

Michael Baker

INTERNATIONAL

We Make a Difference

December 16, 2015

Purchasing Division
State of West Virginia Department of Administration
2019 Washington Street, East
Charleston, West Virginia 25305-0103

**Re: Expression of Interest (EOI) for Professional Engineering
Design Services and Construction Monitoring Services for the
Mountain View Portals DEP16431 (CEOI 0313 DEP1600000005)**

Dear Ms. Beth Collins:

Michael Baker International (Michael Baker) is pleased to present our response to your EOI related to the mapping and design services for the above referenced project in Preston County. Michael Baker is honored to have built a 30-year relationship with the West Virginia Department of Environmental Protection (WVDEP), helping to solve complex mining and environmental challenges. Since 1983, we have worked together on more than 40 projects, and **have successfully received local and national recognition for our efforts**. At Michael Baker, we do not take the past for granted, but rather, look forward to opportunities to enhance the services we offer to the WVDEP. To meet your design requirements and respond to the EOI, Michael Baker has assembled a team of experienced personnel who have performed on previous similar assignments for WVDEP. Our proposed team members have also provided similar services for numerous mine reclamation and related projects over the years for a variety of clients as reflected in the enclosed documentation.

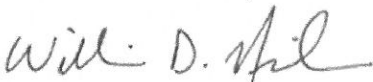
We are proud that our team is led by Mr. Charles D. Stover, with responsibility for providing technical assistance and guidance for all reclamation projects. Mr. Stover is the former Acting Chief and Design Administrator for the WVDEP AML/AMD Program, and most recently, the Reclamation Specialist Supervisor for the Charleston Regional Office of the WVDEP Office of Special Reclamation. This long-standing history and specific experience in mine reclamation and understanding of the AML program will prove to be invaluable to the project and the team. Mr. Stover's presence will help Michael Baker be better prepared to address the remediation issues and contribute to more efficient and cost-effective solutions.

Michael Baker's staff is experienced with all aspects of mine reclamation projects. We have provided similar services to the WVDEP, as well as the Pennsylvania DEP, the Ohio DNR, and the U.S. Office of Surface Mining to name a few. We feel that our combination of regional experience, familiarity with the site, close proximity, and Mr. Stover's specific knowledge and expertise is unique to Michael Baker, and we are confident we can provide efficient, timely, personal, cost effective, and quality solutions for the WVDEP on this assignment.

We look forward to a favorable review of our qualifications and the opportunity to personally present our proposed project approach. Should you have any questions or require additional information, please feel free to contact me at (724) 495-4225 wneider@mbakerintl.com; or Mr. Stover at (304) 769-0821 (cell).

Very truly yours,

Michael Baker Jr., Inc.



William D. Neider, P.E.
Project Manager



Required Forms

- Solicitation Form
 - Affidavit
 - Vendor Preference
 - Certification and Signature Page
 - Addendum Acknowledgement
- 



Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Centralized Expression of Interest
02 — Architect/Engr

Proc Folder: 157405

Doc Description: Expression of Interest Mtn. View Portals

Proc Type: Central Contract - Fixed Amt

Date Issued	Solicitation Closes	Solicitation No	Version
2015-10-27	2015-12-17 13:30:00	CEOI 0313 DEP1600000012	1

BID RECEIVING LOCATION

BID CLERK

DEPARTMENT OF ADMINISTRATION

PURCHASING DIVISION

2019 WASHINGTON ST E

CHARLESTON

WV 25305

US

VENDOR

Vendor Name, Address and Telephone Number:

Michael Baker International, Inc.
100 Airside Drive
Airside Business Park
Moon Township, PA 15108
412-269-6300 Main

RFQ No: DEP16 #12
Buyer: Beth Collins
Bid Opening Date: 12-17-15
Bid Opening Time: 1:30pm

12/17/15 09:35:02
Purchasing Division

FOR INFORMATION CONTACT THE BUYER

Beth Collins
(304) 558-2157
beth.a.collins@wv.gov

Signature X

FEIN # 25-1228638

DATE December 16, 2015

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION:

The West Virginia Purchasing Division, for the Agency, the West Virginia Department of Environmental Protection, is soliciting Expressions of Interest for professional mapping and design services for the Mountain View Portals project located in Preston County, West Virginia, per the attached bid requirements and specifications.

INVOICE TO	SHIP TO
ENVIRONMENTAL PROTECTION OFFICE OF AML&R 601 57TH ST SE CHARLESTON WV 25304 US	ENVIRONMENTAL PROTECTION OFFICE OF AML&R 601 57TH ST SE CHARLESTON WV 25304 US

Line	Comm Ln Desc	Qty	Unit Issue
1	EOI Engineering Design Services		

Comm Code	Manufacturer	Specification	Model #
81100000			

Extended Description :

*Dates of Service are estimated for bidding purposes only.

SCHEDULE OF EVENTS

Line	Event	Event Date
1	Tech Question Submittal Deadline at 5:00 PM	05/11/13

DEP1600000012	Document Phase Final	Document Description Expression of Interest Mtn. View Portals	Page 3 of 3
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ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions

STATE OF WEST VIRGINIA
Purchasing Division
PURCHASING AFFIDAVIT

MANDATE: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Michael Baker International, Inc.

Authorized Signature: [Signature] Date: December 16, 2015

State of Pennsylvania

County of Allegheny, to-wit:

Taken, subscribed, and sworn to before me this 16th day of December, 20 15.

My Commission expires April 19, 20 16.

AFFIX SEAL HERE

NOTARY PUBLIC

Purchasing Affidavit (Revised 07/01/2012)

COMMONWEALTH OF PENNSYLVANIA

Notarial Seal

Linda J. Stahl, Notary Public

Munhall Boro, Allegheny County

My Commission Expires April 19, 2016

MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

State of West Virginia

VENDOR PREFERENCE CERTIFICATE

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

1. Application is made for 2.5% vendor preference for the reason checked:

- ____ Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; **or**,
 ____ Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; **or**,
 ____ Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; **or**,

2. Application is made for 2.5% vendor preference for the reason checked:

- ____ Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or**,

3. Application is made for 2.5% vendor preference for the reason checked:

- ____ Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or**,

4. Application is made for 5% vendor preference for the reason checked:

- ____ Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; **or**,

5. Application is made for 3.5% vendor preference who is a veteran for the reason checked:

- ____ Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; **or**,

6. Application is made for 3.5% vendor preference who is a veteran for the reason checked:

- ____ Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

7. Application is made for preference as a non-resident small, women- and minority-owned business, in accordance with West Virginia Code §5A-3-59 and West Virginia Code of State Rules.

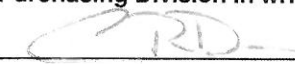
- ____ Bidder has been or expects to be approved prior to contract award by the Purchasing Division as a certified small, women- and minority-owned business.

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

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

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

Bidder: Michael Baker International, Inc.

Signed: 

Date: December 16, 2015

Title: Assistant Vice President

CERTIFICATION AND SIGNATURE PAGE

By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained here; that I am submitting hit bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Michael Baker International, Inc.

(Company)


Chad R. Davis, P.E., Assistant Vice President

(Authorized Signature) (Representative Name, Title)

412-375-3077 | 412-375-2997 | December 16, 2015

Phone Number | Fax Number | Date

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: CEOI_DEP1600000005

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to our proposal, plans and/or specification, etc.

Addendum Numbers Received: NONE

(Check the box next to each addendum received)

☐ Addendum No. 1

☐ Addendum No. 6

☐ Addendum No. 2

☐ Addendum No. 7

☐ Addendum No. 3

☐ Addendum No. 8

☐ Addendum No. 4

☐ Addendum No. 9

☐ Addendum No. 5

☐ Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Michael Baker International, Inc.

Company

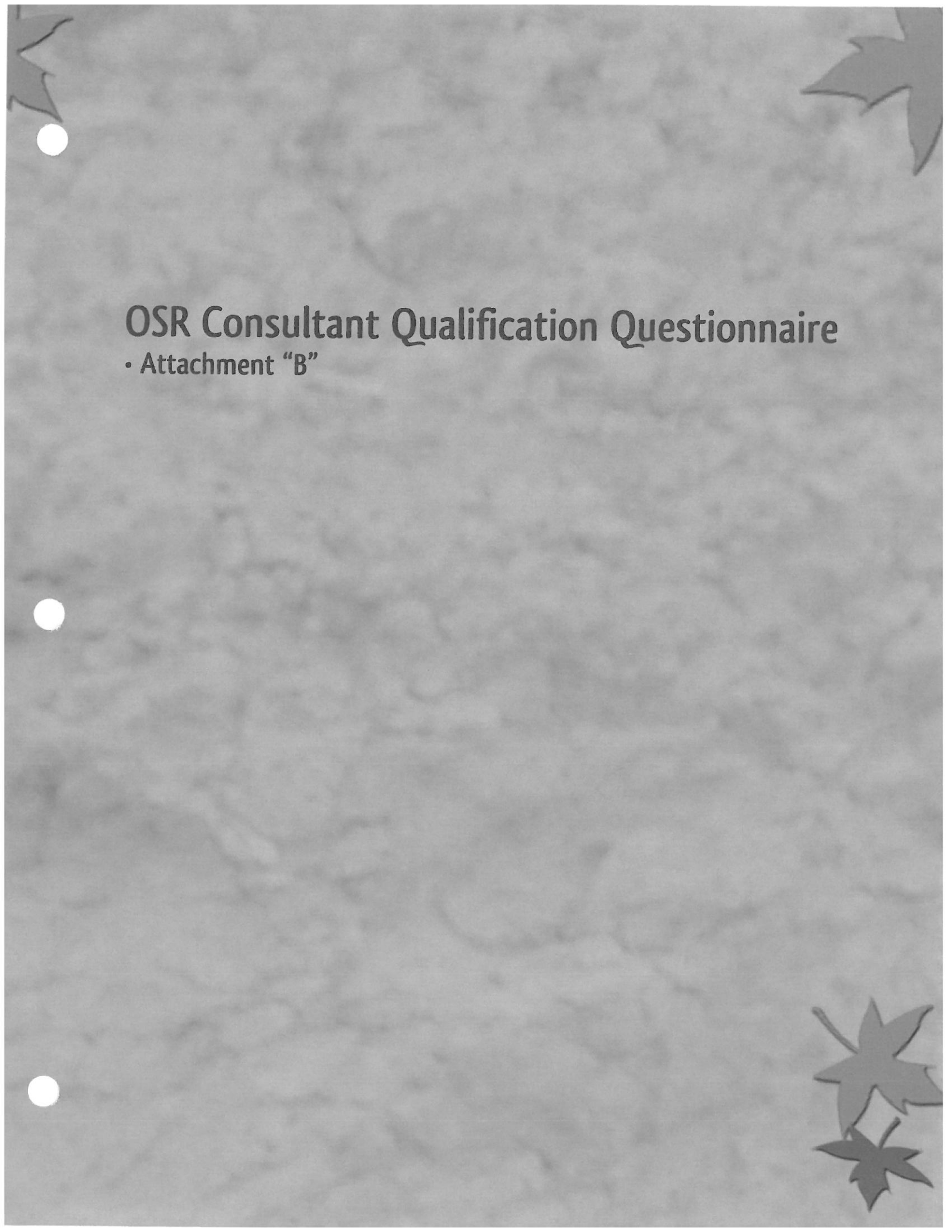

Chad R. Davis, P.E. (Authorized Signature)

December 16, 2015

Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

Revised 08/01/2015

The page features a light gray, textured background. In the corners, there are decorative elements: a single maple leaf in the top-left, a single maple leaf in the top-right, and a cluster of two maple leaves in the bottom-right. On the left side, there are three white circular punch holes.

OSR Consultant Qualification Questionnaire

• Attachment “B”

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE**

Attachment "B"

PROJECT NAME Mountain View Portals Preston County, WV DEP16431 (CEOI 0313 DEP1600000005)		DATE (DAY, MONTH, YEAR) December 16, 2015		FEIN 25-1228638	
1. FIRM NAME Michael Baker International, Inc.		2. HOME OFFICE BUSINESS ADDRESS 100 Airside Drive Moon Township, Pennsylvania 15108		3. FORMER FIRM NAME Michael Baker Jr., Inc.	
4. HOME OFFICE TELEPHONE 412.269.6300	5. ESTABLISHED (YEAR) 1940	6. TYPE OWNERSHIP Individual <u>Corporation</u> Partnership Joint-Venture		6a. WV REGISTERED DBE (Disadvantaged Business Enterprise) YES <u>NO</u>	
7. PRIMARY AML DESIGN OFFICE: ADDRESS / TELEPHONE / PERSON IN CHARGE / NO. AML DESIGN PERSONNEL EACH OFFICE Michael Baker International / 100 Airside Drive, Moon Township, PA 15108 / 724.495.4079 / Christopher A. Ruppen, PG / 25 Russell E. (Rusty) Hall, PE, PS / 7 (Charleston, WV)					
8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM Chad R. Davis, PE, Assistant Vice President – 412.375.3077			8a. NAME, TITLE, & TELEPHONE NUMBER - OTHER PRINCIPALS Russell E. (Rusty) Hall, PE, PS, Assistant Vice President – 304.769.0821		
9. PERSONNEL BY DISCIPLINE (Bold Lettering Indicates Minimum Design Team Members)					
<u>79</u> ADMINISTRATIVE <u>12</u> ARCHITECTS <u>0</u> BIOLOGISTS <u>48</u> CADD OPERATORS/DESIGNERS <u>1</u> CHEMICAL ENGINEERS <u>66</u> CIVIL ENGINEERS <u>33</u> CONSTRUCTION INSPECTORS / Mgrs. <u>56</u> DESIGNERS <u>3</u> DRAFTSMEN	<u>1</u> ECOLOGISTS <u>0</u> ECONOMISTS <u>6</u> ELECTRICAL ENGINEERS <u>44</u> ENVIRONMENTALISTS <u>13</u> ESTIMATORS <u>19</u> GEOLOGISTS <u>7</u> HISTORIANS <u>3</u> HYDROLOGISTS	<u>2</u> LANDSCAPE ARCHITECTS <u>6</u> MECHANICAL ENGINEERS <u>2</u> MINING ENGINEERS <u>1</u> PHOTOGRAMMETRISTS <u>12</u> PLANNERS: URBAN/REGIONAL <u>0</u> SANITARY ENGINEERS <u>2</u> SOILS ENGINEERS <u>7</u> SPECIFICATION WRITERS	<u>16</u> STRUCTURAL ENGINEERS <u>18</u> SURVEYORS/Technicians <u>6</u> TRAFFIC ENGINEERS <u>38</u> ENGINEERING TECHNICIANS <u>73</u> PROJECT MANAGERS <u>34</u> GIS SPECIALISTS <u>130</u> OTHER <u>738</u> TOTAL PERSONNEL (Moon Township, PA and Charleston, WV Offices)		
TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: <u>19</u> * RPEs other than Civil and Mining must provide supporting documentation that qualifies them to supervise and perform this type of work.					
10. HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE?					
_YES _NO N/A					

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE**

Attachment "B"

11. OUTSIDE KEY CONSULTANTS / SUB-CONSULTANTS ANTICIPATED TO BE USED. Attach *AML Consultant Confidential Qualification

NAME AND ADDRESS: Test Boring Services Inc. (If Required) 181 Beagle Club Road Washington, PA 15301	SPECIALTY: Drilling, Geotechnical Exploration, and Monitoring	WORKED WITH BEFORE ☒ Yes ☐ No
NAME AND ADDRESS: Bio-Chem Testing, Inc. 5 Weatheridge Drive Hurricane, WV 25526	SPECIALTY: Water Testing	WORKED WITH BEFORE ☒ Yes ☐ No
NAME AND ADDRESS: Sturm Environmental Services (If Required) Brushy Fork Road Bridgeport, WV 26330	SPECIALTY: Soil Testing	WORKED WITH BEFORE ☒ Yes ☐ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ Yes ☐ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ Yes ☐ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ Yes ☐ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ Yes ☐ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ Yes ☐ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ Yes ☐ No

12. RELEVANT EXPERIENCE.

A. Is your firm's personnel experienced in Abandoned Mine Lands Remediation / Mine Reclamation Engineering?

YES Description and Number of Projects:

Michael Baker has been assisting state and federal agencies with abandoned mine land (AML) restoration and acid mine drainage (AMD) remediation since 1977. Michael Baker's experience began with Operation Scarlift and now includes well over 200 AML/AMD remediation projects ranging from strip pit and highwall regrading subsidence control, mine sealing, reclamation of mine refuse piles,; drainage improvements, revegetation, stream relocation, restoration of streams and wetlands, natural streambed design, landslide correction, and replacement of water supplies affected by abandoned mine lands to abatement of AMD problems. These services are accomplished by providing a "one-stop-shop" of professionals including engineers, geologists, surveyors, and environmental scientists to address essentially any issue that may be encountered on an AML project. These professionals combine diverse experience in:

- | | | | |
|--------------------------|------------------------------|-------------------------------|------------------------|
| • Mining | • Water Treatment | • Stormwater Management | • Surveying |
| • Geotechnical | • Water Line Design & Supply | • E&S Control | • Mapping |
| • Geology | • Grading | • Sustainable Design | • Field Reconnaissance |
| • Hydraulics & Hydrology | • Earthwork Balance | • Hazardous Waste Remediation | • Project Management |
| • Groundwater | • Highwall Elimination | • Material Handling Plans | • Quality Control |

Michael Baker has been assisting West Virginia Department of Environmental Protection with Abandoned Mine Lands Remediation/Mine Reclamation Engineering design services ever since WVDEP initiated its AML Reclamation Program in 1983. In addition to WVDEP, we have also assisted PADEP with AML reclamation and AMD remediation designs. The "AML and related Project Experience Matrix" table provided at the end of this Consultant Qualification Questionnaire (CQQ) shows our experience on AML related projects for different state agencies, and for private clients.

NO

B. Is your firm experienced in soil analysis?

YES Description and Number of Projects:

Michael Baker has conducted in-house soil analysis for over 60 years. We take pride in our work that starts with a geologic literature review to identify and review available references that characterize the site soils and other factors influencing the development and condition of the soils. The task is followed by a geotechnical reconnaissance that is essentially a site view by a Michael Baker geologist or geotechnical engineer to characterize the site soil conditions. Lastly and as appropriate, a subsurface investigation is conducted to collect and identify site soils and assign appropriate engineering descriptions that, in turn, are utilized for soil analysis.

In designing AML reclamation projects, generally three types of soil analysis are needed. These analyses may include: a) geotechnical analysis/soil classification, b) soil analysis for revegetation potential (pH, Acid Base Accounting, Nutrients) and c) soil analysis for hazardous materials. Michael Baker is involved in selecting and collecting the soil samples and analyzing the results of laboratory testing as required for design. Laboratory testing is performed by a subcontractor. Of the 30 most recent AML projects, Michael Baker was involved in soil analysis for 23 projects. Michael Baker has also prepared reprocessing potential evaluations of coal refuse sites (10 projects),

12. RELEVANT EXPERIENCE.

which required evaluation of mine refuse based on laboratory test results. Refuse testing for these projects included refuse float/sink and proximate analysis, with results evaluated by Michael Baker to determine BTU content and reprocessing potential.

In addition to evaluating coal refuse for reprocessing, Michael Baker has experience in the design of coal refuse facilities through our work in supporting active mining. Michael Baker has conducted the geotechnical analysis related to slope stability and liner/cover soils permeability, as well as the analysis to support the staging required to construct the refuse area. Our experience includes coarse refuse piles, fine refuse (slurry) impoundments, and combined refuse areas. Michael Baker currently is involved with the final permitting of a refuse facility for which we have conducted all the geotechnical, civil, and hydraulic analysis for an approximate 300-acre refuse facility.

NO

C. Is your firm experienced in hydrology and hydraulics?

YES Description and Number of Projects:

Michael Baker's hydrology and hydraulic staff for AML remediation design are experts in the application of hydraulic models that include HEC-1, HEC-2, HEC-RAS, HY8, TR20, TR55, HAESTADS PONDS 2, FLOWMASTER, HYDROFLOW, KYPIPE 2, CYBERNET, SEDCAD 4, UNET, and DAMBRK. Michael Baker applies this experience to services such as stormwater management; culvert analysis; hydrologic and hydraulic studies; storm sewer design; floodplain modeling; channel design; watershed planning; energy dissipation; and waterline extension and distribution.

Expertise in hydrology and hydraulics is essential in any AML reclamation/remediation design. Of the 30 most recent AML projects, 28 projects needed hydrology/hydraulics expertise of the AML/AMD design group, and 100% of this work was conducted in-house.

NO

12. RELEVANT EXPERIENCE.

D. Does your firm produce its own aerial photography and Develop Contour Mapping?

YES Description and Number of Projects:

Since 1983, Michael Baker has been designing AML/AMD remediation projects for WVDEP. For all the AML projects to date, WVDEP provided Michael Baker with contour maps developed from aerial photography of the project site. Michael Baker's responsibility was to verify the topographic map by check field surveying.

Michael Baker has a survey and photogrammetric department with a staff of 96. Michael Baker routinely performs aerial photography and contour mapping for federal and several state agencies, as well as for private clients. This includes mapping for special reclamation projects for WVDEP. Michael Baker's Survey and Photogrammetric Department is as old as the company itself is; however, Michael Baker always brings the latest technology to the table. Fixed, mobile, and aerial LiDAR equipment are "state-of-the-art" tools that Michael Baker can offer to add efficiencies to the field mapping process and enhance quality. **Michael Baker is a national leader in the development and application of aerial LiDAR.** During the last five years, Michael Baker has completed more than 50 mapping projects. Some examples are listed as follows:

Professional Mapping and Design Services at the Bond Forfeited Permits of the Maurice Jennings Coal Company S-61-83 and S-53-78, WVDEP (Photogrammetric Mapping, Surveying Services, Bathymetric Surveying, and 4 Band Imagery).

Professional Mapping and Design Services at the Bond Forfeited Permits of the Masteller Coal Company S-125-82 and S-10-85-78, WVDEP (Photogrammetric Mapping, Surveying Services, Bathymetric Surveying, and 4 Band Imagery).

Professional Mapping and Design Services at the Bond Forfeited Permits of the F&M Coal Company S-1044-87 and S-57-84, WVDEP (Photogrammetric Mapping, Surveying Services, Bathymetric Surveying, and 4 Band Imagery).

Updating Boundary/Site Improvements and Utility Survey – 23 LPOEs, North and South U.S. Borders, US-VISIT (Photogrammetric Mapping and Surveying Services).

Rio Grande Valley Border Fence Boundary Surveys, Cameron and Hidalgo Counties, TX. U.S. Army Corps of Engineers, Fort Worth District (Metes and Bounds Surveys and Legal Deed Descriptions)

Land Ports of Entry (LPOEs) Aerial Mapping Refresh, North and South U.S. Borders. Department of Homeland Security, US-VISIT (Mapping)

Sewer Infrastructure Location/Verification, Allegheny County, PA. 3 Rivers Wet Weather, Inc. (GPS or Conventional Survey Data by Others)

Open-End Contract for Surveying and Photogrammetric Mapping Services, Statewide, Pennsylvania. Pennsylvania Department of Transportation (Through a series of nine open-end contracts, Michael Baker has been providing surveying and mapping services to PennDOT continuously since 1986.

Indefinite Delivery Contract A/E for Multidiscipline & Related Services for the Department of Homeland Security and Other Civil/Military Projects. U.S. Army Corps of Engineers, Fort Worth District (Surveying and Mapping)

Border Fence Project – PF225, Various Locations in TX, AZ, NM, CA. U.S. Army Corps of Engineers, Fort Worth District. (Aerial Photography, Analytical Aerotriangulation, Stereo Mapping Compilation, Digital Orthophotography, Horizontal and Vertical Control Surveys, Geodetic Surveys)

Land Ports of Entry (LPOEs) Aerial Mapping Refresh, North and South U.S. Borders. Department of Homeland Security, US-VISIT (Aerial Photography Stereo Mapping Compilation/Topographic Mapping, Horizontal and Vertical Control Surveys, Geodetic Surveys)

Aerial Photography, Contour Mapping, and Field Surveys are at the core of Michael Baker's business and expertise.

NO

12. RELEVANT EXPERIENCE.

E. Is your firm experienced in domestic waterline design? (Include any experience your firm has in evaluation of aquifer degradation as a result of mining.)

YES Description and Number of Projects:

Michael Baker, to date, has designed eight (8) domestic waterlines for WVDEP and countless others for clients in West Virginia, Pennsylvania, Ohio, and elsewhere. In general, for each of these projects, Michael Baker performed field surveying of proposed routes, subsurface investigation for storage tank site foundations, water distribution system hydraulic modeling and analyses, pipeline design, storage tank sizing, sizing and designing booster pumping station, and electric and telemetric system. For the McDowell County Public Water Supply System, Michael Baker also designed a water treatment and filtration plant. Construction plans, specifications, cost estimate and bid schedules were prepared for each project.

Michael Baker has performed numerous waterline extension feasibility studies to determine if the pre-law mining had impacted area aquifers from which local residents obtained drinking water. The studies also involved evaluation of mining activities in the project area with regard to date and time of mining, and the effect of mining on the local aquifers and groundwater quality based on hydrogeological data, resident interview, water sampling and testing, and historic background water quality information. To date, Michael Baker has performed more than 16 water line feasibility studies.

NO

12. RELEVANT EXPERIENCE.

F. Is your firm experienced in Acid Mine Drainage Evaluation and Abatement Design?

YES Description and Number of Projects:

Michael Baker's design experience includes both active and passive treatment systems, which is based on the characterization of the AMD site as well as the flows and chemistry of the AMD. To this end, Michael Baker provides AMD sampling to determine chemical parameters as well as the flow measurements covering high- and low-flow periods that are most important in developing AMD abatement system. To date, Michael Baker has evaluated and designed 17 AMD abatement systems, four of which are passive treatment systems while the other 13 are active treatment facilities that have been constructed and are currently in service. A few examples are listed as follows:

Professional Mapping and Design Services at the Bond Forfeited Permits of the Maurice Jennings Coal Company S-61-83 and S-53-78, West Virginia
Department of Environmental Protection, Office of Special Reclamation, Michael Baker designed seep collectors, conveyance pipes, pump stations, force mains, and limestone lined conveyance channels to transfer AMD to a high density lime slurry treatment system consisting of a surge pond, equalization pond, clarification ponds and a terminal aerobic wetland.

Professional Mapping and Design Services at the Bond Forfeited Permits of the Masteller Coal Company S-125-82 and S-10-85-78, West Virginia
Department of Environmental Protection, Office of Special Reclamation, Michael Baker designed seep collectors, conveyance pipes, and limestone lined conveyance channels to transfer AMD to a treatment system consisting of ponds for aeration, clarification, and sludge retention, a solar powered caustic soda feed pumps, and wholly passive treatment systems that do not include and water wheel lime feeders.

Professional Mapping and Design Services at the Bond Forfeited Permits of the F&M Coal Company S-1044-87 and S-57-84, West Virginia
Department of Environmental Protection, Office of Special Reclamation, Michael Baker designed seep collectors, conveyance pipes, pump stations, force mains, and limestone lined conveyance channels to transfer AMD to a high density lime slurry treatment system consisting of solar powered caustic soda feed pumps, surge ponds, equalization ponds, clarification ponds, and a terminal aerobic wetland.

Kempton Refuse and Acid Mine Drainage/Abandoned Mine Lands, Tucker County, West Virginia, West Virginia
Department of Environmental Protection, Office of Abandoned Mine Lands, Michael Baker designed conveyance pipes and limestone lined conveyance channels to transfer AMD to a treatment system consisting of an equalization pond, successive alkalinity producing system (SAPS pond), and aerobic wetland. The project was constructed in 2009.

Lancashire Acid Mine Drainage Treatment Plant Design, Permitting, and Construction Phase Services, Ebensburg, PA, Pennsylvania
Department of Environmental Protection, Michael Baker directed a multi-disciplinary team of engineers in the design and permitting of an 11 MGD acid mine drainage treatment plant; and subsequently provided construction phase services through commissioning. The treatment plant was successfully commissioned in 2011.

Condition Assessment and Operational Audit – Dumans Mine Water Treatment Plant, Barr Township, PA, Pennsylvania
Department of Environmental Protection, Michael Baker directed activities of a multi-disciplinary engineering team investigating avenues to reduce acid mine water treatment costs and improve operations at the pumping station, treatment plant, and sludge lagoons (9.4 MGD). Work involved review of records; numerous field measurements, bench-scale treatability studies; consultation with the electric company, cost estimating; and preparation of a report summarizing findings and recommendations. The team was charged with finding avenues to reduce the annual operation and maintenance cost of this facility materially while maintaining compliance with applicable effluent limitations.

Additionally, Michael Baker has designed ten AMD remediation projects for the WVDEP alone that included open limestone channel (OLC), anaerobic and aerobic wetlands and settling ponds, limestone sand dumping in the stream, and alkaline leach bed/anoxic limestone drains. Other Michael Baker AMD abatement designs have been designed for USACE's Baltimore and Nashville Districts, as well as the Pennsylvania Department of Environmental Protection.

NO

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN. (Furnish complete data but keep to essentials)

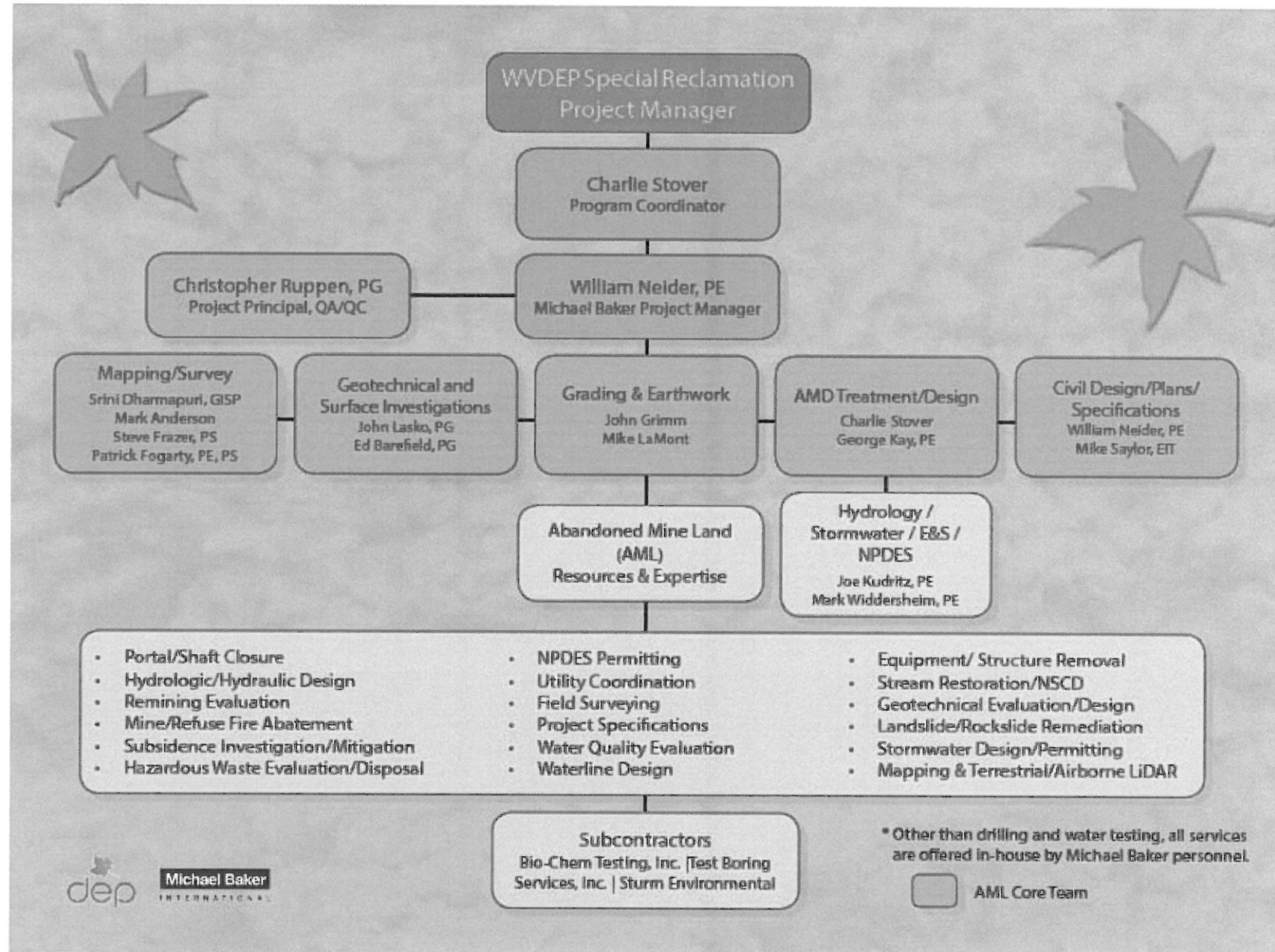
As depicted in Attachments B and C of this AML Consultant Questionnaire Form, Michael Baker can support this project with a variety and depth of technical resources as needed to deliver this project successfully. **However, the organization chart depicted on the following page identifies our core AML team that Michael Baker will dedicate to our WVDEP AML work.** This team will be led by Mr. Charlie Stover, serving as Michael Baker's Special Reclamation Coordinator. Charlie will be supported by Bill Neider, a registered West Virginia Professional Engineer, acting as Project Manager.

The balance of our committed team includes personnel with the type of capabilities required for a typical AML project, including a senior field investigator to help assess the site and understand the mining conditions, a geologist or civil associate to conduct subsurface investigations, a designer for grading and earthwork balance, a civil associate for stormwater/erosion & sedimentation control, and an engineer to assist with the design, plans and specifications.

Other technical disciplines are available to assess items like surface water quality, hazardous materials (past AMD treatment chemicals), cover soils, refuse stability, etc.

This team will work together closely for design efficiency and can handle multiple concurrent projects, tapping other Michael Baker technical resources, as needed, to ensure project success.

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN. (Furnish complete data but keep to essentials)



**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
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Attachment "B"

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN. (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Stover, Charles D. Technical Consultant	40	40	0

Brief Explanation of Responsibilities

Mr. Stover's state government career began as a Dept. of Highways Construction Inspector for two years working mostly on bridge projects, with the last project being the "Bigley Interchange Project" where three Interstate Highways converge in Charleston, W.Va. (I-77, I-79 & I-64). The next position was an Engineering Technician position with a new section of the WV Dept. of Natural Resources, Planning and Development Section's Coal Refuse and Dam Control Program. This was a "ground floor" position with the group being accumulated to regulate the dams and the coal refuse disposal statewide. He advanced to Charleston District Engineer while with that group. When the new federal surface mine laws were passed in 1977 (SMCRA) this entire group was dissolved into the Reclamation Division and placed on Permit Review Teams to provide the expertise to each team for reviewing coal refuse disposal plans and dam designs for freshwater and coal slurry disposal facilities. After approximately four years of permit review, Mr. Stover accepted a position with the Abandoned Mine Lands Program (AML) in 1982 as an inspector that he held for about three years. In 1985, he accepted the position of Design Administrator for AML where he developed a process to employ various engineering consultants simultaneously to design AML projects to standards set up by AML. As his career developed, he was made the Acting Chief of AML for approximately three years. The last eight years of his career was spent developing an additional office for the Special Reclamation Program to better utilize additional tax revenues that became available from a legislation action.

Ebenezer Run Highwall #9, Brooke County, West Virginia. *West Virginia Division of Environmental Protection.* Quality Control Manager. Responsibilities include quality and technical review of backfill design, channels, erosion control measures, details, technical specifications, bid tab, and construction cost estimate. The project consists of reclamation of two sites with approximately 3,660 linear feet of an abandoned strip mine highwall ranging in height from 30 to 40 feet and areas of mine spoil.

Waitman Barbe Highwall #1, Monongalia County, West Virginia. *West Virginia Division of Environmental Protection.* Quality Control Manager. Responsibilities include quality and technical review of backfill design, channels, erosion control measures, details, technical specifications, bid tab and construction cost estimate. The project consists of reclamation of approximately 4,600 linear feet of an abandoned strip mine highwall ranging in height from 30 to 45 feet. This includes areas of mine spoil, three areas of exposed coal refuse, an illegal dumpsite containing non-hazardous construction debris and a suspected 11 mine openings.

Collier Sportsman's Club Highwalls, Brooke County, West Virginia. *West Virginia Division of Environmental Protection.* Quality Control Manager. Provided quality and technical review of backfill design, channels, erosion control measures, details, technical specifications, bid tab, and construction cost estimate.

As Reclamation Specialist Supervisor (2003-2011) in the Department of Environmental Protection-Office of Special Reclamation, Mr. Stover was responsible for:

- ◆ Setting up a new production unit to catch the program up on a backlog of projects utilizing additional tax revenues created by legislative action.
- ◆ Acquiring staffing needs (both clerical as well as technical employees (Reclamation Specialists)) to put this unit into production and begin the "catch up process."
- ◆ Ensuring that all reclamation designs were completed and submitted to the WV Purchasing Division for proper advertising. Meeting interested contractors on-site and conducting a Pre-Bid Conference explaining all aspects of the design, and showing the project as well as answering questions. Upon obtaining a successful bidder, conducted a Pre-Construction Conference to ensure that the contractor got started correctly, and answered any questions about the design package.
- ◆ Making sure that all construction projects were monitored, and resolved any problems that arose during the construction phase.
- ◆ Monitoring and adjusting mine water discharges so that they were to be in compliance with the Clean Water Act. This usually required some adjustments to active water treatment sites that had been installed throughout the region, as well as "tweaking" some of the passive treatment sites that were built.
- ◆ Safeguarding that the project database, as well as the water quality database, was maintained and kept up to date.

Mr. Stover was also a Design Administrator / Acting Chief (1985 – 2003) in the Dept. of Environmental Protection, Abandoned Mine Lands Program

EDUCATION (Degree, Year, Specialization)

AS, 1977, Commerce Accounting

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

N/A

REGISTRATION (Type, Year, State)

N/A

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
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NAME & TITLE (Last, First, Middle Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Ruppen, Christopher A., P.G. Mining Service Manager	12	29	2

Brief Explanation of Responsibilities

Mr. Ruppen is committed to client satisfaction and proactive coordination and communication with WVDEP. Based on the long running relationship between WVDEP and Michael Baker, Mr. Ruppen conveys this approach through Michael Baker's AML Team.

Ebenezer Run Highwall #9, Brooke County, West Virginia. *West Virginia Division of Environmental Protection.* Mining Service Manager. Assisted the project manager in obtaining the necessary resources to keep the project on schedule and in line with the client's expectations. The project consists of reclamation of two sites with approximately 3,660 linear feet of an abandoned strip mine highwall ranging in height from 30 to 40 feet and areas of mine spoil. Michael Baker prepared construction plans, specifications, stormwater pollution prevention plan services, and check survey.

Waitman Barbe Highwall #1, Monongalia County, West Virginia. *West Virginia Division of Environmental Protection.* Technical Manager. Participated in site field view, provided input into the subsurface investigation and interpretation and provided quality design reviews. The project consists of reclamation of approximately 4,600 linear feet of an abandoned strip mine highwall ranging in height from 30 to 45 feet. This includes areas of mine spoil, three areas of exposed coal refuse, an illegal dumpsite containing non-hazardous construction debris and a suspected 11 mine openings. Michael Baker prepared construction plans, specifications, and a stormwater pollution prevention plan services.

Collier Sportsman's Club Highwalls, Brooke County, West Virginia. *West Virginia Division of Environmental Protection.* Technical Manager. Participated in site field view, provided input into the subsurface investigation and interpretation and provided quality design reviews. Assisted with coordination and resolution of the planned gas line crossing and construction through the site. Michael Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of onsite spoil and coal refuse, culverts and channel design, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey and drilling by sub-consultants and the preparation of the WV NPDES Stormwater Permit.

Simpson Creek Highwall, Tipple, & Portals, Barbour County, West Virginia. *West Virginia Division of Environmental Protection.* Department Manager. Responsible for the quality of the project managers' work on the project. Michael Baker was responsible for drilling by sub-consultants, performed research of geological data and mining maps, review of water quality data, preparation of WV Stormwater, USACE, and WVDOT permits. Prepared construction plans and specifications for the project which included erosion and sedimentation control measures, site grading, mine seals, high density polyethylene (HDPE) culverts, a WVDOT box culvert crossing SR 76, grouted rip rap collection channels, soil cover placement, and revegetation.

Foundation Mine Design/Permitting Shaft & Slope Site, Surface Facilities and Batch Weigh System Site, and RR Spur and Siding. *Alpha Natural Resources, Inc.* Project Manager. Responsibilities included overseeing grading design of access roads, site development, and permitting requirements. Michael Baker was responsible for developing several conceptual layouts for shaft and slope sites and rail spur with rail car loadout arrangements and evaluating them in order to optimize and finalize the locations of various surface facilities relative to the shaft and slope including overland conveyors for raw and clean coal transport with transfer stations, raw and clean coal stockpiles and slot storage and reclamation tunnel for clean coal, coal preparation plant water storage tanks, access roads to surface facilities, and batch weigh loadout for rail cars. Michael Baker was also responsible for design of the rail spur, siding, and track layout for rail car loading.

Design and Permitting for Surface Facilities of New Freeport Underground Mine, Clarksville, Pennsylvania. *Alpha Natural Resources, Inc.* Project Manager. Aided in the engineering design of the project. Michael Baker prepared, submitted, and obtained Surface Mining Control and Reclamation Act and National Pollutant Discharge Elimination System permits for the proposed surface facilities associated with the new Freeport Underground Mine. Michael Baker was responsible for the design of the proposed surface facilities, including preparation of the earthwork and grading plan and the design of the foundations for all belt transfer structures, stockpiles, prep plant, clean coal silos, refuse conveyors, clean coal conveyors, and the harbor barge loading facility.

EDUCATION (Degree, Year, Specialization)

Master's Certificate, 2005, Project Management | B.S., 1984, Conservation of Natural Resources | B.S., 1984, Geology

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

American Society of Highway Engineers (ASHE); Highway Geology Symposium (HGS), National Steering Committee; Pittsburgh Geological Society (PGS), Board of Directors and Past President, Member Transportation Research Board (TRB), Materials, Engineering Geology and Subsurface Investigations

REGISTRATION (Type, Year, State)

Professional Geologist, 1995, PA

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
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Attachment "B"

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN. (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Neider, William, D., P.E. Project Manager	4	17	10

Brief Explanation of Responsibilities

Mr. Neider will oversee all aspects of the design, construction document preparation and permitting for site civil engineering projects. He has worked in various areas of the civil engineering practice with his primary area of experience being focused in mining permitting and reclamation projects, oil and gas permitting, land development, local transportation projects, and municipal services. He has managed projects and designed the improvements and infrastructure for commercial development, military/U.S. Government, residential subdivisions, industrial parks and sites, educational facilities, and local streets. In addition to land development experience, he has designed and directed a number of mining facilities infrastructure permitting and reclamation projects including refuse impoundments, coarse refuse piles, erosion and sedimentation control plans, and site reclamation. He also performed municipal engineering designs that included water distribution extensions, sewer modeling/design, drainage studies, and flood abatement designs. In all areas of his experience, he has been involved in every aspect of the design and construction document preparation, as well as management of design teams and project management. Mr. Neider has also been involved in oversight of the construction phase of projects. His experience has been with coordinating the review of project submittals, answering requests for information, and resolving construction related issues to ensure proper conformance to the design intent.

Ebenezer Run Highwall #9, Brooke County, West Virginia. *West Virginia Division of Environmental Protection.* Project Manager. Responsibilities include project manager duties, quality control/quality assurance reviews of the project, and project design. Also responsible for construction cost estimate, stormwater pollution prevention plan, technical specifications, and NPDES permitting. The project consists of reclamation of two sites with approximately 3,660 linear feet of an abandoned strip mine highwall ranging in height from 30 to 40 feet and areas of mine spoil. Michael Baker prepared construction plans, specifications, stormwater pollution prevention plan services, and check survey.

Waitman Barbe Highwall #1, Monongalia County, West Virginia. *West Virginia Division of Environmental Protection.* Project Manager. Responsibilities include project manager duties, quality control/quality assurance reviews of the project, and design of channels and channel linings at the toe of the backfilled highwall. Also responsible for construction cost estimate, stormwater pollution prevention plan, and technical specifications. The project consists of reclamation of approximately 4,600 linear feet of an abandoned strip mine highwall ranging in height from 30 to 45 feet. This includes areas of mine spoil, three areas of exposed coal refuse, an illegal dumpsite containing non-hazardous construction debris and a suspected 11 mine openings. Michael Baker prepared construction plans, specifications, and a stormwater pollution prevention plan services.

Collier Sportsman's Club Highwalls, Brooke County, West Virginia. *West Virginia Division of Environmental Protection.* Project Manager. Responsibilities include project manager duties, quality control/quality assurance reviews, and design of channels and channel linings at the toe of the backfilled highwall. Also responsible for construction cost estimate, stormwater pollution prevention plan, and technical specifications. Involved with proposed gas line crossing with resolution and coordination between the gas line company and the WVDEP. The project consists of reclamation of an abandoned strip mine highwall and includes mine spoil, review of water quality data, design of wet and buried mine seals with bat gates at suspected mine entries, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas.

Professional Mapping and Design Services at the Bond Forfeited Permits of the Maurice Jennings Coal Company S-61-83 & S-53-78, Preston County, West Virginia. *West Virginia Division of Environmental Protection.* Project Manager. Responsibilities include project manager duties, quality control/quality assurance reviews of the project, and project design. Also responsible for construction cost estimate, stormwater pollution prevention plan, and technical specifications. The project consist of mapping, reclamation, and treatment for previously reclaimed highwalls, treatment ponds, and several acid mine drainage (AMD) seeps at the site of an abandoned strip mine.

Professional Mapping and Design Services at the Bond Forfeited Permits of the Masteller Coal Company S-10-85 & S-125-82, Mineral County, West Virginia. *West Virginia Division of Environmental Protection.* Project Manager. Responsibilities include project manager duties, quality control/quality assurance reviews of the project, and project design. Also responsible for construction cost estimate, stormwater pollution prevention plan, and technical specifications. The project consist of mapping, reclamation, and treatment for previously reclaimed highwalls, treatment ponds, and several acid mine drainage (AMD) seeps at the site of an abandoned strip mine.

Professional Mapping and Design Services at the Bond Forfeited Permits of the F&M Coal Company S-1044-87 & S-57-84, Preston County, West Virginia. *West Virginia Division of Environmental Protection.* Project Manager. Responsibilities include project manager duties, quality control/quality assurance reviews of the project, and project design. Also responsible for construction cost estimate, stormwater pollution prevention plan, and technical specifications. The project consist of mapping, reclamation, and treatment for previously reclaimed highwalls, treatment ponds, and several acid mine drainage (AMD) seeps at the site of an abandoned strip mine.

EDUCATION (Degree, Year, Specialization)

B.S.A.S., 2001, Civil Engineering Technology

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

N/A

REGISTRATION (Type, Year, State)

Professional Engineer, 2013, WV | Professional Engineer, 2007, PA

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
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Attachment "B"

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN. (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Dharmapuri, Srinivasan, Ph.D., GISP, PMP LiDAR Scientist	1	28	0

Brief Explanation of Responsibilities

Dr. Dharmapuri has extensive experience in the Geospatial Industry. His experience in Project Management includes Project Management of Photogrammetry/LIDAR projects involving Flight map generation, Plan/Topo Compilation, Ortho generation and final delivery; Project Management of GIS projects involving Cadastral mapping using Best Fit, COGO, and hybrid methods, Zoning, Land use, Soil mapping and pin point addressing; Project setup, production flow, quality control, and client relationship management for all mapping projects; Overseeing development and implementation of various applications used for internal production on projects. Specific skills and experience include:

- Subject matter expert in Geospatial technologies (LiDAR, Remote Sensing and Photogrammetry for Geospatial Information Technology (GIT) area with a role as a primary Michael Baker corporate point of contact for knowledge sharing and issue resolution for the GIT area.
- Project Manager for the multimillion projects on LIDAR for Elevation. The project involved collecting 8000 square miles LiDAR data and subsequent processing with project sites spread across the county.

Airport Master Plan and Layout Plan, Upshur County Regional Airport (W22), Buckhannon, West Virginia. *Buckhannon Upshur Airport Authority.* QA/QC. Prepared the flight plan and imagery plan for the project. Michael Baker performed engineering and planning services to create a master plan and airport layout plan (ALP) set for the Upshur County Regional Airport (W22). The overall objective of the plan was to identify improvements necessary to comply with Federal Aviation Administration criteria and to accommodate forecasted aviation demands throughout the 20-year planning period. Michael Baker developed master plan elements including an airport inventory, forecast of aviation activity, facility requirements, airport alternatives, an ALP set, and a capital improvement program. Michael Baker also provided an in-depth review of the airport's runway length, mapping services, and an aeronautical survey of features on and adjacent to the airport property and within the approach paths to each runway end.

Aerial LiDAR Elevation Data Acquisition and Processing, Washington, D.C. *FEMA.* Project Manager. Performed the role of project management, QA/QC of the LiDAR data and packaging and delivery of final deliverables. Michael Baker provided technical support for aerial Light Detection and Ranging (LiDAR) data acquisition and processing for the Risk Mapping, Assessment, and Planning (Risk MAP) Program. Michael Baker's services included project management, quality assurance and quality control of the LiDAR data, and delivery of final products.

Professional Mapping and Design Services at the Bond Forfeited Permits of the Maurice Jennings Coal Company S-61-83 & S-53-78, Preston County, West Virginia. *West Virginia Division of Environmental Protection.* Technical Manager. Responsibilities include the QA/QC of the LiDAR data and packaging and delivery of final deliverables.

Professional Mapping and Design Services at the Bond Forfeited Permits of the Masteller Coal Company S-10-85 & S-125-82, Mineral County, West Virginia. *West Virginia Division of Environmental Protection.* Technical Manager. Responsibilities include the QA/QC of the LiDAR data and packaging and delivery of final deliverables.

Professional Mapping and Design Services at the Bond Forfeited Permits of the F&M Coal Company S-1044-87 & S-57-84, Preston County, West Virginia. *West Virginia Division of Environmental Protection.* Technical Manager. Responsibilities include the QA/QC of the LiDAR data and packaging and delivery of final deliverables.

Joint Base General Master Plan, Joint Base-McGuire-Dix-Lakehurst, New Jersey. *U.S. Air Force, McGuire AFB.* QA/QC. Responsible for QA/QC of LiDAR data at the spatial constrain level to post processed level. Verified the breaklines generated using LiDARGrammetry method. Michael Baker prepared a joint-base general plan and commander's summary and developed a web-based planning system for the installation. Michael Baker's services included project management, mapping, field investigations, land-use analysis, utility analysis, airfield infrastructure analysis, development of geographic information system (GIS) databases and mapping, and the development of a master plan and capital improvement program.

S.R. 25 Mobile LiDAR Vertical Accuracy Validation, Jackson, Mississippi. *Mississippi Department of Transportation.* QA/QC. Responsible for overall QA/QC of the LiDAR data. Performed the QA/QC of the final products both qualitatively and quantitatively to meet the requirements of the project.

I-20 LiDAR Data Collection and Mapping, Jackson, Mississippi. *Mississippi Department of Transportation.* QA/QC. Responsible for overall QA/QC of the LiDAR data. Performed the QA/QC of the final products both qualitatively and quantitatively to meet the requirements of the project.

EDUCATION (Degree, Year, Specialization)

Ph.D., 2006, Photogrammetry and Remote Sensing | M. Tech., 1985, Remote Sensing | M.Sc., 1983, Physics

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

American Society for Photogrammetry and Remote Sensing (ASPRS) | Project Management Institute (PMI)

REGISTRATION (Type, Year, State)

Certified GIS Professional: 2009 | Certified Photogrammetrist, 2008 | Land Survey Photogrammetrist: 2010 VA | Land Survey Photogrammetrist, 2005 SC | PMP 2010
FAA Idle Level 3 Training

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Attachment "B"

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NAME & TITLE (Last, First, Middle Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Anderson, Mark William GIS Associate	0	9	0

Brief Explanation of Responsibilities

Mr. Anderson is a GIS Associate/LiDAR Technician in Michael Baker's Geographic Information Technologies Department. He has a background in both GIS and LiDAR with an emphasis in regional/environmental planning.

Long-Term Stormwater Comprehensive Plan Engineering Services, Charleston, West Virginia. *City of Charleston, West Virginia.* LiDAR Processor. Processed Mobile LiDAR to create survey accurate plans/DTMS, DEMS, and as-builts. Responsible for creating calibrated LAS files, adjusting them to known control to ensure the LiDAR accuracy, creating formulas to extract the bare earth, overseeing/coordinating the production of the required deliverables, and the QA/QC of the data. Michael Baker provided engineering services to support a long-term, comprehensive, stormwater management plan by mapping the city's stormwater infrastructure. Michael Baker's services included project management, research and data collection, data dictionary development, watershed and stream mapping, storm sewer infrastructure surveying and mapping, storm sewer pipe connectivity mapping, stormwater structure mapping, and geodatabase development.

Orthophotography for Environmental Analysis, Oso Bay, Texas. *Aerotec, LLC.* LiDAR Processor. Responsible for the setup of the aerial LiDAR project to produce classified LAS. Michael Baker is providing color digital orthophotography at a resolution of 0.5 feet in support of an environmental analysis over an area of approximately 56 square miles. Services include the acquisition of new digital aerial imagery with an UltraCam X digital camera system, airborne global positioning system (GPS) and inertial measurement unit collection and processing, GPS ground control surveys and pretargeting, aerotriangulation, digital terrain model generation, and orthorectification. Orthophotography will be delivered as 5,000-foot by 5,000-foot tiles on the Texas State Plane Coordinate System.

Orthophotography for Corridor Routing, Yucca, Texas. *Aerotec, LLC.* LiDAR Processor. Responsible for the setup of the aerial LiDAR project to produce classified LAS. Michael Baker is providing color digital orthophotography at a one-foot resolution over an area of approximately 233 square miles to support corridor routing applications. Services include the acquisition of new digital aerial imagery with an UltraCam X digital camera system, airborne global positioning system (GPS) and inertial measurement unit collection and processing, GPS ground control surveys and pretargeting, aerotriangulation, digital terrain model generation, and orthorectification. Orthophotography will be delivered as 10,000-foot by 10,000-foot tiles on the Texas State Plane Coordinate System.

Surveying and Mapping Master Agreement, Statewide, Mississippi. *Mississippi Department of Transportation.* LiDAR Processor. Processed Mobile LiDAR to create survey accurate plans/DTMS, DEMS, as-builts, etc. of a corridor along MDOT highways. Responsible for creating calibrated LAS files, adjusting them to known control to ensure the LiDAR accuracy, creating formulas to extract the bare earth, overseeing/coordinating the production of the required deliverables, and QA/QC of the data. Under a master agreement for surveying, mapping, and photogrammetry services, Michael Baker is performing surveys for a wide variety of transportation improvement projects, using state-of-the-art aerial and mobile Light Detection and Ranging (LiDAR) technology. This use of LiDAR and geographic information system (GIS) mapping allows Michael Baker to collect roadway feature and elevation information in heavily congested areas without disruption to traffic.

Surveying and Mapping Services Agreement, Worldwide. *U.S. Army Corps of Engineers, Mobile District.* LiDAR Processor. Reviewing raw aerial LiDAR data delivered for processing to ensure it meets client's specifications, then setting up the data in project to be classified and edited to aid the production of contours and models of structures. Michael Baker is providing surveying and mapping services under a five-year indefinite delivery, indefinite quantity agreement to support the district and the South Atlantic Division. Michael Baker's services included project management; topographic data collection; aerial photography; light detection and ranging data collection and analysis; geographic information system development; digital elevation modeling and digital terrain model development; and report preparation.

Statewide Utility Relocation Design Regional Utilities Contract, Region V/Hampton Roads District, Virginia. *Virginia Department of Transportation.* LiDAR Processor. Responsible for processing Mobile LiDAR to create survey accurate plans/DTMS, DEMS, and as-builts of a road corridor. Responsible for creating calibrated LAS files, adjusting them to known control to ensure the LiDAR accuracy, creating formulas to extract the bare earth, overseeing/coordinating the production of the required deliverables, and the QA/QC of the data. Michael Baker has been providing engineering services for the design of utility adjustment plans for VDOT for eight consecutive terms since 1992. Project assignments have included all aspects of utility relocations/adjustments, including more than 50 miles of water and sewer mains ranging in size from 4 inches to 54 inches; bridge crossings; overhead utility support structures; four pump station relocations; numerous water vault relocations, including a water booster pump station and a pressure reducing valve vault; private utility relocations/adjustments, including electrical duct banks, gas mains, steam lines, jet fuel lines and fiber optic communication systems; corrosion control analysis; railroad crossing permit applications and design and surveying.

EDUCATION (Degree, Year, Specialization)

M.S., 2005, Geography/Geographic Information Systems | B.A., 2003, Criminal Justice

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

N/A

REGISTRATION (Type, Year, State)

N/A

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13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN. (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Frazer, John S., P.S. Surveyor/Survey Party Chief	10	36	10

Brief Explanation of Responsibilities

Mr. Frazer has extensive surveying experience and is currently the Survey Manager for the Charleston, WV office. His experience includes geomatics, topographic surveys, aerial mapping control, research, boundary surveys and retracements, highway right-of-way acquisitions and reacquisitions, construction stakeout, residential and commercial site development surveys, volumetric surveys, industrial forensic surveys, gas transmission line surveys, industrial facilities surveys, technical services, project coordination, and client relationships.

Long-Term Stormwater Comprehensive Plan Engineering Services, Charleston, West Virginia. City of Charleston, West Virginia. Surveyor. Responsibilities included client relations, meeting with client to determine primary and secondary initiatives, technical advice on surveying practices and procedures, survey crew coordination and scheduling, field location survey and drainage outfall data collection, field data processing and management, quality assurance and quality control, and professional supervision.

Natural Gas Pipeline Permitting. Williams Midstream. Surveyor. Responsibilities included client relations; technical advice on surveying practices and procedures; project scope and labor cost estimates for several projects; survey crew coordination and scheduling; field survey support for pipeline, pipeline facilities, and aerial mapping projects; field data processing and management; and quality assurance and quality control.

Big Sandy River Site Screening. Commonwealth of Kentucky. Surveyor. Responsibilities included public relations; owner and residence interviews to aid in land boundary determinations; courthouse research; deed plots, composites, and professional opinion as to their field location; field survey for land boundary retracement; field data management; processing of survey data; field evidence evaluation and land boundary determination; preparation of legal description and report; and oversight of survey plat preparation.

Master Services Agreement - Surveying Services for Gathering Lines, Western and Central, Pennsylvania. Confidential Client. Surveyor. Responsibilities included client relations; technical advice on surveying practices and procedures; project scope and labor cost estimates for several projects; survey crew coordination and scheduling; field survey support for pipeline, pipeline facilities, and aerial mapping projects; field data processing and management; and quality assurance and quality control.

Alderson SRTS. West Virginia Department of Transportation, Division of Highways. Surveyor. Responsibilities included technical advice on surveying practices and procedures, topographic site survey of project area, location, and identification of site utilities and infrastructure, processing and managing survey data, and oversight and quality assurance and quality control of existing site mapping for improvements design.

Barracuda Pipeline - Pipeline Survey, Design, and Permitting. Rice Energy, LP. Surveyor. Responsibilities included client and public relations; working with pipeline routers for pipeline centerline; liaison land owner contact; survey crew coordination; pipeline centerline and road crossing surveys for pipeline design and permitting; and processing and management of field data.

Elkins Crosswalk Improvements. City of Elkins. Surveyor. Responsibilities included technical advice on surveying practices and procedures, topographic site survey of project area, locating and identifying site utilities and infrastructure, processing and managing survey data, and oversight and quality assurance and quality control of existing site mapping for improvements design.

Open-End Architectural and Engineering Services, West Virginia State University, Institute, West Virginia. West Virginia State University. Surveyor. Responsibilities included technical advice on surveying practices and procedures, survey crew coordination and scheduling, field survey support, field data processing and management, quality assurance and quality control, and professional supervision and certification. Michael Baker provided architectural and multidiscipline engineering services under a ten-year open-end agreement to design renovations, alterations, reconstruction, or extensions of facilities. Michael Baker's services included programming, planning, design development, construction documentation, evaluations, feasibility studies, cost estimating, and construction contract administration.

EDUCATION (Degree, Year, Specialization)

B.S., 1986, Engineering Technology | A.S., 1986, Civil Engineering Technology

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

West Virginia Society of Professional Surveyors (WVSPS), Greater Kanawha Valley Chapter

REGISTRATION (Type, Year, State)

Professional Land Surveyor, 1996 WV

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NAME & TITLE (Last, First, Middle Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Fogarty, Patrick W., P.E., P.S. Survey Engineer	19	29	21

Brief Explanation of Responsibilities

Mr. Fogarty is responsible for technical and management aspects of civil design and surveying projects within the Charleston, WV, office. Mr. Fogarty has designed and managed projects in numerous disciplines including civil, structural and transportation engineering, site development, ecosystem restoration, planning and surveying. These projects have included stream restoration as well as boundary and topographic and photogrammetric surveys. Duties include field surveying, drawings and specification preparation, design, design drafting, construction inspection, quality control testing, shop drawing review, project management, contract administration, and report preparation. Management duties include financial planning, management and staff utilization, human resource planning, marketing, and strategic planning.

Engineering Design for Remediation of Crooked Run #5, Harrison County, West Virginia. WVDEP - Office of AML&R. Project Manager. Responsible for the management and coordination of all activities. Michael Baker provided engineering services to remediate seven abandoned mine sites along Crooked Run Stream near Clarksburg, West Virginia. Services included field investigation and surveys; core boring and water sampling; conceptual, preliminary, and final design of remediation measures; and bid phase and construction phase support.

Mine Subsidence Remediation Design, Marion County, West Virginia. WVDEP - Office of AML&R. Project Manager. Engineer-of-Record responsible for the coordination of all activities. Michael Baker provided engineering services to mitigate the effects of mine subsidence at four residential sites. Michael Baker's services included surveying and mapping; field investigation; conceptual, preliminary, and final design of subsidence remediation measures; and bid-phase and construction-phase support.

Engineering Services to Remediate Landslide Caused by Abandoned Mine Activity, McDowell County, West Virginia. WVDEP - Office of AML&R. Project Manager. Responsible for the management and coordination of all activities. Michael Baker provided field investigation, engineering services, and construction support to remediate a landslide on private property caused by drainage from abandoned mine portals. Michael Baker provided conceptual, preliminary, and final design documents for remedial drainage measures and provided support during construction.

Engineering Design for Remediation of Crooked Run #5, Harrison County, West Virginia. WVDEP - Office of AML&R. Project Manager. Responsible for the management and coordination of all activities. Michael Baker provided engineering services to remediate seven abandoned mine sites along Crooked Run Stream near Clarksburg, West Virginia. Services included field investigation and surveys; core boring and water sampling; conceptual, preliminary, and final design of remediation measures; and bid phase and construction phase support.

Drainage Improvements and Reclamation Measure Design for Four Abandoned Mine Sites, Kanawha County, West Virginia. WVDEP - Office of AML&R. Project Manager. Responsible for the management and coordination of all activities. Michael Baker is providing surveying and mapping, field investigation, subsurface investigation, water testing and sampling, and conceptual, preliminary and final design for the reclamation of four abandoned mine sites that are affected by uncontrolled drainage, debris, and hazards from open portals. Michael Baker is also providing bid phase and construction phase support for the remedial measures.

Engineering MSA (West Virginia, Kentucky, Pennsylvania). NiSource Corporation. Surveyor of Record. Responsible for quality assurance of field and office activities. Michael Baker has provided NiSource with surveying services for many years. Under our existing MSA, surveying services have been provided for various locations throughout West Virginia, Kentucky, and Pennsylvania.

EDUCATION (Degree, Year, Specialization)

B.S., 1985, Civil Engineering | Diploma, 1993, Surveying and Mapping | Coursework, Business Administration

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Association of State Floodplain Managers (ASFPM)

REGISTRATION (Type, Year, State)

Professional Engineer: 1990, West Virginia | Professional Surveyor: 1993, West Virginia
LEED Green Associate: 2012, West Virginia
Professional Engineer, 2000, Kentucky | Professional Engineer, 2002, Virginia | Professional Engineer, 2003, Pennsylvania | Professional Engineer, 1996, Ohio | Professional Surveyor, 2001, Kentucky | Professional Surveyor, Ohio, 1996

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NAME & TITLE (Last, First, Middle Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Jones, Robert L. Technical Specialist	0	24	0

Brief Explanation of Responsibilities

Mr. Jones has worked extensively in all areas of photogrammetric production including project planning and management; workflow procedure development; aerotriangulation; and digital stereo compilation. He has experience in the development of automated and semi-automated quality control methods for adherence to mapping product accuracy, completeness, and standards. Mr. Jones has been responsible for development of software to aid in map production, map quality, and workflow. He is consulted on a regular basis from all members of the team on a wide range of photogrammetry related issues, including assisting in management and adherence to PennDOT standards.

Seven Orthophotography Sites, West Virginia. *Dominion Transmission, Inc.* Photogrammetrist. Responsible for the orientation of 1"=200' aerial image pairs and DEM compilation for seven compressor station sites in West Virginia and Pennsylvania. Stereo model orientations were created using only airborne GPS photo center and IMU data - no ground control was used to orient the models as is typical in the standard photogrammetric approach. Compiled the DEM for each site from the stereo models that were then used by other members of our team in orthophoto production of the sites. The uncontrolled approach to this project was possible because horizontal accuracy for the orthophotos was +/- 10' and a typical standard for positioning relative to the ground was not required. Michael Baker was contracted by Dominion Transmission to deliver digital orthophotography of a number of their compressor stations in West Virginia and Pennsylvania. New color imagery was collected for the seven project areas at a flight scale of 1"=200' and scanned at a resolution of 14cm. Airborne GPS data was collected during the flight and processed to support the orthorectification process. Digital Terrain Models (DTM) were generated by photogrammetric methods for each compressor station site. Color digital orthophotography was delivered at a final resolution 0.5' and referenced to the appropriate State Plane Coordinate System. The project was completed ahead of schedule and within budget.

Alameda Square Aerial. *EVOQ Properties.* Photogrammetrist. Responsible for Aerial Triangulation, compilation, and data merging between CAD systems. Given new aerial photography, ground control points, and an AutoCAD file containing ground survey mapping data with both above ground and below ground features. An update of the above ground feature changes was performed using ImageStation/MicroStation. The goal was not to corrupt the existing AutoCAD file, but make changes within it to reflect the current surface in planimetrics and contours. Since translation to MicroStation of the given AutoCAD file was not possible without causing corrupted data when translating back to AutoCAD, the task now required the "surgical removal" of items that no longer existed in the old drawing, and the careful addition of new/changed items. The project was delivered with the original AutoCAD file updated and structured so that the client was able to see the changes easily. This project was out of the ordinary in many ways and required the application of many skills in both MicroStation and AutoCAD.

ERGON - WV PLANT PHASE I. *Ergon, Inc.* Photogrammetrist. Responsibilities included aerial triangulation of digital images. Performed a combination of automatic and manual aerial triangulation procedures to create 26 stereo models from 1"=200" color aerial photography for updating the existing 1"=20' planimetric mapping.

Aerial LiDAR Elevation Data Acquisition and Processing, Washington, D.C. *FEMA.* Technical Specialist. Responsible for writing Visual Basic programs to adjust hydrology. Digitized and adjusted hydrology features via airborne data, stereo models and Visual Basic programs. Michael Baker provided technical support for aerial Light Detection and Ranging (LiDAR) data acquisition and processing for the Risk Mapping, Assessment, and Planning (Risk MAP) Program. Michael Baker's services included project management, quality assurance and quality control of the LiDAR data, and delivery of final products.

EDUCATION (Degree, Year, Specialization)

B.S., 1989, Engineering and Mathematics | A.A., 1984, Physics and Math

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

N/A

REGISTRATION (Type, Year, State)

N/A

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NAME & TITLE (Last, First, Middle Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Lasko, John D., P.G. Senior Geologist	8	27	0

Brief Explanation of Responsibilities

Mr. Lasko's background encompasses a variety of geotechnical projects. His experience includes project task management, test boring layout, drilling inspection, geotechnical interpretation of subsurface geology, construction inspection, and related project fieldwork.

Waitman Barbe Highwall #1, Monongalia County, West Virginia. *West Virginia Division of Environmental Protection.* Geologist. Assisted in the field view and determination of mining conditions. The project consists of reclamation of approximately 4,600 linear feet of an abandoned strip mine highwall ranging in height from 30 to 45 feet. This includes areas of mine spoil, three areas of exposed coal refuse, an illegal dumpsite containing non-hazardous construction debris and a suspected 11 mine openings. Michael Baker prepared construction plans, specifications, and stormwater pollution prevention plan services.

Collier Sportsman's Club Highwalls, Brooke County, West Virginia. *West Virginia Division of Environmental Protection.* Geologist. Assisted in the subsurface investigation. Michael Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of onsite spoil and coal refuse, culverts and channel design, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey and drilling by sub-consultants, and the preparation of the WV NPDES Stormwater Permit.

Site Design and Permitting for Cumberland Mine Air Shaft Number 10, Greene County, Pennsylvania. *Alpha Natural Resources, Inc.* Senior Staff Consultant. Responsible for site reconnaissance to evaluate landslide susceptibility for the project site. Evaluated overall site for landslide potential, groundwater conditions, bedrock, and structural geology. Evaluated proposed test boring program and recommended modifications to accommodate investigation of site conditions. Evaluated and modified testing program to accommodate site conditions. Prepared site reconnaissance plan, and provided recommendations for final subsurface investigation and testing and site design. Michael Baker developed site design and construction documents and cost estimates, and provided permitting services for the Number 10 air intake shaft and associated site infrastructure, including a one-mile-long access road at the Cumberland Mine.

S.R. 0079, Section A23, Interstate 79 Missing Ramps, Collier and Robinson Townships, Pittsburgh, Pennsylvania. *Pennsylvania Department of Transportation, District 11-0.* Senior Geologist. Performed field and office coordination for preliminary and final design as geotechnical task manager. Tasks included test boring layout and laboratory testing program development, Level 2 drilling supervision, field data compilation, slope evaluation, rockfall hazard evaluation, mine treatment evaluation, water quality evaluation, and preliminary reports preparation.

Allegheny Valley Train Feasibility Study, Strip District, Pittsburgh to New Kensington, Pennsylvania. *Southwestern Pennsylvania Commission.* Senior Geologist. Responsible for performing site reconnaissance of two-mile section of railway to identify areas of landslide susceptibility and investigate potential for mine subsidence. Developed recommendations memorandum and cost estimate to investigate, evaluate, and repair landslides. In addition, an assessment of mine subsidence potential and subgrade evaluation was performed.

Cumberland Mine No. 8 Shaft Site Design and Permitting, Waynesburg, Pennsylvania. *Foundation Coal.* Senior Geologist. Responsible for performance of slope stability analysis for proposed infrastructure related to construction shaft and bleeder sites. Tasks included site reconnaissance, subsurface investigation, slope stability analysis, and design drawings assistance. Michael Baker provided site design, permitting, and construction document preparation for the No. 8 shaft and portal facility.

Freeport Mine - PH I - Preparation of 6 Design Build RFP Packages and 1 Site Design -Bid Build Bid Package. *Freeport Mining.* Task Manager. Responsible for preparation of Geotechnical Data Report and geotechnical evaluation and design for earthwork for proposed mining facility.

EDUCATION (Degree, Year, Specialization)

M.S., 1989, Earth Science and Geology; B.S., 1985, Geology

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS - N/A

REGISTRATION (Type, Year, State)

Professional Geologist: 1995, PA

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NAME & TITLE (Last, First, Middle Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Barefield, Edward, P.G. Geologist	3	10	0

Brief Explanation of Responsibilities

Mr. Barefield is an engineering geologist within the geotechnical civil engineering unit at Michael Baker. His geotechnical experience includes drilling inspection and subcontract administration/coordination, laboratory testing interpretations, and subcontract administration/coordination, subsurface geology geotechnical interpretation, detailed soil and rock slope stability analyses, structure foundation bearing capacity and settlement calculations, mine subsidence evaluations, aerial and satellite photograph interpretation, field geology reconnaissance and sampling, geotechnical literature review, drilling and laboratory testing program preparation and execution, and geotechnical report preparation and reviews.

Simpson Creek Highwall, Tipple, & Portals, Barbour County, West Virginia. *West Virginia Department of Environmental Protection.* Geologist. Responsible for test boring and open standpipe piezometer installation inspection with office follow-up to provide boring logs for use in design of Acid Mine Drainage remediation.

Wymer Portals and Davidson Highwall Abandoned Mine Complex Reclamation Design, Monongalia County, West Virginia. *West Virginia Department of Environmental Protection.* Geologic Associate. Responsible for on-site geotechnical test boring inspection and oversight. Michael Baker performed site mapping and exploratory drilling and prepared plans and specifications for the reclamation of two large abandoned mine complexes. The proposed remediation designs included the elimination of impounded mine water; installation of wet mine seals; elimination of highwalls through earthwork and site grading using available on-site refuse and spoil materials; and final site revegetation. The project plans included the addition of numerous required surface water and mine drainage structures, such as ditches, pipes, and underdrains. Bat gates were provided for several mine openings.

Site Design and Permitting for Cumberland Mine Air Shaft Number 10, Greene County, Pennsylvania. *Alpha Natural Resources, Inc.* Geologist. Responsible for geotechnical drilling and sampling inspection, and laboratory testing sample selection and testing schedule preparation. Responsible for test boring log preparation and geotechnical site reconnaissance and field mapping and field reconnaissance map preparation. Also responsible for interpretation of site geology and preparation of geologic sections for geotechnical design. Michael Baker developed site design and construction documents and cost estimates and provided permitting services for the Number 10 air intake shaft and associated site infrastructure, including a one-mile-long access road, at the Cumberland Mine.

Mine Permit Application Assistance, Confidential Location, West Virginia. *Confidential Client.* Geologic Associate. Responsible for providing field water sampling services which included determining stream discharges in the field, water sample collection, and field chemistry measurements using field measuring apparatus. Performed field study to inventory property parcels and water resources for area to be longwall undermined.

EDUCATION (Degree, Year, Specialization)

M.S., 2004, Engineering Geology| B.S., 2002, Geology

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Association of Environmental & Engineering Geologists (AEG), Allegheny-Ohio Section, ID# 7038

REGISTRATION (Type, Year, State)

Professional Geologist: 2010, PA | PENNDOT Drilling Inspector, Level I, 2006, PA

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NAME & TITLE (Last, First, Middle Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Grimm, John R. (J.R.) Senior Designer	4	28	0

Brief Explanation of Responsibilities

Mr. Grimm is a designer with a background in pipelines, reclamation of abandoned mine lands including acid mine drainage abatement, earthwork, grading plans, stream channel restoration, sealing of mine portals and reclamation of coal refuse piles. While at Michael Baker he has worked on many abandoned mine land reclamation and mine shaft site design and permitting projects. His site / civil qualifications also consist of parking lot layout and design, roadway geometry, right-of-way acquisition, drainage, storm sewer and sanitary sewer design.

Ebenezer Run Highwall #9, Brooke County, West Virginia. *West Virginia Division of Environmental Protection.* CADD Designer. Responsible for the preparation of construction drawings including the design of the proposed grading required to reclaim the existing highwall and balancing the earthwork on site. The project consists of reclamation of two sites with approximately 3,660 linear feet of an abandoned strip mine highwall ranging in height from 30 to 40 feet and areas of mine spoil. Michael Baker prepared construction plans, specifications, stormwater pollution prevention plan services, NPDES permitting, and check survey.

Waitman Barbe Highwall #1, Monongalia County, West Virginia. *West Virginia Division of Environmental Protection.* CADD Designer. Responsible for the preparation of construction drawings including the design of the proposed grading required to reclaim the existing highwall and balance the earthwork on site. Design responsibilities also included the layout of several mine seals including bat gates where required. The project consists of reclamation of approximately 4,600 linear feet of an abandoned strip mine highwall ranging in height from 30 to 45 feet. This includes areas of mine spoil, three areas of exposed coal refuse, an illegal dumpsite containing non-hazardous construction debris and a suspected 11 mine openings. Michael Baker prepared construction plans, specifications, and a stormwater pollution prevention plan services.

Collier Sportsman's Club Highwalls, Brooke County, West Virginia. *West Virginia Division of Environmental Protection.* CADD Designer. Responsible for the preparation of construction drawings including the design of the proposed grading required to reclaim the existing high wall and balance the earthwork on site. Design responsibilities also included the layout of several mine seals including bat gates where required. Michael Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of on-site spoil and coal refuse, culverts and channel design, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey and drilling by sub-consultants and the preparation of the WV NPDES Stormwater Permit.

Simpson Creek Highwall, Tipple, & Portals, Barbour County, West Virginia. *West Virginia Division of Environmental Protection.* CADD Designer. Responsible for the preparation of construction drawings including the design of the proposed grading required to reclaim the existing highwall, balance the earthwork on site, and provide adequate drainage from the site. Michael Baker was responsible for drilling by sub-consultants, performing research of geological data and mining maps, review of water quality data, preparation of WV Stormwater, USACE, and WVDOH permits. Prepared construction plans and specifications for the project which included erosion and sedimentation control measures, site grading, mine seals, HDPE culverts, a WVDOH box culvert crossing SR 76, grouted rip rap collection channels, soil cover placement, and revegetation.

2007-2008 Foundation Mine Design/Permitting Shaft & Slope Site, Surface Facilities and Batch Weigh System Site, and RR Spur and Siding. *Alpha Natural Resources, Inc.* Designer. Responsibilities included grading design of access roads, site development, and permitting requirements. Michael Baker was responsible for developing several conceptual layouts for shaft and slope sites and rail spur with rail car loadout arrangements and evaluating them in order to optimize and finalize the locations of various surface facilities relative to the shaft and slope including overland conveyors for raw and clean coal transport with transfer stations, raw and clean coal stockpiles and slot storage and reclamation tunnel for clean coal, coal preparation plant water storage tanks, access roads to surface facilities, and batch weigh loadout for rail cars. Michael Baker was also responsible to design the rail spur, siding and track layout for rail car loading.

Design and Permitting for Surface Facilities of New Freeport Underground Mine, Clarksville, Pennsylvania. *Alpha Natural Resources, Inc.* CADD Designer. Aided in the engineering design of the project. Michael Baker prepared, submitted, and obtained Surface Mining Control and Reclamation Act and National Pollutant Discharge Elimination System permits for the proposed surface facilities associated with the new Freeport Underground Mine. Michael Baker was responsible for the design of the proposed surface facilities, including preparation of the earthwork and grading plan and the design of the foundations for all belt transfer structures, stockpiles, preparation plant, clean coal silos, refuse conveyors, clean coal conveyors, and the harbor barge loading facility

EDUCATION (Degree, Year, Specialization)
A.S., 1984, Mechanical Engineering Technology

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS - N/A

REGISTRATION (Type, Year, State) - N/A

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NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
LaMont, Michael, J. Technical Specialist	18	30	20

Brief Explanation of Responsibilities

Mr. LaMont is a designer with a background in pipelines, telecommunications, reclamation of abandoned mine lands including acid mine drainage abatement, earthwork, grading plans, stream channel restoration, sealing of mine portals and reclamation of coal refuse piles. While at Michael Baker he has worked on many abandoned mine land reclamation and mine shaft site design and permitting projects. His site / civil qualifications also consist of parking lot layout and design, roadway geometry, right-of-way acquisition, drainage, storm sewer and sanitary sewer design. Additional telecommunications experience include fiber optic cable construction and installation drawings along highways, railroads and cross country routes, as well as stream and road crossing drawings and cross sections, and state, local, and environmental permit drawings.

Waitman Barbe Highwall #1, Monongalia County, West Virginia. *West Virginia Division of Environmental Protection.* Technical Specialist. Prepared construction plans, details, and cross-section sheets and earthwork balancing for the project, and highwall backfilling grading. Provided erosion and sedimentation control measures, site regrading, mine seals, and collection and diversion ditch alignments and profiles. Michael Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of onsite spoil and coal, culverts and channel, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey and drilling by sub-consultants and the preparation of the WV NPDES Stormwater Permit.

Collier Sportsman's Club Highwalls, Brooke County, West Virginia. *West Virginia Division of Environmental Protection.* Technical Specialist. Prepared construction plans, details, and cross-section sheets and earthwork balancing for the project, and highwall backfilling grading. Provided erosion and sedimentation control measures, site regrading, mine seals, and collection and diversion ditch alignments and profiles. Michael Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of onsite spoil and coal refuse, culverts and channel design, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey and drilling by sub-consultants and the preparation of the WV NPDES Stormwater Permit.

Professional Mapping and Design Services at the Bond Forfeited Permits of the Maurice Jennings Coal Company S-61-83 & S-53-78, Preston County, West Virginia. *West Virginia Division of Environmental Protection.* Technical Specialist. Responsibilities include Prepared construction plans and profiles, details, erosion and sediment control measures, collection and diversion channels, and revegetation.

Professional Mapping and Design Services at the Bond Forfeited Permits of the Masteller Coal Company S-10-85 & S-125-82, Mineral County, West Virginia. *West Virginia Division of Environmental Protection.* Technical Specialist. Responsibilities include Prepared construction plans and profiles, details, erosion and sediment control measures, collection and diversion channels, and revegetation.

Professional Mapping and Design Services at the Bond Forfeited Permits of the F&M Coal Company S-1044-87 & S-57-84, Preston County, West Virginia. *West Virginia Division of Environmental Protection.* Technical Specialist. Responsibilities include Prepared construction plans and profiles, details, erosion and sediment control measures, collection and diversion channels, mine seals and revegetation.

Maple Run Portals and Tipple, West Virginia. *West Virginia Division of Environmental Protection.* Prepared construction plan, profile, detail, and cross section sheets and earthwork balancing for the project, which included, site grading, mine seals, collection and diversion ditches, placement of soil cover, and revegetation.

Emoryville Mine Complex, West Virginia. *West Virginia Division of Environmental Protection.* Prepared construction plan, profile, detail, and cross section sheets and earthwork balancing for the project which included erosion and sedimentation control measures, site regrading, mine seals, collection and diversion ditches, removal of abandoned barges and coal refuse from the North Branch of the Monongahela River, placement of soil cover, and revegetation.

Watson Portal and Refuse Reclamation, West Virginia. *West Virginia Division of Environmental Protection.* Prepared construction plan, profile, detail, and cross section sheets and earthwork balancing for the project which included erosion and sedimentation control measures, site regrading, mine seals, collection and diversion ditches, removal of abandoned barges and coal refuse from the North Branch of the Monongahela River, placement of soil cover, and revegetation.

EDUCATION (Degree, Year, Specialization)

Certificate, 1986, Computer Aided Drafting and Design

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS - N/A

REGISTRATION (Type, Year, State) - N/A

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NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Kay, George P., P.E. Sr. Consultant - Water Quality Engineering	17	32	0

Brief Explanation of Responsibilities

Mr. Kay solves problems related to water quality, water and wastewater treatment, and aquatic ecosystem restoration. He has completed projects for the U.S. Coast Guard, Army, National Guard Bureau, Navy, National Park Service, and Department of Energy; twelve State government agencies including WVDEP; sanitary and hydropower authorities; and major representatives of the ferrous and non-ferrous metals, mining, power, petroleum, coal bed methane and shale gas, chemical, rail, air freight, insurance, site remediation, telecommunications, manufactured products, entertainment and construction industries. Areas of practice include Clean Water Act and Safe Drinking Water Act compliance assistance, design and operational troubleshooting of treatment plants, root cause analysis of myriad problems with finished waters (e.g., permit excursions, aquatic toxicity, product defects, treatment costs, corrosion, etc.), aquatic impact assessment, source water evaluations, training of engineers and treatment plant operators, and lake/lagoon management. He has served as Project Manager for systems treating sewage, various industrial wastewaters, acid mine drainage, contaminated groundwater, and potable water, built across ten States and at eight locations overseas, and has served on due diligence teams for numerous corporate acquisitions and divestitures, spill investigations, and routine EHS audits. Compliance assistance, troubleshooting assignments, and watershed investigations completed across 42 States and at locations overseas.

Professional Mapping and Design Services at the Bond Forfeited Permits of the Maurice Jennings Coal Company S-61-83 & S-53-78, Preston County, West Virginia. *West Virginia Division of Environmental Protection.* Enviro. Specialist. Responsibilities include treatability studies, preparation of a basis of design report, and preparation of plans and technical specifications for an active 180 gpm acid mine drainage treatment system consisting of remote pumping stations, a dense lime feed system, and a system of ponds.

Professional Mapping and Design Services at the Bond Forfeited Permits of the Masteller Coal Company S-10-85 & S-125-82, Mineral County, West Virginia. *West Virginia Division of Environmental Protection.* Environmental Specialist. Responsibilities include treatability studies, preparation of a basis of design report, and preparation of plans and technical specifications for passive (60 gpm) and an active (140 gpm) acid mine drainage systems. The passive system uses limestone channels, limestone forebay, and settling pond. The active system uses limestone channels, a caustic soda feed system, and ponds.

Professional Mapping and Design Services at the Bond Forfeited Permits of the F&M Coal Company S-1044-87 & S-57-84, Preston County, West Virginia. *West Virginia Division of Environmental Protection.* Environmental Specialist. Responsibilities include treatability studies, preparation of a basis of design report, and preparation of plans and technical specifications for four acid mine drainage treatment systems ranging in size from 240 to 1000 gpm. The three smaller systems employ limestone channels, caustic soda feed systems, and ponds. The largest system consists of pumping stations, limestone channels, a dense lime feed system, and a system of ponds.

GTAC 3 & 4 - Bear Creek Chemical Site, (OVER 20 sites), Butler and Armstrong Counties, Pennsylvania. *Pennsylvania Department of Environmental Protection.* Environmental Manager. Responsible for directing sampling and whole effluent toxicity testing of seep from former organic chemical disposal site. Conducted library research on the toxicity of resorcinol and various sulfonic acids on aquatic life and prepared summary report. Directed bench scale treatability testing to stabilize a tarry chemical sludge; prepared report with results and cost estimates for remedial alternatives. Michael Baker provided diverse environmental, engineering, and general technical assistance to the client for this project, involving up to 20 known or suspected related industrial waste disposal sites in two Pennsylvania counties. Varieties of hazardous substances were present at the disposal sites and groundwater had been impacted over a large area affecting the water supply for hundreds of residents.

Design and Permitting for Surface Facilities of New Freeport Underground Mine, Clarksville, Pennsylvania. *Alpha Natural Resources, Inc.* Environmental Engineer. Responsible for preliminary design of river water intake and treatment plant. Michael Baker prepared, submitted, and obtained Surface Mining Control and Reclamation Act and National Pollutant Discharge Elimination System permits for the proposed surface facilities associated with the new Freeport Underground Mine. Michael Baker was responsible for the design of the proposed surface facilities, including preparation of the earthwork and grading plan and the design of the foundations for all belt transfer structures, stockpiles, prep plant, clean coal silos, refuse conveyors, clean coal conveyors, and the harbor barge loading facility.

Lancashire Number 15 Acid Mine Drainage Treatment Facility Design, Barr Township, Pennsylvania. *Pennsylvania Department of Environmental Protection.* Project Manager. Responsible for directing team of chemical, environmental, structural, civil, mechanical, and electrical engineers charged with developing plans, technical specifications, and permit applications for a 11 MGD acid mine drainage treatment plant. Responded to RFIs and review submittals by Construction contractor for new AMD Treatment Plant. Michael Baker designed an 11-million-gallon-per-day acid mine drainage treatment plant consisting of extraction wells; a pre-aeration tank; a neutralization tank; a treatment building with laboratory, office, and controls; a sludge conditioning tank; lime and polymer storage and handling systems; a terminal pond; and a sludge injection system. Michael Baker also prepared plans, specifications, and a construction cost estimate and provided bid and construction phase services.

EDUCATION (Degree, Year, Specialization)

M.S., 1982, Civil Engineering; M.S., 1976, Environmental Health; B.S., 1975, Biological Sciences

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

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REGISTRATION (Type, Year, State)

Professional Engineer, 1986, PA; 1996, Ohio

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE**

Attachment "B"

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN. (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Saylor, Michael J., E.I.T. Civil Associate	3	4	1

Brief Explanation of Responsibilities

Mr. Saylor is a civil associate with Michael Baker Jr., Inc. He has supported erosion and sedimentation control plans such as designing collection channels, water conveyance structures, sedimentation ponds, sediment traps, and other control devices. Mr. Saylor also has experience reviewing flood plains, developing hydraulic models, performing stormwater management and conveyance calculations, and assists in NPDES Stormwater permitting. In the field, he has performed inspections for drilling, as well as sediment, surface soil, and surface water sampling for Michael Baker. Prior to coming to Michael Baker, he served as a laboratory technician testing a variety of soils and aggregates in accordance with AASHTO and ASTM standards.

Ebenezer Run Highwall #9, Brooke County, West Virginia. *West Virginia Division of Environmental Protection.* Civil Associate. Responsibilities included the conceptual design of stormwater channels, sediment basins, and additional erosion and sedimentation controls. Additional responsibilities were for the coordination and inspection of drilling by sub-consultants, collecting water quality samples, and preparation of the WV NPDES Stormwater Permit. The project consists of reclamation of two sites with approximately 3,660 linear feet of an abandoned strip mine highwall ranging in height from 30 to 40 feet and areas of mine spoil. Michael Baker prepared construction plans, specifications, stormwater pollution prevention plan services, NPDES permitting and check survey.

Waitman Barbe Highwall #1, Monongalia County, West Virginia. *West Virginia Division of Environmental Protection.* Civil Associate. Responsibilities included developing the conceptual design, erosion and sediment control plans, and water conveyance structures. The project consists of reclamation of approximately 4,600 linear feet of an abandoned strip mine highwall ranging in height from 30 to 45 feet. This includes areas of mine spoil, three areas of exposed coal refuse, an illegal dumpsite containing non-hazardous construction debris and a suspected 11 mine openings. Michael Baker prepared construction plans, specifications, and a stormwater pollution prevention plan services.

Collier Sportsman's Club Highwalls, Brooke County, West Virginia. *West Virginia Division of Environmental Protection.* Civil Associate. Responsibilities included developing the erosion and sediment control plans, helping prepare the specifications and plans of the report, and inspecting the drilling occurring on site. Michael Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, erosion and sedimentation controls, design of wet and buried mine seals with bat gates at suspected mine entries, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of onsite spoil and coal refuse, culverts and channel design, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the check survey and drilling by sub-consultants and the preparation of the WV NPDES Stormwater Permit.

Professional Mapping and Design Services at the Bond Forfeited Permits of the Maurice Jennings Coal Company S-61-83 & S-53-78, Preston County, West Virginia. *West Virginia Division of Environmental Protection.* Civil Associate. Responsibilities include calculations, design of conveyance channels, seep collectors, pump stations, design brief, and erosion and sedimentation controls. Also includes the preparation of construction plans, specifications, and cost estimate.

Professional Mapping and Design Services at the Bond Forfeited Permits of the Masteller Coal Company S-10-85 & S-125-82, Mineral County, West Virginia. *West Virginia Division of Environmental Protection.* Civil Associate. Responsibilities include calculations design of conveyance channels, seep collectors, design brief, and erosion and sedimentation controls. Also includes the preparation of construction plans, specifications, and cost estimate.

Professional Mapping and Design Services at the Bond Forfeited Permits of the F&M Coal Company S-1044-87 & S-57-84, Preston County, West Virginia. *West Virginia Division of Environmental Protection.* Civil Associate. Responsibilities include calculations, design of conveyance channels, seep collectors, pump stations, design brief, and erosion and sedimentation controls. Also includes the preparation of construction plans, specifications, and cost estimate.

EDUCATION (Degree, Year, Specialization)

B.S., 2012, Civil Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

American Society of Civil Engineers (ASCE)

REGISTRATION (Type, Year, State)

Engineer-In-Training, 2012, OH

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NAME & TITLE (Last, First, Middle Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Kudritz, Joseph Lee, P.E. Civil Engineer	1	7	0

Brief Explanation of Responsibilities

Mr. Kudritz is a Civil Engineer with experience involving water and wastewater collection including water and wastewater hydraulic studies, sewer and force main alignments, constructing pump station operation and maintenance manuals, and cost estimation. Much of his background involves hydraulic and hydrologic studies and models, creating water elevation profiles, and working with topographic maps.

Simpson Creek Highwall, Tipple, and Portals Reclamation, Barbour County, West Virginia. *West Virginia Department of Environmental Protection.* Civil Associate. Performed hydrologic and hydraulic analysis for several unnamed streams. Tasks on the projects included: sizing the channels, sizing the grouted rock protection, and developing peak flow rates based on the contributing drainage area. Michael Baker provided engineering services for the mine reclamation of the Simpson Creek Highwall, Tipple, and Portals. Michael Baker's services included site reconnaissance; records review; surveying; subsurface investigation; water sampling and laboratory testing; engineering analysis and design; preparation of construction plans, specifications, and cost estimate; permitting; bidding-phase support; and construction monitoring.

Freeport Mine - PH I - Preparation of 6 Design Build RFP Packages and 1 Site Design -Bid Build Bid Package. *Freeport Mining.* Civil Associate. Responsibilities included overseeing the drainage aspects on the entire site. Specific duties included, sizing the collection channels and the required erosion protection lining, sizing the necessary sediment traps, and coordinating the channel designs with those responsible for grading the proposed channels.

E02313 - WO 2 SR 519-138 FD. *Pennsylvania Department of Transportation, Central Office.* Civil Associate. Responsible for preparing the post construction stormwater management report and plans to be submitted with the NPDES Permit. Also responsible for specifying the required BMP stormwater controls and designing the stormwater detention basins at the site. j

Open End Agreement, District 12 - General Design Open End. *Pennsylvania Department of Transportation, Central Office.* Civil Associate. Responsible for preparing the post construction stormwater management report and plans to be submitted with the NPDES Permit. Also responsible for specifying the required BMP stormwater controls and designing the stormwater detention basins at the site.

FEMA WR 44 KDKA PGH SWMP. *Kellogg Brown & Root.* Civil Associate. Performed all necessary calculations for the stormwater management controls used for the site. Prepared the stormwater management report for the project.

Engineering Services for Enhancement of the Presidential Emergency Radio Transmission Facilities, Nationwide. *U.S. Army Corps of Engineers, Omaha District.* Civil Associate. Performed all necessary calculations for the stormwater management controls used for the site. Prepared the stormwater management report for the project. Under a design-build relationship with a constructor, Michael Baker conducted site evaluations, designed prototype structures for transmitters and generators, and prepared site designs at 35 locations to upgrade the presidential radio broadcast system. The modular facilities were designed to backup AM and FM transmissions during emergencies and withstand electromagnetic pulses, high winds, and other disasters. Michael Baker's services included mechanical and electrical system design, generator and fuel storage system specifications, preparation of environmental surveys, adapting the prototype designs to individual site conditions, and construction management services during installation.

1971- 2013, Municipal Engineering Services, Koppel, Pennsylvania. *Koppel, Borough of.* Civil Associate. Responsible for determining the size and location of storm drains. From 1971 through 2013, Michael Baker served as the municipal engineer for the borough, providing annual on-call engineering services. Michael Baker's tasks ranged from planning and design through construction inspection to support the daily operations of the borough.

EDUCATION (Degree, Year, Specialization)

Graduate Studies, Water Resources & Environmental Engineering | B.S., 2007, Civil Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Engineers Without Borders (EWB), Pittsburgh Professional Chapter

REGISTRATION (Type, Year, State)

Professional Engineer: 2013, PA | ESRI Certification in ArcGIS 9.2, 2009, PA | AutoCAD Certification, 2008, PA

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE**

Attachment "B"

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN. (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
Widdersheim, Mark R., P.E. E & S, NPDES, and HazMat Management	YEARS OF AML DESIGN EXPERIENCE: 0	YEARS OF AML RELATED DESIGN EXPERIENCE: 26	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 0

Brief Explanation of Responsibilities
 Mr. Widdersheim has been involved in environmental compliance and remediation projects for RCRA, Superfund, state-controlled, and private industrial sites. He has been a key player in the both the groundwater and wastewater treatment arenas (including sanitary systems). His responsibilities also have included engineering analyses/feasibility studies, treatability testing, process design (conceptual and detailed levels), and engineering cost estimating. Mr. Widdersheim has led and supported environmental compliance-related projects involving NPDES permitting, SPCC regulations application, stormwater pollution prevention, and emergency response planning. He is the certifying PE on SPCC and Pennsylvania PPC plans for numerous Michael Baker clients.

STEP Pump System Improvement, Confidential Location, Pennsylvania. Confidential Steel Client. Task Manager. Evaluated AMD pumping system limitations at the STEP hazardous waste landfill. Designed a new HDPE force main for acid mine drainage transfer to wastewater treatment plant for pH adjustment. Michael Baker evaluated the STEP Landfill Acid Mine Drainage (AMD) transfer system with respect to its ability to transfer the increased flows that had been experienced since January 2003. The system was found to be limited primarily by friction losses in a heavily scaled, four-inch force main, but otherwise sufficient to handle the increased flow. A replacement six-inch force main was designed and installed and a construction certification report prepared and submitted to PADEP.

Dumans Treatment Plant Evaluation, Barr Township, Ebensburg, Pennsylvania. Pennsylvania Department of Environmental Protection. Engineer. Responsible for study of the performance and management of an existing acid mine drainage (AMD) treatment system for PADEP, Bureau of Mines. Performed a comprehensive audit and provided operational troubleshooting for a 9.4-million-gallon-per-day acid mine drainage pumping station and wastewater treatment plant. Michael Baker was charged with finding avenues to reduce the annual operation and maintenance cost materially for this facility, while maintaining compliance with applicable effluent limitations. Dramatic lime usage reduction was warranted to cut operation and maintenance costs. Michael Baker performed a comprehensive audit and provided operational troubleshooting for a 9.4-million-gallon-per-day acid mine drainage pumping station and wastewater treatment plant. The project was performed wholly in-house with a multidisciplinary team of chemical, environmental, hydraulic, mining, and electrical engineers charged with finding avenues to reduce the annual operation and maintenance cost of this facility materially, while maintaining compliance with applicable effluent limitations.

2011 IE PTI Drawings, Confidential Location. Confidential Steel Client. Project Manager. Prepared "as-built" process drawing relating to an ion exchange for selenium removal from leachate from a hazardous waste landfill. These were submitted to OEPA to complete the Permit-to-Install for the operation retroactively.

Sampling and Sample Tracking, Confidential Location. Confidential Steel Client. Team Member. Responsible for NPDES Part I permit renewal data collection and application completion. Designed a new HDPE force main for acid mine drainage transfer to treatment plant.

Document Review Services for Pollution Prevention Plans, Various Locations, United States. Air National Guard CRTC/FMB. Environmental Engineer. Performed third party review and commenting on draft environmental plans for various ANG bases. Michael Baker provided third-party technical reviews of stormwater pollution prevention plans; spill prevention, control, and countermeasure plans; and oil and hazardous substance pollution control plans for 58 client installations to ensure regulatory compliance.

STEP 2011 Monument Survey. Confidential Steel Client. Project Manager. Coordinated a triennial monument and gas well survey and prepared revised map to document settlement conditions relating to a hazardous waste landfill cap system.

Feasibility Study/Preliminary Design of Coagulation Pits, Confidential Location, West Virginia. Confidential Client. Engineer. Responsible for data collection and remedial alternatives development for coagulation management and closure of existing in-ground pits. The measures were necessary to meet the requirements of the responsible party's RCRA Corrective Action Agreement. Mark's work included the redesign of the resin and latex coagulation pits that were identified as a Solid Waste Management Unit (SWMU). Meeting regulatory standards for groundwater protection, air emissions, solid waste disposal, and wastewater treatment were critical elements in the design. Michael Baker was enlisted by a plastics manufacturer to address interim measures for the client's in-ground coagulation pits, as required by their RCRA Corrective Action agreement. The project encompassed the redesign of the resin and latex coagulation pits identified as Solid Waste Management Units (SWMUs). It was the intent of the client to place an alternative coagulation system into service. Regulatory standards for groundwater protection, MACT air emissions control standards, solid waste disposal and wastewater treatment were the driving factors in the redesign of the pits.

EDUCATION (Degree, Year, Specialization) B.S., 1989, Chemical Engineering	REGISTRATION (Type, Year, State) Professional Engineer: 1994, PA
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS N/A	

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NAME & TITLE (Last, First, Middle Init.)	YEARS OF EXPERIENCE		
Culler, James A. , P.E., P.L.S. Engineering Manager	YEARS OF AML DESIGN EXPERIENCE: 8	YEARS OF AML RELATED DESIGN EXPERIENCE: 9	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 39
Brief Explanation of Responsibilities Mr. Culler is a civil and environmental engineer with extensive experience in project planning, design, construction, operation and maintenance engineering services. His background includes municipal engineering representation, site engineering for industrial and commercial parks; municipal infrastructure design (roads, storm drainage, water and sewer); industrial and recreational facilities; wastewater and water planning and feasibility studies; and municipal and sanitary engineering designs (water and wastewater treatment, pumping, water storage and distribution, and wastewater collection and conveyance). He is also experienced in preparation of construction drawings and contract specifications; construction cost estimating; preparation of regulatory applications and supporting data; financial planning studies; user rate studies; and construction inspection services. Water System Design Engineering, Aliquippa, Midland and Beaver Falls, Pennsylvania. <i>Various Pennsylvania Municipalities.</i> Project Engineer and Project Manager. Provided design engineering and construction services for water system extension projects. Water Storage Tank Design Engineering, Beaver Falls, Aliquippa and Midland, Pennsylvania. <i>Various Pennsylvania Municipalities.</i> Project Engineer and Project Manager. Provided design engineering and construction services for new construction of finished water storage tanks. Water System Hydraulic Analysis and Modeling, Beaver Falls, New Sewickley, Meadville, Baden and Koppel, Pennsylvania. <i>Various Pennsylvania Municipalities.</i> Technical Review Manager. Performed hydraulic analysis and modeling of various water distribution systems. Spring Alley and Mercer Road Water Pumping Stations, New Brighton Borough and Daugherty Township, Pennsylvania. <i>Beaver Falls Municipal Authority.</i> Project Manager. Performed design engineering evaluations, permitting and preparation of equipment purchasing bidding documents for the two (2) water pumping stations. Spring Alley Station consists of two 455 gallons per minute at 305 feet TDH pumps upgradable to 575 gallons per minute at 330 feet TDH. Mercer Road Station consists of three pumps with two at 300 gallons per minute at 128 feet TDH and one at 400 gallons per minute at 147 feet TDH upgradable to two at 350 gallons per minute at 135 feet TDH and one at 500 gallons per minute at 165 feet TDH. Water Treatment Plant Design, Berwind, West Virginia. <i>West Virginia Division of Environmental Protection.</i> Technical Review Manager. Performed technical reviews for preparation of construction documents for 300 gallons per minute potable ground water treatment facility. Treatment scheme included well pumping, air stripping tower, pre and postchlorination, sedimentation, filtration and sludge dewatering lagoons.			
EDUCATION (Degree, Year, Specialization)			
Doctoral Studies, Civil and Environmental Engineering M.S.C.E., 1973, Environmental Engineering B.S.C.E., 1971, Civil Engineering			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS		REGISTRATION (Type, Year, State)	
American Society of Civil Engineers (ASCE) American Water Works Association (AWWA) Pennsylvania Water Environment Association (PWEA) Water Environment Federation (WEF)		Professional Engineer, 1976, West Virginia Professional Engineer, 1976, Pennsylvania Professional Land Surveyor, 1981, Pennsylvania Certified Construction Specifier, 1985	

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE AML DESIGN SERVICES

HYDROLOGY

SEDCAD4 – Storm Routing through Detention Structures, Channel Design and Riprap Sizing.
TR20 – Project Formulation – Hydrology by SCS
TR55 – Urban Hydrology for Small Watersheds by SCS
HAESTADS POND2 – Storm Routing through Detention Structures
HEC1 – Flood Hydrograph Package by U.S.A.C.O.E.
HAESTADS QTRSS – Urban Hydrology for Watersheds
Hydroflow Hydrographs – Storm Routing Model

HYDRAULICS – OPEN CHANNEL AND CULVERT

HEC RAS/ - river Analysis System/Flood Plain Analysis/Water Surface Profile
HEC2 – Water Surface Profiles by U.S.A.C.O.E.
HY8 – Culvert Analysis by FHWA
FLOWMASTER – Channel and Pipeline Hydraulics by HAESTAD, Inc.
Hydroflow Express – Culverts, Channels, Inlets, and Weir Hydraulics

PIPELINE HYDRAULICS

WATERCAD – Water Distribution System Modeling
KYPipe2 – Water Distribution System Modeling
CYBERNET – Water Distribution System Modeling
Hydroflow Storm Sewer – Stormwater Conveyance System Modeling

GEOTECHNICAL

Log Draft 5
gINT V8.3
FB-Multi-Pier Version 4.16
Slope/W 2007
Seep/W 2007
UTexas 4
GRL WEAP
L-Pile Versions 4, 5 or 6
COM 624P Version 2
GSTABL7 and STEDwin

GEOTECHNICAL (continued)

FIT Version 8.2
UniSettle, Version 3
DARwin 3.1
Midas GTS
GROUP Version 6
FE Flow 5.3
EMBANK
SPW 911
ProSheet
CRSP
DRIVEN
PASTABL6
RSS
HELP
SURFER
SlopeInc
PCASE 2.09.01
CPET-IT
FOSSA
MSEW

DRAFTING AND SITE DESIGN

AutoCAD – Civil 3D for Earthwork, Survey, Quantity, Calculations,
Terrain Modeling, Coordinate Geometry, Site Grading, etc.

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE AML DESIGN SERVICES

SURVEY EQUIPMENT

Survey/Global Positioning System (GPS)

- 12 – Leica System 500 - SR 530 RTK - GPS Receiver
- 2 – Leica RS500 Geodetic Reference Station (RTK – COR Station)
- 16 – Pacific Crest ADL Vantage Pro 2-35 Watt UHF – GPS-RTK Trans/Receiver
- 2 – Airlink Raven CDMA C3210 Wireless Modems – Sprint Service, Public Random IP
- 6 – Airlink Raven CDMA C3210 Wireless Modems – Verizon Service, Static IP
- 1 – Leica Disto – Pro (Handheld EDM)
- 32 – Leica Viva GNSS dual frequency receivers
- 3 – Leica 1230 GNSS dual frequency receivers
- 5 – Trimble R8 Model 3 GNSS dual frequency receivers

Pipe/Cable Locators

- 3 – Radio Detection RD4000 with 3 watt transmitters
- 5 – Radio Detection RD8000 with 10 watt transmitters
- 1 – Radio Detection RD7000 with 3 watt transmitter
- 5 – Optical Ranging Inc. Spar 300 locating system integrated with the Trimble R8 receivers

Total Stations

- 1 – Wild TC 2000

Tripods

- 64

Total Stations with Onboard Data Collection

- 1 – Leica TCRP 1200 total station, fully robotic
- 15 – Leica TS 15P total station, fully robotic
- Optical Plummet
- 1 – Wild ZNL-16 (11164)

Magnetic Locators

- 2 – Chicago Steel Tape - FT - 60
- 1 – Schoenstedt
- 6 – Subsurface Instrument – ML-1

Hydrographic Survey Equipment

- 1 - HyDrone Bathymetric System

Unmanned Survey Equipment

- 1 – Fixed-wing Precision Hawk Lancaster
- 1 – Phantom 3
- 1 – Phantom 2 Vision
- 1 – Phantom Inspire

Levels (Engineering)

- 9 – Zeiss Ni 2 automatic level with Nedo folding rod
- 1 – Wild N-3 with Nedo folding rod
- 2 – Topcon Dini digital levels with bar code rods
- 6 – Leica NA2 automatic level with 16 ft rod

GPS Antennas

- 12 – Leica AT502
- 1 – Leica AT503 w/Chokering and Ray-Dome
- 1 – Leica AT504 w/Chokering and Ray-Dome
- 32 – Leica GS 15
- 5 – Trimble R8 GNSS

Vehicle / Boats

- 12 – 4 Wheel Drive Suburbans
- 2 – 4 Wheel Drive Jeep
- 1 – 4 Wheel Drive Pickup
- 1 – 8 Wheel Argo – Amphibious ATV
- 3 – Utility Trailers (10' and 14')
- 2 – Yamaha- Quad ATV

Fathometer

- 1 – Innerspace Tech Model 455 – 200 KHz 8° Transducer

Survey Software

- 2 – Leica GIS Data Pro Version 3.0
- 1 – Innerspace Technology Version 6.0 Data Logging with Guidance
- 17 – Leica GeoOffice Version 7.5 and 8.3
- 2 – Trimble Pathfinder Office Version 4.0
- 22 – Listech – Liscad 10.0 (COGO)
- 5 – MicroStation Version V8i and XM
- 2 – Leica SPIDER CORS Controlling Software Version 2.0
- 10 – AutoCAD Civil 3D 2011 and 2014

Field Laptops PCs

- 30 – HP Elite laptop PCs
- 1 Panasonic Model CF19 Tough Book

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE AML DESIGN SERVICES

GIS SOFTWARE

ESRI: 4 – ARC/Info, Version 10.X
9 – ArcView, Version 10.X
10 – ArcEditor, Version 10.X
1 – Spatial Analyst
1 – 3D Analyst
1 – ArcCOGO

AutoCAD, Version 2014 and prior versions

1 – Visual Basic, Version 6
1 – Visual Studio 2013 Architects w/MSDN Premium
1 – Visual Studio 2013 Developers w/MSDN Premium
1 – Visual Studio 2013 Pro w/MSDN Premium

ARCInfo and ARCEditor are concurrent licenses
ARCView concurrent licenses

MOBILE LIDAR

Sensor

1 – LYNX Mobile Mapper System with 2 Sensors.

LiDAR Processing WorkStations

3 – HP E5540 2.53 GHz, 18 GB RAM, 1.4 TB of disc space

Servers

1 – HP DL380, 2.1 TB of disc space,
1 – ATMOS R610 DP Server GBE HA TITAN, 120 TB of disc space

Software

1 – Optech ALTM Navigation-Planner
1 – Applanix POS PAC
1 – Optech Dashmap
6 – TerraSolid TerraScan
5 – TerraSolid TerraMatch
6 – TerraSolid TerraModeler
1 – TerraSolid Terraphoto
1 – TerraSolid Terraslave
1 – GeoCue Enterprise Server

5 – GeoCue Client
5- Geocue LiDAR CuePac
1-Geocue LYNX MMS CuePac

PHOTOGRAMMETRIC EQUIPMENT

Softcopy Stereoplotters

1 – HP X5670 @ 2.93 GHz Processor X2 (Xeon), 18 GB RAM, 64 BIT Operating System
1 – HP E5645 @ 2.40 GHz Processor X2 (Xeon), 24 GB RAM, 64 BIT Operating System

Digital Orthophoto

2 – HP Z600 E5640 @ 2.67 GHz Processor X2, 120 GB RAM, 232 GB Disc Space

Scanner

1 – Z/I PhotoScan – Variable Resolution Settings from 7 to 256 microns.

Server

1 – Compaq Proliant DL380
Xeon 3 GHz Processor
5.1 GB Memory
1 Terrabyte Disc Storage

1.2 Terrabyte Network Attached Storage

Software

1 – MrSID, Geo Express 8.5
1 – ImageStation Automatic Triangulation (ISAT) 6.2
7 – IRAS – C, Version 10.1
1 – Adobe Photo Shop 5, Version 10.0
1 – ERDAS Imagine, Version 2010
2 – ImageStation Base Rectifier-ISBR, Version 6.2
3 – ImageStation DTM Collection-ISDC, Version 6.2
3 – ImageStation Feature Collection (ISFC) 5.3
3 – ImageStation Model Setup (SMS) 5.3
2 – ZI Ortho Pro/Geo Media, Version 6.2
34 – MicroStation – J & 8, Versions V8 and V8i
1 – MRF Mapping Tool Kit for GIS Linework Processing, Version 8.1
1 – Corporate licensed Axiom Productivity Kit including File Fixer and English to Metric Conversion packages

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
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Attachment "B"

15. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS THE DESIGNATED ENGINEER OF RECORD

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	NATURE OF YOUR FIRM'S RESPONSIBILITY	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETE
F&M Coal Company, S-1044-87 & S-57-84 Mapping and Design Services Preston County, West Virginia	West Virginia Department of Environmental Protection (WVDEP) Office of Special Reclamation 47 School Street, Suite 301 Philippi, WV 26416	Michael Baker was tasked to provide special reclamation construction documents to treat AMD discharge actively and passively to comply with current NPDES effluent limits. Michael Baker's responsibilities included research of existing geological data and mining maps, aerial mapping verification, supplemental field and bathymetric pond surveying, bench scale treatability testing, acid base accounting testing, engineering design and analysis, the preparation of construction plans and specifications, stormwater pollution prevention plans; cost estimating, bidding-phase support; and construction services.	\$243,752 (Michael Baker Fee)	15%
Masteller Coal Company, S-10-85 & S-125-82 Mapping and Design Services Mineral County, West Virginia	West Virginia Department of Environmental Protection (WVDEP) Office of Special Reclamation 47 School Street, Suite 301 Philippi, WV 26416	Michael Baker was tasked to provide special reclamation construction documents to AMD discharge passively treat to comply with current NPDES effluent limits. Michael Baker's responsibilities included research of existing geological data and mining maps, aerial mapping verification, supplemental field and bathymetric pond surveying, bench scale treatability testing, acid base accounting testing, engineering design and analysis, the preparation of construction plans and specifications, stormwater pollution prevention plans; cost estimating, bidding-phase support; and construction services.	\$168,937 (Michael Baker Fee)	30%
Maurice Jennings Coal Company, S-53-78 & S-61-83 Mapping and Design Services Preston County, West Virginia	West Virginia Department of Environmental Protection (WVDEP) Office of Special Reclamation 47 School Street, Suite 301 Philippi, WV 26416	Michael Baker was tasked to provide special reclamation construction documents to treat AMD discharge passively and actively to comply with current NPDES effluent limits. Michael Baker's responsibilities included research of existing geological data and mining maps, aerial mapping verification, supplemental field and bathymetric pond surveying, bench scale treatability testing, acid base accounting testing, engineering design and analysis, the preparation of construction plans and specifications, stormwater pollution prevention plans;	\$217,982 (Michael Baker Fee)	60%

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE**

Attachment "B"

15. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS THE DESIGNATED ENGINEER OF RECORD

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	NATURE OF YOUR FIRM'S RESPONSIBILITY	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETE
		cost estimating, bidding-phase support; and construction services.		
Ebenezer Run Highwall #9 Brooke County, West Virginia	West Virginia Department of Environmental Protection (WVDEP) Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	Michael Baker's responsibilities included research of existing geological data and mining maps, review of water quality data, check survey, erosion and sedimentation controls, backfilling of existing highwalls to stable configurations, site grading, upgrade of existing access roads, reclamation of onsite spoil and coal refuse, channel design, removal of non-hazardous trash and waste from the site, and revegetation of all disturbed areas. Additional responsibilities were for coordination of the drilling by sub-consultants, water quality sampling and the preparation of the WV NPDES Stormwater Permit.	\$101,413 (Michael Baker Fee) \$1,100,000 (Construction)	98%
Emerald Refuse Area No. 3 Waynesburg, Pennsylvania	Emerald Coal Resources, LP 158 Portal Road, PO Box 1020 Waynesburg, Pa 15370	Prepare permit submission and construction plans for a coal refuse disposal site and slurry impoundment including E&S control, diversion and collection ditches, spillways, staging, and stability analyses.	\$ 996,361 (Michael Baker Fee)	99%
National Pipeline Mapping System GIS Database Repository Services and Digital Data and Map Distribution Nationwide	U.S. Department of Transportation's Research and Special Programs Administration and Office of Pipeline Safety, Washington, D.C.	Michael Baker is maintaining the national geospatial data repository for the National Pipeline Mapping System (NPMS)	\$11,454,837 (Michael Baker Fee)	75%
TOTAL NUMBER OF PROJECTS: 6		TOTAL ESTIMATED CONSTRUCTION COSTS: \$13,183,282 (Michael Baker Fee only)		

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE**

Attachment "B"

16. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS SERVING AS A SUB-CONSULTANT TO OTHERS

PROJECT NAME, TYPE AND LOCATION	NATURE OF FIRMS RESPONSIBILITY	NAME AND ADDRESS OF OWNER	ESTIMATED COMPLETION DATE	ESTIMATED CONSTRUCTION COST	
				ENTIRE PROJECT	YOUR FIRM'S RESPONSIBILITY
None					

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE**

Attachment "B"

17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
Design & Construction Management Services for the Coney Island Water Pollution Control Plant Upgrade New York	City of New York Dept. of Environmental Protection Elmhurst, New York	\$30,838,464 (Michael Baker Fee)	2015	Yes
General Environmental Consulting Services and Technical Support Contract (2009-2015) Various Sites in Pennsylvania	Pennsylvania Department of Environmental Protection Rachel Carson State Office Building P.O. Box 8471 400 Market Street Harrisburg, PA 17101	\$11,686,071 (Michael Baker Fee)	2015	Yes
Currie Landfill and Kelly Farm Sludge Lagoon Remediation Design Millcreek and Fairview Townships, Pennsylvania	Pennsylvania Department of Environmental Protection Rachel Carson State Office Building P.O. Box 8471 400 Market Street Harrisburg, PA 17101	\$1,378,433 (Michael Baker Fee)	2015	Yes
Phase II Environmental Site Assessment of the Bear Creek Area Chemical Sites Butler and Armstrong Counties, Pennsylvania	Pennsylvania Department of Environmental Protection Rachel Carson State Office Building P.O. Box 8471 400 Market Street Harrisburg, PA 17101	\$1,082,257 (Michael Baker Fee)	2015	No (Study)
Collier Sportsman's Club Highwall Brooke County, West Virginia	West Virginia Department of Environmental Protection Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$139,821 (Michael Baker Fee)	2014	Yes
Waitman-Barbe Highwall #1 Monongalia County, West Virginia	West Virginia Department of Environmental Protection Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$117,007 (Michael Baker Fee)	2014	Yes

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE**

Attachment "B"

17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
Simpson Highwall Project , Barbour County, West Virginia	West Virginia Department of Environmental Protection Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$119,000 (Michael Baker Fee)	2013	Yes
Prime No. 1 Mine Fetty Portal Monongalia County, West Virginia	Dana Mining 308 Dents Run Road Morgantown, WV 26501	\$103,000 (Michael Baker Fee)	2013	No
Wymer Portals Project , Preston County, West Virginia	West Virginia Department of Environmental Protection Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$123,000 (Michael Baker Fee)	2010	Yes
Davidson Highwall Project , Preston County, West Virginia	West Virginia Department of Environmental Protection Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$107,000 (Michael Baker Fee)	2010	Yes
Fairmont Five Subsidence Marion County, West Virginia	West Virginia Department of Environmental Protection Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$65,659 (Michael Baker Fee)	2010	Yes
Maybeury (Oakley) Landslide McDowell County, West Virginia	West Virginia Department of Environmental Protection Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$54,683 (Michael Baker Fee)	2010	Yes

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE**

Attachment "B"

18. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM HAS BEEN A SUB-CONSULTANT TO OTHER FIRMS (INDICATE PHASE OF WORK FOR WHICH YOUR FIRM WAS RESPONSIBLE)

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST OF YOUR FIRM'S PORTION	YEAR	CONSTRUCTED (YES OR NO)	FIRM ASSOCIATED WITH
General Investigation Feasibility Study, Powell River Basin Lee County, Virginia	U.S. Army Corps of Engineers, Nashville District	\$79,071 (Michael Baker Fee)	2011	N/A (Study)	David Miller & Associates Vienna, Virginia

19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Abandoned Mine Lands Program.

Michael Baker Jr., Inc. (Michael Baker) has been providing abandoned mine lands (AML) reclamation and acid mine drainage (AMD) remediation since the federal government first enacted legislation. Our work experience in AML/AMD started with Operation Scarlift in the 1970's, and we have been providing our engineering services in these areas to the West Virginia Department of Environmental Protection (WVDEP) since they initiated its AML Reclamation Program in 1983. Michael Baker's AML/AMD experience has developed the skill set for reclamation projects and we have supplemented this skill set by adding key individuals like Mr. Charlie Stover. Mr. Stover's experience and history with West Virginia's AML Program, and specifically The Office of Special Reclamation (OSR), will be invaluable to this project. We also provide services in this area to the WVDEP OSR, Pennsylvania Department of Environmental Protection (PADEP), the Ohio Department of Natural Resources (ODNR), and the U.S. Office of Surface Mining (OSM), to name a few. Our recent experience on numerous AML reclamation and AMD remediation projects for the WVDEP, ODNR, PADEP and the U.S. Army Corps of Engineers, Nashville District, illustrates our track record for the completion of assignments on time and within budget. Through these experiences, Michael Baker has garnered AML/AMD-specific recognition and developed long-standing business relationships through successful endeavors based on our ability to provide the following services at a level that meets environmental standards while exceeding client expectations:

- ◆ Reclamation of mine refuse piles
- ◆ Mine Sealing
- ◆ Subsidence Control
- ◆ Balanced earthwork and grading
- ◆ Strip pit and high wall reclamation
- ◆ Drainage conveyance and improvements
- ◆ Revegetation of acid bearing ground
- ◆ Stream relocation and natural stream channel design
- ◆ Wetland assessments and inventory
- ◆ Restoration of streams and wetlands
- ◆ Landslide identification, investigation and remediation
- ◆ Replacement of water supplies affected by mining
- ◆ Efficient Passive and active AMD treatment systems



Although the projects presented in the Project Experience Matrix of Attachment "C" of the CQQ clearly show Michael Baker's AML design, water system design, and related experience, they only hint at the extensive human and material resources that especially qualify our firm for this project. Additionally, some projects may require some unique technical skills beyond a typical AML project, and as you may observe on our Organization chart included in Section 13 of this Expression of Interest, we can bring the full depth of in-house technical services to the project, as needed. Based on our initial investigations of the project, this includes items like inventorying and characterizing surface water seeps and mine discharge; completing a test boring program aimed at

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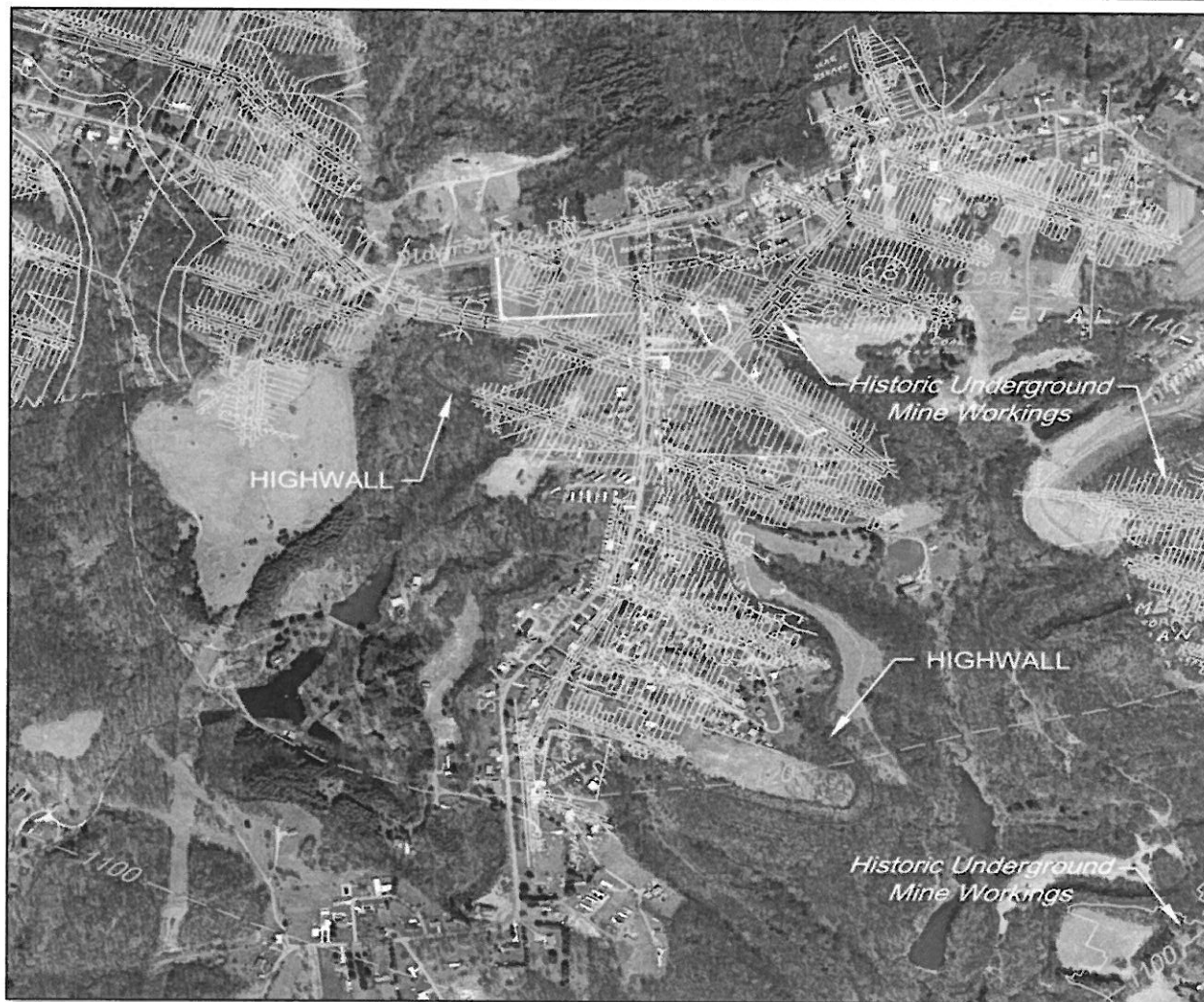
determining spoil, and evaluating any highwall or mine pool conditions to assist with reclamation; designing and maintaining a treatment system for treating mine water and seepage; and LiDAR experts for securing mapping of large and altered sites, to name a few. The following narrative further describes our experience and provides insight into the special capabilities of Michael Baker.

The civil, mining, surveying, mapping, environmental, and geotechnical services of Michael Baker are available to respond to the needs of WVDEP immediately. Working from our Moon Township, Pennsylvania office and supported by our Charleston, West Virginia office, Michael Baker can expeditiously provide the full spectrum of services needed in water distribution system design as well as mine reclamation and mine drainage abatement operations. Some of the more important services our firm can provide to WVDEP include:

Field Investigation and Design Solutions

Sometimes it is about not reinventing the wheel. Our field investigations start with a literature review of any available mapping, historic mine maps, old aerial photographs, mined out area maps, landslide susceptibility maps, geologic maps, soil conservation service reports, etc. After compiling and review of available existing resources, we perform a field view of the project. Our specialized

experience and technical ability has taught us that a typical AML project is a puzzle with many pieces. Because of the history of the site, often pieces of the puzzle no longer exist. Michael Baker's responsibility is to uncover and connect the various puzzle pieces and utilize this information to develop an efficient, constructible, cost-effective design. We take this responsibility very seriously. The adjacent image is an example of present day aerial photography, historical mine maps, structure contours and field collected data. This becomes a valuable design tool.



19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Abandoned Mine Lands Program.

Design Systems – Active and Passive

Michael Baker's design experience includes both active and passive treatment systems, which are based on the characterization of the AMD site as well as the flows and chemistry of the AMD. To this end, Michael Baker provides AMD sampling to determine chemical parameters, as well as the flow measurements covering high- and low-flow periods that are most important in developing AMD abatement system. To date, **Michael Baker has evaluated and designed 17 AMD abatement systems**, four of which are passive treatment systems that have been recently constructed and are currently in service.

Additionally, Michael Baker has designed **ten AMD remediation projects for WVDEP** alone that included open limestone channel (OLC), anaerobic and aerobic wetlands and settling ponds, limestone sand dumping in the stream, and alkaline leach bed/anoxic limestone drains. Other Michael Baker AMD abatement designs have been designed for USACE's Baltimore and Nashville Districts.



Geotechnical Investigation and Analysis

In designing special reclamation projects, generally three types of soil analysis are needed. These analyses may include:

- ◆ Geotechnical analysis (bearing capacity, friction angle, etc.)
- ◆ Soil analysis for revegetation potential (pH, Acid Base Accounting, Nutrients)
- ◆ Soil analysis for hazardous materials where past dumping may have occurred.

Michael Baker is involved in selecting and collecting the soil samples and analyzing the results of laboratory testing as required for design. Of the 30 most recent AML projects, Michael Baker was involved in soil analysis for 23 projects.



Hydrology and Hydraulic Analysis

Michael Baker has used specialized regional and local hydrologic methods in our 50+ years of combined experience in the program and during our work on local and federal contracts. The team has experts in hydrologic analyses who have experience using a variety of current hydrologic methods, including HEC-1, HEC-2, HEC-RAS, HY8, TR20, TR55, HAESTADS PONDS 2,

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FLOWMASTER, HDYRDOFLOW, KYPIPE 2, CYBERNET, SEDCAD 4, UNET, and DAMBRK. Michael Baker applies these models to services such as stormwater management, culvert analysis, hydrologic and hydraulic studies, storm sewer design, floodplain modeling, channel design, watershed planning, energy dissipation, and waterline extension and distribution. The team is also skilled in calibrating the rainfall runoff models in to historical data to justify results. We realize that each watershed is different from the next and that knowledge of local characteristics can be important.

Expertise in hydrology and hydraulics is essential in any AML/AMD remediation design. **Of the 30 most recent AML/AMD projects, 27 projects needed hydrology/hydraulics expertise of the AML/AMD design group.**

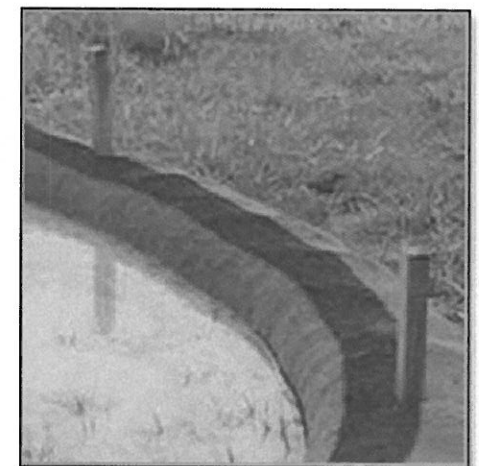
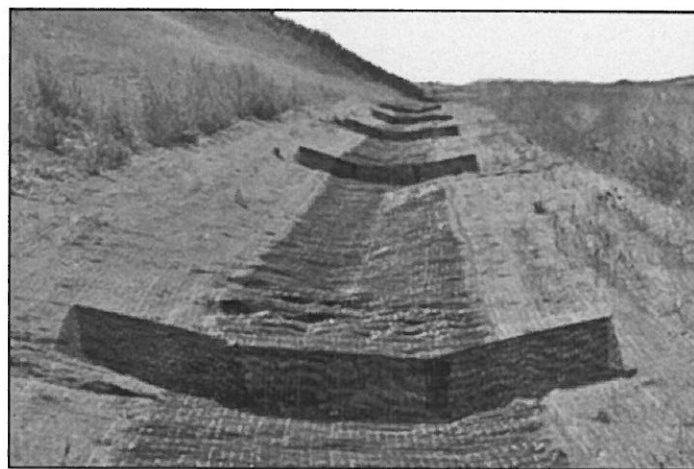
Stormwater Management

Michael Baker applies advancements in sediment control devices to provide an environmentally low impact, cost-effective design for reclamation projects. This approach uses sediment tube traps and wattles in lieu of the conventional sedimentation ponds. These devices filter sediment laden runoff through them while also reducing

hydraulic energy. They also provide a higher efficiency of pollutant removal then conventional methods and reduce the project's total disturbed area typically needed when conventional sedimentation basins are utilized.

Michael Baker grades the site such that all stormwater runoff is directed towards a channel at the toe of the backfilled highwall which doesn't allow any runoff exiting the site without the benefit of treatment. This keeps all runoff within the limits of disturbance and allows for the erosion control devices to be placed incrementally as construction progresses.

Once the site is vegetated, the controls are removed without any further reclamation that typically occurs with traps and ponds. The application of these new technologies also results in lower construction cost and project duration while providing a high efficiency of pollutant removal.



19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Abandoned Mine Lands Program.

Development of Balanced Earthwork and Grading

Michael Baker typically employs AutoCAD Civil 3D for production of grading plans, profiles, details, cross sections, and balancing cut and fill volumes on AML projects. We have presented a team that includes experts in utilizing this tool for grading and evaluating excavation and fill quantities to produce a balanced AML site. AutoCAD Civil 3D is a powerful tool for abandoned mine land projects allowing the rapid evaluation of grading plan alternatives and calculation of bid item quantities. It is especially useful for projects requiring extensive backfilling and grading, such as required for projects with large refuse and gob piles, highwalls, and other abandoned surface disturbances. If required, Michael Baker is also capable of utilizing Bentley MicroStation for development of plans and earthwork balancing.

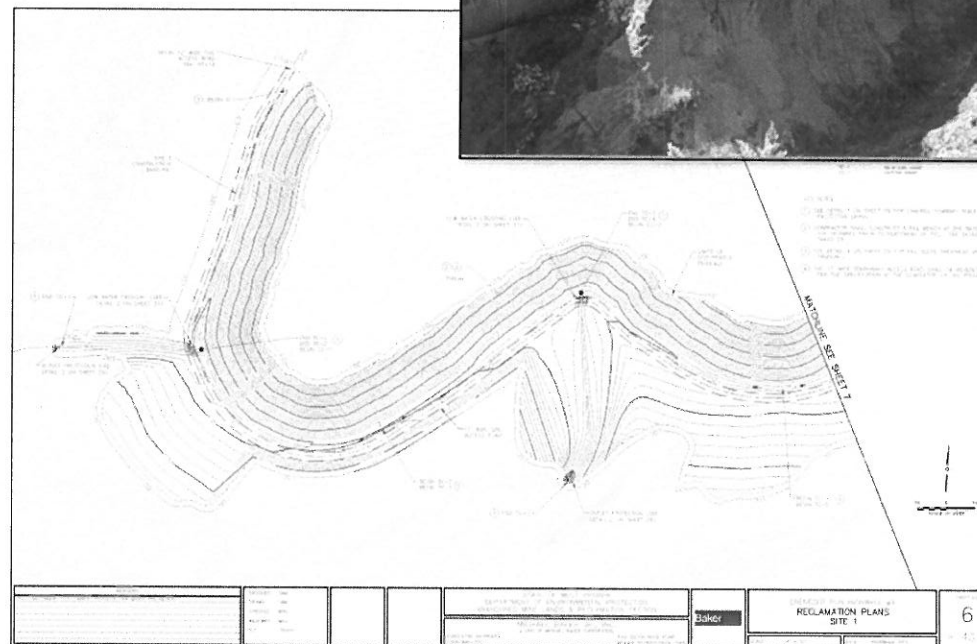
Preliminary Design, Final Design, and Construction Documents

Michael Baker's expert team of licensed professional engineers are experienced in preparing preliminary design reports, construction plans, specifications, bid tabs, and cost estimates for projects including mine subsidence and grouting, portal sealing, highwall backfilling, AMD Treatment and landslide stabilization.

Michael Baker was relied upon to write the manual for PADEP for the Permitting for Surface Facilities related to Coal Mining. A manual in which the guidelines are set for all mine permitting to be used by the Operators. This provides for a consistent and methodical process to permit the facilities and ensures the protection of the environment. This trust in Michael Baker by PADEP to take responsibility for this important document is just a sampling of the trust our clients have always placed in Michael Baker. It also demonstrates our knowledge of the mining processes and procedure. That understanding of how mining occurs today and historically yields valuable insight into developing solutions to deal with the resulting special reclamation projects.

Permitting

Every design project must be permitted; however the role of permitting is often overlooked. Michael Baker can prepare the required permitting documentation for AML designs to obtain required permits and authorizations. Michael Baker has an



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19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Abandoned Mine Lands Program.

experienced team of professionals that have a diverse background in environmental and regulatory permitting. Permits are prepared in-house by a team that is intimately involved with the design of the project and has working relationships with regulatory agencies. In many instances, our working relationships with the regulatory community have allowed us to fast-track permits or permit revisions due to unforeseen conditions. This has saved our client valuable time and funding during design and construction. Beyond the application, Michael Baker provides technical representation to support our client's position during the permit negotiations.

Mobile LiDAR Capabilities

Michael Baker's aerial light detection and ranging (LiDAR) service provides an efficient and affordable high-definition solution to digital terrain model surface creation and planimetric feature collection. Michael Baker owns and operates the latest in aerial LiDAR and positioning technology for outstanding productivity and survey efficiency. From a single aerial collection session, our aerial LiDAR system offers the ability to accurately capture and classify features that are important to you and the requirements of your project. With up to four range measurements, including first, second, third, and last return-point capture, you can be assured that all project data is accurately captured and available for classification

Michael Baker LiDAR provides the ability to accurately and effectively capture point-cloud terrain data for orthophoto rectification and planimetric or topographic map compilation. Products can be delivered as bare-earth DEM files, with the option of upgrading to digital terrain models for contour generation.



Michael Baker owns fixed-wing and octocopter drones.

Some of the functions applicable to design projects for which Michael Baker routinely employs the LiDAR System:

- ◆ Aerial imagery (vertical) acquisition using digital/film based cameras.
- ◆ Aerial Light Detection and Ranging (LiDAR) collection
- ◆ Field survey, including photogrammetry control, densification, and accuracy testing
- ◆ Unmanned Aerial Surveys (UAS)
- ◆ LiDAR data processing
- ◆ Map reproduction
- ◆ Earthwork Volume Computations and Cost Estimates
- ◆ Aerial imagery (oblique photographs)
- ◆ Contour Mapping of the Surface and Subsurface
- ◆ Perform Fully Analytical Aerial Triangulation (FAAT)
- ◆ Stereo compilation of data
- ◆ Aerial Mosaic, including Ortho Imagery
- ◆ Facilities Layout and Site Design
- ◆ Drafting of Plans Profiles and Cross Sections

The LiDAR System and AutoCAD Civil 3D Design software are powerful cost saving tools for abandoned mine land projects since they can evaluate numerous configurations rapidly. They are especially useful for projects requiring extensive waterline plan and profile drawings and can interface with hydraulic models such as WaterCAD for analysis and design. They are also useful for projects requiring extensive backfilling and grading, such as may be required for water tank and pump station sites, and for the grading of refuse banks and gob piles, elimination of highwalls, and reclamation of other abandoned surface disturbances.

19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Abandoned Mine Lands Program.

Additional Services

Michael Baker also provides the following services for abandoned mine lands reclamation and water system design projects:

- ◆ Field Surveying
- ◆ Mapping Verification Surveying
- ◆ Bathymetric Surveying
- ◆ Environmental Evaluations and Assessments
- ◆ Data Acquisition and Interpretation
- ◆ Construction Management

Since we can furnish all of the engineering related services required for abandoned mine lands reclamation projects "in-house", we can work very efficiently and meet the strictest of schedules. Our efficiency is further heightened by the use of mapping systems and AutoCAD compatible design software to perform computer-assisted mapping, design and drafting.

The experience of the key project personnel includes abandoned and active mine operations. Since we continually serve many of the Country's largest coal and mineral producers as well as industrial clients and state environmental agencies, several personnel listed under Item 13 of the CQQ also have experience in all phases of mining services, from survey, mapping, exploration and reserve analysis through mine planning, permitting, design, construction management, and final closure and reclamation. Since mining and reclamation projects (and WVDEP assignments in particular) comprise a large segment of our business, we work to assure that the mining services provided meet the needs and expectations of our clients and any regulatory agencies involved. Some of the many coal producers we have served are listed below:

- | | |
|-------------------------------|--|
| ◆ Consolidation Coal Company | ◆ Emerald Coal Resources LP |
| ◆ Alpha Natural Resources | ◆ Cumberland Coal Resources LP |
| ◆ Westmoreland Coal Company | ◆ Exxon Research and Engineering Company |
| ◆ U.S. Steel Mining Co., Inc. | |

To further demonstrate Michael Baker's full service capabilities and experience, a national award-winning AML project description is provided below.



Michael Baker owns a HyDrone bathymetric system and has used it on numerous mine ponds.

19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Abandoned Mine Lands Program.

State Funded Mine Reclamation and Pollution Abatement Projects – Kempton Refuse & AMD, West Virginia

Michael Baker Jr., Inc. was retained by the West Virginia Department of Environmental Protection to prepare detailed design plans, and technical specifications for the Kempton Refuse & AMD project in Tucker County. The constructed project won a reclamation award and is described in a video on the WVDEP website.

The primary purpose of the Kempton Refuse & AMD project is to reclaim the remains of the pre-law underground and surface mines in the project area and divert AMD through a passive treatment system before discharging to existing streams in order to rehabilitate the watershed, and in turn the North Branch of the Potomac River.

The project involved the reclamation of over 60 acres of exposed refuse and mine spoil, re-establishment of 4,400 LF of stream, and conveyance and treatment of numerous AMD discharges. Site reconnaissance was performed to identify mine seepage points and AMD sources, subsidence features, and potential soil borrow areas. A wetland delineation and stream assessment were performed to determine design parameters and mitigation requirements for regulatory compliance. A series of bore holes were drilled to determine underground conditions including characteristics of refuse, soil, and rock, and to determine the elevation of critical mine entries.

Plans and specifications were prepared for the reestablishment of the unnamed tributary, grading of spoil and refuse to provide positive drainage, collection of acidic seepage, sealing of mine entries, AMD conveyance and treatment, and soil covering and revegetation of refuse materials.

Specifications for revegetation and reforestation of selected areas included soil amendments, seed mixtures, tree plantings, and mulching. Stream restoration designs required to reconstruct two unnamed tributaries in the Potomac watershed employed natural design techniques including a serpentine layout with pools and riffles.

The site included numerous mine seals and collection points to abate the AMD seepage. Mine seals consisting of clay seals, aggregate material, and PVC outlet pipes were proposed, with modified entries required to meet site specific artesian conditions. Conveyance pipes and limestone lined conveyance channels were provided to transfer AMD to a treatment system consisting of an equalization pond, successive alkalinity producing system (SAPS pond), and aerobic wetland. Project construction was completed in 2009.

Summary

As a large, diverse engineering firm, Michael Baker has facilities available to properly conduct water distribution extension, abandoned mine land reclamation, and AMD remediation projects. The use of in-house capabilities facilities can speed project completion and facilitate tracking of progress. The in-house capabilities include:

◆ Data Processing ◆ Interactive Graphics and AutoCAD ◆ Word Processing ◆ Printing and Reproduction

19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Abandoned Mine Lands Program.

Michael Baker's qualifications to provide engineering services for waterline and abandoned mine land projects, we offer the following response to the evaluation factors:

1. Bidder Experience

- ◆ Extensive experience in each area. Items 17 and 18 of the CQQ describe various projects for which we provided these services during the last five years. Projects and technical services listed under item 12 of the CQQ describe competencies typical of various projects for which we provided our services to WVDEP.
- ◆ Strong capabilities in each area. Item 13 of the CQQ lists our personnel by discipline. Our large multi-disciplinary staff is experienced in all aspects of Special Reclamation and AML reclamation; civil, environmental, mining, geotechnical and reclamation engineering applied to surface and underground coal mining; land restoration; stream and water restoration; and land use and natural resources planning. The attached "Project Experience Matrix" show various projects performed for various clients and also show primary participants responsible for these projects.



Kempton Refuse and Acid Mine Drainage/Abandoned Mine Lands Project in Tucker County, West Virginia. The West Virginia Department of Environmental Protection was honored by the U.S. Department of the Interior's Office of Surface Mining for its reclamation and restoration efforts on the Kempton Project. To find out more about West Virginia's Abandoned Mine Lands Program go to:
<http://www.dep.wv.gov/aml/Pages/default.aspx>

2. Qualification of Personnel with respect to background, general experience, and experience relative to the requirements of the project.

- ◆ Michael Baker's key personnel are registered professional engineers experienced in a broad variety of water distribution and similar projects, as indicated item 13 of the CQQ.
- ◆ Our Project Professionals are veterans of many similar projects including past WVDEP projects.

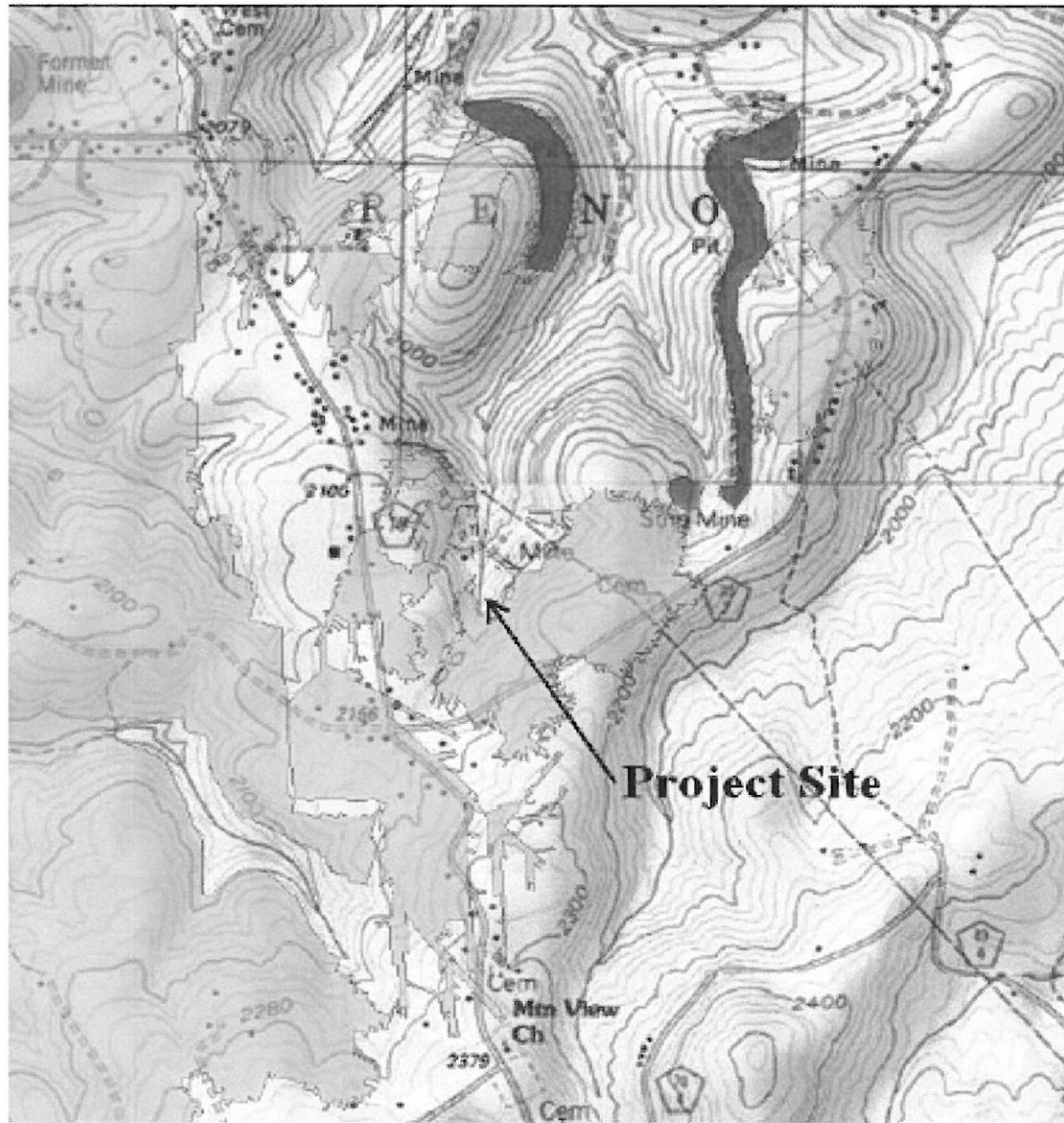
19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Abandoned Mine Lands Program.

- ◆ Our Mining Services Manager, Mr. Christopher Ruppen and our proposed Project Manager for this assignment, Mr. Bill Neider, both demonstrate the desire and commitment that WVDEP deserves and expects for this assignment.
- ◆ The qualifications and experience of Mr. Charlie Stover speak for themselves. His experience in all aspects of AML work is a true benefit to the project and our team. Charlie's intimate knowledge of the Department's goals and objectives, combined with Michael Baker's technical resources, will yield an unsurpassed team that is quality driven.
- ◆ Our commitment is demonstrated by the fact that Michael Baker has conducted a comprehensive investigation of the project site and has been involved with the interpretation of the mining history leading to the current day site conditions.

3. Corporate Specialized Experience and Demonstrated Abilities

- ◆ Michael Baker's specialized experience with AML related problems is summarized in the abandoned mine lands reclamation and Related Projects Matrix in Appendix C. Our work has addressed the full spectrum of reclamation projects.
- ◆ The firm has a wealth of experience on similar projects, as evidenced by projects performed for mining and mineral companies. Moreover, Michael Baker's transportation, site development, and water resource projects in the tri-state area often address special reclamation problems.
- ◆ Michael Baker applies advancements in sediment control devices to provide an environmentally low impact, cost-effective design for reclamation projects. This approach uses sediment tube traps and wattles in lieu of the conventional sedimentation ponds. These devices filter sediment laden runoff through them while also reducing hydraulic energy. They also provide a higher efficiency of pollutant removal than conventional methods and reduce the project's total disturbed area typically needed when conventional sedimentation basins are utilized. Michael Baker grades the site such that all stormwater runoff is directed towards a channel at the toe of the backfilled highwall which doesn't allow any runoff exiting the site without the benefit of treatment. This keeps all runoff within the limits of disturbance and allows for the erosion control devices to be placed incrementally as construction progresses. Once the site is vegetated, the controls are removed without any further reclamation that typically occurs with traps and ponds. The application of these new technologies also results in lower construction cost and project duration while providing a high efficiency of pollutant removal.
- ◆ Our specialized experience and technical ability has taught us that a typical AML project is a puzzle with many pieces. Because of the past history of the site, often pieces of the puzzle no longer exist. Michael Baker's responsibility is to uncover and connect the various puzzle pieces and utilize this information to develop an efficient, constructible, and cost-effective design. We take this responsibility very seriously.

19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Abandoned Mine Lands Program.



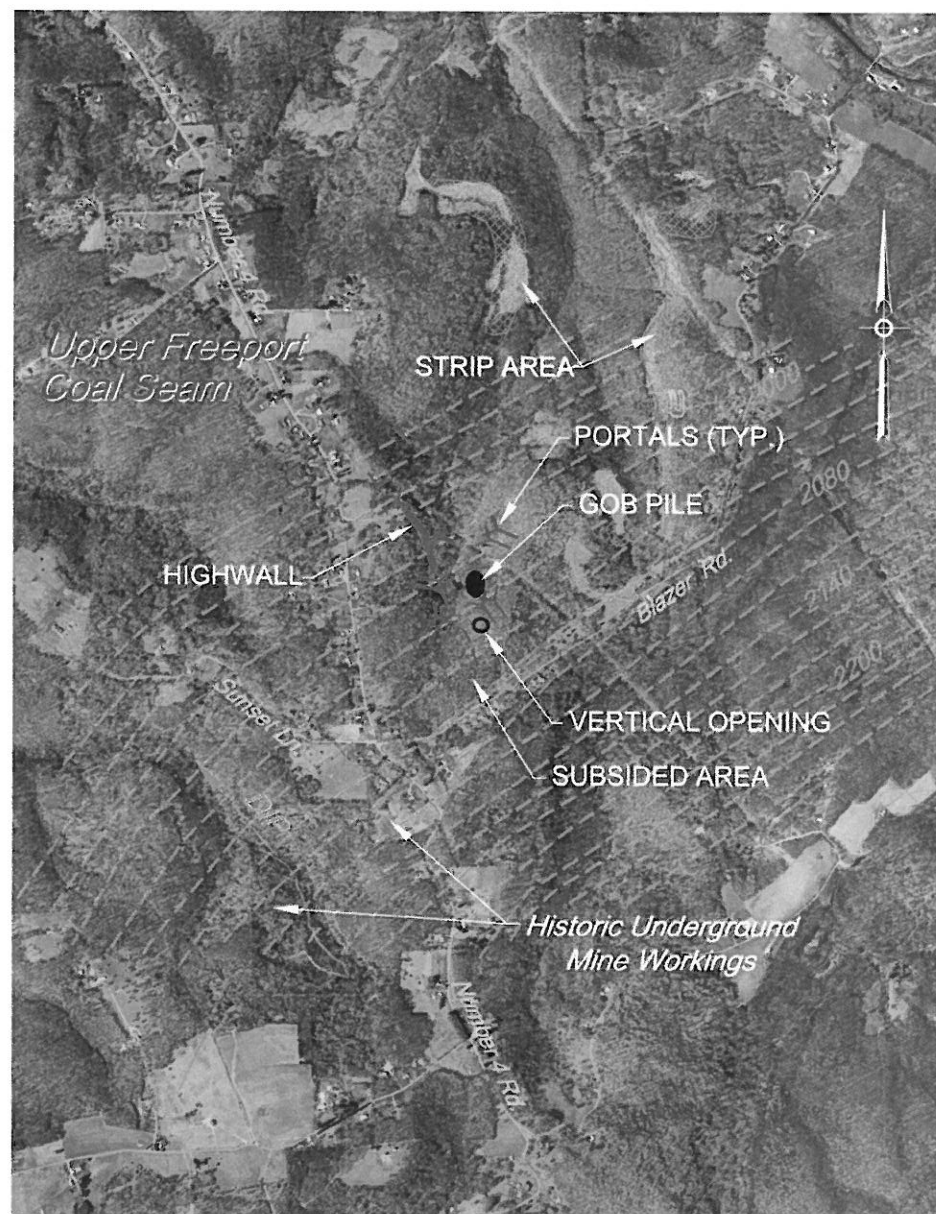
- ◆ The image shown to the right is downloaded from the West Virginia Geologic and Economic Survey and starts to build the puzzle. For the Mountain View Portals site, the reference begins to depict areas of surface mining in the Upper Freeport Coal Seam (purple) which are consistent with the identified highwalls and reclaimed highwalls. Areas of underground mining in the Upper Freeport Coal Seam (tan) with headings and potential portals that are consistent with the identified mine discharge pipes.

19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Abandoned Mine Lands Program.

- ◆ Michael Baker routinely finds these puzzle pieces and utilizing various tools, pieces various references together to depict a quick preliminary overview of the project. The image to the right combines various puzzle pieces for the Maurice Jennings Coal Company, mining site and includes the relative coal dip, historic mine maps, and aerial imagery, combined with some interpretation from our investigation. This information becomes a basis for all future work by providing a clear understanding of the history and the current disposition of the site. This tool becomes the foundation for developing a sound and efficient reclamation solution.

By utilizing this reference compilation, several things become quickly apparent:

- ◆ There is one coal seams involved with this site. The Upper Freeport Coal Seam which surface and deep mined.
- ◆ Site consist of approximately 2,500 linear feet of un-reclaimed highwall.
- ◆ There are 14 known portals that exist on the project sites.
- ◆ Site has one known vertical opening within the project limits.
- ◆ A portion the site has subsided.
- ◆ Relative dip for the Upper Freeport Coal Seam is to the northwest.
- ◆ There is a gob pile onsite.
- ◆ Project site will need to be evaluated for possible AMD discharge and treatment.
- ◆ The existing haul and access roads are in good condition and can be utilized for the project needs



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE

Attachment "B"

20. THE FOREGOING IS A STATEMENT OF FACTS

Signature:  Title: Assistant Vice President Date: December 16, 2015
Printed Name: Chad R. Davis, P.E.



OSR and Related Project Experience Matrix

• Attachment "C"

Projects	* Exp. Basis C = Corp P = Personal	** Additional Info provided In Sections (s)	Project Experience Requirements														
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation	Portal / Shaft Closure	Hydrologic / Hydraulic Design / Eval.	Remaining Evaluation	Mine / Refuse Fire Abatement	Subsidence Investigation Mitigation	Hazardous Waste Disposal	Project Specifications	Water Quality Eval. Mitigation / Replacement	Construction Inspection / Management	Water Treatment	Equipment / Structure Removal	Stream Restoration	Geotechnical / Stability
1. Nine County Roads Water Supply Feasibility Study, Preston County, WV (WVDEP)	C&P					x					x	x				x	
2. Beech Bottom Refuse (WVDEP)	C&P		x		x	x					x				x	x	
3. Borgman Refuse & Portals (WVDEP)	C&P		x	x	x	x					x	x		x			
4. Buckeye Reclamation Landfill CERCLA Site (Consol)	C&P		x			x				x	x	x	x		x	x	
5. Chalk Mountain Mine (The Feldspar Corp)	C&P		x			x					x				x	x	
7. Collier Sportmans' Club Highwall (WVDEP)	C&P	17	x		x	x			x		x						
8. Columbia Portland AML Reclamation (ODNR)	C&P		x	x	x	x					x	x				x	
9. Crooked Run #5 Drainage, Refuse and Portals (WVDEP)	C&P		x	x	x	x					x	x		x	x		
10. Davidson Highwall Project (WVDEP)	C&P	17	x		x	x					x	x		x		x	
11. Dennison S.R. 800 AML Reclamation (ODNR)	C&P			x	x	x					x	x			x	x	
12. Ebenezer Run Highwall #9 (WVDEP)	C&P	15	x			x					x	x					
13. Emoryville Mine Complex AML/AMD (WVDEP)	C&P		x	x	x	x					x	x		x		x	
14. F&M Coal Company S-1044-87 & S-57-84	C&P	15	x		x	x					x	x		x			

Projects	* Exp. Basis C = Corp P = Personal	** Additional Info provided In Sections (s)														
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation												
					Mark Widdersheim , PE – E&S NPDES	Gary Case – Hazardous Material Management	George Kay, PE – AMD Treatment & Design	Srini Dharmapuri, GISP – Mapping & LiDAR	Carl E. Sarver, Jr. – Geology / Mining	Mark Anderson – Mapping & LiDAR	John Miller, PLS - Surveying	James A. Culler, PE, PLS - Engineering Manager	Ralph Gromley, PLS - Surveying	Scott Zang, PE – Refuse Disposal	Patrick Fogarty, PE – Surveying	Russell E. (Rusty) Hall, PE, PS – Principal
				M & P	P	P	M P	M P	P	P	P	M P	P	P	M	
15. Fairmont Five Subsidence (WVDEP)	C&P	17													x	x
16. Flemington Portals & Drainage No. 2 AML/AMD (WVDEP)	C&P		x	x	x											
17. Fort Gordon, Georgia (USACE)	C&P		x			x										
18. Hardy Coal Bond Forfeiture (ODNR)	C&P		x													
19. Jed-Havaco Reclamation (WVDEP)	C&P		x											x		
20. Kempton Refuse & AMD (WVDEP)	C&P		x			x										
21. Lindentree AMD Remediation (ODNR)	C&P		x													
22. Marbury (Oakley) Landslide (WVDEP)	C&P	17	x	x											x	x
23. Maple Run Portals & AMD (WVDEP)	C&P		x	x												
24. Marmet, East Bank, Cabin Creek, Mill Hollow Complex Portals & Drainage (WVDEP)	C&P		x	x											x	x
25. Masteller Coal Company S-10-85 & S-125-82	C&P	15	x					x	x		x	x	x	x		
26. Maurice Jennings Coal Company S-53-78 & S-61-83	C&P	15	x					x	x		x	x	x	x		
27. McArthur Subsidence (WVDEP)	C&P			x												
28. Mineral-Zoar Road AMD Reclamation (ODNR)	C&P			x												

Projects	* Exp. Basis C = Corp P = Personal	** Additional Info provided In Sections (s)	Project Experience Requirements														
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation	Portal / Shaft Closure	Hydrologic / Hydraulic Design / Eval.	Remaining Evaluation	Mine / Refuse Fire Abatement	Subsidence Investigation Mitigation	Hazardous Waste Disposal	Project Specifications	Water Quality Eval. Mitigation / Replacement	Construction Inspection / Management	Water Treatment	Equipment / Structure Removal	Stream Restoration	Geotechnical / Stability
29. Mount Eaton Subsidence Stabilization (ODNR)	C&P					x			x		x					x	
30. No. 4 Reclamation	C&P		x	x	x	x					x	x		x	x	x	
31. Masontown (WVDEP)																	
32. No. 6 Shaft and Dewatering Pipeline (Cumberland Coal Resources LP)	C&P				x	x					x	x					
33. Powell River Ecosystem Restoration, Ely & Puckett Creek, Virginia (USACE)	C&P	18	x	x	x	x				x	x	x		x		x	
34. Ruthbelle Refuse Fire (WVDEP)	C&P		x		x	x		x			x				x	x	
35. Simpson Creek Tipple and Portals Project (WVDEP)	C&P	17	x		x	x					x	x		x	x	x	
36. Turnhole Branch Reclamation (WVDEP)	C&P			x	x	x	x				x	x					
37. Twilight Burning Refuse (WVDEP)	C&P		x	x	x	x		x			x	x		x	x	x	
38. US Steel RCRA Closure Plan (USS)	C&P					x				x	x	x		x	x	x	
39. Waitman Barbe Highwall #1 (WVDEP)	C&P	17	x		x	x					x	x					
40. Watson Portals & Refuse Reclamation (WVDEP)	C&P		x	x	x	x					x	x		x	x	x	
41. Wymer Portals and AMD (WVDEP)	C&P	17	x		x	x					x	x		x	x	x	

*List whether project experience is corporate or personnel based or both. **Use this area to provide specific sections or

Projects	* Exp. Basis C = Corp P = Personal	** Additional Info provided In Sections (s)	Project Experience Requirements													
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation	Portal / Shaft Closure	Hydrologic / Hydraulic Design / Eval.	Remaining Evaluation	Mine / Refuse Fire Abatement	Subsidence Investigation Mitigation	Hazardous Waste Disposal	Project Specifications	Water Quality Eval. Mitigation / Replacement	Construction Inspection / Management	Water Treatment	Equipment / Structure Removal	Stream Restoration
15. Fairmont Five Subsidence (WVDEP)	C&P	17				*			*		*		*			
16. Flemington Portals & Drainage No. 2 AML/AMD (WVDEP)	C&P		*	*	*	*					*		*			*
17. Fort Gordon, Georgia (USACE)	C&P		*			*					*			*		
18. Hardy Coal Bond Forfeiture (ODNR)	C&P		*			*					*			*		
19. Jed-Havaco Reclamation (WVDEP)	C&P		*			*		*			*			*	*	*
20. Kempton Refuse & AMD (WVDEP)	C&P		*		*	*					*	*	*		*	*
21. Lindentree AMD Remediation (ODNR)	C&P		*		*	*					*	*	*			
22. Marbury (Oakley) Landslide (WVDEP)	C&P	17	*	*	*	*					*	*	*	*		
23. Maple Run Portals & AMD (WVDEP)	C&P		*	*	*	*				*	*	*	*		*	
24. Marmet, East Bank, Cabin Creek, Mill Hollow Complex Portals & Drainage (WVDEP)	C&P		*	*	*	*					*	*	*	*		
25. Masteller Coal Company S-10-85 & S-125-82	C&P	15	*		*	*					*	*		*		
26. Maurice Jennings Coal Company S-53-78 & S-61-83	C&P	15	*			*					*	*		*		
27. McArthur Subsidence (WVDEP)	C&P			*		*			*		*					*
28. Mineral-Zoar Road AMD Reclamation (ODNR)	C&P			*	*	*				*	*	*	*		*	*