyoming Rule of Evidence 701.

Dated this 20th day of May, 2013

/s/

Harriet M. Hageman (Bar No. 5-2656)
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RIO VERDE ENGINEERING

EMPLOYEE PROFILE

MARK C. EATINGER, PELS

Title	President, Design Engineer, Construction Manager, Surveyor
Expertise	<ul style="list-style-type: none">- Construction management/project administration.- Utility system design for water transmission and distribution systems, sewage collection systems, lift stations, pressure sewer systems, pump stations, etc.- Urban and rural street design.- Quality control and inspection.- Land surveying.- Water rights.- 10 years of construction experience as a team member in a construction company preparing and working within budgets.
Experience with R.V.E.	<ul style="list-style-type: none">• County Road Design, Inspection, and Contract Administration• WWDC, Little Snake River Conservation District Small Dams Project. Design, safety of dams, water rights, and inspection.• Rio Verde Engineering. Internal project design, quality control, and supervision.• Town of Pinedale. Served as the Town Engineer from 1996 - 2000 and 2001 to 2006.• Sublette County, Paradise Road CR 23-136, Daniel Merna CR 23-112, Forty Rod Road CR 23-149, Mickelson Lane CR 23-141, and Big Sandy Elkhorn CR 23-118 all reconstructed with new asphalt.• Sublette County, Mesa Road CR 23-230, new Construction with asphalt.• Sublette County, East Green River Road Dugway CR 23 110 and Dry Piney Road CR 23-198 reconstructed with new gravel surface.• Town of Pinedale, Wyoming Water Development Commission, 3 miles of transmission waterline and Fremont Lake intake including design, preparation of plans and specifications, construction management, construction staking, and inspection.• Wyoming Water Development Commission, Fayette Irrigation District Rehabilitation Project. Work on inventory, design, analysis, and report.• Wyoming Game and Fish. Work on topographic survey, drawing and design review, and construction management.• Wyoming Water Development Commission, Regional Water System for the Town of Pinedale Study. Facilitate development of land use plan for two mile radius with Town and County Planning and Zoning, provide preliminary design of phases and associated cost estimates. Work on fine tuning computer model of the transmission and distribution system by running calibration tests and making the appropriate adjustments.• Work on projects requiring installation and control of panel points for aerial photography.• Wyoming Department of Transportation, Big Piney Bike Path, topographic survey and design.

Mark C. Eatinger
Employee Profile
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- Town of Pinedale. 1.1 miles of sewer line rehabilitation including design, preparation of plans and specifications, construction management, construction staking, and inspection.
- Town of Pinedale, Wyoming Water Development Commission, West Side Water Supply Project consisting of 2.2 miles of 10 inch water main. Worked on design, plans and specifications, construction management, and inspection

**Previous
Experience
with Kiewit
Construction
Company
1982-1992**

- Gilbert Western Corporation, Lakepoint Project. Managed people and equipment necessary to supply 140,000 cubic yards of concrete for seven miles of concrete paving on Interstate 80 West of Salt Lake City. Responsible for Concrete Quality Control. Supervised completion of job punch list.
- Kiewit/Al Johnson, Bonneville Navigation Locks. Provided equipment design and layout, supervised plant construction, and managed people and equipment necessary to supply 300,000 cubic yards of temperature controlled concrete over a one year period for the construction of the Bonneville Navigation Locks on the Columbia River 40 miles east of Portland, Oregon. Quality Control Manager of on-site testing lab for concrete aggregates and concrete. Obtained first-hand knowledge of partnering.
- Union Rock & Materials Corporation, Plant Superintendent. Managed people and equipment required to produce 125,000 cubic yards of concrete, 250,000 tons of asphalt and 750,000 tons of crushed and washed aggregates, annually. Formulated budgets by analyzing equipment and long-term goals versus anticipated yearly productions.
- Union Rock & Materials Corporation, Special Projects Engineer. Provided cost estimates, designed and supervised construction and installation of plant and equipment capital expenditures in the Phoenix Metropolitan Area.
- Decker Coal Company, various positions including work in special projects, cost department, drill and shoot, production, reclamation, and surveying.

**Academic
Background**

- B.S. Civil Engineering, Montana State University, 1982.
- Continuing Education Classes, University of Wyoming, 1993-2002.

Professional

- Registered Professional Engineer and Land Surveyor – Wyoming PE&LS 6410

Organizations

- American Society of Civil Engineers
- American Council of Engineering Companies
- National Society of Professional Engineers
- Wyoming Society of Professional Engineers
- Wyoming Engineering Society
- ACEC of Wyoming
- Master Mason A.F. & A.M.

STEVEN J. STRESKY

2624 Heartland Drive Sheridan, WY 82801
(307) 672-7133 steve@atcwyo.com

EDUCATION AND CREDENTIALS

M.S. HYDROLOGY University of New Hampshire, 1990

B.S. GEOLOGY and GEOPHYSICS University of Wyoming, 1980

Licensed Professional Geologist, State of Wyoming

Licensed Geologist and Hydrogeologist, State of Washington

MSHA-certified and OSHA-trained (40-hour and supervisor)

Member National Groundwater Association, American Geophysical Union, American Institute of Professional Geologists, and Wyoming Geological Association

EXPERIENCE

10/04 – Present HYDROGEOLOGIST Aqua Terra Consultants, Inc.

Project manager and lead hydrologist for mining projects. Coordinate turn-key mine permits for coal and non-coal clients, and manage ancillary permits and environmental baseline analyses required for state and local permits. Provide technical expertise in geologic and hydrologic analyses, including aquifer and surface-water characterization, quantitative data analysis, geologic mapping, and mine planning.

4/99 – 9/04 HYDROGEOLOGIST Aspect Consulting, LLC, Seattle, Washington

Project hydrogeologist for water-resources and environmental projects. Prepared proposals, cost estimates, and work plans, coordinated contractors, conducted field work, analyzed data, prepared reports, managed budgets, and interacted with clients and regulators. Projects included groundwater supply development for public, industrial, and agricultural uses, environmental assessment, and landfill investigations.

3/95 – 8/98 HYDROGEOLOGIST Handex Environmental, Inc., Marlboro, Massachusetts

Managed environmental assessment and remediation projects for hazardous-waste and contaminated retail/bulk petroleum sites. Prepared work scopes, managed and conducted field work, analyzed data, prepared reports, and interacted with clients and regulators. Projects included contamination assessment, human health risk assessment, remediation design/implementation, and site closure evaluation at commercial and industrial facilities. Contamination experience includes a broad range of petroleum, industrial process fluids, metals, and hazardous wastes.

10/92 – 7/93 HYDROGEOLOGIST Shevenell-Gallen and Associates, Inc., Portland, Maine

2/91 – 4/92 HYDROGEOLOGIST Shevenell-Gallen and Associates, Inc., Portsmouth, NH

Conducted Phase I/II environmental assessments and UST removal projects for commercial and residential sites. Performed background research, conducted subsurface investigations (drilling, test pits, and soil-vapor surveys), performed soil and groundwater sampling, and prepared reports.

3/81 – 4/88 GEOPHYSICIST Mobil Oil Corporation, Dallas, Texas

Processed and interpreted reflection seismic data for oil and gas exploration. Processing included 2D and 3D surveys in the Permian, Powder River, and Michigan basins, Gulf of Mexico, Gulf Coast, off-shore Alaska, off-shore Africa, North Sea, and Barents Sea.

SELECTED PROJECT SUMMARY

MINE PLANNING

CORDERO-ROJO MINE, Cloud Peak Energy, Eastern Powder River Basin

Project geologist and hydrologist for permitting a Lease by Application to expand mining operations. Implemented and conducted field programs to install groundwater monitoring wells, measure stream flow in the Belle Fourche River, and map the Alluvial Valley Floor (AVF). Obtained and analyzed stream-flow records to determine flood frequencies for diversion designs, and evaluated potential connections among the stream, the adjacent alluvium and the advancing mine pits. Prepared geologic cross sections and tied in groundwater hydrology to evaluate impacts from regional CBM development and mining. Assembled technical data and prepared all permitting elements associated with hydrologic and geologic baseline analyses, coordinated field tours with the DEQ, and finalized a successful outcome for the AVF determination, which was approved by DEQ for mining.

FREDERICK QUARRY, McMurry Ready Mix Company, Southeast Wyoming

Project manager and mine permit coordinator for a hard-rock quarry. Provided turn-key permitting services, including technical characterization of groundwater resources to evaluate potential impacts from mining and provide a mining water supply. Evaluated potential groundwater production in fractured rock and supervised the installation of a water supply well in an area difficult to obtain new water rights. Completed subsequent permitting with the SEO requiring analysis that demonstrated minimal potential impacts to the Platte River, located in a sensitive Groundwater Control Area. The mine is now in operation with all approved permits, and the water supply well continues to supply a viable mining operations resource.

YOUNGS CREEK MINE, Youngs Creek Mining Company, Northern Wyoming

Project geologist and hydrologist to manage mine permitting for geologic, hydrologic and AVF characterizations. Designed and implemented surface-water and groundwater monitoring programs in a sensitive hydrologic area where groundwater and surface water enter Wyoming from Montana, flow through the permit area, then re-enter Montana in the Tongue River Valley. Completed AVF mapping in four river valleys, designed and implemented field testing to characterize valley aquifers, and led a field tour with DEQ to review hydrologic and AVF elements of the mine permit area. Designed and constructed a comprehensive numerical groundwater model used to quantify the hydrologic balance and predict mining impacts to groundwater and stream flow. The permit was successfully approved without public comment.

T-CROSS-T RANCH PIT, McMurry Ready Mix Company, Northern Wyoming

Project manager and mine permit coordinator for a sand-and-gravel mine resource. Managed all permitting elements to develop a construction aggregate resource in a sensitive environmental area. Implemented a surface-water monitoring program in Piney and Little Piney creeks, and characterized connected groundwater in the valley bottom that recharges the creeks, supports wetlands and supplies local irrigation. Considered in data analyses were groundwater and surface water discharges from nearby Lake DeSmet, which affect both groundwater and surface water quality in the valley bottom. Worked with wildlife agencies to negotiate protection strategies for the valley bottom, stream flow and raptors. The operation now has all approved permits, and continued environmental monitoring indicates that there have been no impacts to surface water or wildlife.

CHUITNA MINE, Alaska

Project hydrologist assisting with mine permitting of a new Greenfield mining venture. Compiled and analyzed surface water and groundwater data to prepare permitting for mine discharges. Prepared all EPA NPDES permitting documents, and coordinated with client and regulatory staff to ensure a comprehensive characterization of potential discharges and impacts to water quality and stream flow. Assisted in reviewing plans and data for groundwater and surface water monitoring, and worked with other consultants to advise on environmental

monitoring in preparing EIS and mine permit documentation. Provided technical advice regarding complex glacial stratigraphy, shallow groundwater, variable rainfall distribution, and extensive peat deposits that presented unique challenges in hydrologic design.

EASTFORK RANCH PIT, McMurry Ready Mix Company, Southwest Wyoming

Project manager and mine permit coordinator for a sand-and-gravel mine resource in a sensitive environmental and agricultural area. Coordinated with DEQ staff in early phases of project to ensure consensus among permit elements for baseline analyses. Implemented a drilling program to monitor groundwater and characterize the extent of the aggregate resource. Coordinated subcontractors for wildlife, vegetation, soils and cultural resources studies, and completed complex analysis of potential disturbance effects for the protection of sage-grouse within an established Core Area.

BIG HORN MINE, Big Horn Coal Company, Northern Wyoming

Project hydrogeologist to assist in technical evaluation of a mine pit reclaimed as a reservoir to reduce bond and permitting requirements. Developed conceptual mathematics and constructed a water-balance model to predict reservoir water quality with solute inputs from adjacent mine spoils, native bedrock, and river water designed to enter and exit the reservoir through gravel drains. Calibrated the model to match existing data, and utilized the model to demonstrate acceptable water quality at future equilibration. Presented the model to DEQ, which has since approved the bond reduction for permitting requirements.

QUARTER CIRCLE 41 RANCH PIT, Wyoming Construction Materials, Northern Wyoming

Project manager and mine permit coordinator for a construction aggregate resource. Coordinated subcontractors to complete permitting baseline elements for wildlife, vegetation, soils and cultural resources, as well as ancillary permitting for air quality and water rights. Completed initial resource evaluation through subsurface exploration, and mapped geologic elements to characterize prominent resource potential. The mining permit was successfully approved and the mine is currently in production.

HAYSTACK MINE, Haystack Coal Company, Southwest Wyoming

Project scientist for permitting and mine expansion. Provided hydrogeologic expertise for complex groundwater occurrence associated with overthrust geologic structure. Completed an analysis of potential disturbance effects for sage-grouse protection, which was accepted by the wildlife agency and is now in the final approval stage.

CABALLO AND NORTH-ANTELOPE/ROCHELLE MINES, Peabody Energy, Eastern Powder River Basin

Project hydrogeologist to assist with technical permitting requirements for mine expansions. Recommended and implemented a groundwater modeling technique to predict groundwater impacts from mine expansion, incorporating multiple mine sequences. Compiled technical data and assembled turn-key permit materials for the client to incorporate into their regulatory submittal. The permit application materials have been approved by DEQ for NARM, and are currently in review for Caballo Mine.

GREENFIELD COAL MINE PROJECT, County Coal, Western Powder River Basin

Project manager for assessing potential reserves for a new coal mine project. Coordinated surface use agreements and exploration permitting, and planned field exploration program for drilling. Supervised drilling and geophysical characterization and integrated existing data to develop a geologic model of a complex depositional system with multiple coal seams. Developed a geologic database to manage drilling and coal-quality data, and prepared a resource characterization report as a Competent Person for an ASX listing.

WATER RESOURCES

CITY OF GOLDENDALE, Southern Washington

Lead hydrogeologist for a water-supply project to augment existing spring-water supplies prone to drought and provide additional supply for a new energy facility. Prepared bid specifications, coordinated drilling contractors and logged geology for three high-capacity wells in aquifers of the Columbia River Basalt Group and local near-vent volcanic deposits. Utilized outcrop and laboratory information to identify specific basalt flows, and designed and conducted pumping tests to evaluate potential yield from each basalt flow. Instrumented agricultural and private wells within the basin to determine baseline effects from agricultural withdrawals, interference effects among wells, and aquifer characteristics. Presented results as lead author at a hydrologic symposium to hypothesize water-quality variation across the basin.

SOBOBA INDIAN RESERVATION, Southern California

Project hydrogeologist for the development of supplemental water supplies from a faulted, river-valley aquifer. Coordinated and conducted field activities to install a high-capacity well originally designed for irrigation. Logged geology, coordinated geophysical logging, and utilized resulting information to determine production intervals and well design. Interfaced with federal, state, and tribal representatives to determine specific water-quality analytes appropriate for tribal agricultural and domestic needs, and collected samples for analyses. Coordinated and instrumented pumping tests to characterize the aquifer and determine interference effects among irrigation wells. Analyzed pumping-test data and water-quality results, and compiled final report. Based on well yield that substantially exceeded original expectations, the well is now utilized for both agricultural and domestic uses.

SAN MANUEL BAND OF MISSION INDIANS, Southern California

Field coordinator and hydrogeologist for a groundwater resources project related to spring-water bottling plant development and potential impacts on tribal water resources from nearby tunnel construction. Designed, installed, and maintained automated pressure and flow monitoring systems for horizontal wells and associated springs deriving water from fractured bedrock. Coordinated and conducted field meetings for tribal representatives and contractors. Instrumented and conducted single- and multi-well flow tests and analyzed resulting data to determine potential long-term well yield and inter-well interference. Results were used in the bottling plant design now with FDA approval and in successful operation.

LUMMI INDIAN RESERVATION, Northern Puget Sound, Washington

Field hydrogeologist for the installation and testing of water supply wells in glacial deposits prone to salt water intrusion. Provided coordination and oversight for drilling and logged geology to determine optimal producing zones, while monitoring chloride concentrations to minimize salt water impacts to water quality. Designed, instrumented, and conducted pumping tests to determine aquifer parameters and well yields. Data analyses included the combined interactions of tidal, barometric, and well-interference effects. Results were used in a comprehensive groundwater model to predict future salt water impacts and water-resource sustainability.

WASHINGTON NATIONAL PROJECT, King County, Washington

Project hydrogeologist for a groundwater monitoring program for a major development abutting salmon fisheries. Conducted oversight for monitoring well installations in a glacial-advance aquifer. Utilized subsequent groundwater quality data to statistically determine pre-construction background water quality, and assisted in the development of groundwater management and quality assurance plans for post-construction compliance monitoring.

STAPLES HEADQUARTERS, Eastern Massachusetts

Completed fracture analyses for a bedrock water-supply well field. Field-verified faults, joints, and foliation, and sited a test well near the intersection of two faults to maximize yield. Supervised drilling, conducted pumping

tests, and analyzed data to determine well yield and aquifer characteristics. Well yield exceeded expectations, allowing the facility to utilize one water-supply well rather than several low-yielding wells as previously recommended.

ENVIRONMENTAL

LANDFILL INVESTIGATIONS, Puget Sound, Washington

Project hydrogeologist for hydrogeologic and landfill efficacy evaluations at five Puget Sound landfills. Projects included subsurface investigations to develop conceptual geologic models, monitoring well and gas probe installations for groundwater contamination and landfill gas delineation, slug and pumping tests to determine aquifer characteristics, evaluation of existing leachate and gas collection systems, and field data collection to determine a site water balance for phytoremediation. Performed all phases of field work, contractor coordination, client/regulatory interaction, data analysis, and reporting.

LANDFILL CRITICAL SITING, Cedar Hills Regional Landfill, Southeast Puget Sound, Washington

Project hydrogeologist for a metropolitan landfill cell evaluation to determine detailed glacial and inter-glacial stratigraphy, delineate perched groundwater systems, estimate vertical head distribution of the regional aquifer, and discern sources of existing and potential groundwater contamination. Utilized continuous coring to obtain detailed samples for stratigraphic delineation, and used carbon dating to define glacial and interglacial horizons. Used drilling results and engineering laboratory data to conceptualize how low-permeability layers might influence leachate migration and impact the regional aquifer, and for design of a shallow perched water interception system. Routinely interfaced with landfill, regulatory, and health-department personnel. The investigation was approved by the agencies, and the landfill cell has successfully been constructed and utilized.

RISK-BASED SITE ASSESSMENT, Gasoline Service Stations, Willamette Valley, Oregon

Reviewed environmental history for several sites with problematic contamination issues. Determined data needs and collected additional soil and groundwater data to evaluate sites for potential regulatory closure. Utilized state risk assessment protocols to determine risk to human health for anticipated site uses. Successfully negotiated three sites to closure by recommending liberal approaches to evaluating site risk from soil and groundwater contamination.

GASOLINE SERVICE STATION ASSESSMENT AND REMEDIATION, Central and Eastern Massachusetts

Managed more than 50 contaminated retail-petroleum sites for a major-oil client. Work scopes ranged from groundwater and soil assessment to active remediation involving excavation, NAPL recovery, pump-and-treat, sparging, and SVE in sensitive environmental and drinking-water areas. Successfully managed 15 sites to post-remediation closure using risk-based protocol, including EPA/ASTM risk assessment methodologies.

FISHERVILLE MILL, South-Central Massachusetts

Conducted extensive contamination and remediation assessment of a historical mill complex and related canal. Designed and coordinated geophysical surveys, monitoring well installations, and soil sampling. Delineated DNAPL source area related to steel processing and heating-oil NAPL up to 22 feet in thickness. Utilized network of 60 monitoring wells to evaluate horizontal and vertical groundwater flow patterns and contamination distribution in a glacial river-valley aquifer in the contributing area of a public water-supply well field. Assisted in the development of remedial options, and participated in a televised panel at a public meeting to present field results. Provided oversight for the installation of extraction wells for CVOC recovery and containment. Designed, conducted, and analyzed pumping tests to determine aquifer parameters and evaluate aquifer boundaries.

FORNIER-GEMME LAGOON, Central Massachusetts

Implemented a field program for an extensive soil excavation at a hazardous-waste lagoon that produced NAPL and CVOC contamination in soil, groundwater, surface water, and nearby wetland sediment. Permitted and maintained a NAPL recovery and carbon treatment system for excavation dewatering. Utilized TPH field-extraction analyses to determine excavation extent and evaluate post-excavation soil quality. Coordinated site restoration and post-excavation groundwater monitoring program. Conducted aerial-photo and outcrop fracture analyses, and used resulting data to evaluate potential preferential pathways and anisotropy in the underlying bedrock aquifer, and to site down-gradient bedrock compliance monitoring wells. Supervised bedrock coring, designed bedrock couplets, and utilized fracture analysis data to determine bedrock groundwater flow patterns. The excavation proved successful enough to preclude previously-recommended remediation options, saving substantial project costs. The site was successfully negotiated to temporary closure pending evaluation of future site use.