

November 26, 2019

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 and Construction Services for the Camden (Wilson) Landslide – EPAM19051 (CEOI 0313 DEP2000000002)**

Dear Ms. Brittany Ingraham:

Michael Baker International (Michael Baker) is pleased to present our response to your EOI related to the engineering design services for the above referenced project in Lewis County. Michael Baker is honored to have built a relationship that exceeds 30 years with the West Virginia Department of Environmental Protection (WVDEP), helping to solve complex mining and environmental challenges. Since 1983, we have worked together on over 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 landslide and related projects over the years for a variety of clients as reflected in the enclosed documentation.

**Michael Baker's staff is experienced with design services to remedy landslide type projects.** We feel that our combination of regional experience, familiarity with the site, proximity, and 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 (412) 269-2016 [fatma.ciloglu@mbakerintl.com](mailto:fatma.ciloglu@mbakerintl.com).

Very truly yours,

**MICHAEL BAKER INTERNATIONAL, INC.**



Fatma Ciloglu, Ph.D., P.E.  
Project Manager  
Geotechnical National Practice Leader

RECEIVED

2019 NOV 26 AM 11:01

WV PURCHASING  
DIVISION



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: 645829

Doc Description: EOI - Camden (Wilson) Landslide- EPAM19051

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2019-11-05	2019-11-26 13:30:00	CEOI 0313 DEP2000000002	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  
 Moon Township PA 15108  
 412-269-2016

**FOR INFORMATION CONTACT THE BUYER**

Brittany E Ingraham  
 (304) 558-2157  
 brittany.e.ingraham@wv.gov

Signature X

FEIN # 25-1228638

DATE 11/25/2019

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

**ADDITIONAL INFORMATION:**

## Expression of Interest

## Camden (Wilson) Landslide

The West Virginia Purchasing Division is soliciting Expression(s) of Interest for the Agency, the Department of Environmental Protection, from qualified firms to provide architectural/engineering services to provide necessary engineering, and other related professional services to design and specify for construction as well as provide construction administration, for the Camden (Wilson) Landslide, per the bid requirements, specifications, terms and conditions as attached hereto.

\*Online submissions of Expressions of Interest are prohibited.

INVOICE TO		SHIP TO	
ENVIRONMENTAL PROTECTION OFFICE OF AML&R 601 57TH ST SE CHARLESTON WV25304 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.

DEP2000000002	<b>Document Phase</b> Final	<b>Document Description</b> EOI - Camden (Wilson) Landslide- EPAM19051	<b>Page 3</b> <b>of 3</b>
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**ADDITIONAL TERMS AND CONDITIONS**

See attached document(s) for additional Terms and Conditions

## West Virginia Ethics Commission



### Disclosure of Interested Parties to Contracts

Pursuant to *W. Va. Code* § 6D-1-2, a state agency may not enter into a contract, or a series of related contracts, that has/have an actual or estimated value of \$1 million or more until the business entity submits to the contracting state agency a Disclosure of Interested Parties to the applicable contract. In addition, the business entity awarded a contract is obligated to submit a supplemental Disclosure of Interested Parties reflecting any new or differing interested parties to the contract within 30 days following the completion or termination of the applicable contract.

For purposes of complying with these requirements, the following definitions apply:

*"Business entity"* means any entity recognized by law through which business is conducted, including a sole proprietorship, partnership or corporation, but does not include publicly traded companies listed on a national or international stock exchange.

*"Interested party"* or *"Interested parties"* means:

- (1) A business entity performing work or service pursuant to, or in furtherance of, the applicable contract, including specifically sub-contractors;
- (2) the person(s) who have an ownership interest equal to or greater than 25% in the business entity performing work or service pursuant to, or in furtherance of, the applicable contract. (This subdivision does not apply to a publicly traded company); and
- (3) the person or business entity, if any, that served as a compensated broker or intermediary to actively facilitate the applicable contract or negotiated the terms of the applicable contract with the state agency. (This subdivision does not apply to persons or business entities performing legal services related to the negotiation or drafting of the applicable contract.)

*"State agency"* means a board, commission, office, department or other agency in the executive, judicial or legislative branch of state government, including publicly funded institutions of higher education: Provided, that for purposes of *W. Va. Code* § 6D-1-2, the West Virginia Investment Management Board shall not be deemed a state agency nor subject to the requirements of that provision.

The contracting business entity must complete this form and submit it to the contracting state agency prior to contract award and to complete another form within 30 days of contract completion or termination.

*This form was created by the State of West Virginia Ethics Commission, 210 Brooks Street, Suite 300, Charleston, WV 25301-1804. Telephone: (304)558-0664; fax: (304)558-2169; e-mail: [ethics@wv.gov](mailto:ethics@wv.gov); website: [www.ethics.wv.gov](http://www.ethics.wv.gov).*

West Virginia Ethics Commission  
**Disclosure of Interested Parties to Contracts**

(Required by W. Va. Code § 6D-1-2)

Name of Contracting Business Entity: Michael Baker International Address: 100 Airside Drive  
Moon Township, PA 15108

Name of Authorized Agent: Fatma Ciloglu Address: 100 Airside Dr., Moon Twp., 15108

Contract Number: CEOI 0313 DEP 2000000002 Contract Description: EOI

Governmental agency awarding contract: WVDEP

Check here if this is a Supplemental Disclosure

List the Names of Interested Parties to the contract which are known or reasonably anticipated by the contracting business entity for each category below (attach additional pages if necessary):

1. Subcontractors or other entities performing work or service under the Contract

Check here if none, otherwise list entity/individual names below.

2. Any person or entity who owns 25% or more of contracting entity (not applicable to publicly traded entities)

Check here if none, otherwise list entity/individual names below.

3. Any person or entity that facilitated, or negotiated the terms of, the applicable contract (excluding legal services related to the negotiation or drafting of the applicable contract)

Check here if none, otherwise list entity/individual names below.

Signature: 

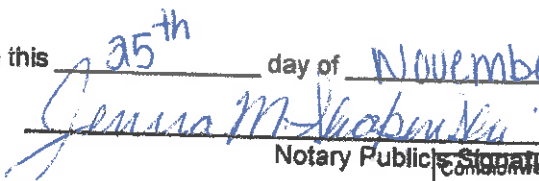
Date Signed: 11/25/2019

**Notary Verification**

State of Pennsylvania, County of Allegheny

I, Fatma Ciloglu, the authorized agent of the contracting business entity listed above, being duly sworn, acknowledge that the Disclosure herein is being made under oath and under the penalty of perjury.

Taken, sworn to and subscribed before me this 25<sup>th</sup> day of November, 2019.



Notary Public Signature

Commonwealth of Pennsylvania - Notary Seal  
Jenna M. Skopinski, Notary Public  
Beaver County  
My commission expires January 31, 2023  
Commission number 1260482

**To be completed by State Agency:**

Date Received by State Agency: \_\_\_\_\_

Date submitted to Ethics Commission: \_\_\_\_\_

Governmental agency submitting Disclosure: \_\_\_\_\_

Member, Pennsylvania Association of Notaries

Revised June 8, 2018

STATE OF WEST VIRGINIA  
Purchasing Division

# PURCHASING AFFIDAVIT

**CONSTRUCTION CONTRACTS:** Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

**ALL CONTRACTS:** 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: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, 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: *John* Date: 11/25/2019

State of Pennsylvania

County of Allegheny, to-wit.

Taken, subscribed, and sworn to before me this 25<sup>th</sup> day of November, 2019

My Commission expires January 31, 2023.

AFFIX SEAL HERE


Commonwealth of Pennsylvania - Notary Seal  
Jenna M. Skopinski, Notary Public  
Beaver County  
My commission expires January 31, 2023  
Commission number 1260482  
Member, Pennsylvania Association of Notaries

NOTARY PUBLIC


*Jenna M. Skopinski*

Purchasing Affidavit (Revised 01/19/2018)

**DESIGNATED CONTACT:** Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

 Project Manager  
\_\_\_\_\_  
(Name, Title) Fatma Ciloglu, Project Manager  
\_\_\_\_\_  
(Printed Name and Title) 100 Airside Drive, Moon Township, Pa 15108  
\_\_\_\_\_  
(Address) 412-269-2016 / 412-375-3980  
\_\_\_\_\_  
(Phone Number) / (Fax Number) Fatma.Ciloglu@mbakerintl.com  
\_\_\_\_\_  
(email address)

**CERTIFICATION AND SIGNATURE:** By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this 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  
\_\_\_\_\_  
(Company)  Fatma Ciloglu, Geotechnical Department Manager  
\_\_\_\_\_  
(Authorized Signature) (Representative Name, Title) Fatma Ciloglu, Geotechnical Department Manager  
\_\_\_\_\_  
(Printed Name and Title of Authorized Representative)  
November 25, 2019  
\_\_\_\_\_  
(Date) 412-269-2016  
\_\_\_\_\_  
(Phone Number) (Fax Number)



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

Attachment "A"

<b>PROJECT NAME</b> Lewis County, WV EPAM 19051 CEOI DEP2000000002		<b>DATE (DAY, MONTH, YEAR)</b> 26 November, 2019		<b>FEIN</b> 25-1228633			
<b>1. FIRM NAME</b> Michael Baker International, Inc.		<b>2. HOME OFFICE BUSINESS ADDRESS</b> 100 Airside Drive Moon Township, Pennsylvania 15108		<b>3. FORMER FIRM NAME</b> Michael Baker Jr., Inc.			
<b>4. HOME OFFICE TELEPHONE</b> 412.269.6300		<b>5. ESTABLISHED (YEAR)</b> 1940		<b>6. TYPE OWNERSHIP</b> Individual Partnership <u>Corporation</u> Joint-Venture			
				<b>6a. WV REGISTERED DBE (Disadvantaged Business Enterprise)</b> YES <u>NO</u>			
<b>7. PRIMARY AML DESIGN OFFICE: ADDRESS / TELEPHONE / PERSON IN CHARGE / NO. AML DESIGN PERSONNEL EACH OFFICE</b> Michael Baker International: 100 Airside Drive, Moon Township, PA 15108/ Fatma Ciloglu, PhD, PE/ 16 Russell E. Hall, PE, PS/2 (Charleston, WV)							
<b>8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM</b> William Aimes, Vice President – 412-375-3051			<b>8a. NAME, TITLE, &amp; TELEPHONE NUMBER - OTHER PRINCIPALS</b> Russell E. Hall, Assistant Vice President – 304-769-0821				
<b>9. PERSONNEL BY DISCIPLINE (Bold Lettering Indicates Minimum Design Team Members)</b>							
<u>691</u> ADMINISTRATIVE <u>43</u> ARCHITECTS <u>7</u> <b>BIOLOGISTS</b> <u>185</u> <b>CADD OPERATORS/DESIGNERS</b> <u>0</u> CHEMICAL ENGINEERS <u>443</u> <b>CIVIL ENGINEERS</b> <u>276</u> CONSTRUCTION INSPECTORS / Mgrs. <u>7</u> DESIGNERS <u>0</u> DRAFTSMEN		<u>2</u> ECOLOGISTS <u>0</u> ECONOMISTS <u>15</u> ELECTRICAL ENGINEERS <u>111</u> ENVIRONMENTALISTS <u>28</u> ESTIMATORS <u>14</u> <b>GEOLOGISTS</b> <u>6</u> HISTORIANS <u>4</u> HYDROLOGISTS		<u>7</u> LANDSCAPE ARCHITECTS <u>15</u> MECHANICAL ENGINEERS <u>2</u> <b>MINING ENGINEERS</b> <u>2</u> PHOTOGRAMMETRISTS <u>190</u> PLANNERS: URBAN/REGIONAL <u>13</u> SANITARY ENGINEERS <u>17</u> SOILS ENGINEERS <u>16</u> SPECIFICATION WRITERS		<u>157</u> STRUCTURAL ENGINEERS <u>38</u> <b>SURVEYORS/Technicians</b> <u>142</u> TRAFFIC ENGINEERS <u>518</u> ENGINEERING TECHNICIANS <u>71</u> PROJECT MANAGERS <u>136</u> GIS SPECIALISTS <u>3,550</u> OTHER  <u>6,711</u> TOTAL PERSONNEL (Moon Township, PA and Charleston, WV Offices)	
<p><b>TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: <u>20</u></b></p> <p>* RPEs other than Civil and Mining must provide supporting documentation that qualifies them to supervise and perform this type of work.</p>							
<b>10. HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE?</b>							
_YES    _NO <b>N/A</b>							

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

Attachment "A"

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

<b>NAME AND ADDRESS:</b> TRC Companies, Inc. One Kenton Drive, Suite 200 Charleston, WV 25311	<b>SPECIALTY:</b> Geotechnical Drilling and Laboratory Services	<b>WORKED WITH BEFORE</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>NAME AND ADDRESS:</b>	<b>SPECIALTY:</b>	<b>WORKED WITH BEFORE</b> <input type="checkbox"/> Yes <input type="checkbox"/> 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          | • Landslide 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 evaluations of coal refuse site (10 project), 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.

12. RELEVANT EXPERIENCE.

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 has completed 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. 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 AMUAMD design group, and 100% of this work was conducted in-house.

NO

**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 six 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)

12. RELEVANT EXPERIENCE.

**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

**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 USAGE'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 it essential)

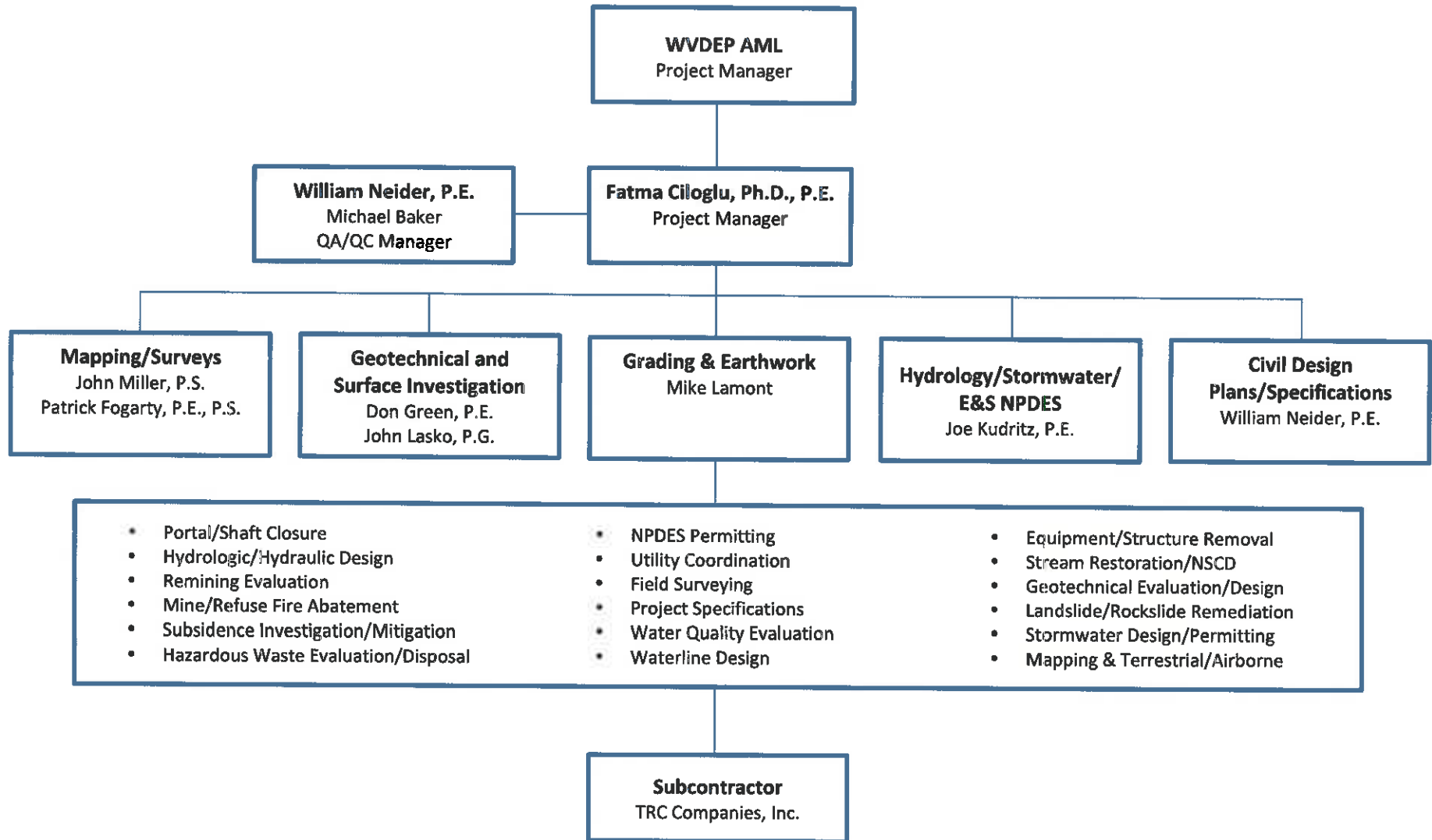
As depicted in Attachments B of this AML Consultant Questionnaire Form, Michael Baker can support this project with a variety and depth of technical resources as needed to deliver this project successfully. **However, the organization chart depicted on the following page identifies our core AML team that Michael Baker will dedicate to our WVDEP AML Landslide Remediation work.** This team will be led by Ms. Fatma Ciloglu as the Project Principal and Project Manager. She is a professional engineer with a Ph.D. in Geotechnical Engineering. Mr. Bill Neider, will serve as the Project QA/QC Manager. Mr. Neider is a registered West Virginia Professional Engineer and has a wealth of knowledge working for the WVDEP.

The balance of our committed team includes personnel with the type of capabilities required for a typical landslide remediation and AML projects, including a senior field investigator to help assess the site and understand the landslide 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, if necessary, 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 this landslide remediation 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)



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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 Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC LANDSLIDE DESIGN EXPERIENCE:
<b>Ciloglu, Fatma Ph.D., P.E. Project Manager Geotechnical Department Manager</b>	<b>0</b>	<b>0</b>	<b>9</b>

**Brief Explanation of Responsibilities**

Dr. Ciloglu is an experienced Geotechnical Engineer with expertise in design and management of geotechnical projects for energy, transportation, government, and private clients. Dr. Ciloglu's responsibilities include foundation analysis and design for buildings and transmission line structures, slope stability analysis and design, rock and soil mechanics, seismic permanent deformation and upstream construction pushout analyses for coal refuse disposal facilities and coal combustion residuals facilities, subsurface exploration, and geophysical investigation techniques. She is also responsible for preparing scopes, budgets and schedules for projects; technical lead for various design projects; manager of engineering staff. Her responsibilities include managing projects, execution of tasks in projects aligned with company and industry quality standards.

**Charlottesville to Dooms 230 kV Line, Landslide Investigation, Virginia.** *Project Manager.* Developed geotechnical investigation and lab testing program and repair alternatives for the landslide occurred near transmission line structure. Alternatives considered are (i) rock buttress, (ii) soil nail and wire mesh applied to face of the slide area, and (iii) micropiles.

**Duquesne Light Company, Allegheny Boulevard, Pittsburgh, Pennsylvania.** *Project Manager.* Responsible for landslide remediation along a transmission line. Project involved construction of a rock buttress.

**John E. Amos Landfill, West Virginia.** *Technical Manager.* Developed geotechnical investigation and lab testing program, conducted design of two soil nail walls. Soil nail walls were constructed on each side of the valley creating a widened area for landfill activities, reducing earth disturbance and excavation volume, and stabilizing the steep cut slopes in the soil and weak rock. With a surface area of approximately 60,000 square feet, the North Soil Nail Wall is approximately 1,075 feet long with a maximum exposed height of 74 feet. Furthermore, the South Soil Nail Wall is approximately 380 feet long with a maximum exposed height of 41 feet and has a surface area of approximately 12,000 square feet.

**White Oak Refuse Disposal Facilities No.2, Illinois.** *Technical Manager.* Designed slope stabilization system including closely spaced vertical and battered micro-piles. The vertical and battered micropiles are connected at the surface to form an "A" frame configuration which mobilizes the tensile resistance of the battered micropiles.

**Greensburg Pike Bridge Replacement, Allegheny County, Pennsylvania.** *Technical Manager.* Performed technical design review of retaining wall including soil nails and rock anchors.

**Harrison Power Plant, West Virginia.** *Technical Manager.* Performed technical design review of soil nail wall and provided recommendations for design and construction of the soil nail wall.

**Emsworth Lock and Dam Back Channel Abutment Stabilization, Pittsburgh, Pennsylvania.** *USACE, Pittsburgh District. Senior Project Engineer.* Designed and evaluated stabilization features for abutment walls. Evaluated micropiles, rock anchors, and drilled pipe pile retaining walls to support the abutment walls under loading associated with installation of scour protection. Performance of the proposed abutment combination wall system was evaluated for the resulting lateral force where the rock socket length, spacing, and section of king pile were optimized to provide sufficient lateral load resistance and moment capacity.

**TL-591 Monongahela River Crossing, Washington County, Pennsylvania.** *Senior Project Engineer.* Developed geotechnical investigation and lab testing program. Developed soil design parameters to be use in wall design, designed sheet pile wall with tie back anchors. Conducted technical review of alternative design including MSE wall.

**Schenley Park Landslides, Pittsburgh, Pennsylvania.** *Senior Project Engineer.* Reviewed findings of the geotechnical exploration program conducted for the City of Pittsburgh related to the occurrence of two landslides in Schenley Park. Developed soil stabilization systems including redi-rock wall, green gabion baskets and T-wall systems.

**Quantico Marine Corps Base Nail Slope Stabilization System, Maryland.** *Project Engineer.* Designed slope stabilization design including soil nails. Developed soil design parameters to be use in the design based upon the findings of drilling and laboratory testing program. Performed geotechnical and structural designs for all components of the soil nail slope stabilization system.

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**Glen Lyn Plant, Virginia.** Conducted slope stability analyses including deep-seated and liner veneer stability, and seismic slope stability analyses of the post-closure landfill configuration. Evaluated the potential for saturated fly ash to liquefy as a result of a regulatory-defined design earthquake and the corresponding liquefaction and seismic stability factors of safety for the Glen Lyn Landfill.

**Trimble County Generation Station Landfill, Kentucky.** Performed two-dimensional QUAKEW finite element dynamic response analysis and seismic slope stability analysis.

**Oldhouse Branch Coal Refuse Facility Expansion, Justice, West Virginia.** Developed field investigation and laboratory testing programs and evaluated PSCPT data from in-situ field testing, and laboratory testing data to estimate strength properties. Performed undrained strength analysis for staged upstream construction stability and estimate an acceptable construction loading rate.

**Mach Mine No.1, Coal Refuse Disposal Facilities No.1, 2 and 3, Johnston City, Williamson County, Illinois.** *Williamson Energy, LLC.* Evaluated PSCPT data from in-situ field testing, and laboratory testing data to estimate strength properties, and dynamic soil properties for coal refuse materials to be used in static liquefaction and dynamic analyses. Performed deterministic and probabilistic seismic hazard analysis including estimation of peak ground acceleration, response spectrum of design earthquake. Performed post-earthquake slope stability analyses to estimate in-situ driving shear stresses and the factor of safety against liquefaction flow failure. Performed permanent deformation analyses using Newmark, and Makdisi and Seed empirical relationships.

**White Oak Refuse Disposal Facilities No.1 and 2, McLeansboro, Hamilton County, Illinois.** Performed seismic slope stability and permanent deformation analysis. Performed probabilistic seismic hazard analysis including estimation of peak ground acceleration, response spectrum of design earthquake. Conducted post-earthquake slope stability analyses, upstream construction pushout analyses and permanent deformation analyses.

**Dear Run Mine Complex, Coal Refuse Disposal Facility No.2, Hillsboro, Montgomery County, Illinois.** Performed seismic slope stability and permanent deformation analysis. Performed probabilistic seismic hazard analysis including estimation of peak ground acceleration (PGA), response spectrum of design earthquake. Conducted post-earthquake slope stability analyses to estimate in-situ driving shear stresses and the factor of safety against liquefaction flow failure.

**Cumberland Mine CRDA No. 2 Expansion Geotechnical Design, Green County, Pennsylvania.** Performed seismic hazard assessment and triggering analyses to evaluate if design earthquake would trigger strength loss in tailing dam material, fine coal refuse material. Seismic hazard study was performed in accordance with the Engineering Design Manual for Coal Refuse Disposal Facilities. Design earthquake parameters were estimated based on USGS seismic hazard maps and earthquake probability maps. The susceptibility of fine coal refuse material strength loss during the design earthquake was evaluated performing pore-pressure based method and one-dimensional dynamic response analysis by SHAKE2000 software.

**Consol Bailey Mine Coal Refuse Disposal Area No. 5, Greene County, Pennsylvania.** *Consol Coal Company, LLC.* Performed finite element slope stability analysis, seepage analysis, and internal drain design for new tailing impoundment. Involved in evaluations of a flexible membrane liner system beneath the proposed dams/embankments at proposed facilities (slurry impoundment and impounding embankment/dam). Conducted a parametric study of interface shear strengths and corresponding slope stability factors of safety for various cross sections through the CRDA No. 5 main embankment under different stages and conditions.

**Cumberland Mine Facility No. 1 and No. 2 Geotechnical Design Services, Greene County, Pennsylvania.** *Emerald Coal Resources, LP.* Performed two-dimensional finite element slope stability analyses for proposed expansion plan for Coal Refuse Disposal Area No.1 and No. 2. The expansion plan included eliminating existing push-out and upstream bench to create additional volume for fine coal refuse material. Slope stability analyses were conducted for long-term static conditions and seismic conditions.

**Viper Mine Coal Preparation Facility Geotechnical Design Services, Logan County, Illinois.** Performed slope stability analysis for an expansion plan for coarse refuse fill area. Expansion plan included raising the grades of the disposal area to increase the capacity. The effect of the modified embankment configuration on slope stability is evaluated by 2D, limit equilibrium, slope stability analyses under long-term static, post- earthquake and pseudo-static conditions. Engineering analysis included establishing soil design parameters: effective stress strength properties, total stress strength properties, and undrained shear strength properties used for the slope stability analyses.

EDUCATION (Degree, Year, Specialization)

Ph.D. 2009, Civil Engineering; M.S., 2004, Civil Engineering; B.S., 2002, Civil Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

N/A

REGISTRATION (Type, Year, State)

Professional Engineer, 2011, Michigan

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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 LANDSLIDE DESIGN EXPERIENCE:
<b>Neider, William, D., P.E. Project QA/QC Manager</b>	<b>7</b>	<b>20</b>	<b>12</b>

**Brief Explanation of Responsibilities**

Mr. Neider will provide QA/QC and 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, QA/QC 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.

**Mountain View Portals Mine Reclamation, 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, technical specifications, and NPDES permitting. The purpose of the project was to remediate subsidence areas, reestablish mine captured stream, provide drainage conveyances, install mine seals and bat gate mine seals, and perform refuse reclamation and revegetation of disturbed areas. Michael Baker prepared construction plans, specifications, stormwater pollution prevention plan services, and check survey.

**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 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 consists 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.

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**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. 2011 Civil Engineering Technology

**MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**  
N/A

**REGISTRATION (Type, Year, State)**

Professional Engineer, 2007, Pennsylvania; Professional Engineer, 2007, Virginia; Professional Engineer, 2005, Oklahoma; Professional Engineer, 2009, Maryland; Professional Engineer, 2013, West Virginia; Professional Engineer (Civil), 2016, Massachusetts

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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 LANDSLIDE DESIGN EXPERIENCE:
<b>Miller, John, P.S. Senior Surveyor</b>	<b>4</b>	<b>46</b>	<b>20</b>

**Brief Explanation of Responsibilities**

Mr. Miller is a seasoned Licensed Surveyor with over 45 years of experience. He has managed and directed crews for various survey projects including control surveys for aerial mapping, as-built surveys, property surveys, subdivision and land development surveys, topographic surveys for sewer and water projects, and construction stakeouts. Mr. Miller has managed projects from initial client contact to completion, prepared cost estimates for projects, performed court house research, deed plotting, boundary line resolution, plotted and reduced field data, managed subdivision layout and erosion sedimentation plans, prepared Highway Occupancy Permits and DEP planning modules, prepared agency applications and obtained approvals, attended municipal meetings, prepared legal descriptions, created plans using computer aided drafting, and volume calculations for landfill air space.

**Haywood Landslide Remediation, Washington County, Pennsylvania. Rice Energy, LP. N/A.** Michael Baker provided engineering services for the Haywood Landslide Remediation, including in-field engineering and project oversight. The client sought to maintain pipeline operation for the duration of this remediation project. Michael Baker established and maintained a survey monitoring program to detect any additional slide movement and coordinated with the Pennsylvania Department of Environmental Protection throughout the project.

**Mapping and Design Services for Special Mine Reclamation Permits, Preston County, West Virginia.** West Virginia Department of Environmental Protection. Surveyor. Directed survey crew in the location of mine openings, seeps, monitoring wells and test borings. Verified mapping contours by surveying cross-sections. This survey will be used for engineering design to treat the water from mine drainage. Michael Baker is providing engineering and mapping services to meet the requirements of special mine reclamation permits. Michael Baker's services include data collection and analysis, aerial mapping verification, supplemental field and bathymetric pond surveying, bench-scale treatability testing, acid-base accounting testing, engineering design and analysis, preparation of construction plans and specifications and stormwater pollution prevention plans; cost estimates, bidding-phase support; and construction services.

**Maurice Jennings Coal Company Site, Preston, West Virginia.** West Virginia Department of Environmental Protection. Surveyor. Directed survey crew in the location of mine openings, seeps, monitoring wells, treatment facilities and treatment ponds. Verified mapping contours by surveying cross-sections. This survey will be used for engineering design to treat the water from mine drainage. Michael Baker is providing engineering services for the special reclamation of Maurice Jennings Coal Company mining permits; S-61-83 and S-53-78. The project area consists of previously reclaimed highwalls, treatment ponds, and several acid mine drainage (AMD) seeps at the site of an abandoned strip mine. Michael Baker's services include aerial mapping, site reconnaissance, permit research and review, surveying, bench-scale treatability studies, AMD conveyance, AMD treatment, preparation of reclamation and treatment plans, stormwater pollution prevention plans, field water quality sampling, technical specifications, bidding-phase support, construction services, and right-of-way support.

**Masteller Coal Company Site, Mineral, West Virginia.** West Virginia Department of Environmental Protection. Surveyor. Directed survey crew in the location of mine openings, seeps, monitoring wells, treatment facilities and treatment ponds. Verified mapping contours by surveying cross-sections. This survey will be used for engineering design to treat the water from mine drainage. Michael Baker is providing engineering services for special reclamation of Masteller Coal Company mining permits; S-10-85 and S-125-82. The project area consists of previously reclaimed highwalls, treatment ponds, and several acid mine drainage (AMD) seeps. Michael Baker's services include site reconnaissance, permit research and review, aerial mapping, surveying, bench-scale treatability studies, AMD conveyance, AMD treatment, preparation of reclamation and treatment plans, stormwater pollution prevention plans, field water quality sampling, technical specifications, bidding-phase support, and construction services.

**EDUCATION (Degree, Year, Specialization)**

A.S. 1972, Civil Engineering Technology

**MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

Pennsylvania Society of Land Surveyors (PSLS), Allegheny

**REGISTRATION (Type, Year, State)**

Professional Land Surveyor, 1984, Pennsylvania

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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 LANDSLIDE DESIGN EXPERIENCE:
<b>Green, Donald, P.E. Geotechnical Technical Consultant</b>	<b>10</b>	<b>20</b>	<b>25</b>

**Brief Explanation of Responsibilities**

Mr. Green's responsibilities include geotechnical engineering, foundation and retaining wall design, planning, laboratory and field investigations, preparation of plans and specifications, and project supervision and management. He has spent the majority of his career performing foundation engineering for structures both on land and water.

**Drover Slope Movement, Markleysburg, Pennsylvania.** Levicoff, Silko & Deemer, P.C. Expert Witness. Responsible for testifying at trial to render an opinion about the triggering cause of a landslide. Michael Baker was retained to prepare an expert witness report to identify the triggering cause of a landslide which affected a private residence and to serve as an expert witness at the subsequent trial.

**ATP - Cleveland DOT Innerbelt Construction Group 2 Design Build Pursuit with Kokosing.** Kokosing Construction Company, Inc. Geotechnical Engineer. Responsible for evaluating and determining cost-effective deep foundations at a complex site, which considered methods to accommodate landslide prone slopes and integration of existing stabilizing structures under staged construction of a multi-hundred-million-dollar limited access highway. Also responsible to conduct an independent technical review of mitigation measures to control pervasive groundwater seepage and soil piping at a stability-sensitive valley slope.

**Ryan Homes On-Call Geotechnical and Engineering Services, Various Locations in Pennsylvania, Buffalo, New York, and Nashville, Tennessee.** NVR, Inc. Task Manager. Responsible for being the client's point-of-contact to provide on-call engineering services ranging from foundation stabilization, landslide investigation and stabilization, mitigation of groundwater intrusion, and wall movement. Michael Baker was responsible for providing professional geotechnical engineering services, on an on-call basis, to assist Ryan Homes when problems were encountered during the development of residential lots. Michael Baker was responsible for investigating the cause and extent of the problem and recommending methods for remediation and stabilization.

**Structural Engineering Services Open-Ended Contract, Pittsburgh, Pennsylvania.** City of Pittsburgh, Pennsylvania. Geotechnical Engineer. Responsible for evaluation of structural distress and discern the probable period over which the distress occurred for damaged residential properties. Also responsible for evaluating the impact of an active landslide on the structural integrity of multiple structures. This Open-Ended Agreement to provide Structural Engineering Services to the City of Pittsburgh has been used for a wide variety of structural, as well as geotechnical tasks. Tasks have ranged from the inspection of pedestrian and roadway bridges to investigations and recommendations for action related to deterioration/failure of a steel crib retaining wall. Other services have included preparation of rehabilitation plans for deterioration of a steel rigid frame bridge structure, as well as investigations for various retaining wall alternatives.

**West Greene Elementary Center -Design Retaining Wall Repair, Waynesburg, Pennsylvania.** West Greene School District. Technical Manager. Responsible for an independent forensic investigation to determine the cause of the collapse of a modular block retaining wall and 20-foot-high concrete revetment, was responsible for final design and preparation of pricing documents under a Guaranteed Maximum Price (GMP) contract, to construct a replacement concrete cantilevered retaining structure and a separate buried anchored retaining structure to support a landslide-prone soil mantle. Also responsible as the Design Professional of Record to complete final design, provide design consultation during construction, coordinate with the Contractor to facilitate cost-reduction enhancements under the GMP contract, make weekly site visits to confirm design compliance during construction, review shop drawings and submittals, and issue a Certificate of Final Completion. Work was completed under an accelerated schedule to provide a site that was secure for occupancy to commence the 2015-2016 school year on time. Attention to detail and partnering with the Contractor resulted in this project being named as a nominee finalist for the 2015 Master Builders' Association Building Excellence award. Michael Baker completed an independent forensic investigation to determine the cause of a modular block retaining wall collapse that occurred during wall construction, and completed an alternate replacement wall design, slope drainage improvements, and temporary slope stabilization to remove collapsed wall sections under active landslide loading conditions. Michael Baker provided design consultation during wall construction.

**CuyahogaValley Railway-Slope Stabilization Project, Summit County, Ohio.** National Park Service and the Ohio Department of Transportation. Project Manager. Responsible for design of rock anchors for construction of a two-tiered wall system to stabilize a landslide below an existing bridge abutment.



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**Mine Subsidence, Open-End Engineering Services Agreement, Pennsylvania Department of Environmental Protection, Bureau of Abandoned Mine Reclamation, Project Manager.** Responsible for investigation of reported mine subsidence events, determination of potential causes, and developing plans to mitigate subsidence damage on over two dozen projects. Drilled test borings, installed instrumentation to monitor movement, performed laboratory tests, completed analyses, and prepared summary reports to document findings and make recommendations. Approximately 1990. Cost: \$200,000 (Design Fee).

**Rural Abandoned Mine Reclamation (RAMP) Program (6 sites), Multiple-Counties, West Virginia. Project Engineer.** Responsible for engineering services required to reclaim abandoned mine areas, including site investigations, hydrologic/hydraulic studies, topographic surveys and geotechnical investigations. Used data obtained to prepare PS&E to solicit bids to reclaim abandoned mine areas. Mine reclamation included waste disposal, closure of abandoned mine entries, mine seals, storm water management, AMD abatement, slope stabilization, and revegetation. Approximately 1984 (Final Design). Cost: \$100,000 (Fee).

**North Fayette Interchange, North Fayette and Moon Townships, Allegheny County, Pennsylvania. Pennsylvania Department of Transportation, District 11-0. Geotechnical Project Manager.** Responsible for preliminary and final design of a new highway interchange along S.R. 0060. Performed a geotechnical investigation to support roadway and bridge design, which included water quality monitoring to establish baseline data for construction monitoring, AMD abatement, and investigation of potential mine fire activity. Cost: \$15,000,000.

**Freedom Road Improvement Project, Butler and Beaver Counties, Pennsylvania. Pennsylvania Department of Transportation, District 11-0. Geotechnical Project Manager.** Responsible for preliminary design for safety improvements over about 10 miles of two-lane roadway. The subsurface investigation included over 100 test borings to support roadway and structure design. Investigated construction alternatives to reduce impacts of exposing seven coal beds, abatement of AMD, mitigation of subsidence activity at abandoned clay mines, landslide stabilization, and stream relocation. Cost: \$2,000,000 (Fee).

**Emerald Hills Site Development, Allegheny County, Pennsylvania. Expert Witness for landslide litigation.** Responsible for review of available data, determine existing site conditions, analyze slope stability, identify the triggering cause of the landslide, develop plans to mitigate slope movement, and prepare an Expert Witness Report.

**Westpointe Site Development, Allegheny County, Pennsylvania. Expert Witness for landslide litigation.** Reviewed available data, performed slope stability analyses, rendered an opinion about contributory construction methods that triggered a landslide, and prepared an Expert Witness Report.

**Holiday Park Landslide, Allegheny County, Pennsylvania. Expert Witness for landslide litigation.** Responsible for review of available data, completion of field and laboratory investigations, completion of slope stability analyses, and evaluation of data to determine the cause(s) of the landslide.

**Reginella Landslide, Allegheny County, Pennsylvania. Expert Witness for landslide litigation.** Responsible for engineering evaluations to determine potential causes of the landslide. Olde Orchard Landslide, Allegheny County, Pennsylvania. Expert Witness for landslide litigation. Responsible for evaluation of landslide mitigation alternatives and preparation of engineering cost estimates for arbitration settlement.

**Mine Subsidence Abatement, Beafore Residence, Fairmont, West Virginia. U.S. Department of the Interior, Office of Surface Mining (OSM). Project Manager.** Responsible for subsurface investigation and preparation of PS&E to abate subsidence-induced lateral displacement of a private residence while under contract for OSM. Approximately 1982 (Preliminary and Final Design). Cost: \$250,000 (Construction)

EDUCATION (Degree, Year, Specialization)

M.S. 2004, Civil Engineering  
 B.S. 1978, Civil Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

N/A

REGISTRATION (Type, Year, State)

Professional Engineer, 1985, Pennsylvania

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**13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN. (Finish 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 LANDSLIDE DESIGN EXPERIENCE:
<b>Fogarty, Patrick W., P.E., P.S. Survey Engineer</b>	<b>22</b>	<b>32</b>	<b>23</b>

**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.

**Abandoned Mine Lands, West Virginia.** *WVDEP Statewide Contract. Various Location. Project Manager.* provided services for civil design for various Abandoned Mine Land (AML) projects throughout West Virginia. Various types of AML projects include landslide correction include retaining wall design and site grading and drainage improvements, acid mine drainage collection and neutralization, water line upgrade and extensions, and various projects requiring site regrading and drainage upgrade. Work on these projects also included establishing horizontal and vertical control surveys for aerial photogrammetry mapping, baseline layout, referencing control points, generating check cross sections and site surveys including all physical and topographic features of each unique site.

**West Virginia Department of Environmental Protection, Abandoned Mine Lands.** *Various Locations in West Virginia. Project Manager.* Provided services for topographic mapping for various Abandoned Mine Land (AML) projects throughout West Virginia. Provided topographic mapping and coordinated aerial photogrammetry for various types of AML projects include landslide correction include retaining wall design and site grading and drainage improvements, acid mine drainage collection and neutralization, water line upgrade and extensions, and various projects requiring site regrading and drainage upgrade. Work on these projects also included establishing horizontal and vertical control surveys for aerial photogrammetry mapping, baseline layout, referencing control points, generating check cross sections and site surveys including all physical and topographic features of each unique site.

**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 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.

**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.

**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.

**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.

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10. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN. (FILL IN COMPLETE DATA BUT KEEP TO ESSENTIAL)

**Summersville Five Block Mine Reclamation, Nicholas County, West Virginia. WVDEP - Office of AML&R. Assistant Project Manager.** Responsible for the civil and structural design as well as the coordination of all other activities.

**Water Extension, Randolph County, West Virginia. WVDEP. Project Manager and Lead Designer.** Provided services for the design of a waterline extension for the Norton- Harding-Jimtown Public Service District in Randolph County, West Virginia. The assignment included the coordination of aerial photogrammetric mapping, geotechnical investigation, and the preparation of plans and specifications for planned extensions to three communities (Pumkintown, Mabie, and Green). The project consisted of approximately 30,000 feet of 6" and 8" PVC SDR 21 water pipe, one new booster pump station, one 100,000 gallon water storage tank, fire protection and other appurtenances. As a Project Manager, provided coordination, oversight, staffing assignments, report preparation and cost estimating services for a water system studies for the City of Mullens in Wyoming County, and the Communities of Dille/Widen and Mill Creek in Nicholas and Clay Counties in West Virginia. The Phase I Study was conducted to determine the extent of degradation to the water source due to Pre-Law Mining Activity. A Phase II Study was also conducted to provide in-depth, site specific research of past and present mining activity, interviews with area residents, water sampling and testing, and the preparation of a cost estimate of potential waterline installation.

EDUCATION (Degree, Year, Specialization)

B.S. 1985, Civil Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Association of State Floodplain Managers (ASFTM)

REGISTRATION (Type, Year, State)

Professional Engineer, 2000, Kentucky; Professional Surveyor, 2001, Kentucky; Professional Engineer, 2008, North Carolina; Professional Engineer, 2006, Ohio; Professional Surveyor, 1996, Ohio; Professional Engineer, 2003, Pennsylvania; Professional Engineer, 2002, Virginia; Professional Engineer - Civil/Structural, 1990, West Virginia; Professional Surveyor, 1993, West Virginia; Asphalt Paving Technician, 1981, West Virginia.

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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 Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC LANDSLIDE DESIGN EXPERIENCE:
<b>Lasko, John D., P.G. Senior Geologist</b>	<b>11</b>	<b>30</b>	<b>20</b>

**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.

**StauntonHgts-062617. Staunton Heights Homeowners Association. Project Manager.** Senior Geologist responsible for site reconnaissance, drilling supervision, oversight, coordination, selection of laboratory testing, review of logged materials, and subsurface interpretation of findings. Conducted a literature review to determine soil, geologic, and hydrologic setting and ground water conditions for landslide within residential development. Assessed landslide susceptibility at the development based on published literature, aerial photographs review, and subsurface investigation. Developed landslide investigation report and recommended design build contractor approach for repairs. Evaluate and assessed landslide susceptible slopes around the development and prepared Landslide Risk Assessment Report.

**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.

**Coller 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.

**Roadway Engineering Services, Statewide, Pennsylvania. Range Resources - Appalachia, LLC. Senior Geologist.** Provide geotechnical input for roadway improvements, subgrade, landslide repair, embankment benching, and roadway cut slopes. Michael Baker provided transportation consulting services for public roadway use associated with natural gas exploration and production activities. Michael Baker's services included pre-development roadway evaluations to identify the physical deficiencies of proposed routes; coordination with state, county, and township officials to communicate road-use plans; construction support services during roadway repairs; roadway complaint investigations; development of a SharePoint site integrated with geographic information systems to maintain and sort information; and development of standard operating procedures.

**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.

**Landslide Induced Pipeline Failure, Armstrong County, Pennsylvania. Buckeye Pipeline Company. Geologist.** Responsible for inspection of remediation construction activities after a pipeline break including landslide stabilization, site grading, erosion and sedimentation control, and installation of spring collection and treatment facilities. Work also included preparation of record drawings and construction quality control reports. Construction involved several contractors and required close liaison with state agencies. Michael Baker conducted a detailed landslide investigation after a 10-inch diameter petroleum pipeline break and resulting spill which was induced by a landslide.

**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.

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**Repair of Slide, Confidential Location, Pittsburgh, Pennsylvania. Confidential Client. Geologist.** Responsible for performing emergency site evaluation following a massive rockslide which buried two active rail lines. Tasks included rockslide failure interpretation, slope hazard evaluation, and site reconnaissance. Monitored clean-up activities and provided consulting services during clean-up. Also conducted survey monitoring and assisted in remediation design. Tasks included supervising field survey- identified rock slope areas for scaling and performing rockfall modeling for warning system. Client's double track mainline was blocked by a rock slide on May 22, 1997. The tracks are located at the toe of a steep hill that rises over 300 feet above the tracks. Client engaged Michael Baker to investigate the cause of the slide and prepare a remediation plan. Michael Baker's geotechnical investigation determined that the slide was caused by the failure of soft clay stone at track level which supported a higher rock layer. Michael Baker investigated repair option and recommended a cast in place concrete tied buttress wall for the failed section of the old wall and an anchored reinforced concrete facing for 1,400 feet of existing wall. The wall height varied from 22 to 32 feet and was located 15-feet from the nearest track. Seven strand anchors with a design load of 240 kips and 45-foot bond length were used on the new and repaired section. The final wall design included slope drains and strip drains and a rock fall detection fence. Michael Baker expedited the design and prepared the Bid documents. The client advertised and awarded the project 30 days after the slide occurred. Michael Baker provided inspection services during construction. Michael Baker received a Letter of Commendation from the client.

**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. in Earth Science and Geology, B.S., 1985, Geology

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS - N/A

REGISTRATION (Type, Year, State)

Professional Geologist, 1995, Pennsylvania

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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 Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC LANDSLIDE DESIGN EXPERIENCE:
LaMont, Michael, J. Technical Specialist	21	33	23

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.

**Glen Mitchell Road Landslide and Roadway Stabilization Projects, Aleppo Township and, Sewickley Heights Borough, Pennsylvania.** Allegheny County Department of Public Works. Designer. Responsible for proposed reclamation plans, storm sewer design, paving design, horizontal & vertical control plans, erosion and sedimentation control measures, earthwork volume calculations, construction details, easement drawings, contract drawings, and cost estimating. In July 2003, a landslide ruptured 100 feet of pavement along Glen Mitchell Road in Aleppo Township forcing Allegheny County to close the road for safety. Michael Baker was retained to investigate the landslide and provide construction documents for the emergency remediation of the 200-foot-long landslide.

**Worthington Avenue Landslide, Jefferson Hills Borough, Allegheny County, Pennsylvania.** Allegheny County Department of Public Works. Designer. Responsible for proposed SBL wall plans, paving design, horizontal and vertical control plans, erosion and sedimentation control measures, earthwork volume calculations, construction details, easement drawings, contract drawings, and cost estimating. Michael Baker was retained to provide plans and specifications for remediation of a 500-foot long landslide located along Worthington Avenue. The landslide complex damaged two existing timber crib walls and closed the westbound lane on Worthington Avenue.

**Geotechnical Open-End Services, Allegheny County, Pennsylvania.** Allegheny County Department of Public Works. Designer. Responsible for proposed reclamation plans, paving design, horizontal & vertical control plans, erosion and sedimentation control measures, earthwork volume calculations, construction details, easement drawings, contract drawings, and cost estimating. Michael Baker was retained by the County in 2002 and currently retained to provide on-call Geotechnical support to address Geotechnical impacts to the County's aging infrastructure. Geotechnical services provided under this contract included emergency response, landslide remediation, addressing lateral support issues, retaining wall failures, drainage improvements, flood facility studies, dam inspections, dam rehabilitation, roadway subgrade evaluations, subsurface investigations, laboratory testing and construction support.

**Pitcairn Road Stream Realignment and Roadway Embankment, Borough of Pitcairn, Allegheny County, Pennsylvania.** Allegheny County Department of Public Works. Designer. Responsible for generation of grading plans for the reclamation, dewatering, and backfilling of five existing ponds located in a surface-mined area. Provided site drainage measures and developed baseline cross-sections, profiles, construction details, and balanced earthwork volumes for the overall site reclamation. Michael Baker was retained in 2002 to perform design engineering and construction support services for the Dirty Camp Run realignment and Pitcairn Road embankment repair. The project was the result of the collapse of a 100-foot-long section of Pitcairn Road due to the failure of the adjacent wooden crib wall.

**Cumberland Mine, Waynesburg, Pennsylvania.** Cumberland Coal Resources, LP. Designer. Responsible for existing mapping preparation and existing surface digital terrain model development; shaft pad and cutting pile layout and design; access road design, including the horizontal and vertical control; treatment pond layout and sediment trap sizing and design; earthwork volume calculations for overall site related to construction sequencing; initial ditch and erosion and sedimentation control layout; profiles, sections, details, and baseline geometry development; permit submission drawings, and land use and reclamation drawings preparation; soil and topsoil stock pile areas design; and, contract / permit drawings and construction details preparation. Michael Baker has been assisting Cumberland Mine personnel with mine permitting and design since approximately 1980. The various projects performed by Michael Baker typically required a full range of services beginning with mine site characterization and surface facility design, continuing through preparation of required permit applications and coordination with regulatory agency(s), to preparation of required construction documents. Michael Baker also developed topographic mapping needed for design and permitting.

EDUCATION (Degree, Year, Specialization)

Certificate 1988 Computer Aided Drafting and Design

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 Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC LANDSLIDE DESIGN EXPERIENCE:
<b>Kudritz, Joseph Lee, P.E. Civil Engineer</b>	<b>1</b>	<b>10</b>	<b>0</b>

**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 - PHI - 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.

**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.

<b>EDUCATION</b> (Degree, Year, Specialization) Graduate Studies, Water Resources & Environmental Engineering   B.S. 2007, Civil Engineering	<b>REGISTRATION</b> (Type, Year, State) Professional Engineer - Civil, 2013, Pennsylvania; Professional Engineer, 2019, Ohio; Professional Engineer, 2015, Idaho
<b>MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS</b> Engineers Without Borders (EWB); Pittsburgh Professional Chapter	

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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 LANDSLIDE DESIGN EXPERIENCE:
<b>Soller, Dustin Civil Associate - Geotechnical</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Brief Explanation of Responsibilities**

**Chevron Various Well Pads.** *Chevron USA, Inc.* Performed desktop study to evaluate landslide prone areas at proposed well pad locations. Conducted on-site geotechnical investigations to assist with well pad design.

**StauntonHghts-062617.** *Staunton Heights Homeowners Association.* Prepared sections and prepared a site desktop study to assist with an existing conditions report of landslide prone area.

**Rice Walter Stinger Spur.** *Rice Energy, LP. Geologic Associate.* Responsible for on-site drilling inspector for landslide control/prevention study.

**Diorio Landslide.** *Morgan Seven Enterprises, LLC. Geologic Associate.* Performed subsurface investigation of a landslide. The subsurface investigation was used to evaluate landslide conditions and evaluate slope stability.

**Transmission Line Landslide Remediation, Pennsylvania.** *Confidential Client. Geologic Associate.* Michael Baker is providing engineering services for the evaluation and remediation of landslides along transmission lines. Michael Baker's services include site assessment and inspection, geotechnical investigations, including borings and laboratory testing, preliminary and final design for landslide and access road repairs, and construction oversight.

**Rice Walter Stinger Spur.** *Rice Energy, LP. Geologic Associate.* Responsible for on-site drilling inspector for landslide control/prevention study.

**EDUCATION (Degree, Year, Specialization)**

BS 2015, Geology/Environmental Science

**MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

N/A

**REGISTRATION (Type, Year, State)**

Geologist in Training, 2018; Pennsylvania



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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 LANDSLIDE DESIGN EXPERIENCE:
<b>Barefield, Edward H., P.G., E.I.T.</b> Civil Associate	0	0	4

**Brief Explanation of Responsibilities**

Mr. Barefield is a Technical Manager within the geotechnical engineering department at Michael Baker. His geotechnical responsibilities 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, deep foundation design, 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. He also performs Quality Peer Reviews for Geotechnical deliverables.

**Findlay Township 2019 Engineering Services.** *Findlay Township.* Geologist. Performed field visit to the site of a small landslide that was impacting a rural township road in Findlay Township, Pennsylvania. Provided recommendations memorandum to the client regarding landslide/roadway repair alternatives.

**South Mahoning Slide Project, Parts I - IV, Templeton, Pennsylvania.** *Pennsylvania Department of Transportation, District 10-0.* Geologic Associate. Responsible for performing a preliminary slope stability analysis of landslide to support the proposed alignment for a roadway relocation. Assisted in development of shear strength parameters for slope stability analysis and preparation of draft geotechnical engineering report. The South Mahoning Slide Project provided for the realignment of a portion of S.R. 1003 in Templeton Pennsylvania. This emergency project was necessary due to continual slide problems that restricted traffic to one lane along the original roadway alignment. The new roadway was shifted adjacent to a Rail-to-Trails Facility for most of its length; however, had to overcome severe geometry constraints and severe cut slope issues to accomplish the realignment. Michael Baker provided Preliminary Engineering and Environmental Services, through Final Design, Right-of-Way Acquisition, and Construction Consultation.

**1994-2013 Municipal Engineering Services, Greene Township, Beaver County, Pennsylvania.** *Greene Township.* Geologic Associate. Responsible for performing field reconnaissance of a landslide that closed one lane of a roadway. Assisted in preparation of report to Greene Township municipal authorities. Since 1994, Michael Baker has served as the municipal engineer for the township, providing annual on-call engineering services. Michael Baker's tasks range from planning and design through construction inspection to support the daily operations of the township.

**Transmission Line Landslide Remediation, Pennsylvania.** *Confidential Client.* Geologist. Worked as the lead project engineering geologist to respond to short-notice request for field characterization of a large landslide occurring within the client's powerline right-of-way. Work involved characterization of the landslide site by several field reconnaissance visits to define dimensions, quantities of displaced material, and causation factors. After initial site characterization, worked to develop short-term and long-term mitigation design alternatives, with accompanying costs, for client's consideration in selection of a final alternative to pursue for final design. Michael Baker is providing engineering services for the evaluation and remediation of landslides along transmission lines. Michael Baker's services include site assessment and inspection, geotechnical investigations, including borings and laboratory testing, preliminary and final design for landslide and access road repairs, and construction oversight.

**Bergey Site Evaluation.** *TILDEN MARCELLUS, LLC.* Geologist. Visited the site with the project manager to view several landslides. Prepared follow-up memorandum regarding alternatives for mitigating/repairing the landslides.

**Corr H QAM Sect 1 CS.** *West Virginia Department of Transportation, Division of Highways.* Geologist. Performed field visit to a construction site to view ancient historic landslide at STA 340+00. Prepared site visit memorandum to discuss field findings.

**E02814 WO5 SR356 Const Consult.** *Whitman, Requardt & Associates.* Geologist. Visited site of a landslide that occurred on the project during construction. Designed rock buttress landslide repair detail that was implemented during construction.

EDUCATION (Degree, Year, Specialization)  
M.S., 2004, Engineering Geology; B.S., 2002, Geology

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

Attachment "A"

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS N/A	REGISTRATION (Type, Year, State) Professional Geologist, 2010, Pennsylvania; Professional Geologist, 2015, Kentucky; Professional Geologist, 2016, Nebraska; Professional Geologist, 2016, Indiana; Professional Geologist, 2017, New York; Engineer-in-Training, 2018, Pennsylvania
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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 Init.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC LANDSLIDE DESIGN EXPERIENCE:
<b>Davis, Brian E., P.G. Project Manager</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Brief Explanation of Responsibilities**  
Mr. Davis is a project manager with experience in geotechnical, geological/hydrogeological, mining, oil/gas pipelines, water resources, solid waste, and environmental investigations. He has been responsible for numerous projects related to geotechnical and water issues, mine permitting, hazardous and solid waste management, CERCLA, RCRA, Installation Restoration Program, environmental site assessments, underground storage tanks, and construction management.

**NVR Open End for Geotechnical & Engineering Services.** *NVR, Inc. Technical Manager.* Responsible for developing and initiating a geotechnical investigation of a landslide at a residential development. Project included installation of soil boring, inclinometers, field surveying and data collection.

**Litigation-Investigation/Testing, Confidential Location, Pennsylvania.** *Confidential Client. Geologist.* Provided forensic investigation support of the landslide. Michael Baker provided geotechnical investigation and evaluation services with respect to a landslide at a waste area. Michael Baker provided geotechnical support to the property owner's litigation attorneys, including preparation of an expert witness report. The case was settled to the satisfaction of the property owner.

**Geotechnical Open-End Services, Allegheny County, Pennsylvania.** *Allegheny County Department of Public Works. Geologist.* Provided geotechnical support to the project. Michael Baker was retained by the County in 2002 and is currently retained to provide on-call Geotechnical support to address Geotechnical impacts to the County's aging infrastructure. Geotechnical services provided under this contract included emergency response, landslide remediation, addressing lateral support issues, retaining wall failures, drainage improvements, flood facility studies, dam inspections, dam rehabilitation, roadway subgrade evaluations, subsurface investigations, laboratory testing and construction support.

**CP700PA Line ROW Restoration.** *Buckeye Partners, LP. Technical Manager.* Responsible for developing landslide remediation along a pipeline. Responsibilities include development of conceptual remediation, developing final remediation and construction drawings.

EDUCATION (Degree, Year, Specialization) M.S., 2004, Engineering Geology, B.S., 2002, Geology	REGISTRATION (Type, Year, State) Professional Geologist, 1994, Pennsylvania Professional Geologist, 2010, Delaware
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS N/A	

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 V81  
 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  
AML CONSULTANT QUALIFICATION QUESTIONNAIRE**

Attachment "A"

**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
<p><b>Allegheny River Blvd. Landslide Remediation</b>  <b>Transmission Line Landslide Remediation</b>                      Allegheny County, Pennsylvania</p>	<p>Ms. Meenah Shyu, P.E.                      Duquesne Light Company                      2841 New Beaver Avenue                      Pittsburgh, PA 15233</p>	<p>Geotechnical evaluation and remediation of landslides along transmission lines remediation. Michael Baker performed an initial site inspection, site characterization and development of remediation alternatives. The site characterization included a subsurface investigation and laboratory testing. Remediation alternatives included an anchored retaining wall, rock buttress or lime or cement stabilization of materials. The rock buttress alternative was selected. Michael Baker then prepared a bid package that included construction plans, specifications, details and cost estimate. During construction, Michael Baker provided construction oversight to make sure the landslide remediation was performed in accordance with the construction plans.</p>	<p align="center">\$1,300,000</p>	<p align="center">95%</p>
<p><b>Buckeye Line 700 Slide Area Alternatives Analysis and Construction Oversight of Landslide Repair</b>                      Moon Township, Allegheny County, Pennsylvania</p>	<p>Mr. Travis Gardner, PMP                      District Project Manager                      Buckeye Partners, L.P.                      993 Broadhead Road, Suite 100                      Moon Township, PA 15108</p>	<p>Provided a alternatives analysis with recommendations to repair a landslide along Line 700. Michael Baker performed an initial site review and developed a condition report and two alternatives to mitigate the land movement. Michael Baker conducted survey work to establish the limits of the slide area and provided engineering design services to develop construction plans, specifications, details and a cost estimate to remedy the site. After contract award, Michael Baker provided oversight to ensure the contractor performed the landslide repair in accordance with the construction plans</p>	<p align="center">\$1,100,000</p>	<p align="center">95%</p>

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AML CONSULTANT QUALIFICATION QUESTIONNAIRE**

Attachment "A"

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

<b>PROJECT NAME, TYPE AND LOCATION</b>	<b>NAME AND ADDRESS OF OWNER</b>	<b>NATURE OF YOUR FIRM'S RESPONSIBILITY</b>	<b>ESTIMATED CONSTRUCTION COST</b>	<b>PERCENT COMPLETE</b>
<b>TL-590 Construction Services Two Landslips Marshall County, West Virginia</b>	Mr. Tim Gawenus, P.E. Dominion Energy Transmission, Inc. 925 White Oaks Boulevard Bridgeport, WV 26330	On-site inspection of land slips along transmission line TL-590. Michael Baker performed onsite inspection to ensure compliance to the project specifications including verification of equipment and materials to maintain erosion and sedimentation plan, soil sample collection analysis and evaluation for enable proper soil densification, performed Troxler nuclear moisture density measurements to determine soil compaction was within the project specifications. Provided oversight of final grading and seeding of the landslip area.	\$800,000	75%
<b>Bergey 812 Well Pad Landslide Remediation Gaines, Tioga County, Pennsylvania</b>	Mr. Sean Wainwright Executive Vice President Tilden Marcellus, LLC 4600 J Barry Court, Suite 120 Canonsburg, PA 15317	Geotechnical design of landslide remediation. Michael Baker performed a detailed geotechnical site reconnaissance of the landslide and developed remediations alternatives as possible solutions to the landslide issue. A remediation alternative was selected by the client. Michael Baker then prepared a bid package that included construction plans, specifications, details and quantity worksheets. After the client selected the contractor, Michael Baker provided construction oversight to make sure the landslide remediation was performed according to the construction plans.	\$165,000	75%
<b>Mountain View Portals Mine Reclamation Preston County, West Virginia</b>	West Virginia Department of Environmental Protection (WVDEP) Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	Michael Baker responsibilities includes providing engineering services for the reclamation of the Mountain View Portals abandoned coal mine site. Michael Baker's services included site investigation; field survey; subsurface investigation; water quality and soil sampling and analysis; conceptual, preliminary, and final design; stream restoration; permitting; environmental investigations; bidding-phase support; and construction monitoring.	\$ 169,267 (Michael Baker Fee)	90%
<b>F&amp;M Coal Company, S-1044-87 &amp; S-57-84 Mapping and Design Services Preston County, West Virginia</b>	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	\$243,752 (Michael Baker Fee)	90%

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**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
		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.		
<p><b>Masteller Coal Company, S-10-85 &amp; S-125-82</b> <b>Mapping and Design Services</b> Mineral County, West Virginia</p>	<p>West Virginia Department of Environmental Protection (WVDEP) Office of Special Reclamation 47 School Street, Suite 301 Philippi, WV 26416</p>	<p>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.</p>	<p align="center">\$168,937 (Michael Baker Fee)</p>	<p align="center">90%</p>
<p><b>Maurice Jennings Coal Company, S-53-78 &amp; S-61-83</b> <b>Mapping and Design Services</b> Preston County, West Virginia</p>	<p>West Virginia Department of Environmental Protection (WVDEP) Office of Special Reclamation 47 School Street, Suite 301 Philippi, WV 26416</p>	<p>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; cost estimating, bidding-phase support; and construction services.</p>	<p align="center">\$217,982 (Michael Baker Fee)</p>	<p align="center">90%</p>



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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
<p><b>Multi-Purpose Machine Gun Range Reconstitution</b>                      Camp Ravenna Joint Military Training Center, Ohio</p>	<p>USPFO-OH                      2811 W. Dublin-Granville Road                      Columbus, OH 43235-2788</p>	<p>Michael Baker responsibilities include architectural, engineering, and environmental services for reconstitution of the Automated Multi-Purpose Machine Gun (MPMG) Range at Camp Ravenna Joint Military Training Center. Michael Baker provided topographic mapping and surveying, reviewed design documents against current codes, performed a new wetlands delineation, supporting facility design, stormwater collection and conveyance, site layout and development, targetry layout and associated automation, utilities, construction documents and cost estimate, updated and prepared required permits, and provided construction phase support.</p>	<p>\$612,079                      (Michael Baker Fee)</p>	<p>90%</p>
<p><b>Small Arms Range Repair Evaluation</b>                      Mansfield, Ohio</p>	<p>OH Air National Guard                      1947 Harrington Memorial Road                      Mansfield, OH 44903-0179</p>	<p>Michael Baker evaluated the small arms range at Mansfield Correctional Institution (ManCI) and prepared a feasibility report to identify key deficiencies of existing facilities, potential impacts of surrounding environs, and develop recommendations for needed repairs. Michael Baker performed a preliminary assessment of existing conditions; prepared an environmental baseline survey (EBS) that included a health and safety plan, soil sampling of the firing range, and stream and groundwater water sampling; and performed a Phase I archaeological field survey to identify potentially significant archaeological resources. Michael Baker developed a feasibility report with recommendations (including cost estimates) for capital improvements and preventative maintenance to allow for compliance with current standards and meet stated requirements for frequency of use.</p>	<p>\$124,834                      (Michael Baker Fee)</p>	<p>90%</p>

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Attachment "A"

**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
<p><b>Corridor H Quality Assurance Management (QAM) Services Randolph and Tucker Counties, West Virginia.</b></p>	<p>West Virginia Department of Transportation Division of Highways Building 5 Charleston, WV 25305</p>	<p>Michael Baker provided quality assurance management (QAM) for construction of Sections 1, 2, and 3 of the Corridor H highway from Kerens to Parsons. During a long-term relationship with the client, Michael Baker served as the owner's representative to provide all the services needed from pre-award phase, through post-award and construction stages of their largest ever construction project being executed as design-build.</p>	<p align="center">\$19,266,623 (Michael Baker Fee)</p>	<p align="center">80%</p>
<p><b>TOTAL NUMBER OF PROJECTS:</b></p> <p align="center">7</p>		<p><b>TOTAL ESTIMATED CONSTRUCTION COSTS:</b></p> <p align="center">\$20,803,474 (Michael Baker Fee only)</p>		

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION  
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Attachment "A"

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  
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Attachment "A"

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)
<b>Training Area and Maneuver Trails Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio</b>	121 OH Air National Guard 1438 S.R. 534 SW Newton Falls, Ohio 43217-1161	\$292,131 (Michael Baker Fee)	2018	Yes
<b>Ebenezer Run Highwall #9 Brooke County, West Virginia</b>	West Virginia Department of Environmental Protection (WVDEP) Office of Abandoned Mine Lands & Reclamation 601 57th Street, SE Charleston, WV 25304	\$101,413 (Michael Baker Fee)	2015	Yes
<b>Design &amp; Construction Management Services for the Coney Island Water Pollution Control Plant Upgrade New York</b>	City of New York Dept. of Environmental Protection Elmhurst, New York	\$30,838,464 (Michael Baker Fee)	2015	Yes
<b>General Environmental Consulting Services and Technical Support Contract (2009-2015) Various Sites in Pennsylvania</b>	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
<b>Currie Landfill and Kelly Farm Sludge Lagoon Remediation Design Millcreek and Fairview Townships, Pennsylvania</b>	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
<b>Phase II Environmental Site Assessment of the Bear Creek Area Chemical Sites Butler and Armstrong Counties, Pennsylvania</b>	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)

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**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
None					

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 International, 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 full skill set for reclamation projects. 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 past 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:

- Landslide identification, investigation and remediation
- 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
- 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 "B" 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 determining spoil and evaluating the landslide subsurface conditions to assist with the landslide remediation; providing LIDAR and survey 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 landslide remediation design as well as development of plans, details, specifications and cost estimates as well as any other mine reclamation and mine drainage abatement operations that may be incurred along the way. Some of the more important services our firm can provide to WVDEP include:

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.

### 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 landslide remediation project is a puzzle with many pieces.



Because of the history of the site, often pieces of the puzzle no longer exist or may have occurred as recently as yesterday. 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 following image is an example of present-day landslide remediation design by Michael Baker to avoid disturbance to a major utility transmission line. Through field investigations and the design effort, a rock buttress was used to mitigate the landslide and avoid disruption to the power grid.

### Geotechnical Investigation and Analysis

In designing landslide remediation projects and 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.

The Michael Baker team is filled with talented engineers and geologists to perform efficient geotechnical investigations and analysis.

### 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 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, FLOWMASTER, HDYRDOFLOW, KYPIPE 2, CYBERNET, SEDCAD 4, UNET, and DAMBRK.

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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 AMUAMD projects, 28 projects needed hydrology/hydraulics expertise of the AML/AMD design group.

These services are available and will likely be called upon to support design of drainage channels, underdrains and other controls likely needed to safely convey water off-site.

#### **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 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 slope 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.

#### **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 landslide remediation and 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 landslides, 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 landslide stabilization, mine subsidence and grouting, portal sealing, highwall backfilling and AMD Treatment.

#### **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 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



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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 and Aerial 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.

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 landslide remediation and 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 landslide remediation, 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.

Additional Services

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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.

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**

With extensive experience in landslide remediation, 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 Landslide remediation 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" lists projects and service areas and personnel involved with the project.

**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 landslide remediation and similar projects, as indicated item 13 of the CQQ.
- Our Project Professionals are veterans of many similar projects including past WVDEP projects.

Our Project Principal and Manager, Ms. Fatma Ciloglu and our Project QA/QC Manager for this assignment, Mr. Bill Neider, both demonstrate the desire and commitment that WVDEP deserves and expects for this assignment.

### **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 B. Our work has addressed the full spectrum of reclamation projects.

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION  
AML CONSULTANT QUALIFICATION QUESTIONNAIRE

Attachment "A"

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The firm has a wealth of experience on similar projects, as evidenced by projects performed for mining and mineral companies. Moreover, Michael Baker's private client work in the tri-state area has address significant landslide projects and have often address special reclamation problems.


Our specialized experience and technical ability have taught us that a typical landslide 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.

Michael Baker routinely finds these puzzle pieces and utilizing various tools, pieces various references together to depict a quick preliminary overview of the project. From the pictures provided from the site, several things become quickly apparent:

- There is one coal seam involved with this site: the Pittsburgh Coal Seam which was surfaced-mined.
- Site consists of multiple slides.
- Stormwater control measures will likely need to be implemented to safely convey runoff offsite.
- Relative dip for the Pittsburgh Coal Seam is to the southwest.
- Project site will need to be evaluated for possible AMD discharge and treatment.
- The former existing haul and access road is in poor condition and will need to be stabilized for the project needs.

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 landslide remediation and special reclamation projects.

20. THE FOREGOING IS A STATEMENT OF FACTS

Signature:  Title: Project Principal, Project Manager Date: November 26, 2019  
Printed Name: Fatma Ciloglu,





