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Solicitation Response(SR) **Dept:** 0313 **ID:** ESR01112200000004122 **Ver.:** 1 **Function:** New **Phase:** Final **Modified by** batch , 01/11/2022

Header 1

List View

General Information | Contact | Default Values | Discount | Document Information | Clarification Request

Procurement Folder: 970677
Procurement Type: Central Purchase Order
Vendor ID: 000000160928
Legal Name: CIVIL & ENVIRONMENTAL CONSULTANTS INC
Alias/DBA:
Total Bid: $0.00
Response Date: 01/11/2022
Response Time: 12:37
Responded By User ID: kevinhanks
First Name: Kevin
Last Name: Hanks
Email: khanks@cecinc.com
Phone: 304-933-3119

SO Doc Code: CEOI
SO Dept: 0313
SO Doc ID: DEP2200000006
Published Date: 12/10/21
Close Date: 1/11/22
Close Time: 13:30
Status: Closed
Solicitation Description: EOI - Francis Drainage Maintenance
Total of Header Attachments: 1
Total of All Attachments: 1

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

State of West Virginia
Solicitation Response

Proc Folder:	970677
Solicitation Description:	EOI - Francis Drainage Maintenance
Proc Type:	Central Purchase Order

Solicitation Closes	Solicitation Response	Version
2022-01-11 13:30	SR 0313 ESR01112200000004122	1

VENDOR

000000160928
CIVIL & ENVIRONMENTAL CONSULTANTS INC

Solicitation Number: CEOI 0313 DEP2200000006

Total Bid: 0 **Response Date:** 2022-01-11 **Response Time:** 12:37:16

Comments:

FOR INFORMATION CONTACT THE BUYER
Joseph E Hager III
(304) 558-2306
joseph.e.hageriii@wv.gov

Vendor Signature X **FEIN#** **DATE**

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

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	EOI Engineering Design Services				0.00

Comm Code	Manufacturer	Specification	Model #
81100000			

Commodity Line Comments:

Extended Description:

*Dates of Service are estimated for bidding purposes only.

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

State of West Virginia
Centralized Expression of Interest
Architect/Engr

Proc Folder:	970677
Doc Description:	EOI - Francis Drainage Maintenance
Proc Type:	Central Purchase Order

Reason for Modification:

Date Issued	Solicitation Closes	Solicitation No	Version
2021-12-10	2022-01-11 13:30	CEOI 0313 DEP2200000006	1

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

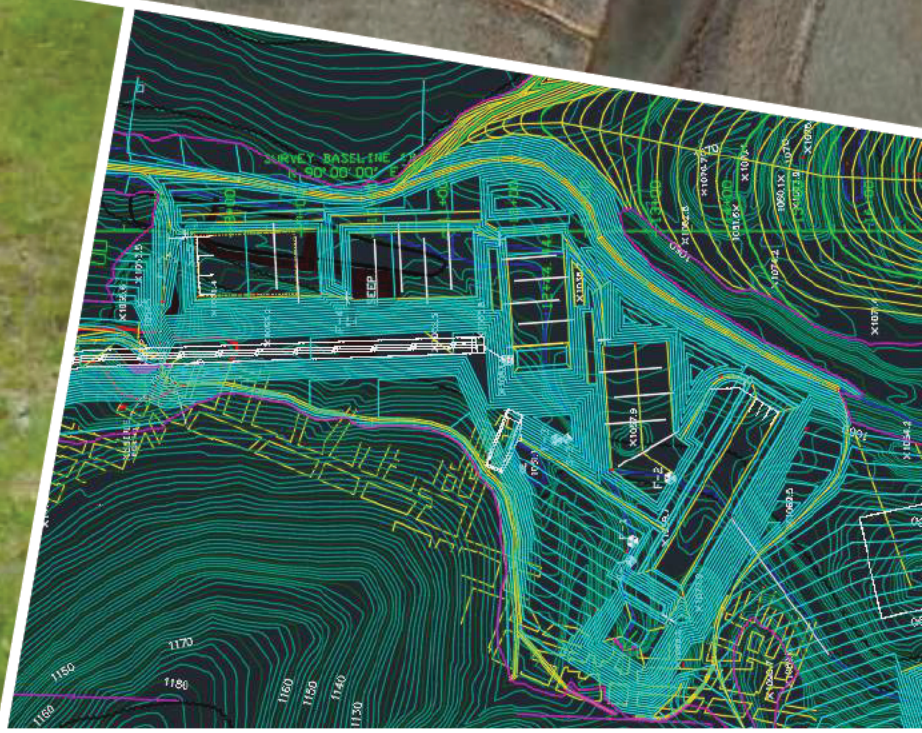
Vendor Customer Code: 000000160928
Vendor Name : Civil & Environmental Consultants, Inc.
Address : 120 Genesis Blvd
Street : Same as above
City : Bridgeport
State : West Virginia **Country :** USA **Zip :** 26330
Principal Contact : Dennis E. Miller
Vendor Contact Phone: 304-933-3119 **Extension:** N/A

FOR INFORMATION CONTACT THE BUYER
Joseph E Hager III
(304) 558-2306
joseph.e.hageriii@wv.gov

Vendor Signature X **FEIN#** 25-1599565 **DATE** 1-6-2022

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

Civil & Environmental Consultants, Inc.



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

FRANCIS DRAINAGE MAINTENANCE
CEOI 0313 DEP2200000006

CEC | BRIDGEPORT
Project 320-020
January 11, 2022

January 11, 2022
Mr. Joseph E. Hager III
Department of Administration
Purchasing Division
2019 Washington Street East
Charleston, West Virginia 25305-0130

Dear Mr. Hager:

Subject: Proposal for Professional Engineering Services Solicitation No. CEOI 0313 DEP2200000006
EOI – Francis Drainage Maintenance
CEC Project: 320-020

Civil & Environmental Consultants, Inc. (CEC) is pleased to submit this Expression of Interest (EOI) to West Virginia Department of Environmental Protection (WVDEP) for the Francis Drainage Maintenance project located in Harrison County, West Virginia. Our preparation of this proposal is based the Expression of Interest (EOI) dated December 10, 2021.

The civil engineering services representing **CEC's Bridgeport, West Virginia location** include surveying/geo-spatial, civil, hydrological, hydrogeological, geotechnical engineering, transportation engineering, ecological, and environmental services. The management and delivery of these projects will be performed through our local Bridgeport, West Virginia office. Our office is built with experts in the region and currently has over 100 staff comprised of engineers, surveyors, geochemists, hydrologists, permitting specialists, construction technicians, and more. The employees comprising our project team have extensive and varied experience specializing in the aspects of engineering necessary for the completion of this projects. Additionally, a part of CEC's design team are the original designers of the Francis Mine AMD treatment facility from the year 1996. Dennis Miller and Ben Faulkner assisted in developing the design of the original facility identified under this Expression of Interest. New to the project team will be Dr. Jeffrey Skousen, professor of soils and reclamation specialist at West Virginia University. Dr. Skousen will be providing expertise and consultation services in ensuring a properly executed and designed project is delivered to the WVDEP-DLR-AML. Also added to this project team is Timothy Denicola, PG, CFM. With a background in geochemistry and hydrology, Mr. Denicola specializes in mine water remediation and brings extensive practical experience in modern passive treatment system design and construction. We are confident that the enclosed materials highlight our team and our capabilities.

CEC wants to optimize the time and resources that AML has designated for this important project and **continue to exhibit excellence in mine drainage mitigation design and implementation**. A short (60 day) turnaround requirement associated with the EOI challenges this deliverable. While CEC is in possession of historic water quality data collected by our professionals prior to and within a few years of the system installation, adequate characterization of current water quality is essential to preparing appropriate, long-lasting treatment systems that will satisfy the State's objectives. CEC is in hopes that WVDEP has already established selected appropriate water sampling locations at Francis Drainage that include both water chemistry and flow measurements. This data will also provide critical information to guide decisions as to which components are functioning (improving water quality) or in need of necessary refurbishment. If these data have not been collected, CEC strongly encourages AML to provide the successful design team with sufficient time and resources to conduct a minimum round of sampling and site characterization to obtain the necessary data.

CEC is committed to providing the technical expertise and resources necessary for a multitude of tasks, our commitment goes beyond technical services as we are driven by quality deliverables that meet the scope, schedule, and budget. CEC understands the funding mechanism associated with AML projects and we will treat your resources like our own resources, upholding the highest level of fiscal responsibility.

Thank you for providing CEC the opportunity to present our qualifications to the WVDEP. We look forward to the opportunity to **communicate directly with the WVDEP** and discuss our approach to this project in a shortlist interview. Should you have any questions, please do not hesitate to reach out to Daniel Martinez at (304) 203-8655 or Dennis Miller at (304) 844-1169.

Respectfully submitted,
CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

Daniel Martinez, P.E.
Project Manager

Dennis Miller, P.S.
Vice President

PROFESSIONAL ENGINEERING & CONSULTING SERVICES FOR WVDEP - FRANCIS DRAINAGE MAINTENANCE

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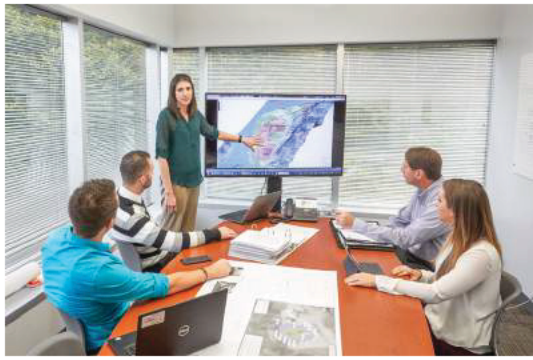
APPENDICES

1.0 Firm Overview

Civil & Environmental Consultants, Inc. (CEC) is recognized for providing innovative design solutions and integrated expertise in air quality, civil engineering, ecological sciences, environmental engineering and sciences, planning, survey, transportation engineering, waste management, and water resources. CEC was founded in 1989 and currently has approximately 1,100 employees. From our 29 offices, we provide comprehensive multi-disciplinary services to numerous clients across the country. Specifically, CEC has extensive experience providing landslide mitigation services to various clients from our Bridgeport, West Virginia office.

Our Bridgeport Office has successfully completed in excess of 200 landslide mitigation projects in the last year. This experience is highlighted in the resumes of key personnel (Attachment C) and representative project summaries (Attachment D) presented in this SOQ. CEC does not anticipate the need for subconsultant services for this project except for drilling and laboratory testing on an as-needed basis.

1.1 Commitment to Safety



CEC is committed to conducting its business in a manner that sustains and protects the safety and health of its employees. CEC strives for continuous improvement in the effectiveness of its safety and health programs. We affirm that:

- Working safely is a key corporate value and a condition of employment.
- All workplace hazards can be safeguarded against by using proactive measures and actions.
- Occupational safety and health is part of every employee's total job performance.
- Each CEC employee is responsible, and is held accountable for establishing safe workplace conditions to prevent injuries and occupational illnesses.
- Training employees to work safely is essential and is the responsibility of CEC Managers and Supervisors.
- Creating and maintaining a safe workplace, combined with the prevention of personal injuries and accidents, is good business.
- An effective Safety Program is part of CEC's vision and mission.

CEC's Workplace Safety Program and Manual provides general physical hazard assessments for tasks commonly performed by CEC employees. The program requires a hazard assessment and preparation of a project safety plan for all field operations. The plans are continuously updated through the use of Job Safety Assessments and on-site safety meetings for CEC personnel.

1.2 Attention to Quality

CEC performs our professional services under our corporate Quality Assurance Plan (QAP). This QAP was developed to verify the engineering, design, plans and other deliverables prepared by the project team and the various disciplines are supported by comprehensive studies and sound engineering judgment, in compliance with established policies, guidelines and standards, and contain appropriate design flexibility and cost saving measures. This QAP entails a comprehensive listing of CEC quality policies

and standard operating procedures that are available on CEC's internal network. It is consistently reviewed and updated by a multi-office team of experienced professionals to ensure "Best Quality Control Practices" are uniformly applied. In support of this QAP, CEC is committed to the application of established design policies, guidelines, and processes developed and published by review and resource agencies. From a quality standpoint, technical personnel review the technical quality, accuracy and completeness of all designs, analyses, drawings, estimates, and report text. Peer-level personnel are responsible for the performance of an independent check of all calculations and project deliverables prior to each project milestone submission.

As part of the QAP, reviews will be performed for the appropriate element throughout the design/construction process. These reviews will be completed prior to submitting reports, plans, construction documentation, or other deliverables. These reviews will verify the adequacy of the information presented and compliance with established guidance documents. The QAP also documents procedures for work procedure and equipment use, employee and project safety, project management and records and communications. The goal and objective of the QC/QA Policy is to provide a safe and consistent delivery of quality services to the WVDEP.

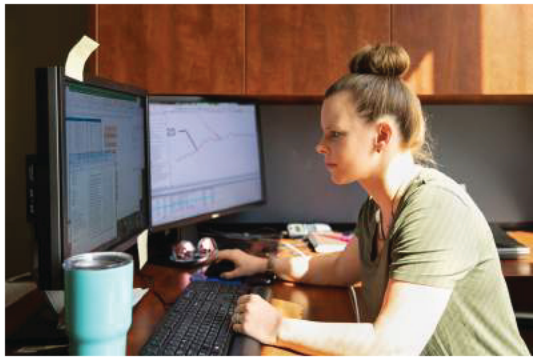
1.3 Controlling Costs and Maintaining Schedules

CEC has written quality policies that are provided to all employees; these policies define critical work quality and internal control procedures. Employees are instructed and required to record hours worked daily in the Deltek system and each employee-prepared time sheet is reviewed and approved by a system defined supervisor. Project management personnel have online access to project budgets, project cost and hours, billing and accounts receivable information. In addition to online access, each month the Accounting Department distributes to the project manager and principal-in-charge copies of a summary project status report showing budget and actual project information.

Project cost controls are provided by our fully integrated accounting system. The management information system is used to compile and control costs by project and by task, independent of personnel used, or their office location. Costs specific to the project are consolidated by accounting and verified by the CEC project manager for accuracy. Further accounting control is provided for monthly reviews of all projects. The costs incurred are compared to progress on the projects to confirm that the expenditures of budgeted funds correlate to the overall progress on the projects.

1.4 Staff Availability

CEC regularly reviews workload by office and by Practice through a series of regularly scheduled meetings/reviews. Each office holds a weekly meeting to review new and upcoming proposal activity and reports shared opportunities. Additional practice meetings/ reviews are held to review workload, schedule manpower and anticipate schedule changes. CEC regularly monitors our workload and backlog against staff availability and adds personnel, as necessary, to meet client and project requirements and has the ability to augment staff from our 29 office locations and over 1,100 personnel.



1.5 Multi-Disciplined

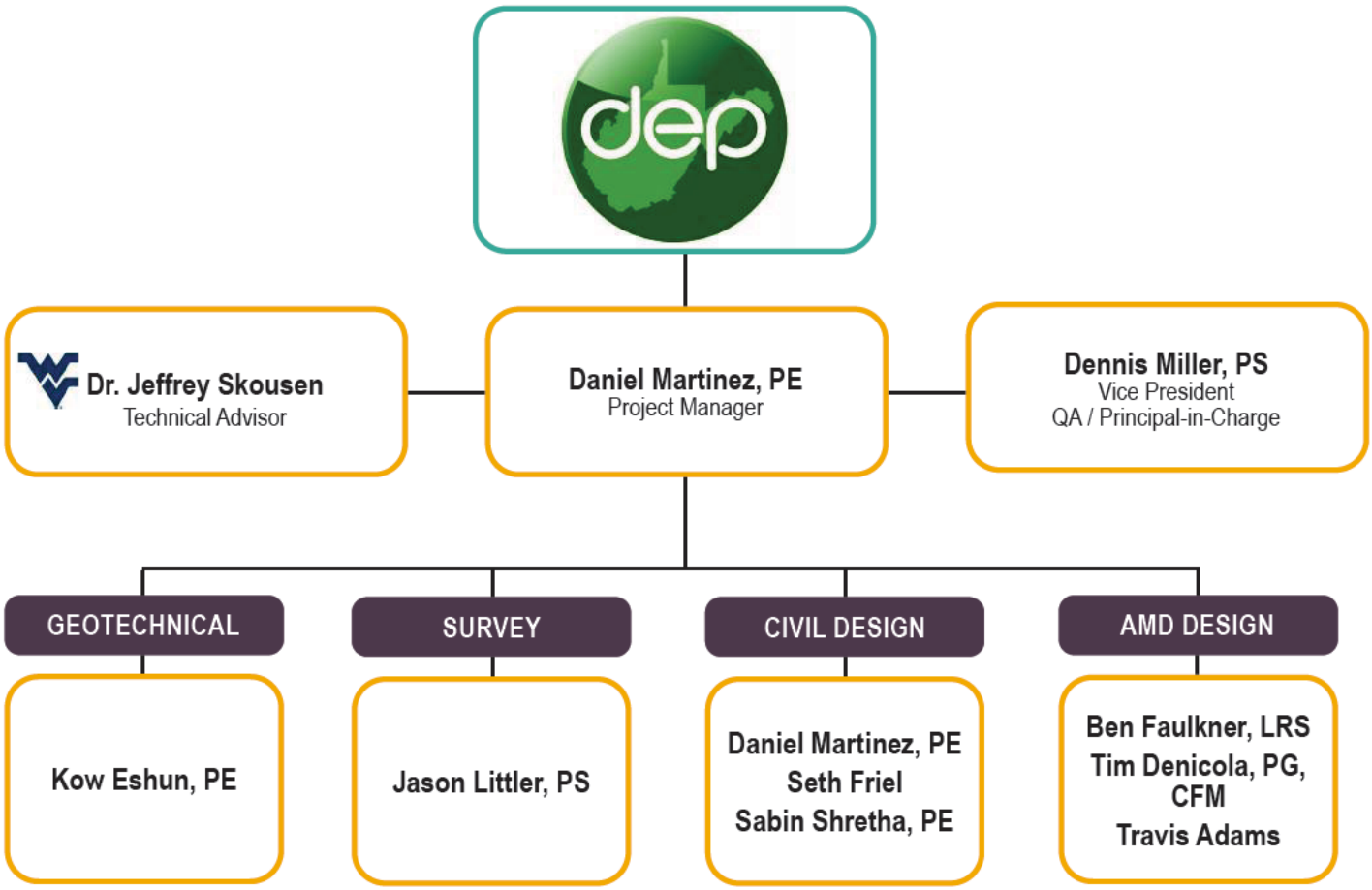
CEC is an expanding company with:

- Civil Engineers
- Geotechnical Engineers
- Transportation Engineers
- Structural Engineers
- Environmental Scientists
- Environmental Engineers
- Chemical Engineers
- Geologists
- Hydrogeologists
- Hydrologists
- Ecologists
- Biologists
- Wetland Scientists
- Threatened & Endangered Species Experts
- Agronomists/Soil Scientists
- Emissions Testing Professionals
- Chemists
- Archaeologists
- Construction Managers & Inspectors
- Environmental Technicians
- Treatment Plant Operators
- Land Surveyors
- Landscape Architects
- GIS Analysts & Programmers

2.0 Firm Overview

The following key personnel will assist in the Francis Drainage Maintenance Project. CEC's project team is comprised of individuals that have the technical knowledge, professional experience and project understanding to support the West Virginia Department of Environmental Protection, Division of Land Restoration, Office of Abandoned Mine Lands and Reclamation (WVDEP-DLR-AML) with geotechnical investigation and design of landslides, investigation/reclamation/design of dangerous impoundments and highwalls, acid mine drainage (AMD) investigation and mitigation, portal sealing and hydraulic engineering. The project team identified to work with the WVDEP has extensive experience in full service design solutions for performing site assessments and design remediation and mitigation services throughout West Virginia. In addition, our team has extensive experience in ecosystem restoration, and Clean Water Act Permitting. Each of the anticipated team members presented in the organizational chart that follows is based out of CEC's Bridgeport, West Virginia office and will be crucial in the successful execution of these projects.

In addition to the key personnel noted in the organizational chart below, CEC's Bridgeport, WV office has more than 100 technical and managerial personnel who can provide a wide range of services, including but not limited to Construction Field Services, Environmental Engineering, Permitting and Ecological Services.



CEC's project team and their roles are further described below:

Mr. Ben Faulkner, L.R.S. will act as a Technical Advisor in the development of the investigation, designs, plans and specifications. Mr. Faulkner is experienced in all environmental aspects of mining with over 40 years of experience in environmental matters. He has enjoyed diverse perspectives as environmental permit manager, regulator, preparer, researcher, and consultant. His focus has been on environmental compliance and characterization of mined properties, with 5 years of mine law enforcement and over 35 years as industry manager, academic research associate, and private consultant to the coal, hard rock, and aggregate mining industries. His experience spans working in state mining programs in IL, OH, KY, PA, SC, TN, TX, VA and WV and CERCLA projects in GA, TN and OH. International projects include USVI, Canada, and Wales. He is recognized as a Federal Court expert witness in characterization and chemical/passive treatment of mine drainage as well as land reclamation and aquatic restoration/evaluation of dramatically disturbed lands. He is the only person to serve on both editorial committees of the Office of Surface Mining's Acid Drainage Technical Initiative for coal and metal mining sectors. He is also qualified through ASTM as an Environmental Professional for the purpose of conducting Environmental Site Assessments, Environmental Compliance Audits, and Due Diligence Inquiries. Recent work with USDoE grant took him to over 140 mine sites in 5 states for characterization of drainage treatment and precipitates potential for Rare Earth Elements recovery. Mr. Faulkner joined CEC in 2016 and works out of the Bridgeport, WV office. Mr. Faulkner was also a part of the original project team who first evaluated and designed the original Francis Drainage Facility passive treatment system.

Mr. Timothy Denicola, P.G., C.F.M. is a project manager whose multi-disciplined background includes expertise in geochemistry, geology, and hydrology. His experience includes mine water remediation, ecosystem restoration, and environmental assessments and remediation. Specific capabilities include soil, surface and groundwater chemical analysis, hydrologic data collection, design of mine water treatment systems, design of stream and wetland restoration, geotechnical soil and rock exploration drilling, construction quality assurance, environmental assessments and remediation, and development of various spill control plans. He will conduct water quality and soil chemical sampling. His experience in regulatory compliance and design of passive and semi-active treatment systems will be crucial in the facilitation of this project.

Mr. Dennis Miller, P.S. was a part of the original project team who first evaluated and designed the original Francis Drainage Facility passive treatment system. He will be overseeing and implementing CEC's stringent quality control policies and to facilitate the delivery of a high quality product to the state. He will also use his deep rooted background in AML reclamation to provide technical guidance and supervision. Mr. Miller has more than 28 years of experience in AML restoration, Acid Mine Drainage, geodetic control surveys, high accuracy monitoring, and more. He has worked on both private and public sectors and has noteworthy experience in the policies and procedures within the WVDEP, WVDOT, FHWA, and FAA. His familiarity with the project objectives along with his dedication to CEC's quality policies will be an asset in delivering a high quality product.

Mr. Daniel Martinez, P.E. will serve as the project manager and designer coordinating with CEC's internal resources to meet the schedules of the projects. Mr. Martinez has more than seven years of diverse experience in land development, ecosystem restoration design, abandoned mine land reclamation, transportation engineering, and hydraulics. He has managed design teams on several AML-related projects in West Virginia and Maryland. His diverse background has allowed Daniel to provide innovative design solutions that blend unique, environmentally sound mitigation techniques with conventional civil engineering design practices. His proven track record of on-time project delivery and in-depth design approaches will make him an asset on this project. Daniel is currently a project manager in the Bridgeport, WV office.

Mr. Kow Eshun, P.E. will provide geotechnical project oversight and review as well as construction management. Kow has more than ten years of diverse experience in geotechnical engineering, transportation and Construction Quality Assurance. Kow has worked on and managed a wide range of subsurface investigations to provide recommendations for landslide remediation, foundations, slope stability analyses, ground improvement techniques, mine subsidence, and earthwork. Additionally, Kow has managed a wide range of projects in the transportation, health, natural gas, manufacturing, telecom and utilities industries including roadway projects, well pads, compressor stations, building projects, substation construction and expansion. Kow currently serves as CEC;s geotechnical practice lead in the Bridgeport office, runs our slip mitigation program, and manages our Construction Quality Assurance field personnel.

Mr. Jason Littler, P.S. will provide survey project oversight. Mr. Littler has over 24 years of experience. His responsibilities have included positions as Roadway Designer and Survey Project Manager. He has performed drainage computations, construction layout, earthwork volumes, topographical surveys, aerial mapping control surveys, boundary surveys, WVDOH right-of-way plan development, courthouse research, deed work maps, survey plats, survey descriptions, earthwork volume computations, WVDOH waste permits, plan preparation, subdivision plats, cell tower surveys, oil and gas landowner exhibits, pipeline as-builts, pipeline alignment sheets, pipeline routing, fine grade computations, and survey field crew management and oversight. Jason is a senior project manager in the Bridgeport, WV office.

Mr. Sabin Shrestha, P.E. Mr. Shrestha has over eight years of civil engineering and water resources experience in both the public and private sectors. Mr. Shrestha is experienced in the hydraulic design of bridges and culverts, flood impact studies, stormwater management, roadway project development, site development, and construction inspection. Mr. Shrestha has been involved in stream restoration, erosion prevention, and sediment control design, Stormwater Pollution Prevention Plan (SWPPP) development, Groundwater Protection Plan (GPP), Best Management Practices (BMPs), and regulatory permitting. He has performed hydrological and hydraulic studies for small to large-scale watersheds in the states of West Virginia, Virginia, Pennsylvania, Alabama, New York, North Carolina, and Texas. Mr. Shrestha is proficient in multiple design software such as ArcGIS, Civil3D, HEC-RAS (1D & 2D), HEC-HMS, HydroCAD, and HY-8.

Mr. Travis Adams has 23 years of experience in the consulting engineering industry servicing municipal, private, commercial, and industrial clients. His project practice focus includes the detailed engineering design of acid mine drainage treatment systems, reclamation of disturbed lands, water and wastewater treatment plants, water distribution systems, and wastewater collection systems. He has served as the overall project manager for numerous large municipal water and wastewater treatment plant projects as well as numerous water distribution and wastewater collection system projects, leading a team of professionals to evaluate, design, permit, bid, and construct projects with challenging construction obstacles and complex technical and regulatory requirements.

2.1 Sub Consultants

CEC will use **Novel Geo-Environmental, LLC (NGE)** to assist in performing the geotechnical investigation by performing the subsurface drilling. Since inception in 2003, NGE has performed geotechnical engineering and/or geotechnical drilling services on over 110 West Virginia DEP AML projects. Geotechnical drilling services for AML projects have included the following services:

- Soil drilling and sampling using hollow-stem augers and split-spoon sampling.
- Rock coring using a NQ-wireline system to collect continuous samples of bedrock.
- Installation of piezometers into mine voids to allow for water level determination and water sampling.
- Installation of inclinometers to allow for prolonged monitoring of slope movements.

Minority Business Enterprise Program:
CERTIFICATION: MBE/DBE/SBE
NAICS CODE: 541330
SERVICE(S): ENGINEERING SERVICES
CERTIFICATION: MBE/DBE/SBE
NAICS CODE: 541620
SERVICE(S): ENVIRONMENTAL CONSULTING SERVICES

CEC will also use **Sturm Environmental Services (SES)** to perform water chemistry evaluation and testing. SES offers laboratory facilities that are inspected annually, accredited, and approved by state agencies. SES has one of the most advanced, independent laboratories in West Virginia, providing clients with expedient, practical, and professional services in the areas of:

- Soil and overburden assessments
- Surface and groundwater hydrology
- Aquatic and benthic surveys
- Safe drinking water determinations
- Wastewater analysis
- Leaching studies
- Problematic evaluation of acid-mine drainage
- Complete inorganic analysis

SES is a Women Owned Business and a Small Business Entity.

Resumes for the above-listed key personnel, including certifications, registrations, and project experience have been included in **Attachment C.**

3.0 Understanding of Project Requirements

CEC has reviewed the WVDEP-DLR-AML's request for qualifications relating to the Francis Drainage Maintenance Expression of Interest. With a project team that includes the original designers of the Francis Drainage site in 1996 (Dennis Miller and Ben Faulkner), CEC is excited to have the opportunity to characterize the performance of the system and work with the WVDEP to ensure future work at the project will continue to be a safe, environmentally sound product that complements the community and improves the water uses of the receiving stream.

Francis Drainage Maintenance

This project is located west of Whitehall, WV and east of Enterprise, WV outside of the City of Fairmont's MS4 boundary. The project area can be found at the end of Harrison County Route 12/12 (Trainer Road) approximately 600 feet from the intersection of Harrison County Route 12/12 (Trainer Road) and Harrison County Route 12 (Francis Mine Road). The area was surface mined with deep mine development prior to the SMCRA of 1977 leaving unstable coal refuse, erodible soils with poor vegetation, and problematic mine drainage from acid-producing materials. The land stability and water quality issues were addressed by the State of West Virginia under its Abandoned Mine Lands Program as the program pioneered the development of passive treatment systems. Sturm and Associates was afforded the opportunity to work with AML to design remedial efforts to stabilize the site and mitigate the acid mine drainage using the most proven principles at the time. This current project entails the characterization of the existing drainage which is expected to indicate that some of the structures in the original project have exceeded their capacity to treat acidity and/or capture metal precipitates from the drainage. The design will detail appropriate excavation of problematic structures, removal and proper disposal of metal precipitates, spent treatment media and other compromised or aged components of the existing system and ensure that these materials will be stabilized and hydraulically sequestered in appropriate disposal areas integrated with the overall designated reclamation area. This will likely entail borrowing suitable material and disposal within and perhaps outside the original footprint of the project area. Renovated hydraulic appurtenances will be designed including structures to capture and convey problematic drainage with an appropriately designed passive AMD treatment system which will likely include an oxidation bed. This work will include all items necessary to construct this facility such as environmental permitting, geotechnical analysis, and construction plans that detail the design of drainage channels, underdrains and/or other controls to safely convey treated and untreated water off the site when finally reclaimed and revegetated after the re-disturbance.

CEC is intimately experienced with the original Francis Mine Project. In 1996, CEC's Dennis Miller and Ben Faulkner were a part of the team selected by the WVDEP-DLR-AML to perform the original passive AMD treatment facility design and investigation. This design team delivered a successful treatment system that lived up to its full useful life. This same design team will be heavily involved in the scope of work items identified by the solicitation. New to this team will be Dr. Jeffrey Skousen, professor of soils and reclamation specialist at West Virginia University. Dr. Skousen will be providing expertise and consultation services in ensuring a properly executed and designed project is delivered to the WVDEP-DLR-AML.

This site has produced copious problematic drainage since the 1970's. Characterization of the drainage prior to the original AML project indicates that the total acid load from the unnamed tributary of Coons Run of West Fork River associated with this project exhibited (1084 gpm * 90 mg/L acidity *0.0022) 214 tons and (1084 gpm * 12 mg/L Total Iron) 286 {dry} tons of iron per year based on average flows. Despite dramatic improvements in the late 1990's by the AML project that protected the nearby residential areas from mine

blowouts, dangerous unstable and unproductive landforms and attractive nuisances, there exists today poor quality drainage from the site, partly from components of the passive treatment system that have exceeded their design life or design capacity. Twenty years of collecting and treating the drainage from the Francis site would conservatively have produced over 4,000 dry tons of iron. Given the relatively low (1-5%) solids concentration of typical AMD sludge, the volume of iron/manganese/aluminum precipitates produced by the mine drainage would far exceed the overall capacity of the total void space in all the impounding structures of the system.

Owing to the involvement of key personnel involved in the original AML project, CEC has documents that memorialize the mining activities, land configuration and subsurface characterization and water quality conditions that existed prior to the original AML project. Those documents allow for an understanding of the issues and approach utilized to mitigate the site and document the placement of a substantial volume of coal refuse material that was addressed for water quality concerns. These documents represent the efforts to characterize the site in 1996 and include the rationale and sizing of the drainage collection and treatment system based on the background water quality data collected in 1994-96. Recent preliminary review and limited field reconnaissance of the site prior to the preparation of this Expression of Interest suggests a measure of continued efficacy remains toward the original objective of improving water quality. The site is regularly visited by professors and students of West Virginia University as an excellent example of innovative and successful mitigation of acid mine drainage issues by passive treatment systems. Researchers at WVU (including the National Mine Land Reclamation Center and Division of Plant and Soil Sciences) have evaluated the prolonged success of individual components of the Francis system in various assessments as documented in regional, national, and international publications and symposia. Performance of the components was based on water quality collected at the Francis site over a period of several years after installation. The sampling locations (inlet and outlet of select components) that qualify flow and water quality for key parameters are invaluable in determining the efficacy of each component over time and will indicate trends, suggest system issues and alert to system issues, and the arrival of reaching design capacity. Additional observations allow for the determination as to the nature of the issue or failure as either hydraulic refusal (due to clogging with metals precipitates) or exhaustion of neutralizing agents such as the limestone in this system.

CEC wants to optimize the time and resources that AML has designated for this important project and continue to exhibit excellence in mine drainage mitigation design and implementation. A short (60 day) turnaround requirement associated with the EOI challenges this deliverable. While CEC is in possession of historic water quality data collected by professionals prior to and within a few years of the system installation, its design team echoes the consistent requirements voiced by water quality professionals that adequate characterization of current water quality is absolutely essential to preparing appropriate, long-lasting treatment systems that will satisfy the objective of the State. CEC is in hopes that WVDEP has already established selected appropriate water sampling locations at Francis Drainage that include both water chemistry and careful flow measurements that will provide the design team with excellent data for the design/retrofit/re-establishment of an effective treatment system. This knowledge will also provide critical information to allow reasonable decisions as to which components are functioning (improving water quality) or in need of necessary refurbishment, including drainage/cleaning/precipitate and media replacement.

If these data have not been collected, CEC strongly encourages AML to provide the successful design team with sufficient time and resources to conduct a minimum round of sampling and site characterization to obtain the necessary data. CEC would appreciate the opportunity to review WVDEP's data holdings pertaining to recent water quality (and quantity) at this project.

CEC's professional services will consist of providing the WVDEP with site reconnaissance, site access plans, a geotechnical subsurface investigation, water quality tests, preparation of designs, plans, and specifications relating to AMD treatment likely including an oxidation bed design, site access, erosion and sediment controls, and clearing and grubbing/site revegetation to be performed within the limits of disturbance. Permitting applications will also be submitted as necessary for the project's successful completion. The following sections of this letter include our understanding of the project requirements.

3.1 Understanding of Project Requirements

On-site Reconnaissance

CEC will conduct an on-site reconnaissance to characterize the various features requiring resolution. The reconnaissance will include viewing and performing field testing of the drainage in and out of existing treatment components and carefully measure flow. Locations will be selected based on available historic sampling and best professional judgement of the design team with input and approval from WVDEP. CEC will collect water samples commensurate with the field work a minimum of one time under relatively "normal" flow conditions, but will reserve the right to discuss further sampling during elevated flow conditions with the AML Office. Laboratory analysis of key parameters of the water samples will be rushed to expedite data review and interpretation.

CEC will characterize the surrounding terrain around any landslides, subsidence areas, and seepage or former portal openings along with documentation of general site conditions such as soil moisture and relevant rainfall data for the previous year. In addition, the site reconnaissance will include a review of existing and previous AML mine seals and conveyance systems, as well as identifying possible site access for equipment. CEC will conduct a desktop review of available mine mapping and soil maps to identify additional high risk areas near the area prior to the site visit. The findings of this site visit will be incorporated into the layout and design of the remediation of the project as well as restoration and management practices.

Topographic and Planimetric Survey.

CEC will perform a topographic and planimetric survey of the project sites. This survey will provide the existing contour mapping of the site at the time of the Small Unmanned Aerial System (sUAS Flight. This sUAS flight will be supplemented with more traditional survey methods to provide a detailed base map suitable for developing construction drawings.

AMD Passive Treatment System

Upon completion of the initial round of sampling and examination of any available data collected by WVDEP and others, CEC will prepare a conceptual plan based on the strengths and shortcomings of the current system. Every attempt will be made to retain and protect existing drainage components and structures that are functional and consistent with the overall revised treatment strategy. CEC will employ the use of AMD-Treat software (from OSMRE's Technical Innovation and Professional Services {TIPS} suite of software) as well as the custom worksheets and design tools its designers have created over their many years of mine drainage remediation research and practice. The products of load-based calculations as to tonnage, yardage, volume, residence or exposure time, and other factors will be presented from both approaches and compared with notes from the professional as to specific expectations of each system component to accomplish the design goals of the total treatment system.

Existing drainage components such as Anoxic Limestone Bed (ALD), Open Limestone Channel (OLC), Successive Alkalinity Producing System (SAPS), Anaerobic Wetland (AnW), Aerobic Wetland (AeW), Vertical Flow Wetland (VFW)' Limestone Leach Bed (LSB), Sediment Pond (SE) or other facilities will be evaluated for remaining life and adequacy. Should these structures be deemed to be ineffective in the total process of capturing and/or neutralizing acidic drainage and removing contentious metals concentrations, the component or structure will be hydraulically isolated from the system via pumping or construction of a gravity-flow temporary channel or pipe around the component or structure to allow for it to be drained. If confirmed by partial excavation or testing, and if deemed appropriate, the component will be fully excavated with an attempt to identify and protect and preserve any underlying seal or liner material to maintain the integrity of the existing or retrofitted passive collection and treatment system. The need for current representative water quality data (including flow) is imperative, but to demonstrate our approach, we present a hypothetical data set in the following table:

Temp	pH	Cond	DO	ORP	Acid (Calc.)	Alk (Est.)	Fe.3	Fe.2	Al.T	Mn.T	SO4	Q
deg C	S.U.	uS/cm	mg/L	mV	mg/L as CaCO3		mg/L	mg/L	mg/L	mg/l	mg/L	gpm
12.8	3.10	2,540	0.10	NS	367.1	0.01	19.6	62.0	27.6	5.6	1,400	100

Table 1: Hypothetical Data Set

Initial treatment calculations based on the hypothetical dataset are included as Table 2:

Chemical Parameters	AMD Source Water	Units
Acid Load	441	lbs/day
Fe Load	98	lbs/day
Al Load	33	lbs/day
Mn Load	7	lbs/day
Total Iron	81.60	mg/L
Ferrous Iron (Fe2+)	62.00	mg/L
Ferric Iron (Fe3+)	19.60	mg/L
Dissolved CO2 concentration	PHREEQC/AMDtreat	mg/L
Treatment Calculations	**Value**	**Units**
Limestone consumption	158	tons/yr
Limestone consumption (20 yrs)	6,314	tons
Fe-oxidation DO demand	8.87	mg/L
Mn-oxidation DO demand	1.64	mg/L
Total DO demand	10.51	mg/L
Sludge solids (5% solids)	891	ft3/year
Sludge liquids (5% solids)	133,354	gal/year
AMD volume	52,560,000	gal/year

Table 2 – Hypothetical Treatment Calculations

Chemical bench testing on less severe mine water indicates an acid neutralization capacity of ~0.85 mg/L of acid per minute. The calculated metals acidity of 367.1 mg/L will require ~7 hours of retention time to sufficiently neutralize acidity. Treatment calculations indicate a required dissolved oxygen (DO) concentration of 10.51 mg/L to facilitate oxidation of iron and manganese into ferric-hydroxide (Fe(OH)3) and amorphous pyrolusite (MnO2). This value is the upper limit of DO saturation at 55 degrees Fahrenheit and is greater than natural DO saturation under warmer conditions. Current observations corroborate oxygen deficiency evident by the presence of ferrous-hydroxide. Therefore, discharge of partially treated mine water between best management practices (BMPs) will require gravity driven mechanical agitation to facilitate continual oxidation during the treatment process. Mechanical agitation will be promoted by high velocity flushing with discharge pipe inverts positioned above the water surface of receiving ponds. This will promote aggressive agitation and oxygenation of partially treated water. Conveyance channels and/or spillways between BMPs will utilize check dams to create drops and agitation. Additionally, rock baffle construction in settling ponds will reduce velocity, increase retention time, and thereby increase atmospheric contact time. Several BMPs will be designed shallow and broad to increase atmospheric oxygen exchange and prevent formation of anoxic conditions at depth.

The hypothetical treatment approach will utilize the existing treatment system footprint and start with a Flushing Limestone Bed (FLB) constructed of 4" diameter limestone aggregate possessing sufficient permeability to facilitate removal of precipitated solids. The underdrain will be constructed of 12" diameter high-density polyethylene (HDPE) or Standard Dimension Ratio 35 (SDR35) pipe having a custom perforation pattern to increase flush velocity and extend the zone of influence during solids removal. The flush

mechanism will utilize an automated bell dosing siphon activated by the maximum designed water level in the FLB. The dosing siphon will be as designed by Fluid Dynamic Siphons. The FLB will flush to completion prior to initiation of a new cycle. The anoxic conditions of the raw mine water reduces the potential for excessive precipitation within the porosity of the limestone aggregate.

Flushed effluent from the FLB will convey into a settling pond (SP) constructed with two rock baffles. Rock baffles will be constructed of 4" diameter limestone aggregate placed perpendicular to flow. Water will be received behind the initial baffle and will discharge immediately beyond the second rock baffle. This design principal substantially reduces flow velocities and short circuiting to achieve the particle settling velocity. Accumulation of settled solids will occur in a "zone of settling" created between both baffles. Additionally, the reduced velocity through the settling pond will facilitate greater retention and atmospheric oxygen exchange.

The third BMP will utilize the principal of a successive alkalinity producing system (SAPS) by utilizing an additional FLB. The calculated acidity of 367 mg/L is not generated instantaneously, but throughout the treatment process by hydrolysis of metals. Residual alkalinity from the initial FLB may not be sufficient to facilitate neutralization of acidity generated throughout the treatment process. A second FLB generates the necessary alkalinity and will be designed shallower with ~1.5 feet of limestone and ~1.5 feet of standing water. This will reduce the tendency to form anoxic conditions at depth within the limestone and will promote greater atmospheric oxygen exchange. This design is similar to a manganese removal bed and it's anticipated that precipitated amorphous pyrolusite will begin to accumulate within this BMP. The FLB will utilize 4" diameter limestone, 12" diameter perforated flush plumbing, and an automatic bell dosing siphon. Mine water will possess a higher dissolved oxygen concentration within this treatment component as compared to the initial FLB but will possess a lower metal concentration thereby reducing the potential for excessive precipitation within the porosity of the limestone aggregate.

The fourth BMP will emulate the second as an appropriately designed settling pond with two rock baffles to capture flushed solids and promote oxidation. The fifth BMP will utilize a shallow, heavily vegetated wetland to promote physical filtration of remaining suspended solids for final polishing. Broad open-top spillways will be constructed between each BMP to broaden the flow path and prevent short-circuiting. The FLB will utilize open-top spillways only under conditions of plugged flush plumbing, but the settling ponds and wetland will utlize the spillways as the primary discharge point from the BMP.

The estimated hypothetical limestone volume for 20 years neutralization capacity is estimated at 6,300 tons (Table 2). Based on the existing treatment system footprint and estimated pond depths the theoretical limestone volumes and retention times are provided below as Table 3. Each BMPs assumes a foot of freeboard not included in this table. The existing footprint refurbished as described would result in a passive treatment system constructed of ~5,100 tons of limestone having a neutralization capacity of ~16.2 years with a retention time exceeding twelve days at 100 gallons per minute. The settling pond capacity to store liquid sludge of 5% solids to quarter depth is ~16.7 years. The estimated performance of the passive treatment system between substantial maintenance activities is ~15-20 years.

	Total	LS	Water	BMP	BMP	BMP	Retention	LS	SP
BMP	Depth	Depth	Depth	Area	Volume	Volume	Time	Capacity	Capacity
	ft	ft	ft	ft2	ft3	gal	days	tons	years
FLB	5.0	5.0	0.0	15,025	75,125	241,649	1.7	3,568	-
SP	5.0	0.0	5.0	15,946	79,730	596,422	4.1	-	8.36
FLB	3.0	1.5	1.5	15,095	32,379	242,210	1.7	1,538	-
SP	5.0	0.0	5.0	15,949	79,745	596,534	4.1	-	8.37
WL	1.0	0.0	1.0	15,036	15,036	112,477	0.8	-	-
TOTALS							**12.4**	**5,106**	**16.7**

Table 3 – Hypothetical Quantities and Times

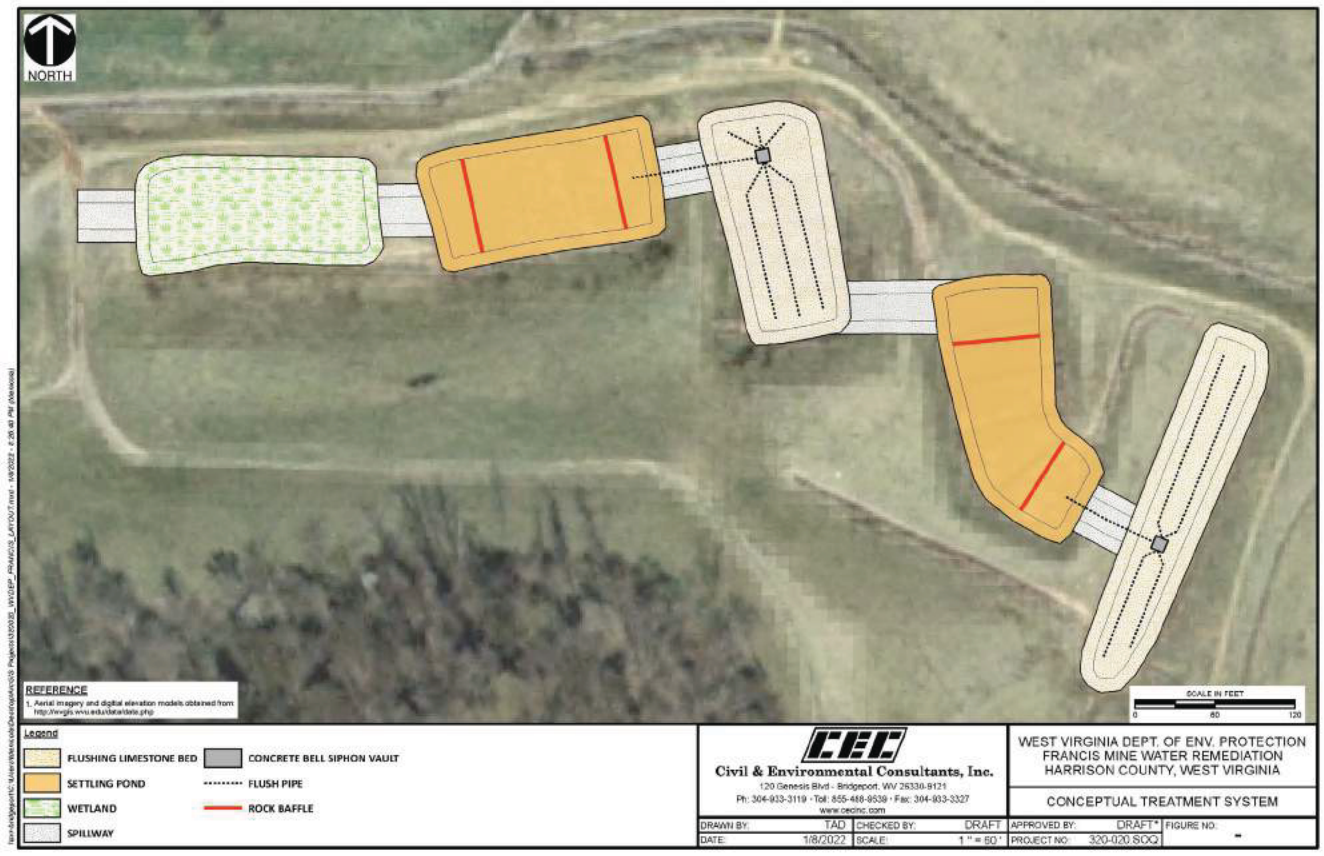


Figure 1 - Conceptual AMD Treatment Facility Layout

Oxidation Bed Design

WVDEP has indicated that an oxidation bed may be an appropriate component to add to or replace existing components of the Francis drainage system. CEC's designers recognize the value of this technology which was developed through relatively recent observations of completed AMD passive systems and unabated mine drainage research sites. CEC will carefully evaluate the inclusion of a properly sized and located oxidation bed to facilitate the oxidation of metals prior to neutralization stages, if deemed efficacious and there is sufficient surface area for this component within the assigned limits of construction and operation.

Ecological Delineation

The existing treatment system could be considered by some to be "wetlands" or areas contemplated to be disturbed or affected by the project may be considered as "wetlands". WVDEP should provide clear direction as to the scope of the project with respect to current regulatory requirements. If instructed to explore this requirement, CEC has a capable team that routinely performs wetlands delineation, mitigation and other wetland related services. Wetlands will be identified and delineated in accordance with the routine determination methodology described in the 1987 USACE Wetlands Delineation Manual (USACE Manual), supplemented by the 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (USACE Supplement), National Wetland Plant List, and USDA 1991 Hydric Soils of the United States. Streams and other waters, such as ponds, seeps, springs, etc., will be identified by the presence of an ordinary high water mark as defined in 33 CFR Part 328.3(e) and USACE Regulatory Guidance Letter No. 05-05. Streams will be classified as perennial, intermittent, and ephemeral as defined in the 2017 Nationwide Permits. Floodplains will be identified and delineated from Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps and other available state or local floodplain mapping information.

Wetland and waters determination data will be recorded on field data forms and each aquatic resource will be photographed. CEC will mark the boundaries of wetlands and other waters with consecutively numbered surveyor's ribbon and locate the boundaries using aerial/LiDAR topographic mapping and Trimble® Geo-XT or Geo-XH Global Positioning System (GPS) equipment. The mapping and GPS boundary locations will be used to prepare a wetland and waters delineation map.

After completing the identification, field delineation, and classification of wetlands, buffers, other waters, and floodplains within the study area, CEC will prepare a wetland and stream delineation report. The report will include a description of the classification and delineation methods, wetland and waters determination field data forms and photographs, tabulation of the type and quantities of each aquatic resource, and a wetland, waters, and floodplain delineation map showing the location, extent, and classification of each aquatic resource within the Site.

Geotechnical and Water Chemistry Investigation

A subsurface drilling plan is anticipated to be generated and implemented on all projects within Francis Drainage Maintenance. CEC will coordinate with a drilling subcontractor to perform exploratory borings at appropriate locations suitable to quantify and qualify onsite materials needed for backfilling and grading disturbed areas. Test bores will also be drilled to assess for physical and chemical properties of unreclaimed refuse and spoil as applicable.

Water quality samples may be collected from surface waters and groundwater seeps to quantify contaminant loads in the shallow aquifer. Water quality parameters may include field temperature, pH, specific conductivity, dissolved oxygen, and oxidation-reduction potential. Laboratory parameters may include acidity, alkalinity, total iron aluminum and manganese, dissolved iron aluminum and manganese, calcium, magnesium, and sulfate. Discharge measurements will be collected within and in proximity to the project location with a SonTek FlowTracker 2 Acoustic Doppler Velocity Meter. Drainage conveyances to be installed or repaired in the mitigation of dangerous impoundments or chronic AMD discharges in particular may reference the results of the water chemistry testing to facilitate a suitable selection of channel protection or lining material.

Clearing and Grubbing

CEC will design and develop a Clearing and Grubbing plan to remove all woody vegetation and accumulated trash to prepare the site for construction. Delineated wetlands and waterways will be protected by biodegradable filter sock. Clearing and grubbing and earthwork operations upslope from the residential structure will consider the use of super silt fence between the work and the structures to be protected.

Access Roads

CEC will design all-weather style construction access roads to facilitate access to the project sites. Where construction is anticipated to impact public roadways, a Maintenance of Traffic (MOT) plan will be developed using the standards from the West Virginia Department of Transportation, Division of Highways, Manual on Temporary Traffic Control for Streets and Roadways to enable construction operations while limiting impact to public travel ways and a provide safe interaction between public traffic and construction operations.

Mine Spoil Refuse and Gob Pile Reclamation

CEC will evaluate the site to identify suitable locations to spread and dispose of mine drainage precipitates and spent passive treatment media or aggregate, mine spoil refuse and gob material. Topsoil will be stockpiled to set aside valuable organic material for later use. In order to provide a soil cap over the refuse of suitable thickness, onsite borrow areas may need to be used. Subsurface investigation will be completed as needed to identify suitable borrow locations within the project area. The borrow material will be reused as a cap over the mine spoil refuse and will be topped with the stockpiled topsoil to better facilitate revegetation. The final grade will be blended into the existing topography and graded to drain in a manner that reconnects stream flows and moves overland and subsurface flows offsite.

Repair or Replacement of Existing Drainage Systems

CEC understands that existing impoundments, faulty drainage systems, or other be the cause of the drainage problems. Furthermore, an existing AML mine seal and conveyance system may be failing. As such, CEC will review the existing drainage systems and propose either maintenance, repair, replacement, or new systems be installed if conditions warrant.

Hydraulic and Hydrological Assessment, Stormwater Management, and Conveyance Structures

The purpose of this task is to prepare a stormwater management plan for collection, conveyance, and detention measures as required for post development conditions in accordance with the requirements of WVDEP-DLR-AML.

- CEC will perform a preliminary pre- and post-development hydrologic and hydraulic analysis to determine stormwater management requirements for post-development conditions as required.
- CEC will perform detailed engineering analysis and design for any stormwater collection, conveyance, and detention systems required for the site. CEC will prepare design drawings and specifications for the stormwater drainage system design to include

plan view layout, cross sections (as needed) and construction details in accordance with WVDEP-DLR-AML standards.

CEC will design open channel flow limestone ditches to capture surface runoff and ground water and direct that flow around or through the Project site. Care will be taken to divert uphill runoff around proposed grades. All designed ditches will have engineered linings to provide stability and resist tractive stream forces. Limestone may be specified for all riprap lined ditches to add alkalinity to captured waters, but non-reactive aggregate may be substituted in collection areas where neutralization (and commensurate generation of metals precipitates and flocs is to be avoided). Pipes or other hydraulic appurtenances will be designed to transport captured ditch flows where necessary. Horizontal borings will be considered as a means of relieving hydraulic pressure conveying flows through to receiving ditches. CEC will design subsurface drains (where necessary) to safely convey ground water into constructed ditches or directly into receiving streams.

CEC is experienced in hydraulic and hydrologic analysis, dynamic two (2) dimensional flow modelling, culvert and bridge design, and preparation of hydraulic reports necessary to support the findings. Natural Channel Design (NCD) techniques will be considered where appropriate as an alternative to conveyance ditches. NCD will also be considered where needed to help restore natural order to clogged and impacted streams.

Where proposed open channel ditches traverse through subsidence zones or other areas where stream water loss is evident, CEC will propose the use of grouted riprap or geosynthetic clay liners to span these locations and reduce flow loss to deep underlying mines.

Revegetation of Disturbed Areas

CEC will develop temporary and permanent revegetation plans for disturbed areas. Revegetation plans will utilize either mining reclamation standard revegetation specifications or a more diverse native non-invasive planting scenario including grass seed mixes, woody and herbaceous shrubs, and hardwood trees.

Permitting Submittals

CEC experts local to Bridgeport, will prepare and submit the following necessary permits as applicable and as determined at the pre-design meeting:

- West Virginia Department of Environmental Protection Division of Water and Waste Management (WVDEP-DWWM) National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit
- WVDEP-DWWM Section 401 Water Quality Certification permit
- United States Army Corps of Engineers (USACE) Regional General Permit for Abandoned Mine Lands (Section 404)
- West Virginia Department of Highways (WVDOH) MM-109 Encroachment Permit

Additional permits may become necessary as investigation into each of the project locations progresses. Those permits may include, but not be limited to:

- Stream Activity Application
- Fish Spawning Waiver
- Floodplain Permit
- Various Agency Technical Assistance Letters

CEC will notify the WVDEP-DLR-AML in the event that any additional permits become necessary and collaborate towards a solution.

4.0 References

We encourage WVDEP to contact the following client contacts to discuss our previous performance on similar projects. CEC has performed numerous landslide remediation projects with the following clients.

Mr. Tim Miller
Maryland Department of the Environment
Regulatory & Compliance Engineer Senior - Abandoned Mine Land Division
160 South Water Street, Frostburg, MD 21532
Phone: 301-689-1465
Email: tim.miller@maryland.gov

Mr. Lee Kaplan, PG, MPH
Posillico, Inc.
Project Executive
I750 New Highway
Farmingdale, NY 11735
Phone:917-868-5472
Email: lkaplan@posillicoinc.com

Mr. Jeff McCauley
Antero Resources Corporation
Roadway Design Manager
535 White Oaks Blvd., Bridgeport, WV 26330
Phone: 304-859-4209
Email: jmccauley@anteroresources.com

Mr. Ben Sampson
Lyons Run Watershed Association
President
Phone: 412-347-1060
Email: bsampson@sampsonmorrisgroup.com

Appendix A

AML Consultant Qualification Questionnaire

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE

Attachment "B"

PROJECT NAME	DATE (DAY, MONTH, YEAR)	FEIN
Francis Drainage Maintenance	11, January, 2022	25-1599565

1. FIRM NAME	2. HOME OFFICE BUSINESS ADDRESS	3. FORMER FIRM NAME
Civil & Environmental Consultants, Inc.	333 Baldwin Rd, Pittsburgh PA 15205	N/A

4. HOME OFFICE TELEPHONE	5. ESTABLISHED (YEAR)	6. TYPE OWNERSHIP	6a. WV REGISTERED DBE Disadvantaged Business Enterprise)
412.429.2324	1989	☐ Individual ☒ Corporation ☐ Partnership ☐ Joint-Venture	☐ Yes ☒ No

7. PRIMARY AML DESIGN OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. AML DESIGN PERSONNEL EACH OFFICE

Bridgeport Office | 120 Genesis Boulevard, Bridgeport, WV 26330 | 304.933.3119 | Daniel Martinez, PE | 9

8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM	8a. NAME, TITLE, & TELEPHONE NUMBER – OTHER PRINCIPALS
Kenneth Miller | PE | CEO Dan Szwed | PE | COO Dennis Miller | PS | Vice President & Office Lead	Kow Eshun | Principal | Geotech | 304-848-7142

9. PERSONNEL BY DISCIPLINE

117	ADMINISTRATIVE	85	ECOLOGISTS	11	LANDSCAPE ARCHITECTS	11	STRUCTURAL ENGINEERS
	ARCHITECTS		ECONOMISTS	11	MECHANICAL ENGINEERS	140	SURVEYORS
14	BIOLOGIST	4	ELECTRICAL ENGINEERS		MINING ENGINEERS	7	TRAFFIC ENGINEERS
30	CADD OPERATORS	170	ENVIRONMENTALISTS	10	PHOTOGRAMMETRISTS	179	OTHER
7	CHEMICAL ENGINEERS		ESTIMATORS		PLANNERS: URBAN/REGIONAL		
276	CIVIL ENGINEERS	44	GEOLOGISTS	1	SANITARY ENGINEERS		
18	CONSTRUCTION INSPECTORS		HISTORIANS	3	SOILS ENGINEERS		
30	DESIGNERS	1	HYDROLOGISTS		SPECIFICATION WRITER	**1169**	**TOTAL PERSONNEL**

TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE:
8 WV Professional Engineers in Bridgeport (213 companywide)

*RPEs other than Civil and Mining must provide supporting documentation that qualifies them to supervise and perform this type of work.

10. HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE? ☐ Yes ☐ No ☒ N/A

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

NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE
Novel Geo-Environmental, LLC 650 MacCorkle Avenue West St. Albans, WV 25177	geotechnical investigation services including drilling investigation and technical reporting of findings	☒ Yes ☐ No
Sturm Environmental Services Brushy Fork Road Bridgeport, WV 26330	Water chemistry testing and evaluation	☒ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No

12. Experience

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

YES Description and Number of Projects: CEC personnel have 90 years of direct Abandoned Mine Lands Remediation/Mine Reclamation Engineering experience. In 2018, CEC was awarded the Excellence in Construction Award for the Shinns Run Portals Reclamation Design Project by the Associated Builders and Contractors, Inc. CEC personnel have also designed the Ohio Abandoned Mine Lands Project – Flint Run Acid Mine Drainage that received a national award. The list below is some of the project that CEC personnel have designed in the past.

1. Stollings (White) Portals, three mine seals, sediment and erosion control
2. Norton Highwall #1 reclamation design to eliminate 8,900 LF of highwall with 11,145 LF of drainage ditches
3. Tub Run Highwall and Refuse Phase II, reclamation design to eliminate 12,500 LF of highwall with 11,400 LF of drainage ditch design and roadway design
4. Tub Run Highwall and Refuse Phase I, reclamation design to eliminate 10,000 LF of highwall with 9,900 LF of drainage ditch design with a large box culvert
5. Greenbrier Hollow Refuse, reclamation design removal of cast over the hill coal refuse pile, 2 mine seals and 1,015 LF of drainage ditch design.
6. Island AMD Passive Treatment System (non-BFS) – iron oxidation, acid neutralization, metal precipitation/collection, hydrologic conveyances
7. Sauls Run Strip and Landslide "Emergency AML Project" This project was completed from start to finish in (4) weeks including field survey, design, subsurface investigation plan, design and removal of three slips behind house on Sauls Run.
8. North Taylor AMD Passive Treatment System (non-BFS) – acid neutralization, mixing basin, aerobic wetlands, hydrologic conveyances, revegetation
9. Virginia DMME AMD Passive Treatment System (non-BFS) – sulfate reducing bioreactor, settling pond, aerobic wetlands

CEC personnel have successfully completed 20 acid mine drainage evaluation and abatement design projects.

NO

B. Is your firm experienced in Soil Analysis?

YES Description and Number of Projects: CEC has routinely completed soil analysis and acid base accounting for mining impacted properties including the West Virginia Department of Environmental Protection Office of Abandoned Mine Lands. On all of our past AML reclamation design projects, CEC performed soil analysis or had the analysis performed by subconsultants. CEC has routinely completed soil analysis on AML for stream restoration focusing on ABA, Pyritic Sulfur, and Nutrient Content. CEC has also performed soil analysis for the Oil & Gas Industry focusing on VOCs, PAHs, Phthalate Esters, Petroleum Compounds, Metals, Anion, and Radionuclides. CEC has completed soil analysis on approximately 50 projects.

NO

C. Is your firm experienced in hydrology and hydraulics?

YES Description and Number of Projects: CEC personnel have successfully completed numerous hydrology and hydraulics projects associated with bridges, box culverts, piping, ditchwork, and sediment ponds. CEC personnel have completed 60 AML related hydrology and hydraulics projects. Sabin Shrestha and Swastik Bhandari from the Bridgeport CEC office both have Master's Degree in Water Resources (hydrology and hydraulics, proficient with Flowmaster- Storm Drainage Design - Storm Drainage Modeling - Stormwater BMP Research and Design - Surface Water Hydraulics/Hydrology - HydroCad v8.0, have been published numerous times and have both passed the Professional Engineering exam and are waiting for their PE to be awarded. CEC has local industry experts as noted above in hydrology and hydraulics.

1. Shinns Run Portals (WVDEP) - field surveying, subsurface investigations of impounded mine pools, records review, HEC-RAS hydrologic evaluation, streambed seals, ditchwork, piping, subsurface drains, stream bank protection, roadbed protection, soil testing, preliminary and final designs / construction plans, dewatering operation, mine drainage treatment, opinion of cost, bid schedule, calculation brief, meeting attendance
2. Pageton (Lambert) Portals (WVDEP) - Reclamation design of coal refuse pile with 51,000 cubic yards of excavation, 24 wet mine seals, 13,700 L.F. sediment control, 1,600 L.F. ditchwork, piping, streambank protection, 24 acres revegetation, topographic surveying, construction mapping, soil testing, hydraulic studies and design, preliminary and final design, construction plans and specifications, engineers cost estimate, bid schedule, calculations brief, onsite preliminary design/pre-bid/pre-construction meetings, reporting and invoicing
3. Birds Creek Number 4 (WVDEP) - Reclamation design of coal refuse pile with 35,000 cubic yards of excavation, 8 wet mine seals, 5 bat gate designs, 18 acres revegetation, topographic surveying, construction mapping, soil testing, hydraulic studies and design, preliminary and final design, construction plans and specifications, engineers cost estimate, bid schedule, calculations brief, onsite preliminary design/pre-bid/pre-construction meetings, reporting and invoicing.

NO

D. Does your firm produce its own Aerial Photography and Develop Contour Mapping?

YES Description and Number of Projects: CEC routinely collects LiDAR topographic data and aerial imagery with more than 200 projects successfully delivered for various state, federal and private clients. Typical resolution of contour mapping is suitable to produce 1.0 ft contours. Also CEC personnel managed the North and South mapping contract for several years for the West Virginia Department of Environmental Protection, Division of Land Restoration, Office of Abandoned Mine Lands. The contract consisted of a 3 year assignment with the WVDEP and involved surveying and mapping services to be used for the design and construction of Abandoned mine lands projects located throughout the northern counties of West Virginia.

NO

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: CEC's Bridgeport office has a water resources group which has 10 staff members and has over 100 years of experience with domestic waterline design and construction. This group has also performed design and construction of several AML waterline projects including Terra Alta, Masontown, Tunnelton and 2 projects in Lewis County. CEC completes extensive water transfer projects for the oil & gas industry and municipal water supplies on approximately 50 projects. CEC personnel have also worked on over 8 waterline feasibility studies with the West Virginia Department of Environmental Protection office of Abandoned Mine Lands.

CEC staff members have extensive experience in the evaluation of aquifer degradation as a result of mining to determine if abandoned mine lands impact to groundwater and surface water. In the Town of Newburg, WV CEC looked at impact for 96 homes. Correspondence from the Newburg PSD indicated past mining operations may contribute to their water quantity and quality problems. The Project involved a Preliminary Investigation to determine the impact pre-law mining had on the water resources within the study area. The investigation included project mapping, public and private record search and surface, ground water sampling along with resident interviews, geologic and hydraulic investigations and review and identification of historic mining operations in or near the project area. Mining has impacted potable water supplies and a further determination was made if the mining occurred before or after the Surface Mining and Reclamation Control Act of August 3, 1977 (pre-law mining). Pre-law impacts qualify for assistance from the Abandoned Mine Lands program. The investigation concluded all seven (7) resident's water supplies have been impacted by abandoned pre-law deep mines and qualify for AML funding. Alternatives investigated for mediation included No Action, Individual Well and Water Treatment Systems, and extension of the Norton Harding Jimtown PSD distribution system to the affected 7 residents at an estimated cost of $378,000.

Another project involved extending approximately 15 miles of waterline to serve 103 residents whose water supply had been diminished or contaminated. The project involved a preliminary investigation to determine the impact pre-law mining had on the water resources within the study area. This study included surface and ground water sampling and reporting; public and private record search to determine if residents potable water supply have been impacted by mining; and secondly, if the mining that impacted potable water supplies occurred prior to the Surface Mining and Reclamation Control Act of August 3, 1977. Pre-law impacts qualify for assistance from the Abandoned Mine Lands (AML) Program. The preliminary investigation included a complete hydrologic and geologic investigation of the study area and development of supporting documents and maps to apply for the AML&R Grant for the waterline extension. The study determined that residents water supplies have not been impacted by abandoned mine lands.

On both examples, Dennis Miller, PS and Gregory Linder, PE had direct project experience from field sample collection to drafting and report preparation.

NO

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

YES Description and Number of Projects: CEC routinely assesses AMD and designs passive and active treatment management practices for treatment of acid mine drainage. CEC has completed approximately 20 AMD remediation projects. CEC employs mining geochemists with nearly 30 AMD remediation projects in prior and current employment.

Ben Faulkner, LRS has 41 years of experience working in West Virginia on Acid Mine Drainage projects and is chairman of the Acid Mine Drainage Task Force. Dennis Miller, PS has over 25 years of experience working on Acid Mine Drainage projects (most of which with Ben Faulkner), Timothy Denicola, PG CFM has 5 years of experience with acid mine drainage projects.

NO

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

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Faulkner, Ben B. Bridgeport, WV Office	41	42	2

Brief Explanation of Responsibilities
Mr. Faulkner provide technical expertise and oversight with regard to all aspects of the project. His start to end project delivery experience and history of research in environmental matters will aid the project team to deliver a successful project tailored to the needs of the WV DEP.

EDUCATION (Degree, Year, Specialization)
Graduate Certificate, 1986, Environmental Studies, WV College of Graduate Studies
B.S., 1979, Biology, Concord University

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
-Society of Environmental Toxicology and Chemistry
-West Virginia Mine Drainage Task Force
-Society for Freshwater Science
-West Virginia Coal Association, Inc.
-International Mine Water Association
-American Society of Mining and Reclamation
-Society for Mining, Metallurgy, and Exploration, Inc.
-Air & Waste Management Association
-American Society of Reclamation Sciences

REGISTRATION (Type, Year, State)
Licensed Remediation Specialist, West Virginia

Approved Person - Surface Mine/Quarry Permit Applications, West Virginia Department of Environmental Protection Mines and Minerals

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Denicola, Timothy A. Bridgeport, WV Office	5	8	0

Brief Explanation of Responsibilities
Mr. Denicola is a project manager whose multi-disciplined background includes expertise in geochemistry, geology, and hydrology. His experience includes mine water remediation, ecosystem restoration, and environmental assessments and remediation. Specific capabilities include soil, surface and groundwater chemical analysis, hydrologic data collection, design of mine water treatment systems, design of stream and wetland restoration, geotechnical soil and rock exploration drilling, construction quality assurance, environmental assessments and remediation, and development of various spill control plans. Mr. Denicola manages projects from conceptual through final completion in collaboration with a qualified team of personnel.

EDUCATION (Degree, Year, Specialization)
M.S., 2013, Geology, West Virginia University
B.S., 2006, Chemistry, Clarion University of Pennsylvania

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
Member of several northern WV non-profit watershed associations

REGISTRATION (Type, Year, State)
Erosion and Sediment Control Responsible Personnel (Green Card), 2015, Maryland, [redacted]

State Highway Administration Erosion and Sediment Control (Yellow Card), 2015, Maryland, [redacted]

Association of State Floodplain Managers (ASFPM) Certified Floodplain Manager (CFM), [redacted]

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Miller, Dennis E. Bridgeport, WV Office	24	33	0 Domestic 5 AML

Brief Explanation of Responsibilities

Mr. Miller will be the Principal in Charge for these projects. Of his 33 years of experience, 24 have been spent working on and with the West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands and Reclamation Bond Forfeiture Program and Emergency Program. Mr. Miller has performed water sampling collection, surveying and mapping, design plan preparation, construction monitoring and post design/construction water quality monitoring of passive AMD projects. Mr. Miller has worked on over 49 AML projects that were study and or design, he has also work on over an additional 50 with the emergency program and bond forfeiture program. Mr. Miller also has been the principal in charge and surveyor in charge of several large transportation projects. Over the past 8 years Mr. Miller has served as the office lead and surveyor in charge on over 100 roadway improvement projects including bridge replacement projects, roadway slip repair projects and bridge replacement projects.

EDUCATION (Degree, Year, Specialization)

A.S., Surveying, Glenville State College, 1989

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
Ohio Oil & Gas Association Contractors Association of West Virginia	Professional Surveyor, 1993, West Virginia Professional Surveyor, 2007, South Carolina Approved Person - Surface Mine/Quarry Permit Applications, West Virginia Department of Environmental Protection Mines and Minerals

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Martinez, Daniel A. Bridgeport, WV Office	2	6	1

Brief Explanation of Responsibilities

Mr. Martinez will serve as the project manager and oversee all project related activity. He will also act as one of the designer's under the guidance of Mr. Faulkner and our technical specialist, Dr. Jeffrey Skousen . Mr. Martinez brings a diverse background of more than 7 years of experience in various aspects of civil engineering to include project management, land development, ecosystem restoration, transportation engineering, and hydraulics and hydrology.

EDUCATION (Degree, Year, Specialization)

B.S., 2014, Civil Engineering Technology, Fairmont State University

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
American Society of Civil Engineers (ASCE) American Council of Engineering Companies WV (ACECWV)	Professional Engineer, 2021, West Virginia Professional Engineer, 2021, Pennsylvania

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
Eshun, Kow O. Bridgeport, WV Office	YEARS OF AML DESIGN EXPERIENCE: 10	YEARS OF AML RELATED DESIGN EXPERIENCE: 10	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 2

Brief Explanation of Responsibilities
Mr. Eshun is a Principal with in CEC's Bridgeport Office and will be responsible for geotechnical aspects as well as monitoring project progress.

EDUCATION (Degree, Year, Specialization)
B.S., 2005, Civil Engineering, Kwame Nkrumah University of Science and Technology
M.S., 2013, Geotechnical Engineering, The University of Akron

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
American Society of Civil Engineers, Project Management Institute, Deep Foundations Institute	Professional Engineer – TX [redacted] KY [redacted] MD [redacted] WV [redacted] PA [redacted] VA [redacted] OH [redacted]

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
Littler, Jason H. Bridgeport, WV Office	YEARS OF AML SURVEY EXPERIENCE: 15	YEARS OF AML RELATED SURVEY EXPERIENCE: 24	YEARS OF DOMESTIC WATERLINE SURVEY EXPERIENCE: 5

Brief Explanation of Responsibilities
Mr. Littler has over 24 years of experience including positions Survey Practice Lead, Survey Manager and AML Mapping Program manager. Mr. Littler served as Survey Project Manager in charge of surveying and mapping for the WVDEP Office of Abandoned Mine Lands & Reclamation Northern and Southern Mapping Contracts, on these projects with the West Virginia Department of Environmental Protection, Division of Land Restoration, Office of Abandoned Mine Lands. These contracts consisted of a 3 year assignment with the WVDEP and involved surveying and mapping services to be used for the design and construction of Abandoned mine lands projects located throughout the northern counties of West Virginia. Mr. Littler was in charge of the successful completion of the mapping for 93 individual projects with a total mapped acreage of 10,800 acres. Mr. Littler was responsible for the client maintenance, field visits, billing, invoicing and oversight for this three year assignment. Also Mr. Littler has experience as a roadway surveyor and Survey Project Manager. He has been in direct charge with as many as 12 survey crews, which all reported to him and were supervised by him for direction and client satisfaction. He has been in professional charge of several boundary surveys ranging in size from small lot and partition surveys to large multi-tract 1000 acre surveys.

EDUCATION (Degree, Year, Specialization)
A.S., 1995, Civil Engineering Technology, West Virginia Institute of Technology
B.S., 1996, Engineering Technology (Survey Emphasis), West Virginia Institute of Technology

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
West Virginia Society of Professional Surveyors Ohio Oil & Gas Association	Professional Surveyor, 2006, West Virginia

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
Adams, Travis W. Bridgeport, WV Office	YEARS OF AML DESIGN EXPERIENCE: 20	YEARS OF AML RELATED DESIGN EXPERIENCE: 23	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 23
Brief Explanation of Responsibilities Mr. Adams will be a part of any domestic waterline design that may accompany the projects associated with this solicitation.			
EDUCATION (Degree, Year, Specialization) B.S., 1998, Environmental Science (Emphasis on Water Quality), West Virginia University			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)		

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE AML DESIGN SERVICES
1. AutoCAD Civil 3D
2. ESRI ArcGIS
3. Topcon, Nikon, and Trimble Robotic Total Stations
4. Topcon, Trimble RTK-GPS
5. Leica Terrestrial LIDAR 3D Scanner
6. Velodyne Mobile LIDAR (ground and aerial based)
7. DJI small unmanned aircraft system (sUAS)
8. Topcon, Nikon automatic levels
9. Trimble GeoExplorer 6000 Series
10. YSI ProPlus Multi-parameter Probe
11. Marsh McBirney Flow Meter
12. Hanna HI 98703 Turbidity Meter
13. Hanna HI 99121 Direct Soil pH Meter
14. Submersible and Peristaltic Pumps
15. Mini RAE 3000 Portable Handheld VOC Monitor
16. Corel 98 Suite
17. Microsoft Office Suite
18. North American Green Erosion Control Blanket Software
19. KY Pipe Water and Sewer Line Software
20. Bentley MicroStation with InRoads

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
Border Wall RGV 08 and RGV 09 Design Build - Civil, Structural, H&H, Electrical Rio Grande Valley, Texas	United States Army Corps of Engineers, 819 Taylor St, Fort Worth, TX 76102	Border wall structural design and layout, new road design, site grading, stormwater systems, surveying/mapping, construction stakeout and inspection	$541,000,000	Design: 100% Construction: 20%
Sand Spring Run - Stream Sealing and Restoration Frostburg, Maryland	Maryland Department of the Environment - Abandoned Mine Land Division 160 South Water St, Frostburg, Maryland 21532	Stream restoration design and Geosynthetic liner design and sealing, sanitary sewer relocation.	$491,000	Design: 100% Construction start: Spring 2022
Lyons Run AMD Remediation Project and Mitigation Bank Westmoreland County, PA	Lyons Run Watershed Association 2500 Eldo Road Monroeville, PA	Historic water quality review, water quality sampling, remediation design, development of mitigation banking prospectus, ecological delineation, survey.	$1,800,000	Design: 90% Construction Start: Spring 2022
Export/Delmont AMD Remediation Westmoreland County, PA	Lyons Run Watershed Association 2500 Eldo Road Monroeville, PA	Historic water quality review and sampling, Ecological delineation, chemical loading and treatment calculations, engineering design of an automated calcium oxide slurry treatment system and development of solids handling practices.	$5,500,000	Design: 30% Construction Start: 2023
MND 9 Landslide Stabilization, Moundsville, WV	HG Energy, LLC 5260 Dupont Road Parkersburg WV	Site survey, ecological delineations, permitting, geotechnical engineering design of the landslide remediation and stabilization, construction inspection and compaction testing.	$350,000	Design: 100% Construction: 80%
Kirk Pad Landslide Remediation Salem, WV	Antero Resources Corporation 535 White Oaks Blvd Bridgeport WV	Site assessment, topographic survey, permitting, Geotechnical investigation and remediation design.	$300,000	Design: 100% Construction: 80%

River Road Slips Landslide and Road Repair Monongalia County, WV	WVDOH District Four 2460 Murhpys Run Road Bridgeport, WV 26330	Complete surveying, permitting, right of way, utility coordination, and geotechnical investigation/design of pile and lag walls, soil nail walls, and tieback walls for 20 landslides along County Route 45 (River Road) in Morgantown.	$4,250,000	Design: 100% Construction start: Spring 2022
Moose Lake subsidence mitigation and construction inspection for multiple panels Cameron, WV	MarkWest Energy Partners, LP 4600 J. Barry Court Suite 500 Canonsburg, PA	Engineering, survey, geotechnical, permitting, and construction engineering and inspection in support of subsidence mitigation around sensitive infrastructure during long wall mining operations.	$3,000,000	Design: 100% Construction: 50%
Monongah Precast Mine Grouting Plan and Bridge Replacement, Monongah, WV	WVDOH District Four 2460 Murhpys Run Road Bridgeport, WV 26330	Mine subsidence evaluation, mine subsidence grouting and stabilization plan, survey, ecological delineations and permitting, geotechnical investigation and design, bridge replacement design, roadway improvements and staged construction design.	$2,500,000	Design: 100% Construction start: Summer 2022
Buffalo Creek Mine Subsidence Bridge Replacement, Mannington, WV	EQT Production Company 400 Woodcliff Drive Canonsburg PA WVDOH District Four 2460 Murhpys Run Road Bridgeport, WV 26330	Mine subsidence evaluation, survey, ecological delineations and permitting, geotechnical investigation and design, bridge replacement design, roadway improvements and temporary traffic control plans.	$2,500,000	Design: 90% Construction start: November 2021
TOTAL NUMBER OF PROJECTS: 10		TOTAL ESTIMATED CONSTRUCTION COSTS: $561,691,000		

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 FIRMS RESPONSIBILITY
Border Wall RGV 08 and RGV 09 Design Build – Civil, Structural, H&H, Electrical Rio Grande Valley, Texas	Border wall structural design and layout, new road design, site grading, stormwater systems, surveying/mapping, construction stakeout and inspection.	United States Army Corps of Engineers, 819 Taylor St, Fort Worth, TX 76102	2023	$541,000,000	$35,000,000
Guyan Creek Bridge Construction Engineering Mount Olive, WV	Demolition Plan, Erection Plan, Shoring Design, Temporary Bridge Design	West Virginia Division of Highways, Engineering Division, Capitol Complex, Building 5, 1900 Kanawha Blvd., East, Charleston, WV	2021	$751,306	$751,306
Marshall County Airport Extension NPDES Permitting Marshall County, WV	NDPES permitting and construction services	Ohio-West Virginia Excavating, Co. 56461 Ferry Landing Road Shadyside OH	2023	$3,000,000	$15,000
Exelon Clearsight TX Power 1 Surveying Lubbock, TX	Right-of-way mapping, vegetation analysis, power line compliance reporting	South Plains Electric Cooperative Incorporated	December 2021	Undisclosed	$60,000
Cubby's Daycare Site Development Bridgeport, WV	Water/sewer line design, Surveying, Construction Inspection, Geotechnical and Civil Engineering	CUBBY'S CHILD CARE CENTER, INC 801 Genesis Blvd Bridgeport, WV 26330	Summer 2022	$3,000,000	$300,000
Hawk's Nest State Park Improvements Ansted, WV	Civil Site design, ADA Pathways, Construction Administration	West Virginia Division of Natural Resources 324 4th Avenue South Charleston, WV 25303	Spring 2022	Undisclosed	$200,000

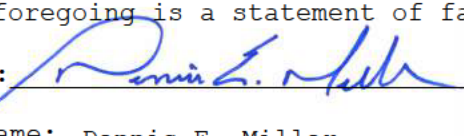
16. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD				
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
Beaver Creek Passive AMD Treatment Preston County, WV	Friend of the Cheat, Inc. 119 South Price Street Suite 206 Kingwood, WV 26537	$296,000	2020	Yes
Shinns Run Portals Subsidence and Portal Sealing Shinnston, WV	WVDEP, Office of Abandoned Mine Lands 601 57th St. SE, Box 20 Charleston, WV 25340	$1,617,796	2016	Yes
Mcalpin Portals and Drainage Mine portal sealing and drainage structure maintenance Bridgeport, WV	WVDEP, Office of Abandoned Mine Lands 601 57th St. SE, Box 20 Charleston, WV 25340	$1,351,743	2018	Yes
Charles Pointe Development Commercial site development and mass earthwork with complete infrastructure design Bridgeport, WV	Genesis Partners, LP P.O. box 1000 Bridgeport, WV 26330	$20,000,000	2018	Yes
Lower Dempsey Stream Restoration highwall grading on AML Logan, WV	Ecosystem Investment Partners, LLC 5550 Newbury St, Ste B Baltimore, MD 21209 Canaan Valley Institute, Inc. 494 Riverstone Rd Davis, WV 26260	$5,200,000	2016	Yes
Georges Creek Shaft Stream restoration and sealing and mine portal closure Frostburg, WV	Maryland Department of the Environment - Abandoned Mine Land Division 160 South Water St, Frostburg, Maryland 21532	$5,216,206	2018	No
Dulaney Subsidence Damage Complaint Mine Subsidence Evaluation and Report for Structure Damage Colliers, WV	State of West Virginia Board of Risk and Insurance Management 1124 Smith Street Suite 4300 Charleston, WV 25301	undetermined	2020	N/A
St. Clair Subsidence Damage Complaint Mine Subsidence Evaluation and Report for Structure Damage Brenton, WV	State of West Virginia Board of Risk and Insurance Management 1124 Smith Street Suite 4300 Charleston, WV 25301	undetermined	2019	N/A

17. 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
Corduroy Inn at Snowshoe	Omni Associates 207 Jefferson St. Fairmont, WV 26554	$21,000	2019	Yes	Omni Associates
MCPARC Wave Pool Improvements	Omni Associates 207 Jefferson St. Fairmont, WV 26554	$24,000	2018	Yes	Omni Associates
Elkins Mon General	Omni Associates 207 Jefferson St. Fairmont, WV 26554	$24,000	2018	Yes	Omni Associates
East Side Fire Station	Omni Associates 207 Jefferson St. Fairmont, WV 26554	$22,000	2019	Yes	Omni Associates
Bridgeport Rec Center, Site Development	City of Bridgeport 515 West Main St. Bridgeport, WV 265330	$600,000	2019	Yes	Omni Associates
First Exchange Bank	Omni Associates 207 Jefferson St. Fairmont, WV 26554	$23,000	2019	Yes	Omni Associates
Pike Fork Bridge Construction Engineering Webster Springs, WV	WVDOH, District 7 131 highland Drive West, WV 26452	$1,600,000	2019	Yes	Bear Contracting, LLC

18. 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.

Civil & Environmental Consultants, Inc. (CEC) personnel have experience with esoteric aspects of mine land reclamation and mine water remediation. CEC does not employ generic remediation strategies, but assesses and evaluates critical details of water chemistry, reaction dynamics, soil properties, hydrologic properties, regional geology, and client and landowner needs. CEC personnel have decades of experience in the reclamation community, familiarity with modern reclamation techniques, and access to a suite of engineering design/geochemical software. Site grading, volumetric analysis, and hydraulic assessments constitute a bulk of work completed by CEC Bridgeport. CEC presents an interdisciplinary team utilizing a data and client driven approach to mine land reclamation and mine water remediation.

19. The foregoing is a statement of facts.

Signature:  Title: Vice President

Date: January 11, 2022

Printed Name: Dennis E. Miller

Appendix B

AML and Related Project Experience Matrix

AML and RELATED PROJECT EXPERIENCE MATRIX

PROJECT	Exp. Basis C Corp. P Personnel	Additional Info Provided in Section (s) **	PROJECT EXPERIENCE REQUIREMENTS															PRIMARY STAFF PARTICIPATION/CAPACITY *** M=Management P=Professional					
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation	Portal/Shaft Closure	Hydrologic/Hydraulic Design/Eval.	Remining Evaluation	Mine/Refuse Fire Abatement	Subsidence Investigation Mitigation	Hazardous Waste Disposal	Project Specifications	Water Quality Evaluation/ Mitigation/ Replacement	Construction Inspection/ Management	Water Treatment	Equipment/ Structure Removal	Stream Restoration	Geotechnical/Stability	Gregory Linder, P.E. Senior Design Engineer	Dennis Miller, PS QA/QC Manager	Ben Faulkner, LRS Technical Advisor	Jason Littler, P.S. Survey Manager	4 Survey Crews	5 CADD Operators
Francis Mine Drainage	P		X	X		X				X	X	X		X				P	P	P			
McAlpin Portals and Drainage	P		X	X	X	X			X		X	X		X		X	X	M			P	P	P
Hodgesville (Wright) Mine Blowout	C		X	X	X	X			X		X	X		X				M			P	P	P
Arlington (Gain) Highwall	C		X			X					X							M	P		P	P	P
Camden (Hartley) Dangerous Landslide*	C		X			X					X	X					X	M			P	P	P
Shinns Run Portals	P			X	X	X			X		X	X		X		X		M	P		P	P	P
Special Rec. Multiple Projects	C		X	X	X	X			X		X	X		X			X	M			P	P	P
Norton Highwall #1	P		X	X	X	X					X			X	X			M	P		P	P	P
Tub Run Highwall and Refuse Phase II	P		X	X	X	X				X	X			X	X							P	P
Tub Run Highwall and Refuse Phase I	P		X			X					X				X							P	P
Newburg Waterline Feasibility Study	P					X						X		X				M					P
Point Mtn. Waterline Feasibility Study	P					X						X		X				M					P
Greenbrier Hollow Refuse	P		X	X	X	X					X			X	X							P	P
Sauls Run (Carpenter) Landslide	P		X	X	X	X					X			X	X		X		M		P	P	P
Pageton (Lambert) Portals	P		X	X	X	X					X			X	X							P	P
Birds Creek #4	P		X	X	X	X					X			X	X							P	P
Church Creek/Manown Highwall	P		X		X	X					X				X	X						P	P
Racine (Bradshaw) Portals	P			X	X	X					X				X	X						P	P
Hampton #4 Maintenance	P		X			X					X	X				X	X		M		P	P	P
Howesville Sites	P		X	X	X	X				X	X	X			X	X	X	M				P	P
Sandy Run Highwall and Portals	P		X	X	X	X				X	X	X			X	X	X	M				P	P
Wilsie-Rosedale Waterline Feasibility I D. # 324	P					X						X		X			X						P
Laurel Valley (Daniels) Landslide	P		X			X					X						X	M	M		P	P	P
Price Hi l Airshaft/Buildings	P			X	X	X					X	X		X	X		X		M		P	P	P
Glady Fork AMD Trmt. Plant.	P			X		X					X	X	X	X			X	M	M		P	P	P
Weaver Portals, Ph. I & II	P		X	X	X	X			X		X	X	X	X	X	X	X	M	M		P	P	P

AML and RELATED PROJECT EXPERIENCE MATRIX

PROJECT	Exp. Basis C Corp. P Personnel	Additional Info Provided in Section (s) **	PROJECT EXPERIENCE REQUIREMENTS															PRIMARY STAFF PARTICIPATION/CAPACITY *** M=Management P=Professional					
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation	Portal/Shaft Closure	Hydrologic/Hydraulic Design/Eval.	Remining Evaluation	Mine/Refuse Fire Abatement	Subsidence Investigation Mitigation	Hazardous Waste Disposal	Project Specifications	Water Quality Evaluation/ Mitigation/ Replacement	Construction Inspection/ Management	Water Treatment	Equipment/ Structure Removal	Stream Restoration	Geotechnical/Stability	Gregory Linder, P.E. Senior Design Engineer	Dennis Miller, PS QA/QC Manager	Ben Faulkner, LRS Technical Advisor	Jason Litter, P.S. Survey Manager	4 Survey Crews	5 CADD Operators
Nixon Run AMD	P		X	X	X	X					X	X		X	X	X	X		M		P	P	P
Taylor Waterline Feasibility, I D. # 309	P					X						X		X									P
Poplar Ridge Waterline Feasibility, I D. # 298	P					X						X		X									P
Summit Park Waterline Feasibility I D. # 288	P					X						X		X									P
Fairmont (Hendrickson) Subsidence	P			X		X			X		X	X					X		M		P	P	P
Tunnelton (Dillsworth) Landslide	P			X		X			X	X	X				X		X	P	M		P	P	P
Arlington (Cox) Drainage	P			X	X	X			X		X		X				X		M		P	P	P
Sauls Run Strip and Landslide	P		X			X					X		X			X	X	P	M		P	P	P
Hodgesville Waterline Feasibility I D. # 275	P					X						X		X									P
McElwain Waterline Feasibility I D. # 271	P					X						X		X									P
Old Bridgeport Hill Mine Drainage, Ph II	P		X	X	X	X			X		X	X		X	X	X	X		M		P	P	P
Flint Run East Acid Mine Drainage	P		X			X				X	X	X		X	X	X	X			P		P	P
Murray City AMD and Art Project	P			X	X	X					X	X		X								P	P
Danehart Acid Mine Drainage	P		X			X			X		X	X		X			X		M			P	P
Nutters Tipple Bond Forfeiture	P		X			X				X	X				X	X	X		M			P	P
Lake Milton Acid Mine Drainage	P		X			X					X	X		X	X	X	X			P		P	P

* List whether project experience is corporate or personnel based or both.

** Use this area to provide specific sections or pages if needed for reference.

*** List Primary Design personnel and their functional capacity for the projects listed.

Attachment "C"

Appendix C

Key Personnel Qualifications & Resumes

Ben B. Faulkner
Senior Consultant

43 YEARS OF EXPERIENCE

EDUCATION

Certificate, Environmental Studies, WV College of Graduate Studies, 1986

B.S., Biology, Concord University, 1979

Ben Faulkner is experienced in all environmental aspects of mining with over 40 years of experience in environmental matters. He has enjoyed diverse perspectives as environmental permit manager, regulator, preparer, researcher, and consultant. His focus has been on environmental compliance and characterization of mined properties, with 5 years of mine law enforcement and over 35 years as industry manager, academic research associate, and private consultant to the coal, hard rock, and aggregate mining industries. His experience spans working in state mining programs in IL, OH, KY, PA, SC, TN, TX, VA and WV and CERCLA projects in GA, TN and OH. International projects include USVI, Canada, and Wales. He is recognized as a Federal Court expert witness in characterization and chemical/passive treatment of mine drainage as well as land reclamation and aquatic restoration/evaluation of dramatically disturbed lands. He is the only person to serve on both editorial committees of the Office of Surface Mining's Acid Drainage Technical Initiative for coal and metal mining sectors. He is also qualified through ASTM as an Environmental Professional for the purpose of conducting Environmental Site Assessments, Environmental Compliance Audits, and Due Diligence Inquiries. Recent work with USDoE grant took him to over 140 mine sites in 5 states for characterization of drainage treatment and precipitates potential for Rare Earth Elements recovery.

PROJECT EXPERIENCE

Copper Basin Project, OXY, USA - Glenn Springs Holdings, Inc., Ducktown Polk County, TN*

Ben 1997-current. Mr. Faulkner was engaged by OXY subsidiary GSHI to lead the initial investigation of water quality at this former copper mining and sulfuric acid manufacturing site in TN. As the project matured to a Voluntary Cleanup Oversight and Assistance Program project under CERCLA, Faulkner provided characterization of the surface water impacts from mine waste and identified a remediation strategy at the several thousand-acre site in two watersheds. Since 1997, Faulkner has been a principal investigator and designer at this environmental award-winning site. This project has been championed by both the Tennessee Department of Conservation and Environment and USEPA as a model for the nation to deal with CERCLA mine sites because of the prompt, dramatic improvement in aesthetics and water quality in the affected watersheds and the recovery of the Ocoee River. The project received the 2015 TN Governor's Environmental Stewardship Award, allowing OXY to negotiate a settlement with USEPA. Faulkner was the principal designer of passive systems at the project, and participated in the establishment of Biological Performance Goals, Annual Macroinverebrate Monitoring, Stream Habitat Restoration and Wetland efforts and banking, Waste Characterization and Remediation, preparation of Engineering Evaluation/Cost Analysis (EE/CA) and Remedial Investigation documents. He has

EXPERTISE

Experienced wheel loader and track excavator operator

REGISTRATIONS

Licensed Remediation Specialist

- [redacted]

CERTIFICATIONS

Certified Blaster, West Virginia Department of Environmental Protection Ofice of Explosives and Blasting

Class 32 Safety Sensitive Personnel, West Virginia Office of Miner's Health, Safety & Training

MSHA Surface Miner, Mine Safety And Health Administration

8-hour HAZWOPER Refresher Training, Safety Unlimited, Inc.

Hydrogen Sulfide Awareness Training, Safety Unlimited, Inc.

40-Hour OSHA HAZWOPER, Occupational Safety & Health Administration

Environmental Professional, ASTM

Approved Person - Surface Mine/Quarry Permit Applications, West Virginia Department of Environmental Protection Mines and Minerals

Heartsaver CPR AED, American Heart Association

SafeLand USA - Basic Orientation, PEC Safety

West Virginia Scientific Collecting Permit, Division of Natural Resources

Private Applicator Certification, Tennessee Dept. of Agriculture

10-Hour OSHA Construction Safety (Occupational Safety & Health Administration), OSHA

ATV Safety Institute Training, ATV Safety Institute

Recreational Off-Highway Vehicle Training, Recreational Off-Highway Vehicle Association

Phase I and II Environmental Site Assessment, ASTM

E1527 Standard Practice for Phase I Environmental Site Assessment, ASTM

served as curator of historic and remediation images for the documentation of efforts at the site. He continues to monitor the re-establishment of habitat and fauna at the site through focused monitoring of streams and wildlife. He materially participates in field monitoring and/or evaluation of a diverse list of environmentally focused activities at the project. He coordinates the Wildlife Habitat Council Program. He has reported on the approach and progress of the project at a number of state, national, and international symposia.

Columbia Phosphorous Facility, OXY, USA, Glenn Springs Holding, Inc., Columbia Maury, TN*
2008-current. OXY, USA's subsidiary GSHI operated a phosphorous mining and processing facility near Columbia, TN until the 1970's. Mr. Faulkner was commissioned to pioneer the removal of P4 and other contaminants from a wastewater stream from the legacy property. He applied successful principles in constructed treatment wetlands to design two phases of passive systems to successfully remediate the contaminants. He continues to assist GSHI in monitoring the site and development of wildlife habitat for their Wildlife Habitat Council Program.

Coal Mine Drainage Issues in TN, various, statewide, TN*
2005-2010. Mr. Faulkner was engaged to characterize drainage issues from coal mine operations at several coal interests in the State of TN. His clients included Crossville Coal and Sequatchie Valley Coal treatment issues.

Copperhill Industries Special Projects, Copperhill Industries, Copperhill Polk, TN*
2013-2018. Mr. Faulkner has assisted this materials reprocessing firm with stormwater and NPDES permit requirements on a CERCLA/RCRA property. He has collected and evaluated surface and groundwater samples to prepare detailed plans for waste and water management including surface diversions and passive treatment systems. Faulkner has also assisted the firm with collection and analysis of mine waste materials for the purpose of characterization and marketing.

Greenbrier Streams Biosurvey, Greenbrier Minerals, a subsidiary of Coronado Coal LLC, Anjean Greenbrier, WV*
1984-current. Mr. Faulkner has conducted macroinvertebrate monitoring and stream characterization using EPA's Rapid Bioassessment Protocol and WVSCI methods at over 40 sites within an environmentally sensitive 30,000-acre property. Faulkner is wholly responsible for conducting the field work, works closely with a Society for Freshwater Science qualified taxonomist for identification to the genus level, and prepares the appropriate reports for NPDES and Aquatic Ecosystem Protection Plans. The reports are cumulative for the 30+ year study.

Acid Mine Drainage Bond Forfeiture Project, WVDEP, statewide, WV*
1987-2002. When coal operations fail to meet their reclamation and water quality obligations under their environmental permits, the regulatory authority revokes their permits and they forfeit their performance bonds. For 14 years, Mr. Faulkner was the Project Principal for a contract to evaluate the water quality impacts from 890 revoked sites. He either personally sampled or supervised the extended water sampling effort for these sites in 39 counties, and maintained a database of site information and water quality. He represented WVDEP in negotiations with US Department of Interior Office of Surface Mining, Reclamation and Enforcement in developing policy and a program for dealing with water quality at revoked sites, including the characterization and prioritization of the sties, designing and implementing chemical and passive treatment systems, evaluations of the treatment, and policy refinement. Mr. Faulkner worked closely with the Stream Restoration Group and Abandoned Mine Lands (AML) offices of WVDEP to coordinate mitigation efforts and served as special consultant to the WVDEP Director for special projects. He regularly assessed stream impacts for the State by macroinvertebrate monitoring using EPA's Rapid Bioassessment Protocol.

Problematic Active Mine Drainage Inventory, WVDEP, statewide, WV*
1984-2001. Beginning in 1994, the WV Legislature ordered an inventory of problematic drainage at active coal mine sites that threatened the solvency of the Special Reclamation Fund. The fund is generated through taxes on the coal industry and used by WVDEP to address delinquent land reclamation and water quality issues. Mr. Faulkner served as Project Principal under a personal services contract with WVDEP to work closely with reclamation inspectors to sample and inventory raw water sources that required treatment to meet effluent limits. This field work was repeated in 1996, 1998, and 2000 and remains the most comprehensive study of mine water quality in the state. Mr. Faulkner coordinated the identification, sampling, laboratory contracts and data management, and prepared detailed GIS analysis of the occurrence, source, chemical loading, and treatment technology from the over 600 sources of drainage identified in the study.

AML Problem Area Descriptions - Remediation Projects, former employer, statewide WV & OH*
1987-2015. Mr. Faulkner field reviewed hundreds of Abandoned Mine Lands sites in WV and prepared Problem Area Descriptions for the State of WV. After prioritization and selection of the individual project, Mr. Faulkner prepared mitigation alternatives that addressed land stabilization and water quality improvement. Some of these projects were watershed level and others were focused sites. He worked closely with mining engineers, land surveyors, and other scientists to design detailed reclamation plans and treatment strategies to accomplish these objectives in both WV and OH.

West Virginia DNR Surface Mine Reclamation Inspector, WVDNR, predecessor to WVDoE and WVDEP, statewide, WV*
1979-1984. Mr. Faulkner began his environmental career as a State Mine Inspector in McDowell and Wyoming Counties. There he inspected over 100 deep mine operations, 30 surface mine operations, and a number of coal preparation facilities and refuse areas. He received training in coal refuse site inspection, hydrology and drainage control, and best management practices. He transferred to Greenbrier/Fayette/Nicholas/Summers Counties where he inspected a dozen limestone quarries and over 100 mine sites. In this capacity, he reviewed mine permit applications, oversaw the permit application process, and ensured environmental compliance of the permits when issues. He had statewide responsibilities with special drainage projects

Elgin Equipment Water Quality Projects, Elgin Equipment Group- Norris Screen & Manufacturing, Cook Legacy Water & Energy, WV, VA, PA, IL, CA*
2013-2015. Elgin Equipment Group is a leading global manufacturer of products and solutions for the mining and materials handling industries. Mr. Faulkner was contracted by Elgin to evaluate the application and development of proprietary pressurized membrane technologies and proprietary anti-biological coatings of water handling equipment. This work involved Mr. Faulkner's field and laboratory efforts to characterize mine drainage and the bench/pilot/full-scale application of pressurized membrane separation technologies to achieve metals, selenium, chloride, sulfate, and other TDS treatment objectives at several mine sites and shallow groundwater mitigation sites in several states. Mr. Faulkner also designed and conducted laboratory efforts to demonstrate the efficacy of a proprietary equipment coating in resisting mollusk colonization.

Mine Drainage Investigation, Luminant Mining, TX*
2015-2016. Mr. Faulkner has investigated problematic mine drainage at Luminant's Oak Hill lignite coal surface mine and submitted a work plan for further characterization of the hydrology of the site. Working with Dr. Jeff Skousen of WVU, the team addressed limnology of a mine pit, groundwater and surface water monitoring to gather information to remediate problematic drainage.

Mission Coal Assessment, confidential, two mine complexes in West Virginia, two mine complexes in Alabama
Role: Senior Consultant
In 2019 a mining company sought information in a confidential bid for mining assets in a bankruptcy case. A team of CEC mining professionals was engaged through counsel to review available records and field reviewed the mine properties (totaling several thousand acres and hundreds of permits) for due diligence and environmental compliance. Ben Faulkner reviewed all records and was responsible for field review of all Alabama properties.

Inventory of Rare Earth Elements from Coal Mine Drainage , WVU Research Corporation - US Department of Energy Grants, Appalachian Coal Region*
2017. Faulkner contacted major coal producers in WV,VA,OH,PA,MD and made arrangements for confidential sampling of acidic mine drainage and precipitates at over 140 treatment facilities. He collected the samples and inventoried the reserves and potential for extracting strategic rare earth elements from the drainage.

Painesville Plant Site , OXY, USA - Glenn Springs Holdings, Inc. , Painesville, OH - shores of Lake Erie*
2018-current. This legacy site has been reclaimed and has an ongoing program for The Wildlife Habitat Council. Faulkner assisted in design and implementation of activities that resulted in certification by WHC. Faulkner was chosen to present his innovative monitoring work at this and other sites at WHC's annual international meeting in Baltimore in 2019.

Pedigree Study for Polycystic Kidney Research Foundation, J.W. Riley Hospital, Department of Medical Genetics, Indianapolis, IN*
2010. Mr. Faulkner completed a genetic study for the research of Adult Polycystic Kidney Disease.

Freshwater Institute Mine Aquaculture Research Project, The Conservation Fund, statewide, WV*
1995-1996. Mr. Faulkner served as Principal Investigator in preparing an inventory of mine drainage resources in West Virginia suitable for aquaculture. Grants from US Department of Agriculture allowed Mr. Faulkner the opportunity to research mine-related water resources through his established relationships with mine engineers and managers. He located the high flow discharges (many abandoned and isolated) and characterized the seasonal flow and water quality, providing a practical working inventory of these precious resources for the development of aquaculture and other water uses. As a follow up to the project, he provided location, sampling, characterization and site evaluation services to West Virginia University (WVU) Extension Service Aquaculture Projects.

Special Selenium and Raw Water study for major Appalachian Coal concern, Confidential, WV*
2012-2018. Mr. Faulkner has been the project principal for a special study of a major idled coal property in West Virginia where the company was under a consent decree to characterize and reduce selenium concentrations in their multiple discharges from surface, underground and refuse operations. He led teams collecting water samples and maintained a comprehensive water quality database for over 3 years. The study included real time flow monitoring employing pressure transducers at over 30 surface water weirs. The project matured to including raw water sampling to facilitate application for post-mining effluent limits. Faulkner helped design, construct, maintain, and monitor several very large bioreactors for selenium removal.

Mine Management - Permitting and Environmental Compliance, Leckie Smokeless Coal Co., Anjean Greenbrier, WV*
1983-1990. Mr. Faulkner was the Environmental Compliance Manager for this coal operation on 30,000 acres in a native trout watershed. In addition to managing daily environmental compliance at the many surface preparation/refuse and deep mine operations, he obtained permits and handled public relations. During his tenure, the company was awarded a number of WV Surface Mine & Reclamation Association Reclamation Awards. Mr. Faulkner departed the firm but continued to perform consulting services for them for many years.

Helvetia Artesian Mine Drainage Project, Carter Roag Coal Co. (United Coal Co.), Helvetia Randolph, WV*
2012. This completed deep mine allowed mine water with high iron concentrations to discharge through an existing bore hole to a sensitive trout stream. Mr. Faulkner was contracted to characterize the drainage and make recommendations as to improve treatment. His work involved drainage characterization, aeration and oxidizer efforts, and addition of polymers and flocculants.

Penn Virginia Special Projects, Penn Coal Corporation, Charleston, WV*
2000-2011. Penn Virginia contracted Mr. Faulkner to conduct stream characterization at its many operations in Boone and Kanawha Counties. This involved macroinvertebrate collection and stream habitat evaluation utilizing USEPA Rapid Bioassessment Protocol. Mr. Faulkner also assisted Penn Virginia with the design, construction and evaluation of a number of passive treatment systems.

Haile Gold Mine Drainage, Haile Mining, Kinross Gold, Kershaw, SC*
2001-2002. Mr. Faulkner reviewed mine waste management and chemical treatment efforts at this historic mining property and designed passive treatment systems to mitigate constituents of environmental concern. The company implemented the systems which performed satisfactorily for many years until decommissioned upon mine reactivation.

City of Princeton Phase I ESA for The Dean Company, City of Princeton WV, Princeton Mercer, WV
The Dean Company operated a log veneer processing facility in Princeton, WV for decades before moving its operations out-of-state. The 35 acre facility with multiple structures totaling 275,000 square feet was characterized under ASTM standards E1527-13.

Antero Special Projects - Gas monitoring, Clearwater site characterization, monitoring, Antero Energy, Pennsboro Ritchie, WV
Background water sampling and drainage characterization for a $800M central water treatment facility for this Natural Gas firm included dedicated landfill and on-going monitoring of receiving streams for watershed organization. Gas monitoring of waste lagoons for more than a dozen facilities.

Dominion Gas Phase I ESA Glade Creek Industrial Park, Dominion, Summersville Nicholas, WV
Performed Environmental Site Assessment for new warehouse and maintenance facility under ASTM standards.

WVU Emergency UST, West Virginia University, Beckley Raleigh, WV
WVU purchased the campus of Mountain State University and encountered subsurface UST issues associated with a residence hall. Investigated the issue with Ground Penetrating Radar and subsequent excavation.

V&S Enterprises Phase I ESA, V&S Land, Clarksburg Harrison, WV
V&S leases property with commercial structures for the oil & gas industries. Two properties (one in Clarksburg, WV and another in Bealsville, OH (project 185-865 in 2018) were characterized under ASTM standards.

Richard Mine Drainage AML Project, WV Conservation Agency through GAI Consultants, Morgantown Monongalia, WV*
2007-2008. Mr. Faulkner was commissioned by GAI to characterize the Richard Mine Drainage and its effects on Decker's Creek. Faulkner collected samples based on extensive mine mapping reconnaissance, and performed field testing and detailed laboratory bench scale chemical treatment studies at the facilities of REIC Laboratories, Inc. From this, he developed a feasibility study involving several chemical treatment alternatives strategies that could be employed by WVCA and its partners in the AMD treatment project.

Mettiki Coal Special Projects, Alliance Resource Partners, LP, Mt. Storm Tucker, WV*
2001-2016. Mr. Faulkner has performed special projects for Mettiki since 2001. He conducted surface and groundwater studies on surface properties overlaying a critical subsidence zone. At Mettiki's request, he proposed and designed a surface water diversion and passive treatment system to deal with AML drainage as a mitigation proposal for Mettiki to mitigate proposed activities elsewhere. Faulkner has most recently assisted Mettiki with selenium abatement efforts in-situ by subsurface water management and treatment. He is also evaluating the performance of their existing chemical treatment plant at the Oakland, MD site.

Peabody Coal - Will Scarlett Mine Environmental Suit, Confidential - Attorney Client Privilege, Stonefort, IL*
2010. The Will Scarlett Mine has been represented as the most severe acid mine drainage issue in Illinois. Mr. Faulkner was commissioned by Peabody to characterize the AMD issues at the site, and to document the evolution of the chemical treatment efforts. His work included a comparison of the historic decade-long relationship between AMD treatment costs with precipitation. He also evaluated the empirical costs to achieve NPDES compliance for the site based on historic expenditures and a treatability study.

Preservati Special Projects, Met Coal and Land Development Construction Sites, Princeton Mercer, WV*
2002-2013. Mr. Faulkner has assisted this coal company with stormwater permits and drainage studies at its land development interests for more than a decade. His work included runoff analysis and designing diversion and sediment control structures. He has also assisted with re-vegetation issues in a recent large-scale Lepidopteran-based issue at their surface mining operations.

Martin Marietta Auburn Quarry Drainage, Martin Marietta, Auburn, GA*
2008. Mr. Faulkner was contracted by MM to characterize problematic drainage at this granite quarry near Atlanta. His work included soils/overburden Acid Base Account and a chemical treatment evaluation where he proposed materials handling alternatives and chemical treatment scenarios for meeting pH limits for the NPDES permit.

Coalfields Expressway Mine Drainage Issue, Marshall Miller & Associates, Maxie Buckhannon, VA*
2001-2002. Coal bearing strata and abandoned coal refuse areas lay in the path of the proposed Coalfields Expressway. MMA was commissioned by the VA Dept. of Transportation to perform the geotechnical and environmental work for the design of the project. MMA contracted Mr. Faulkner to assist with the chemical stabilization of the coal refuse associated with the project. The work was accomplished to ensure minimal impact to the environment and involved water and soils sampling and Acid Base Accounting analysis.

Carmeuse Glass Rock Plant and Quarry Drainage Issue, Carmeuse Lime through BBC&M, Glenford Perry, OH*
2008-2009. Mr. Faulkner characterized metals and Total Suspended Solids drainage issues at this quarry operation. He collected water samples and prepared recommendations for water treatment and management, and materials handling as needed to achieve NPDES effluent limits.

Krypton Slope Stability Project, Confidential - Attorney Client Privilege, KY
2012. A coal client contracted Mr. Faulkner to perform water quality characterization and determine groundwater paths associated with a civil suit involving a large landslide. Mr. Faulkner designed and implemented a dye/tracer study to assist with the characterization of the drainage. The project involved remote sensors for specific conductance and charcoal dye traps to determine the presence and intensity of tracers introduced in the subject drainage.

Mine Complex Management - Permitting & Compliance, Island Creek Coal, Holden Logan, WV*
1985-1988. Mr. Faulkner worked as an in-house consultant for Island Creek Coal. His work involved preparing mining and NPDES permits and ensuring environmental compliance at seven mine complexes in WV and Kentucky. He dealt with prospect, underground, surface and preparation issues and conducted numerous Probable Hydrologic Consequences Studies and prepared all necessary permitting and compliance duties associated with a major corporate mining interest.

Williams Threedubs Compressor Facility Coal Mining Incidental to Land Development, Williams Company, West Liberty, WV
Role: Senior Consultant
In developing its multi-million dollar compressor facility near West Liberty, WV, Williams encountered coal that complicated the stability of the pad. Under WV law, coal removal incidental to land development is required to obtain a special surface mining permit. Requirements for this permit satisfy the requirements of federal and state mining laws with respect to all major environmental and legal issues. This involved characterization of soils, overburden, coal, drainage, safety, and property issues. Similar characterization efforts were conducted for another Compressor Facility in Brooke County to the northeast in 2018 where coal removal was also necessary. Faulkner reported on the permit preparation at the 2019 International SME Conference in Denver, CO.

Surface Coal Mine Drainage, Attorney Client Privileged, Wise Wise, VA*
2019-2019 A lawsuit between a major environmental group and established coal mining concern involved TDS from mine drainage and associated fills. Plaintiff alleged violations of Clean Water Act, RCRA and SMCRA. Faulkner conducted extensive file work and field work to characterize the drainage and mining history to represent the company in Federal court (Abingdon) as an expert witness in mine drainage and land reclamation. It was established that valley fills were point-sources under NPDES and that the operator had been in compliance with applicable statutes for TDS and other chemical parameters of concern. Faulkner's biological monitoring also convinced the court there was no environmental degradation. The Court granted the defendant's motion for summary judgement.

Buckeye Selenium Compliance Plan, Greer Industries, Inc, Cheat Lake, WV
Role: Senior Consultant
Designed and helped client install, maintain, and monitor a V-notch weir with recording pressure transducer. The pressure transducer measures the height of water in the weir, and when compensated against a nearby atmospheric pressure transducer and calibrated against a regularly read staff gauge, returns a log of accurate flow through the weir. The values are used to produce selenium and other parameter loadings.

Eastern Panhandle Pipeline Expansion , Mountaineer Gas, WV Eastern Panhandle
Role: Senior Consultant
Reviewed available mapping and imagery to prepare Phase I Environmental Site Assessment for new 20 mile pipeline to Martinsburg from Berkeley Springs, WV.

Environmental Audits for Real Estate Transactions for Industrial Properties, various, northern and central WV*
Role: Principal Investigator
A consulting firm to which Ben Faulkner sub-contracted was responsible for performing environmental audits for the potential purchaser of hundreds of tracts of land with a history of timbering and coal mining operations. Faulkner led a team that inventoried and characterized over 400 tracts and 10,000 acres in six counties. The process included aerial reconnaissance and videotaping from a helicopter in 1984. Global Positioning Systems (GPS) technology was in its infancy and advance mission planning and post-mission correction was necessary. Faulkner's databases of this and statewide (39 counties) public projects commissioned by WVDEP were selected by WVU faculty for use in early ESRI courses taught at the university.

Arch Coal Subsidiaries - Special Projects, Arch Coal Leer Mine, Mountain Laurel, and (formerly ICG) Patriot, Eastern, Hazard, others, Statewide WV & KY*

2006-current. Mr. Faulkner has provided professional services to several Arch coal subsidiaries since 2006. For ICG Eastern in Nicholas/Webster counties, WV, he collected raw and stream water samples for new permits, worked to insure chemical and passive treatment system compliance, and obtained permit release. He implemented several dye tracer studies to determine local hydrology related to problematic drainage. He conducted macroinvertebrate stream studies. He designed bioreactor systems to effectively collect and treat selenium laden drainage. This was implemented after bench and pilot scale efforts designed, monitored, and evaluated by Mr. Faulkner. Until the property became idle in 2014, Faulkner maintained a database of water quality for this work, consisting of over 11,000 samples. For Arch's northern WV mine sites, Faulkner was commissioned to evaluate problematic drainage near Morgantown and Bruceton Mills and refine existing chemical treatment and evaluate the opportunity to implement passive strategies. At the new Leer Mine, Faulkner conducted a chemical treatability study for problematic drainage and presented an array of treatment alternatives and associated cost-benefit analysis. In Mingo and Logan counties, WV, Faulkner conducted a dye tracer study to determine the groundwater path from an impoundment near a community. He dealt with a unique calcium deposition issue at the ICG Hazard Surface Mine Complex. He conducted dye-tracer studies for the Vindex complex near Mount Storm. He reviewed water quality and operations of a chemical treatment system for a legacy flooded mine in Preston County to propose changes in pumping and water management efforts.

EIP SWV Stream Mitigation Bank CQA, Ecosystem Investment Partners, Davy McDowell, WV

2016. Served as Senior Consultant when this Stream Restoration Project encountered deep mine drainage that manifested as visible red seepage in the restored stream channel. High iron concentrations and copious staining and precipitation compromised water uses and the macroinvertebrate assemblage. Mr. Faulkner characterized the drainage and outlined/critiqued several proposed alternatives for remedy. He designed and field supervised an alternative involving careful excavation of the deep mine outcrop to divert the pooled mine water into a design diversion away from problematic spoil. He also designed passive treatment systems to mitigate the impacts of several localized drainage influences at the project.

Stormwater Permits for Chromated Copper Arsenate Wood Preservative Facilities, various, statewide, WV*

1991-1992. Enactment of a new WV State Code required that NPDES stormwater permits be obtained by the wood preservative industry for all treatment facilities. Mr. Faulkner led a team of scientists and investigators who contacted five individual facility operators in four WV counties. He was responsible for coordinating the land surveying, mapping, site characterization, human and eco-risk assessment and remediation efforts that were associated with obtaining stormwater permits for these previously unregulated facilities.

Attorney-Client Privileged Information, Babst- Calland, Confidential Confidential, WV

2016. Mr. Faulkner's expertise was sought in this legal matter where a land developer had altered headwater streams. The regulatory authority brought an enforcement action against the landowner requiring stream restoration involving disturbance of previously undisturbed strata. Mr. Faulkner reviewed the soils/water sampling and characterization effort and offered an interpretation of the results of the Acid Base Accounting, Synthetic Precipitation Leaching Procedure, and prediction of water quality for the proposed mitigation effort.

Environmental Site Assessment for US Food & Drug Administration, AquaBounty Technologies, Lindside Monroe, WV*

2011. Mr. Faulkner prepared this Site Assessment for an aquaculture grow-out facility to satisfy USFDA concerns about genetically modified Atlantic Salmon. The assessment was patterned after an international study involving egg production and culture in Prince Edward Island, Canada and grow-out in Panama, Central America. Mr. Faulkner was responsible for surveying and mapping the facility, and evaluating the potential for native species impact should the fish escape from the facility. He evaluated water quality and fish habitat/assemblage downstream in Rich Creek and in the New River in two states.

WV-10 Evaluation of Reclamation Techniques, WVU Research Corporation, statewide, WV*

1990-1991. Mr. Faulkner worked with three PhD researchers in two states, examining various reclamation techniques and passive treatment technologies and their long-term efficacy. The project involved evaluation of the profitability of re-mining and water quality at re-mining sites.

Austinville, VA Lead Mine Issues, Attorney Client Privileged, Austinville Wythe, VA*

2014-2018. Mr. Faulkner was engaged by the landowner of a US Revolutionary War era mine site to address water quality issues associated with this underground lead/zinc mine. He has characterized the drainage at the site and prepared a Substantive Rationale for the improvement of water quality by appropriate land reclamation and water management. Relying on successful CERCLA projects, Faulkner employed an adaptive management strategy in making specific water management recommendations and assisted professional engineers in designing permanent drainage and remediation structures. He represented the client in Federal District Court (Roanoke, VA) as an Expert Witness on mine drainage and land reclamation. The court ruled for the client.

* *Work performed prior to joining CEC*

PROFESSIONAL AFFILIATIONS

Society of Environmental Toxicology and Chemistry

West Virginia Mine Drainage Task Force

Society for Freshwater Science

West Virginia Coal Association, Inc.

International Mine Water Association

American Society of Mining and Reclamation

Society for Mining, Metallurgy, and Exploration, Inc.

Air & Waste Management Association

American Society of Reclamation Sciences

CHAIRMAN OF THE WEST VIRGINIA MINE DRAINAGE TASK FORCE WWW.WVMDTASKFORCE.COM

RECORD OF EXPERT LEGAL TESTIMONY TO 2021-06 AVAILABLE UPON REQUEST

PROFICIENT IN MEDICAL OFFICE MANAGEMENT

Timothy A. Denicola, PG, CFM

Project Manager III

11 YEARS OF EXPERIENCE

EDUCATION

M.S., Geology, West Virginia University, 2013

B.S., Chemistry, Clarion University of Pennsylvania, 2006

Mr. Denicola is a project manager whose multi-disciplined background includes expertise in geochemistry, geology, and hydrology. His experience includes mine water remediation, ecosystem restoration, and environmental assessments and remediation. Specific capabilities include soil, surface and groundwater chemical analysis, hydrologic data collection, design of mine water treatment systems, design of stream and wetland restoration, geotechnical soil and rock exploration drilling, construction quality assurance, environmental assessments and remediation, and development of various spill control plans. Mr. Denicola manages projects from conceptual through final completion in collaboration with a qualified team of personnel.

PROJECT EXPERIENCE

Export AMD Assessment and Treatment Plant Design, Westmoreland County, PA
Two mine water discharges near Export, PA, convey a combined 3000 gallons per minute of severely acidic, iron and aluminum contaminated mine water into a watershed having fishery potential. Mr. Denicola completed a historic water quality review, baseline water quality sampling and hydrologic data collection, chemical loading and treatment calculations, site surveying, and developed a conceptual engineering design utilizing a calcium oxide slurry system and solids handling practices. The design includes an innovative approach to working within site constraints while ensuring sufficient carbon dioxide off-gassing, reagent mixing, precipitated solids handling, onsite solids disposal, and simplified operations and maintenance.

Lyons Run AMD Remediation and Mitigation Bank, Westmoreland County, PA
The Lyons Run watershed is severely impaired by acidic, iron and aluminum contaminated mine water. Mr. Denicola completed baseline water quality sampling and hydrologic data collection, remediation design, and development of a mitigation banking prospectus. Mr. Denicola managed site delineations and baseline biological monitoring, high resolution LiDAR topographic UAV flights, geotechnical site assessment, and regulatory components including USACE, PADEP, and local requirements. The project will ultimately utilize a successive alkalinity producing system (SAPS) to neutralize acid, collect precipitated solids, and improve watershed ecological function while generating mitigation banking credits to offset long-term operations and maintenance costs.

Beaver Creek at Auman Road Passive AMD Treatment, Preston County, WV
A tributary to a cold water fishery (CWF) is impacted by acidic, aluminum contaminated water emanating from an abandoned coal surface mine. Mr. Denicola designed two passive mine water treatment systems consisting of flushing limestone beds (FLB), settling ponds, and aerobic polishing wetlands. Each FLB utilized an automatic dosing siphon, large diameter limestone, and trench drain conveyance to reduce loss of

EXPERTISE

Abandoned Mine Drainage (AMD)

AMD Treatment Design

Site Grading and Drainage

Ecosystem Restoration

Mitigation Banking

Stream and Wetland Design

Monitoring Well Installation

Soil Boring Advancement

Rock Coring Exploration

Soil Chemical Sampling

Water Quality Sampling

Aquifer Pumping

Contaminant Tracking

REGISTRATIONS

Professional Geologist

- PA [redacted]

CERTIFICATIONS

Certified Floodplain Manager, Association of State Floodplain Managers

Level I Applied Fluvial Geomorphology, Wildland Hydrology

Level II River Morphology and Applications, Wildland Hydrology

Level III River Assessment and Monitoring, Wildland Hydrology

Level IV River Assessment and Monitoring, Wildland Hydrology

FAA Part 107 Unmanned Aerial Vehicle Pilot License

Advanced AMDtreat Mine Drainage Cost Calculation Software, U.S. Office of Surface Mining Reclamation and Enforcement (15-Hour)

PEC/Safeland Training, 8-Hour Course, [redacted]

substrate porosity and increase alkalinity generation and flushing velocities. Settling ponds utilize perforated stand-pipes to regulate the effluent rate and achieve particle settling velocities. Aerobic wetlands were designed with thick, native, non-invasive grasses, woody shrubs and wetland trees to facilitate final polishing while increasing ecological habitat. Extensive chemical, hydrologic, and volumetric calculations were utilized to ensure optimal cost-effective performance.

Lehigh River Basin Watershed Assessment, Eastern PA*

Mr. Denicola was provided chemical data from approximately two dozen abandoned mine discharges (AMD) in several impaired subwatersheds of the Lehigh River. Utilizing spatial and statistical software, Mr. Denicola prepared an assessment and recommendations report identifying priority AMDs and priority subwatersheds for remediation. Statistical methods utilized univariate multivariate statistical techniques including principal component and hierarchal cluster analysis. Based on geochemical calculations, site-specific treatment options were recommended including associated engineering and construction costs.

Oxbow Mitigation Bank, Ritchie County, WV

The Oxbow Mitigation Bank will restore approximately 26,000 feet and enhance approximately 48,000 feet of heavily degraded stream corridor. The property has been heavily timbered and traversed with access routes resulting in excess sedimentation, disconnected stream channels, and reduced biological diversity. Off road vehicle traffic and the county right-of-ways utilize the stream corridor resulting in substantial geomorphic degradation. Mr. Denicola has managed and completed stream restoration designs, geotechnical rock drilling exploration, oil & gas infrastructure relocations, county right-of-way decommissioning, and contractor coordination to facilitate successful project completion.

Brushy Fork Mitigation Bank, Harrison County, WV

The Brushy Fork Mitigation Bank will restore approximately 48,000 feet of streams and 5.5 acres of wetland. Portions of the property were extensively coal mined and streams will be constructed into poor quality spoil with the potential for acid generation and iron precipitation. Mr. Denicola has conducted extensive chemical and hydrologic data collection to characterize the construction material and has selected various mitigation techniques to prevent negative spoil influences on water quality. A combination of alkaline reagent, organic compost, aerobic wetlands, impermeable liners, and spoil excavation will be utilized to ensure acceptable water quality beneficial to establishment of aquatic habitat post-construction.

Herods Run Passive AMD Treatment Project, Upshur County, WV*

Herods Run is impacted by acidic, iron contaminated water emanating from an abandoned coal surface mine. Mr. Denicola prepared the winning conceptual design, developed the preliminary and final engineering design drawings, and prepared the construction specifications, cost estimates, and bid package. Mr. Denicola prepared permit application packages for the U.S. Army Corps of Engineers (USACE) Regional General for AML permit and WV Department of Natural Resources (WVDNR) Stream Activity permit. Throughout the project Mr. Denicola facilitated open communication between a non-profit watershed association, various landowners, and a private energy company owning easements.

Regulated Mining Property AMD Treatment and Refuse Research Study, Sequatchie County, TN*

An extensively reclaimed, regulated mining property treats acidic groundwater emanating from various locations. Mr. Denicola conducted an assessment of various treatment options ultimately identifying the most cost-effective method of meeting NPDES compliance at several discharge points. In addition, Mr. Denicola is currently completing a treatment test cell study to assess techniques for mitigating acid production in mining refuse, thereby eliminating the need for long-term AMD treatment.

Water Quality Monitoring, Antero Treatment, LLC, Doddridge County, WV

Antero Treatment, LLC, as a requirement of federal, state, and local regulation requires environmental monitoring. Mr. Denicola performed stream and site-specific water quality and hydrologic monitoring in support of company operations. Monitoring included collection of field chemical parameters and laboratory samples for analysis of RCRA and non-RCRA volatile and semi-volatile organic compounds, poly-nuclear aromatic hydrocarbons, phthalate esters, petroleum related hydrocarbons, metals, anions, and radionuclides. Monitoring required analysis of gases including methane and dihydrogen sulfide. Flow data was collected using a USGS Wading Rod with FlowTracker Acoustic Doppler flow meter and the cross-sectional area method.

Soil Quality Monitoring, Antero Resources Corporation, Multi-County, WV

Mr. Denicola routinely performed soil sampling in support of company operations. Sampling adhered to EPA Method 5035A for volatile organic compounds in soil and assessed pre-construction and post-construction soil quality at production facilities.

Regulatory Compliance, Antero Treatment, LLC., Doddridge County, WV
Antero Treatment, LLC, operates a water treatment facility that requires onsite storage and handling of industry wastewater and regulated reagents. Mr. Denicola became intimately familiar with site-specific processes and oversaw completion of Aboveground Storage Tank (AST) fit-for-service inspections. Mr. Denicola personally developed the Spill Prevention Response Plan (SPRP) and Spill Prevention Control and Countermeasure (SPCC) Plan in conformance with 47 CSR 63 and 40 CFR 112, respectively. Mr. Denicola prepared spill compliance training documentation and administered training to Antero personnel.

Watershed Based Plan and Quality Assurance Protection Plan*
As a responsibility of project management, Mr. Denicola composed a Watershed Based Plan (WBP) and Quality Assurance Protection Plan (QAPP) for approval by the United States Environmental Protection Agency (U.S. EPA). The WBP identifies priority remediation sites to meet compliance with West Virginia Department of Environmental Protection (WVDEP) Total Maximum Daily Loads (TMDL) requirements for the WV 303(d) list of impaired streams. In addition, Mr. Denicola composed a QAPP to ensure that the U.S. EPA-accepted sampling and data handling protocols were being utilized universally across all staff members and sampling events within the watershed.

Brubaker Active AMD Treatment Conceptual Design, Clearfield County, PA*
Mr. Denicola developed the winning conceptual design for active treatment at the abandoned Dean Clay Mine discharge in the Brubaker Run watershed. The design utilized calculations for acid neutralization and sludge production rates. The design included active treatment BMPs, surface water diversion and high flow bypasses, and a proposal for an on-site sludge disposal assessment requiring a geotechnical study of the nearby mine workings.

AMD Assessments and Recommendations,, Buck Mountain #2 and Lausanne Tunnel, Eastern Pennsylvania*
Several passive AMD treatment systems required an assessment and recommendations report to evaluate treatment efficacy. Mr. Denicola conducted chemical and hydrological sampling and completed an assessment of each location including recommendations and associated costs. Development of the recommendations required calculations of acid and metal loads, alkalinity generation and acid neutralization rates, ferrous iron oxidation rate, sludge volume, and BMP sizing for necessary hydrologic retention time.

**Kanes Creek South Site #3, Office of Surface Mining (OSM) Watershed Cooperative Agreement (WCAP)
Preston County, WV***
Several acid mine discharges impairing Dills Run, required development of a passive remediation system. Mr. Denicola oversaw the final stages of system design, construction stormwater permitting, and West Virginia Non-Point Source (NPS) 319 and Office of Surface Mining (OSM) Watershed Cooperative Agreement (WCAP) grants management, as well as conducted construction oversight and completion of pre- and post-construction monitoring. The final system ultimately consists of a flushing limestone bed followed by two settling ponds in series. The system is successfully neutralizing all acidity, introducing residual alkalinity, and is removing all metals to analytical minimum detection limits.

AMD Treatment, Broad Top Township, Bedford County, PA*
Various active and passive AMD treatment systems currently operate within Broad Top Township. Mr. Denicola conducted geochemical calculations that directly translated into several passive system designs, conducted chemical and hydrological sampling as part of an assessment and recommendations study, and conducted the post-construction final inspection of the most recently construction AMD treatment system.

Semi-Active AMD Treatment, Sewickley Creek, Brinkerton, Westmoreland County, PA*
The Brinkerton Semi-Active AMD Treatment project was affected by a high volume of alkaline mine water discharge and the existing passive treatment system required refurbishment. Mr. Denicola assisted in redesign of a Maelstrom Oxidizer, pond berm stabilization, incorporation of top flow weirs to allow collection of chemical and hydrological data, and conversion of a smaller acidic mine water collection area into an anoxic limestone drain. Mr. Denicola also performed construction oversight at various stages of project completion.

AMD Remediation, Slabcamp Tributary, Preston County, WV*
Four severe AMDs are impairing a tributary to Slabcamp Run and a 5.4-acre wetland. Mr. Denicola completed pre-construction monitoring, execution of landowner right-of-entry agreements, acquisition of an environmental consulting firm, communication with the U.S. Army Corps of Engineers (USACE) regarding wetland and waterways permitting, communication with the State Historic

Preservation Office (SHPO) to complete a Section 106 review, communication with West Virginia Department of Natural Resources (WVDNR) to complete a National Environmental Policy Act (NEPA) review and composed an Environmental Assessment (EA), communicated with Region VI Planning and Development Council for the necessary consultation letter, and assisted development of a conceptual design.

AMD Remediation, Ingrand Mine, Preston County, WA*

Two severe AMDs impairing Dills Run required development of a passive remediation system. Mr. Denicola oversaw pre-construction monitoring, completion of land purchase through execution of a subdivided land deed, acquisition of an environmental consulting firm, communication with the USACE, SHPO, NEPA, and Region VI, and assisted development of a final design with associated specifications, bid, and contract documents. The passive treatment system utilizes a flushing limestone leach bed, two settling ponds, an anaerobic vertical flow wetland (AVFW), and a polishing wetland and is successfully reducing contaminant loads to Dills Run and Kanes Creek.

Successive Alkalinity Producing System and Active Lime Doser Assessments, Deckers Creek Watershed*

As a responsibility of project management, Mr. Denicola thoroughly audited all existing systems within the Deckers Creek watershed. The most extensive audits were conducted at a successive alkalinity producing system (SAPS) that utilizes flushing limestone leach beds, settling ponds, and an AVFW. Chemical, hydrologic, and redox potential data were collected, and geochemical software was utilized to evaluate the iron reducing capability of the AVFW, which ultimately proved to be highly successful. The SAPS was receiving AMD with pH=2.6 and high ferric iron and aluminum concentrations and was discharging water of circum-neutral pH with metals below minimum detection limits. The AVFW alone displayed a redox potential of -0.093 V and conversion of all ferric iron into the ferrous form. In addition, the Deckers Creek watershed utilizes two active tipping bucket lime dosers for neutralization of severely degrading AMD. Mr. Denicola thoroughly audited both active systems through a series of geochemical sampling and evaluation techniques. The results of the audits substantiated the necessity of future funding for refurbishment.

** Work performed prior to joining CEC*

Dennis E. Miller, P.S.

Vice President and Bridgeport Office Lead

33 YEARS OF EXPERIENCE

EDUCATION

A.S., Surveying, Glenville State College, 1989

Mr. Miller has over 33 years of consulting experience and serves as the Office Lead/ Vice President of the Bridgeport, WV office. He is responsible for overseeing daily operations, promoting a safe working environment, staff development and office development, project management and client development.

Of the 33 years of experience 24 have been spent working on transportation projects, bridges, roads and airports. Mr. Miller has been the principal in charge and surveyor in charge of several large transportation projects including the Nationwide Airport Obstruction Survey Contract, Mr. Miller was the program coordinator, principal and lead field surveyor in charge, responsible for the overall program development for nationwide WAAS surveying. Mr. Miller performed all field surveying associated and described in AC 150 5300 16A, 17B & 18B including PACS & SACS reestablishment, photo control, runway end, runway centerline, NAVAIDS surveying, UDDF submission on over 16 airports from Morgantown West Virginia to Victoria Texas, the airports covered six different states.

Over the past 8 years Mr. Miller has served as the office lead and surveyor in charge on over 100 roadway improvement projects including bridge replacement projects, roadway slip repair projects and bridge replacement projects.

Mr. Miller is responsible for professional development and staff mentoring. He is in constant communication with clients, project managers and key technical staff, providing the guidance necessary to ensure that every project is completed with professionalism and efficiency. Mr. Miller has worked on both private and public sectors and has noteworthy experience in the policies and procedures within WVDEP, WVDOT, FHWA, FAA.

EXPERTISE

- Project / Program Management
- Geodetic Control Networks
- Airport Obstruction Sruveying
- Airport Surveying
- Transportation & Bridge Surveying

REGISTRATIONS

Professional Surveyor [redacted]

CERTIFICATIONS

- Notary Public, West Virginia
- Adult First Aid with CPR/AED/BBP, MEDIC First Aid
- USACOE Construction Quality Management for Contractors , US ARMY Corps of Engineers
- 10-Hour OSHA Construction Safety (Occupational Safety & Health Administration), OSHA
- 30-hour Construction Safety & Health, OSHA
- Approved Person - Surface Mine/Quarry Permit Applications, West Virginia Department of Environmental Protection Mines and Minerals

PROJECT EXPERIENCE

Abandoned Mine Lands

Stollings (White) Portals, WVDEP

Role: Principal in Charge

Mr. Miller was the Principal in charge for this CADD services contract for the West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands project. The project is located in very close proximity to an occupied house and involved installing and backfilling three (3) bat gate mine seals, sediment and erosion control, and revegetation. Six (6) construction sheets detailing AML standards were computer drafted for the project. The project involved an onsite kick-off meeting, developing and submitting a cost proposal and scope of work letter for approval, submitting a final design package, invoicing, attending meetings, and progress reports.

Webster Point Mountain Waterline Feasibility Study, I.D. No. 384

Role: Principal in Charge

Mr. Miller served as Principal in charge and conducted water sampling and analysis on this study to determine if abandoned mine lands were adversely affecting residents along the proposed waterline extension corridor. The project involved extending approximately 15 miles of waterline to serve 103 residents whose water supply had been diminished or contaminated. The project involved a preliminary investigation to determine the impact pre-law mining had on the water resources within the study area. This study included surface and ground water sampling and reporting; public and private record search to determine if residents potable water supply have been impacted by mining; and secondly, if the mining that impacted potable water supplies occurred prior to the Surface Mining and Reclamation Control Act of August 3, 1977. Pre-law impacts qualify for assistance from the Abandoned Mine Lands (AML) Program. The preliminary investigation included a complete hydrologic and geologic investigation of the study area and development of supporting documents and maps to apply for the AML&R Grant for the waterline extension. The study determined that residents water supplies have not been impacted by abandoned mine lands.

Greenbrier Hollow Refuse

Role: Principal in Charge

Mr. Miller served as Principal in charge and surveyor on this $834,000 abandoned mine lands reclamation project located near McDowell in McDowell County West Virginia. The reclamation design removed a cast-over-the-hill coal refuse pile located directly behind the First Baptist Church of McDowell to a stable configuration that involved 51,00 cubic yards of earthwork. The project included two (2) wet mine seals and 8 acres of vegetation. The project had 1,015 linear feet of drainage ditches, two (2) manholes, and a temporary stream crossing. The project involved extensive coordination with utility companies having lines inside the project area. The project involved treating AMD during mine dewatering and construction, and a sediment control plan and approved NPDES permit to control construction runoff. Other permits completed for the project included MM109 permits to work in the right-of-way of State roads and a USACOE permit for the stream crossing. The project involved topographical surveying to supplement project mapping, preliminary designs, final designs, specifications, calculation brief, bid schedule, engineer's estimate of probable construction costs, pre-bid and pre-construction conferences, and monthly reports, and invoicing.

Scott Road and Findley Road Waterline Extension Feasibility Study, I.D. No. 356

Role: Principal in Charge

Mr. Miller served as Principal in charge to determine abandoned mine lands impact to groundwater and surface water for seven (7) homes located along Randolph County Route 5/5. Correspondence from the Norton Harding Jimtown PSD indicated past mining operations may contribute to their water quantity and quality problems. The Project involved a Preliminary Investigation to determine the impact pre-law mining had on the water resources within the study area. The investigation included project mapping, public and private record search and surface, ground water sampling along with resident interviews, geologic and hydraulic investigations and review and identification of historic mining operations in or near the project area. Mining has impacted potable water supplies and a further determination was made if the mining occurred before or after the Surface Mining and Reclamation Control Act of August 3, 1977 (pre-law mining). Pre-law impacts qualify for assistance from the Abandoned Mine Lands program. The investigation concluded all seven (7) resident's water supplies have been impacted by abandoned pre-law deep mines and qualify for AML funding. Alternatives investigated for mediation included No Action, Individual Well and Water Treatment Systems, and extension of the Norton Harding Jimtown PSD distribution system to the affected 7 residents at an estimated cost of $378,000.

Lewis County Economic Development Authority Waterline Feasibility Study, I.D. No. 374

Role: Principal in Charge

Mr. Miller served as Principal in charge on this study to determine if abandoned mine lands were adversely affecting residents along the proposed waterline extension corridor. The project involved extending approximately 15.2 miles of waterline to serve 110 residents whose water supply had been diminished or contaminated. The project involved a preliminary investigation to determine the impact pre-law mining had on the water resources within the study area. This study included surface and ground water sampling and reporting; public and private record search to determine if residents potable water supply have been impacted by mining; and secondly, if the mining that impacted potable water supplies occurred prior to the Surface Mining and Reclamation Control Act of August 3, 1977. Pre-law impacts qualify for assistance from the Abandoned Mine Lands (AML) Program. The preliminary investigation included a complete hydrologic and geologic investigation of the study area and development of supporting documents and maps to apply for the AML&R Grant for the waterline extension. The study determined that residents water supplies have not been impacted by abandoned mine lands.

Clarksburg (Ryder Avenue) Drainage, WVDEP
Role: Principal in Charge
Mr. Miller was the Principal in charge and primary design person for this $65,000 Abandoned Mine Lands construction project that involved several homes located at or near the cropline of a coal seam and along the down dip side of a large abandoned underground mining operation. All homes experienced drainage problems in basements or yards. The project required design of an underdrain system to intercept water from the mines prior to impacting local residents. Subsidence support, in the form of backstowing with stone aggregate, was also designed and provided for yards exhibiting subsidence depressions.

Old Bridgeport Hill Mine Drainage, Phase II , Harrison County, WV
Role: Principal in Charge
Mr. Miller served as the Principal in charge and surveyor on this Abandoned Mine Lands (AML) Construction Project located in Harrison County, West Virginia. The project involved capturing and conveying mine drainage around several businesses located down gradient of a large abandoned mine. Four (4) wet mine seals were designed and approximately 1,400 linear feet of grouted rock riprap ditch, 80-foot subsurface drain, eight (8) culverts, a manhole, and three (3) drop inlets. The project required close coordination with the West Virginia Department of Highways (WVDOH) to marry the AML Project to an on-going storm sewer system construction project. I successfully negotiated moving several proposed drop inlets on the new storm sewer system constructed by the WVDOH to provide convenient outlets for piping and ditches from the AML Project. The project also involved dewatering and treatment of approximately 17.4 M gallons of water estimated to be in the mine pool behind wet mine seal constructions. Several of the constructions were located in proximal to local business buildings and in a buried and overhead rich mine field. Close coordination with the businesses and both public and private utilities were a necessary part of this project.

Poplar Ridge/Morrison Ridge Waterline Extension Feasibility Study, I.D. No. 298
Role: Principal in Charge
Mr. Miller served as Principal in charge to determine abandoned mine lands impact to groundwater and surface water for twenty-one (21) homes located along Poplar Ridge and Morrison Ridge in Braxton County, West Virginia. Correspondence from these home owners indicated mining operations were contributory to their water quantity and quality problems. The Project involved a Preliminary Investigation to determine the impact pre-law mining had on the water resources within the study area. This study included surface and ground water sampling and public and private record search to determine if residents' potable water supply was impacted by mining and if the mining that impacted potable water supplies occurred prior to the Surface Mining and Reclamation Control Act of August 3, 1977 (pre-law mining). Pre-law impacts qualify for assistance from the Abandoned Mine Lands program. The final report included a complete hydrologic and geologic investigation of the study area and development of supporting documents to apply for the AML&R Grant for the waterline extension. Supporting documents included engineers' probable cost of construction for three alternatives. These alternatives included No Action, Drilled Well Replacement, and Extension of the on-going extension of the Flatwoods-Canoe Run PSD Poplar Ridge/Morrison Ridge Waterline Extension Project.

McElwain Waterline Extension Feasibility Study, I.D. No. 271 , Webster County, WV
Role: Principal in Charge
Mr. Miller was the Principal in charge for the preliminary investigation and AML&R Grant Report and supporting documents for the McElwain Waterline Extension located in Webster County, West Virginia. The project involved either extending about 0.6 miles of six-inch waterline or drilling a new well to serve the McElwain Residence. The McElwain residence experienced a diminished and contaminated potable water supply as a result of mining operations. The project involved a preliminary investigation to determine the impact pre-law mining had on the water resources within the study area. This study included surface and ground water sampling and public and private record search to determine if McElwain's potable water supply have been impacted by mining, and second, if the mining that impacted the potable water supply occurred prior to the Surface Mining and Reclamation Control Act of August 3, 1977. Pre-law impacts qualify for assistance from the Abandoned Mine Lands (AML) Program.The final report included a complete hydrologic and geologic investigation of the study area and development of supporting documents to apply for the AML&R Grant for the waterline extension. Supporting documents included engineers' probable cost of construction for three alternatives. These alternatives included No Action, Drilled Well Replacement and Extension of the Cowen PSD Waterline to the McElwain residence.

Special Reclamation Multiple Permits, WVDEP, Philippi and Barbour Counties, WV
Role: Principal in Charge

Mr. Miller served as Principal in charge on this reclamation contract with the West Virginia Department of Environmental Protection, Office of Special Reclamation contract that included five (5) surface and deep mine permits that forfeited their reclamation bonds. The five (5) drastically disturbed mine sites included RobLee Coal Company Forfeited Permit D-49-82, RobLee Coal Company forfeited permit numbers U-1001-91 and O-1009-93, Energy marketing forfeited permit number U-24-84, and Buffalo Coal Company forfeited permit number S-52-80. The engineer's estimate of probable construction costs for the five (5) mine sites was $6,400,000. Altogether the five (5) reclamation projects involved 1,002,000 cubic yards of balanced earthwork; three (3) mine seal installations; 22,500 l.ft. of ditches; 3,500 l.ft. of pipes; 37,000 l.ft. of sediment control structures; eight (8) pond designs with spillways; 163 acs. of revegetation; aerial photography of 630 acs. with surveyed controls; property owner negotiations for rights-of-entry; site investigations including subsurface investigations; soil and refuse testing; hydraulic and hydrologic investigations and calculations; highwall elimination with material handling plans; refuse neutralization; calculation brief; construction plans; construction specifications; bid schedules; engineer's estimate of probable construction costs; project meetings; monthly updates, invoicing, and other required deliverables.

Surveys / Geomatics

West Virginia Department of Environmental Protection

Mr. Miller was the Program Coordinator for the planning, development and implementation of the work plan to successfully survey & map abandoned mine sites in West Virginia. This project included the aerial photography / aerial mapping, by both film and lidar, geodetic ground control which included over one-hundred-twenty observation points, photo control points, ground surveying and mapping and quality control. The final mapping was used by various design consultants for the abatement of abandoned mine sites throughout West Virginia.

West Virginia Department of Transportation (Independent Payment Verification)

Mr. Miller was the Program Coordinator/Project Manager and served as a field crew member for the past five years on the independent payment verification for the King Coal highway Red Jacket Section. He was responsible for the Independent Payment Verification Reconciliation Report as required by WVDOT and the FHA on 11.37 miles of four lane divided highway which is an active coal mining & construction site. Mr. Miller organized a team of professionals and developed a strategy for the project. The first year the team collected over 23,000 points of conventional & GPS survey data in four days and the second year over 27,000 points of conventional & GPS data was collected in four days. This project is the first FHA sponsored project that the post mining land use from the coal mining activity is a four lane divided highway; this is a public private partnership.

Project Impact Randolph Tucker Partnership

Mr. Miller was the office manager and served as project manager on the planning, development and implementation of the work plan to successfully install and blue book sixty-five (65) new USGS bench mark monuments within Randolph and Tucker Counties in West Virginia. This project was completed in forty-five (45) days to comply with the funding mechanism and involved three offices and over fifteen employees.

Source Water Assessment Program

Mr. Miller was responsible for the overall project management of the Source Water Assessment and Protection Program (SWAP). The purpose of the project was to complete source water assessments and protection plans for fifteen (15) communities in West Virginia, public water supply systems utilizing surface waters to determine past and present possible contaminates. Mr. Miller managed the inventory of all field and researched data including, agency database research, windshield surveys data, field & office GIS & GPS data collection on each site and sub-site, chemical & biological water quality monitoring results for each site, and the development of the Arc View Access data management tool, and final report compilation. Responsibilities included data collection (which consisted of visiting several sites throughout West Virginia to GPS possible source water contaminants within a pre-determined zone of critical concern), compiling information from various water treatment plants throughout the state, report compilation and assistance with the development of GIS mapping.

** Work performed prior to joining CEC*

PROFESSIONAL AFFILIATIONS

Ohio Oil & Gas Association

Contractors Association of West Virginia

Daniel A. Martinez, P.E.

Project Manager I

7 YEARS OF EXPERIENCE

EDUCATION

B.S., Civil Engineering Technology, Fairmont State University, 2014

Daniel Martinez brings over 7 years of diverse experience in the fields of transportation engineering and analysis, site development, stream restoration, structural drafting and evaluation, and hydraulic and hydrologic modelling. Since joining Civil & Environmental Consultants, Inc., Mr. Martinez has performed county and state road improvements and widenings for over 16 miles of roadway. He has managed and designed an additional 26 miles of rural roadways and associated infrastructure for the federal sector. His roles have been in the capacity of project management, road corridor and typical section improvements, ADA compliant sidewalk and ramp replacements, road widening to accommodate various AASHTO design vehicles and their turning movements, engineer's estimates, erosion and sediment control designs and plans, Hydraulic analysis and reporting, Culvert design, producing bid documents and conducting field investigations.

Mr. Martinez has also performed geomorphic surveys and generated stream and wetland designs to meet site specific performance standards and habitat objectives utilizing a variety of software such as AutoCAD Civil 3D, HydroCAD & Rivermorph. Once the projects are designed and permitted, Mr. Martinez produces the construction plan sets and generates the associated 3D machine control files. Mr. Martinez has performed post-construction as-built surveys using robotic total stations and RTK GPSs and produced record drawings for over 12 miles of stream restoration projects. He has implemented natural channel design theory and completed stream and wetland restoration and enhancement designs for over 18 miles of streams throughout West Virginia, Ohio, Maryland, and Pennsylvania.

PROJECT EXPERIENCE

Ecosystem Restoration and Mitigation

George's Creek - Multi Stream Sealing, Maryland Department of the Environment – Abandoned Mine Lands Division, Frostburg Maryland

Role: Designer

Stream and civil designer apart of restoring approximately 2,000 feet of Georges Creek as a meandering natural stream channel with frequent connectivity to wetlands and a riparian floodplain, fill and seal two abandoned surface mine pits, reclaim two high walls, and construct a public-use recreation pond. Stream and pond liners were designed to prevent flow into the underground mine workings that transport water and pollutants to a neighboring watershed. The project was jointly funded by the Maryland Department of the Environment Abandoned Mine Lands Division and the Chesapeake & Atlantic Coastal Bays Trust Fund

EXPERTISE

Rural Hydraulics & Hydrology

Grading Plans

Stream Restoration Design

Stream flow loss prevention and lining

Bridge Safety Inspection

Road Improvement Design

REGISTRATIONS

Professional Engineer

- WV [redacted]
- PA [redacted]

CERTIFICATIONS

10-hour Construction Safety, Occupational Safety & Health Administration

FAA Part 107 Remote Pilot Certification, U.S. Department of Transportation Federal Aviation Administration

Adult First Aid with CPR/AED/BBP, MEDIC First Aid

SafeLand USA - Basic Orientation, PEC Safety

Level I Applied Fluvial Geomorphology, Wildland Hydrology

Level II River Morphology and Applications, Wildland Hydrology

Transportation Engineering Technician (TRET) - Level V, West Virginia Division of Highways

Bridge Safety Inspector, West Virginia Division of Highways

Sand Spring Run - Stream Sealing, Maryland Department of the Environment – Abandoned Mine Lands Division, Frostburg Maryland

Role: Project Manager and Stream Designer

This project entailed installing a Geosynthetic Impermeable Liner underneath of a stream to prevent loss of flow from the stream due to ground water migration into underlying deep mines. Overtop of the liner, natural stream design principles were used to return the stream to a stable and uplifting condition. 2D hydraulic modelling was utilized to evaluate and reduce shear stresses while also providing a restored stream that did not affect the 100 year flood elevations of the project area. Mr Martinez's was the project manager of the site as well as the stream designer. His roles included developing the designs of liner and stream restoration, coordinating the site permitting, assisting in performing the 2D hydraulic modelling, and preparing technical specifications and bid documents for the project.

Brushy Fork Mitigation Bank, Ecosystem Investment Partners, LLC, WV, USA

Role: Stream Designer

Mr. Martinez was involved in mitigation design, culvert analysis and plan set development for this project. The objective of the project was to restore and preserve the streams located within the 1,900 acre project boundary to their natural states to allow for the reintegration of its former biologic and aquatic species, and to generate stream mitigation credits for the client. A total of over 15 acres of wetlands and over 15 miles of streams were designed within with project boundary. Mr. Martinez developed the designs of various streams, as well as being apart of the team that created the permitting and construction plan set to be submitted to the appropriate state regulatory agencies, and the construction contractor.

Charles Pointe Mitigation, Genesis Partners, LP, Bridgeport Harrison, WV

Mr. Martinez was involved in the geomorphic survey, design and plan set development for this project. The objective of the project was to restore entrenched and deficient streams to their ideal natural states to allow for the reintegration of their former biologic and aquatic species, and to generate stream restoration credits for the client. Mr. Martinez developed the designs of over 6 acres wetlands and various tributaries within the watershed. Additionally, he generated the permitting and construction plan sets as well as 3D machine control and stake-out files.

Confidential Stream Restoration and Mitigation Bank, Confidential Client, Ritchie County, WV

Mr. Martinez was involved in the geomorphic survey, terrestrial LiDAR scanning, design and plan set development for this project. The objective of the project was to restore the stream to its natural state to allow for the reintegration of its former biologic and aquatic species, and to generate stream restoration credits for the client. Mr. Martinez developed the preliminary designs of over 1 mile of streams in the phase 1 restoration site as well generated the permitting and construction plan set to be submitted to the appropriate state regulatory agencies.

EIP WV Conservation Easements , Ecosystem Investment Partners, LLC, Logan Varies, WV

Role: Survey Office Technician

Mr. Martinez was involved with the generation of the conservation easements for this site. The objective of this project was to create deed descriptions and boundary plats to provide conservation easements for a proposed stream restoration project. Mr. Martinez created and revised 3 separate boundary exhibits detailing the extents of the conservation easements to be conveyed.

Oxbow Stream Mitigation Bank, Ecosystem Investment Partners, LLC, Macfarlan Ritchie, WV, USA

Role: Stream Designer

Mr. Martinez was involved in mitigation design, culvert analysis and design and plan set development for this project. The objective of the project was to restore and preserve the streams located within the 2,000 acre project boundary to their natural states to allow for the reintegration of its former biologic and aquatic species, and to generate stream mitigation credits for the client. Mr. Martinez developed the designs of various streams as well as generating the permitting and construction plan set to be submitted to the appropriate state regulatory agencies, and the construction contractor.

Southern West Virginia Stream Mitigation Record Drawings, Confidential Client, WV, USA

Role: Stream Designer

Mr. Martinez produced as-built (record) drawings for three separate stream mitigation sites in southern West Virginia. The data was acquired through the uses of terrestrial LiDAR scanning and post-construction geomorphic surveying that was combined to produce record documentation and allow for the ability for regulatory agencies to view the restored streams in a 3D environment

that was created “in-house” and hosted through an online server accessible only to the regulatory agencies and other related parties. These record drawings would also become a part of the reference documents for the 5 year monitoring regime that the mitigation site would endure. The total lengths of streams recorded were over 10 miles in total.

Wetzel Tract Mitigation Bank, Ecosystem Investment Partners, Reader Wetzel, WV
Role: Stream and Road Designer
Mr. Martinez was involved in the geomorphic surveying, culvert analysis, stream restoration and road design and plan set development for this project. The objective of the project was to restore entrenched and deficient streams to their ideal natural states to allow for the reintegration of their former biologic and aquatic species, and to generate stream restoration credits for the client. As part of the proposed mitigation activity, Mr. Martinez developed a conceptual county route improvement plan for a county road that ran adjacent to the primary stream that regularly experienced inundation during heavy storm events. This plan included designs for arch and three sided box culverts that allowed the proposed streams to cross the road without experiencing a disruption in the pattern or dimension of the tributaries. A combination of 3D design and analysis software’s allowed for machine control and stake-out files to be created. Mr. Martinez developed the final designs of the majority of the streams in the phase 1 & 2 restoration sites as well as the permitting and construction plan set submitted to the appropriate state regulatory agencies.

Transportation

Border Wall Design Build - Rio Grande Valley, Southern Border Constructors, Rio Grande Valley, Texas
Role: Designer and Design Manager
Daniel Martinez served as the Design Manager overseeing 2 design teams consisting of 5 members each responsible for over 13 miles of border wall layout and 26 miles of roadway design associated with US/Mexico Border infrastructure in Texas. Daniel was also the engineer directly responsible for the design and layout of approximately 8 miles of roadways and 4 miles of border wall. He developed the design procedures that were used by 13 engineering teams across the country and served as their civil engineering point of contact. Daniel participated in weekly progress calls with Customs and Border Protection (CBP) and the United States Army Corps of Engineers (USACE). The design of the project was held in strict adherence with the standards and specifications set forth from AASHTO, the Texas Department of Transportation, USACE, and CBP. This design-build project started construction in Summer of 2020 and is scheduled to be completed in 2022.

Arnolds Creek Road and Left Fork Road County Route Improvement, Antero Resources Corporation, West Union, West Virginia
Role: Road Designer
Designer in charge of preparing a conceptual widening and improvement design for a 5.1 mile portion of roadway

Brushy Fork Road County Route Improvement, Antero Resources Corporation, Brushy Fork WV
Role: Road Designer

- Designer tasked with performing county route improvement design and the associated hydraulic and hydrologic analysis
- Prepared a HEC-RAS model for a proposed box culvert related to the improvement of the county route
- Performed route improvement design and generated conceptual plans for 2.0 miles of rural road rehabilitation

Gorrell Run Road County Route Improvement, Antero Resources Corporation
Role: Road designer

- Performed conceptual route layout and improvement design for 5.3 miles of road owned by the state of West Virginia
- Performed hydraulic and hydrologic analysis for proposed culvert improvements and replacements
- Generated conceptual and preliminary plan sets and prepared summaries of estimated quantities

Monongah Precast Bridge Replacement, West Virginia Division of Highways, Monongah,WV
Role: Designer
Designer responsible for addressing WVDOH comments in regard to the road alignment relocation, typical section improvements, and steel bridge replacement plans.

Piney Ridge Road County Route Improvement, Antero Resources Corporation, Reader, West Virginia
Role: Road Designer

- Designer tasked with performing county route improvement design for 3.7 miles of delapidated county road
- Performed hydraulic analysis for all existing and proposed culverts along the county route improvement
- Prepared conceptual plans and quantities

WV State Route 74 South Bridge Replacement, Antero Resources Corporation, Pennsboro, WV
Role: Road Designer and Structural Designer/Drafter

- Prepared conceptual through construction plans for the replacement of an arch/channel beam bridge with a prestressed adjacent box beam bridge
- Prepared a HEC-RAS model for a pre and post condition assessment for the proposed replacement
- Prepared hydraulic report and supporting documents necessary to permit the replacement which is located in a FEMA Flood Zone
- Designer in charge of preparing complete details, quantities and plans for the bridge replacement which was to utilize staged construction methods
- Designed a temporary detour route which incorporated the staged construction nature of the project
- Designer in charge of preparing complete roadway construction plans and details pertaining to the approach roadway
- Performed a safety inspection of the existing bridge following NBIS methods

Well Pad Site Design

Antero Experience, Antero Resources Corporation, WV
Role: Designer
Mr. Martinez was apart of the design team for the 2 sites listed below. The client's objective for these sites was to have CEC take another consultants design and upgrade the grading and site layout. Mr. Martinez contributed to the following tasks: compilation of base data, upgrading the other consultants plans and designs the CEC standard and applying applicable design standards to the site. CADD grading features included well pads, benches, impoundments and AST pads and spoil piles. List of Antero projects include: Pool Well Pad and North Fork Well Pad

EQT Experience, EQT Production company, Logansport and Pullman, WV
Role: Designer
Mr. Martinez generated the conceptual site design and associated plan developments for the 2 sites listed below. The client's objective for these sites was to place a well site on top of a ridge with challenging topography. Mr. Martinez contributed to the following tasks: Compilation of base data, civil site design plan sets (conceptual), site earthwork and balancing, coordination of environmental impacts for permitting, Storm water conveyance and management. CADD grading features included well pads, benches, impoundments and AST pads and spoil piles. List of EQT projects include: GLO 162 (Marion County) and PUL 98 (Ritchie County

Mountaineer Keystone, LLC Experience, Mountaineer Keystone, LLC, WV
Role: Designer
Mr. Martinez generated the conceptual site design and associated plan developments for the two sites listed below. The client's objective for this site was to place a well site on top of a ridge with challenging topography. Mr. Martinez contributed to the following tasks: Compilation of base data, civil site design plan sets (conceptual), site earthwork and balancing, coordination of environmental impacts for permitting, Storm water conveyance and management. CADD grading features included well pads, benches, impoundments and AST pads and spoil piles. List of Mountaineer Keystone, LLC projects include: Hamilton #2 Well Pad (Barbour County) and PUMA 75 Well Pad (Taylor County)

Daniel A. Martinez, P.E.
Project Manager I

NNE Experience, Northeast Natural Energy, LLC, WV

Role: Designer

Mr. Martinez generated the conceptual site design and associated plan developments for the site listed below. The client's objective for this site was to place a well site on top of a ridge with challenging topography. Mr. Martinez contributed to the following tasks: Compilation of base data, civil site design plan sets (conceptual), site earthwork and balancing, coordination of environmental impacts for permitting, Storm water conveyance and management. CADD grading features included well pads, benches, impoundments and AST pads and spoil piles. List of Mountaineer Keystone, LLC projects include: NNE 822 Well Pad (Monongalia County)

TRAINING

Safety Inspection of In-Service Bridges ([redacted]

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers

Jeffrey G. Skousen, PhD

Professor of Soil Science – West Virginia University

40 YEARS OF EXPERIENCE

EDUCATION

Ph.D. Texas A&M University, Range Science Department. 1985.

M.S. Brigham Young University, Botany and Range Science Department. 1982

B.S. Brigham Young University, Botany and Range Science Department. 1981.

A.S. Brigham Young University, Music Department, Piano Technology. 1981.

EXPERTISE

- Abandoned Mine Drainage (AMD)
- AMD Treatment Design
- Soil Science/Analyses
- Native Plant Restoration
- Revegetation of Disturbed Lands
- Post-Mining Land Use Development

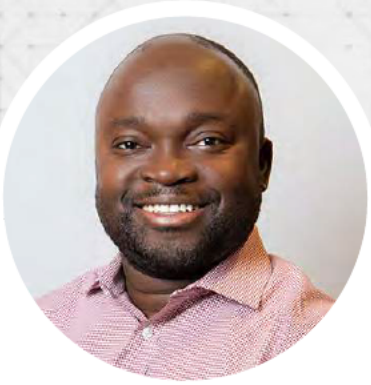
Jeff Skousen is a Professor of Soil Science in the Division of Plant and Soil Sciences (Davis College of Agriculture, Natural Resources and Design) and is the Extension Land Reclamation Specialist in the Agriculture and Natural Resources Program Unit of the West Virginia University Extension Service. He received his Ph.D. from Texas A&M University, and M.S. and B.S. degrees from Brigham Young University.

Jeff has more than 40 years of experience in reclamation of disturbed lands, soil and water remediation, and agriculture. He teaches courses in soil science, environmental science, and reclamation of disturbed soils.

His research program includes acid mine drainage control and treatment and improvement of water quality, overburden and soil analyses, reclamation of oil and gas extraction sites, revegetation of disturbed lands, reforestation, native plant restoration, biomass for bioenergy, and post-mining land use development. He has published over 300 articles in journals, books, proceedings, and extension publications. He works with faculty across campus and with researchers at other institutions, guides graduate student research, and presents research results at professional meetings. He organizes the annual Acid Mine Drainage Task Force Symposium, conducts seminars and workshops on mined land reclamation, and consults with state and federal agency personnel, landowners, coal operators, and consultants. He works internationally on land reclamation issues in Asia and Europe.

He received the Applied Soil Science Award from the Soil Science Society of America, the Plass Award for Life-long Achievements in Reclamation Research and Service by the American Society of Mining and Reclamation, the Golden Auger Award from the WV Association of Soil Scientists, the Heebink Award for Outstanding Service from West Virginia University, and several outstanding teaching, research, and service awards in the department and college. He is a member of the science team of the Appalachian Regional Reforestation Initiative and edits the American Society of Mining and Reclamation's magazine entitled "Reclamation Matters." He has served on numerous national committees and councils on reclamation, including the president of the American Society of Mining and Reclamation twice, and was an associate editor for the Journal of Environmental Quality for six years.

Kow O. Eshun, P.E.
Principal



15 YEARS EXPERIENCE

EDUCATION

B.S., Civil Engineering, Kwame Nkrumah University of Science and Technology, 2005

M.S., Geotechnical Engineering, The University of Akron, 2013

REGISTRATIONS

Professional Engineer

- TX [redacted]
- KY [redacted]
- MD [redacted]
- WV [redacted]
- PA [redacted]
- VA [redacted]
- OH [redacted]

CERTIFICATIONS

Project Management Professional (PMP), Project Management Institute

10-Hour OSHA Construction Safety (Occupational Safety & Health Administration), OSHA

Mr. Eshun has 15 years of diverse experience in Geotechnical engineering, Logistics, Transportation and Construction Quality Assurance. Mr. Eshun has worked on a wide range of subsurface investigations to provide recommendations for shallow foundations, intermediate foundations, deep foundations, retaining structures, slope stability analyses, ground improvement techniques, mine subsidence, and earthwork for both greenfield and brownfield projects. Experience also includes geohazard characterization for pipeline projects, landslide mitigation and landslide remediation.

Additionally, Mr. Eshun has managed a wide range of projects in the transportation, health, natural gas, manufacturing, telecom and utilities industries including roadway projects, well pads, compressor stations, building projects, substation construction and expansion.

PROJECT EXPERIENCE

Transportation/Aviation

Charleston Interstate Roadway Lighting Renovation, WVDOH, Charleston Kanawha, WV*
Overall project manager for the geotechnical exploration and design of foundations for the high mast lighting poles for the I-64 in Charleston. Kow managed a 4-week drilling schedule on a busy interstate road working night shift to minimize the interruption to traffic. Project involved the design of over 25 drilled caissons. Managed and coordinated the structural design of the caissons with our subcontractor (Michael Baker Jr., Inc.)

Upshur County Regional Airport, Chapman Technical Group, Buckhannon Upshur, WV
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses. Prepared both preliminary and final recommendations for earthwork, pavement design for the rehabilitation of the apron and taxiway.

Tabler Station Connector Roadway, WVDOH, Martinsburg Berkeley, WV*
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses for the proposed roadway. Prepared both preliminary and final recommendations for earthwork, construction, karst treatment and cut/fill slope stability and construction for the proposed roadway

East Burke Bridge Replacement, WVDOH, Martinsburg Berkeley, WV*
Served as staff engineer for this project which consisted of the replacement of the existing bridge. He managed subsurface exploration, laboratory testing and was involved with the preparation of recommendations for the foundation of the bridge abutments

WVDOH Thomas Buford Pugh Bridge, Orders Construction Company, Prince Fayette, WV*
Project involved the replacement of the existing bridge with a new one. Managed the drilling and laboratory testing services for the preinstallation borings. Information from the borings was used to provide design recommendations for the caissons for the foundations

Meathouse Fork Bridge, Thrasher Engineering, New Milton Doddridge County, WV*
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses. Prepared both preliminary and final recommendations concerning earthwork and the design and construction of foundations for the proposed bridge

Power

AEP Amos-Chemical 138 kV Rebuild, American Electric Power, WV*
Managed the geotechnical site exploration for the construction of transmission lines linking two stations. The project consists of using deep foundation (drilled caissons) to support the proposed towers

AEP Union Carbide Station 8, American Electric Power, Institute Kanawha, WV*
Managed the expansion of an existing electric substation at the plant. Managed and coordinated the Electrical Earth Resistivity testing for the ground grid design of the proposed expansion

AEP Proposed Backup Generator Foundation, American Electric Power, Radford Pulaski, VA*
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses. Prepared recommendations for earthwork, foundation design (shallow foundation) for a generator pad

Beech Ridge Battery Storage, Invenergy, LLC, Rupert Greenbrier County, WV*
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses. Site was filled with mine spoils and deep dynamic compaction option was recommended to improve soil. Managed and supervised the DDC and post testing work to permit the use of shallow foundations to support the proposed structure.

Oil & Gas

Moore to Revival Pipeline Slip, Antero Resources, Salem Doddridge, WV
Managed the investigation and remedial design of a landslide along a pipeline right of way in Doddridge County, WV. CEC was retained by gas company to develop an approach to stabilize the landslide because it was threatening the integrity of the pipeline. CEC developed an approach to regrade the slope, provide adequate drainage, and construct a toe key to stabilize the slope.

Varner Well Pad Slip, Antero Resources, Salem Doddridge, WV
Managed the investigation and remediation of a landslide at a well site in Doddridge County, West Virginia. CEC was retained by an oil & gas company to investigate a landside that had the potential to slide down into existing ponds downslope of a gas well pad. The landside was occurring along the slope of an active well pad. CEC investigated the landslide and developed an approach to regrade the slope to stabilize the landslide.CEC provided drawings and specifications for the work. CEC is in the process of providing oversight for the slip repair.

Slope Monitoring and Landslide Remediation, Nisource, Southern West Virginia, WV*
Project Engineer for the investigation, monitoring and design of landslide remediation plans for various gas pipelines in southern West Virginia. The projects involved the two stages; designing landslide remediating plans and monitoring stability of slopes using a combination of piezometers and inclinometers. Managed the field investigations, modeled the slopes to develop remediation plans for failed slopes and a ranking system for the management of the risk of slope failures.

Sherwood Plant, MarkWest Energy, Sherwood Doddridge County, WV
Project involved the construction of bridges to provide access for the construction of a substation for the Sherwood Plant. Managed the geotechnical investigations and provided recommendations for the foundation design for the bridge foundations

PEN 40 Well Site, EQT, Pennsboro Ritchie, WV
Managed the geotechnical investigations at the proposed well site and prepared report providing recommendations for site earthwork, cut and fill recommendations and slope stability.

FAW 55, EQT, Monongah Marion, WV
Provide geotechnical engineering services relating to the county road improvement for FAW 55 well pad site. Managed the geotechnical subsurface exploration and provided design recommendations for a soldier pile and lagging along access road to the site.

Tonys Bridge Well Pad, Mountaineer Keystone, LLC, Mt Clare Harrison, WV
Managed the geotechnical investigations at the proposed well site and prepared report providing recommendations for site earthwork, cut and fill recommendations and slope stability. Also managed the compaction testing and construction monitoring for the project.

FAW 70, EQT, Monongah Marion, WV
Managed the geotechnical investigations at the proposed well site and prepared report providing recommendations for site earthwork, cut and fill recommendations and slope stability. The project involved building over an abandoned coal mine with overburden of less than 60 feet. Perform subsidence evaluation and development recommendations to reduce the risk of mine subsidence.

Gould Well Pad, XTO Energy, Warrendale Upshur, WV
Managed the geotechnical investigations and construction monitoring for the repair of a landslide affecting a portion of the well pad. Prepared a geotechnical engineering report and landslide repair drawings for construction purposes. Also provided recommendations for the disposal of soil to be excavated from the closure of an existing impoundment at the site.

Sherwood to Majorsville Pipeline ROW Slip Repairs , MarkWest Energy Partners, Littleton Doddridge, Wetzel and Marshall County, WV
Provided design for slips repairs along the pipeline ROW and managed the construction and field testing for the slips remediation. Also provided similar services for the Yankee Camp Pipeline Slip, Twenty Inches Sales Loop Pipeline Slip for MarkWest.

Trent Slip , Antero Resources, New Milton Doddridge County, WV
Managed the investigation and remedial design of a landslide along a pipeline right of way in Doddridge County, WV. Provided oversight and testing services for Antero during the construction stage of the project. Also provided similar services for Gum Run Road Slip Repairs for Antero.

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers

Project Management Institute

Deep Foundations Institute

PUBLICATIONS

Sett, K., Eshun, K. O., Chao, Y.-C., and Jeremi?, B., "Effect of Uncertain Spatial Variability of Soils on Nonlinear Seismic Site Response Analysis", Geotechnical Special Publication No. 225: State of the Art and Practice in Geotechnical Engineering (Proceedings of Geo-Congress 2012, Oakland, CA, March 25-29), Roman D. Hryciw, Adda Athanasopoulos-Zekkos, and Nazli Yesiller, Eds., pp.2856-2865, 2012

Alexandros Nikellis, Kow O Eshun, Mojtaba Dyanati, David A Roke, Qindan Huang, Akhilesh Chandra, Kallol Sett, "Effect of Site-Specific Soil Nonlinearities and Uncertainties on Ground Motion Intensity Measures and Structural Demand Parameters ", Georisk: Assessment and Management of Risk for Engineered Systems and Geohazards Volume 12, Issue 4, pp.279-296, 2018

Jason H. Littler, P.S.

Senior Project Manager

25 YEARS OF EXPERIENCE

EDUCATION

A.S., Civil Engineering Technology, West Virginia Institute of Technology, 1995

B.S., Engineering Technology - (Survey Emphasis), West Virginia Institute of Technology, 1996

REGISTRATIONS

Professional Surveyor
- WV [redacted]

Mr. Littler has over 24 years of experience with proven leadership skills, including managing, supervising, and motivating staff to achieve company objectives. Responsibilities have included positions as Roadway Designer and Survey Project Manager. He has performed roadway design, site civil design, drainage computations, construction layout, earthwork volumes, topographical surveys, aerial mapping control surveys, boundary surveys, WVDOH right of way plan development, courthouse research, deed work maps, survey plats, survey descriptions, earthwork volume computations, hydrology computations, WVDOH waste permits, plan preparation, subdivision plats, cell tower surveys, oil and gas landowner exhibits, pipeline as-builts, pipeline alignment sheets, pipeline routing, fine grade computations, and survey field crew management and oversight. He has been in direct charge with as many as 12 survey crews, which all reported to him and were supervised by him for direction and client satisfaction. He has been in professional charge of several boundary surveys ranging in size from small lot and partition surveys to large multi-tract 1000 acre surveys. He has performed numerous ALTA/ASCM land title surveys all throughout West Virginia for various banks, title insurance companies and development companies.

PROJECT EXPERIENCE

Land Development

Sun Mountain Resort, Mount Hope, WV*

This project consisted of the development of approximately 1,000 acres of land located on the west side of US Route 19, north of the exit to Mount Hope in Fayette County, WV. Preliminary plans for the Sun Mountain Resort included an amphitheater, hotel, Gary Player golf course, and a conference facility. Mr. Littler was responsible for all storm drainage and some of the civil design associated with the construction of the complex The construction of this project was not completed.

Northeast Quad Development, Bridgeport, WV*

Mr. Littler was involved in performing all site design for the development of this proposed commercial site, such as producing a detailed set of plans showing all site grading and drainage structures and performing all runoff calculations and sediment pond sizing. He also submitted a National Pollution Discharge Elimination System (NPDES) permit for approval.

Fairskies Development, Buckhannon, WV*

Mr. Littler performed a complete site design to produce the most available land use for this development. He also calculated pre and post runoff curve numbers with discharges, designed all structures accordingly, and provided mapping and placement of a relocated gas line. He also completed and submitted an NPDES permit.

Surveys / Geomatics

WVDOH-Red Jacket Postal Facility ALTA Survey, Mingo County, WV*

Performed an ALTA/ASCM land title survey for this project. Mr. Littler served as Survey Project Manager coordinating all survey crews and managing the daily field collection of data in accordance to ALTA survey procedures along with utility coordination, record research and computations.

Robinson Run Preparation Plant, Harrison County, WV*

Mr. Littler served as Survey Project Manager in charge of surveying on this 2200 TPH coal preparation plant being constructed for Consol Energy. This plant was built to replace the existing plant which had served its time. This project was unique in that the new prep plant was positioned directly behind the existing plant and the existing conveyor feed line to the plant was to only be extended

from the old plant into the new plant. The tolerances on alignment tie in was minimal and final tie-in between the old conveyor feed line and the new conveyor feed line was accomplished in a couple of days with no misalignment problems.

WVDEP Office of Abandoned Mine Lands and Reclamation Northern Mapping Services, northern counties of West Virginia*

Mr. Littler served as Survey Project Manager in charge of surveying and mapping on these individual Projects with the West Virginia Department of Environmental Protection, Division of Land Restoration, Office of Abandoned Mine Lands. This contract consisted of a 3 year assignment with the WVDEP and involved surveying and mapping services to be used for the design and construction of Abandoned mine lands projects located throughout the northern counties of West Virginia. Currently in the Northern contract, Mr. Littler has been in charge of the successful completion of the mapping for 40 individual projects with a total mapped acreage of 5,800 acres. Mr. Littler was responsible for the client maintenance, field visits, billing, invoicing and oversight for this three year assignment.

WVDEP Office of Abandoned Mine Lands and Reclamation Southern Mapping Services, southern counties of West Virginia*

Mr. Littler served as Survey Project Manager in charge of surveying and mapping on these individual Projects with the West Virginia Department of Environmental Protection, Division of Land Restoration, Office of Abandoned Mine Lands. This contract consisted of a 3 year assignment with the WVDEP and involved surveying and mapping services to be used for the design and construction of Abandoned mine lands projects located throughout the southern counties of West Virginia. Currently in the southern contract, Mr. Littler has been in charge of the successful completion of the mapping for 53 individual projects with a total mapped acreage of 5,000 acres. Mr. Littler was responsible for the client maintenance, field visits, billing, invoicing and oversight for this three year assignment.

Tygart Valley Dam, Grafton, WV*

Served as survey crew chief producing as-built surveying diagrams of piping within the dam. Surveying was conducted inside the dam for all as-built locations. Information was to be used for realignment of new pipes being replaced. Also performed original ground topography surveying for an access road leading to the base of the dam for access of equipment.

Dolphin Communications, Bridgeport, WV*

Mr. Littler performed a complete boundary survey of this tract and produced original ground mapping for the proposed road location to the new KISS FM radio station. Mr. Littler acquired all necessary permits and contracted all state agencies necessary for the construction of this road. He also performed runoff calculations and sized all culverts along the road.

Buckhannon Readiness Center, Capitol Engineering, Buckhannon, West Virginina

Role: Survey Project Manger/surveyor-in-Charge

UAV-based acquisition of LiDAR and georeferenced Photography for the existing conditions as-built mapping for an approximately 16 acre site of the Buckhannon Readiness Center. This project involved the collection of UAV Lidar mapping combined with Conventional/GPS surveying techniques. Responsibility included project management, quality control review of all survey deliverables and survey crew coordination.

* *Work performed prior to joining CEC*

PROFESSIONAL AFFILIATIONS

West Virginia Society of Professional Surveyors

Ohio Oil & Gas Association

Travis Adams
Senior Project Manager

23 YEARS OF EXPERIENCE

EDUCATION

B.S., Environmental Science (Emphasis on Water Quality), West Virginia University, 1998

EXPERTISE

Design of Municipal Water and Wastewater Treatment Plants

CERTIFICATIONS

Adult and Pediatric First Aid/CPR/AED, Red Cross

Certified Compaction Technician, West Virginia Department of Transportation

Certified Concrete Field Testing Technician, West Virginia Department of Transportation

Aggregate Certified Technician, West Virginia Department of Transportation

SafeLand USA - Basic Orientation, PEC Safety

Mr. Adams has 23 years of experience in the consulting engineering industry servicing municipal, private, commercial, industrial, Oil and Gas, and government sector clients. His project practice focus includes the detailed engineering design of water and wastewater treatment plants, water distribution systems, and wastewater collection systems. Mr. Adams's engineering experience includes: Detailed engineering design of water distribution pipelines, booster pump stations, water storage tanks, sanitary sewer collection pipelines, force mains, existing water and sewer system rehabilitation, development of CSO LTCP, and sanitary sewer pump station design. He has served as the overall project manager for numerous large municipal water and wastewater treatment plant projects as well as numerous water distribution and wastewater collection system projects, leading a team of professionals to evaluate, design, permit, bid, and construct projects with challenging construction obstacles and complex technical and regulatory requirements. Mr. Adams serves as the primary point of contact with the client and ownership team, regulatory personnel, and external team members throughout the life of the project.

PROJECT EXPERIENCE

Water Resources/Public Utilities

City of Mount Vernon, Ohio Anaerobic Digester Improvements for 5 MGD WWTP, City of Mount Vernon, OH, Knox County, Ohio

Role: Senior Project manager

Project Scope consisted of upgrading and modernizing the two (2) existing anaerobic digesters by removing the existing old Perth® gas mixing systems and installing new Linear Motion (LM) mixers in order to improve mixing and achieve improved volatile solids reduction as well as efficient production of useable biogas. New floating roof/cover systems equipped with biogas storage is proposed to be installed on the existing digesters as well. The project scope also includes the installation of a Huber® Strain press to screen primary sludge prior to entering the digesters in order to reduce trash accumulation consisting mainly of rags and sediment.

Solvay Chemicals, Inc. Willow Island Wastewater Treatment Plant - Ozone Treatment System, Solvay Chemicals, Inc., Willow Island Facility, Belmont, West Virginia

Role: Senior Project manager

Project Scope consisted of the design, bidding, and project management for the addition of an Ozone Treatment process to the existing Willow Island Wastewater Treatment Facility in order to address regulatory issues associated with the facilities NPDES discharge permit to the Ohio River. Solvay was experiencing issues related to toxicity with respect to their treated wastewater discharge to the Ohio River.

Improvements to the treatment process consisted of the design and construction of a new Ozone treatment system to address the toxicity problem as well as allow for reduction in the amount of biomass (sludge) produced as a result of the current treatment process. CEC's scope of services included site survey, civil engineering, geotechnical engineering, structural engineering, and construction management services.

Stonewall Resort Extended Aeration with Tertiary Filtration WWTP Upgrades, Stonewall Resort, Lewis County, West Virginia

Role: Senior Project manager

Project Scope consisted of the planning, design, permitting, bidding, and construction management for improvements to an existing extended aeration WWTP including tertiary filtration that provides year-around wastewater treatment to a major resort facility. Upgrades consisted of the rehabilitation of four (4) existing tertiary sand filters, new aeration piping and diffusers to the extended aeration process, construction of a new post-aeration basin to ensure required dissolved oxygen levels are met, and the construction of a new building for the proposed UV disinfection system, blower and controls room, as well office and lab space for the plant operator.

Town of Terra Alta Water Treatment Plant Upgrade & Water Line Extension to Corinth, Town of Terra Alta, Preston County, WV*

Role: Served as Senior Project Engineer

The project scope consisted of the planning, funding, design, bidding, and construction management of upgrades to the Town's existing Water Treatment Plant and the extension of the Town's potable water distribution system to provide potable water service to approximately 200 new residential customers in Corinth. The WTP upgrades consisted of the design and construction of a new pre-treatment sedimentation basin constructed in a new engineered metal building complete with rapid mixers, chemical feed equipment, pumps, and controls. The waterline extension consisted of the extension of 8", 6", 4", and 2" main waterline, a new 100,000 gallon water storage standpipe, 200 new customer meter settings, and miscellaneous fire hydrants, valves, and trench repair items. The residents of Corinth had approached the Town about providing public water service because the area was previously mined and the majority of the residential water wells in the Corinth area had become polluted with large amounts of iron, sulfur, and manganese making the majority of the ground water in the area un-usable. Due to the presence of previous mining activity impacting the ground water supply, the Engineer was able to secure grant funds from the WVDEP Abandoned Mine Lands (AML) Program which resulted in low water customer user rates making the project very affordable.

New 700 GPM Potable Water Treatment Plant & Water Distribution System Extension to the Hazelton Federal Prison Complex, Preston County, WV, Preston County PSD #4, Preston County, WV*

Role: Served as Project Engineer and Construction Manager

The project scope consisted of the design, permitting, bidding, and construction management of a new 700 GPM Water Treatment Plant and Water Distribution System Extension to serve the Hazelton Federal Prison Complex. Major items included the design and development of source water wells to provide raw water to the new WTP, New 700 GPM Water Filtration Plant, Two (2) new 700 GPM Booster Pump Stations, Three (3) new Water Storage Tanks including a 1 Million Gallon Elevated Water Storage Tank located near the prison complex, and the installation of a new 16" Ductile Iron Waterline installed across country from the new WTP to the Federal Prison Complex.

Newell Water Company 1,400 GPM Potable Water Treatment Plant, Newell Water Company, Hancock County, WV*

Role: Served as Senior Project Engineer

Project scope consisted of the design, permitting, bidding, and construction management of a new 1,400 GPM Water Treatment Plant to serve residential, commercial, and one (1) large industrial customer near the city of Newell in Hancock County, WV. This project was funded privately by the Homer Laughlin Fiesta Ware China Company who required a constant supply of high quality potable water for their Fiesta Ware china manufacturing facility. The water treatment process consisted of pressure filtration vessels designed to remove iron and manganese from the incoming raw water supply wells.

Travis W. Adams. "No Surface Discharge Allowed". WVAWWA/WEA 2018 Joint Conference, Canaan Valley Resort, Davis, WV, May 21, 2018

GEOTECHNICAL ENGINEERING & DRILLING SERVICES

Geotechnical Engineering

Geotechnical engineering is one of NGE's core areas of practice. Our highly qualified and experienced staff of geotechnical engineers, geologists, and technicians enables us to provide practical and economic solutions to a variety of geotechnical problems. We are especially experienced and qualified in dealing with the types of geotechnical issues typically encountered in the Appalachian region.

Some of the geotechnical engineering services NGE provide include:

- Commercial development geotechnical investigations and reports
- Shallow and deep foundation analysis
- Highway and bridge geotechnical studies
- Well pads and compressor stations geotechnical investigations
- Water storage tank investigations
- Freshwater and wastewater impoundment investigations
- Slope stability studies
- Fill embankment analysis and design
- Cut slope analysis and design
- Retaining wall design
- Landslide investigations and remedial designs
- Laboratory soil testing
- Geotechnical instrumentation
- Mine subsidence investigations
- Pile drivability studies
- Groundwater and seepage studies

Geotechnical Drilling Services

In addition to geotechnical engineering services, NGE also offers geotechnical drilling and exploration services with in-house experienced drilling personnel. Equipment available for use includes track-mounted drill rigs which can be used to access most sites, portable hand-operated equipment for difficult to reach sites, and dynamic cone penetrometer equipment. Some of the drilling and exploration services offered include:

- Test borings with Standard Penetration Sampling
- Rock coring and sampling
- Shelby tube sampling
- Piezometer and monitoring well installation
- Slope inclinometer installation
- Dynamic cone penetrometer testing
- Portable drilling equipment for difficult site access

OFFICES:

West Virginia Office:
650 MacCorkle Avenue West
St. Albans, WV 25177
(304) 201-5180
John Nottingham, P.E.
jnottingham@ngeconsulting.com

Pennsylvania Office:
171 Montour Run Road
Moon Township, PA 15108
(412) 722-1970
Jim Henry, P.E.
jhenry@ngeconsulting.com

GEOTECHNICAL ENGINEERING & DRILLING SERVICES

All of NGE's drill rigs are equipped with hollow stem augers, Standard Penetration Testing and Sampling equipment, wireline rock coring equipment, AW and NQ drilling rods. NGE's current drilling equipment includes the following:

- Diedrich D-50 rubber track mounted drill rig
- Two CME 45 rubber track mounted drill rigs
- Acker Soil Scout rubber track mounted drill rig
- Acker portable tripod mounted drill rig
- Wildcat portable dynamic cone penetrometer
- AMS portable auguring and sampling equipment
- Casing advancer system
- Three drill rig haul trucks (tilt-bed and tractor/ trailer)
- Water haul trucks and trailers
- Three off road utility vehicles
- Numerous water pumps, hose, and portable storage tanks

Diedrich D-50 Rubber Track Mounted Drill Rig

Construction Inspection Services

NGE has a staff of well trained and highly experienced construction technicians who work under the supervision of licensed professional engineers. Our technicians are trained and have WVDOH certification in the areas of soil compaction, concrete, aggregate and bituminous materials. Some of the construction materials testing services provided include:

- Fill placement monitoring and soil compaction testing
- Concrete sampling and testing
- Aggregate sampling and testing
- Examination and verification of foundation bearing soils
- Pile driving inspection
- Drilled pier inspection

In addition to the above services, NGE also provided **cross -hole sonic logging** of drilled shafts. This is a non-destructive means for testing and verifying the integrity of drilled shafts used in bridge and building foundations.

Crosshole Sonic Logging Equipment

ISNETWORLD ISN MEMBER CONTRACTOR

Avetta MEMBER

PEC SAFETY SSQ PARTICIPANT

AXIOMMEDICAL

Appendix D

Related Project Experience

Civil & Environmental Consultants, Inc.

CRAFTS CREEK STREAM FLOW RESTORATION PROJECT

OWNER/CLIENT

CNX Resources Corporation

LOCATION

Morris Township, Washington County, PA

CEC SERVICES

Natural Stream Channel Design

Liner Design

Hydrology and Hydraulic Analysis

Erosion and Sediment Control Design

Construction Monitoring

Construction Quality Assurance

OWNER OBJECTIVE

CNX Resources Corporation was looking to restore and maintain flow of Crafts Creek, overlaying the E18 Enlow Fork Mine longwall mining panel, to a stable and ecologically functional stream channel. The Pennsylvania Department of Environmental Protection (PADEP) is requiring flow be restored to the streams' pre-mining condition.

CEC APPROACH

CEC was hired to perform a stream flow restoration project on an approximately 1,000 feet section of Crafts Creek. A stable stream channel was designed utilizing geosynthetics, geotextiles, an alluvial amendment method, and natural stream channel design principles to seal the underlying fractured bedrock and thus help restore and maintain stream flow.

The stream channel grading plan was designed with reference reach data collected along Sawhill Run in East Finley Township, Washington County, Pennsylvania as well as using regional curve equations for stable stream channel characteristics such as drainage area; bankfull depth, width, and cross-sectional area; meander length; radius of curvature; and floodprone area width. The stream bankfull capacity was designed for a 2-year storm event.

The geosynthetic stream liner system utilized a geosynthetic clay liner (GCL) overlain by a Geoweb cellular confinement system to provide a barrier to infiltration into the underlying fractured bedrock. The stream liner system was designed to resist erosion from a 100-yr storm event and was installed in the upstream section of the stream restoration reach. A detailed hydrologic and hydraulic analysis was performed to determine the velocities, shear stress and stream power in order to confirm the natural channel and stream liner design geometry and stability.

The alluvial amendment method used the addition of bentonite to the subsurface alluvium and soils to create a more cohesive and lower permeable substrate soil that can improve stream flow conveyance. This method was used in the downstream section of the stream restoration reach.

An erosion and sediment control design, that minimized the impacts to water quality during construction, was provided in compliance with PADEP Chapter 102 requirements for the project. Construction monitoring and quality assurance was performed to ensure the restoration activities were built in accordance with the construction drawings and specifications. Final planting was completed in 2013.

A detailed stream restoration compliance monitoring program, which included regular field visits for five years to document the progression of the stream back to a naturally functioning and stable stream channel, was performed for the stream restoration reach following construction.

Civil & Environmental Consultants, Inc.

BEAVER CREEK PASSIVE AMD TREATMENT

OWNER/CLIENT

Friends of the Cheat, Inc.

LOCATION

Kingwood, WV

CEC SERVICES

Site Grading/Earthwork Analysis

Clean Water Act, Section 401/404 Permitting

Ecosystem Restoration

Water Quality & Sediment Surveys

Wetland AMD Treatment

Wetlands & Waters Delineations

NPDES Permitting Support

Construction Quality Assurance

Erosion & Sediment Control Design and Inspection

Watershed Planning and Restoration

Horizontal & Vertical Control Surveys

Topographic Surveys

Construction Management

GPS/GIS Services

Existing acid-iron conditions of UNT to Beaver Creek.

OWNER OBJECTIVE

Friends of the Cheat, Inc. (FOC) is a non-profit watershed association with the mission to restore, preserve, and promote the outstanding natural qualities of the Cheat Watershed. FOC has been recognized repeatedly over the years for unrelenting dedication and measurable success to improve the Cheat Watershed. FOC works with community stakeholders and technical experts to understand and revitalize brownfields in the lower Cheat River watershed to spur economic growth, protect public health, and promote environmentally-friendly redevelopment. Since 1995, FOC and its partners have implemented 15 acid mine drainage (AMD) treatment systems on abandoned mine lands in the lower Cheat River watershed.

The Beaver Creek AMD project site resides on pre-Surface Mining Control and Reclamation Act (SMCRA) Abandoned Mine Land (AML) of the upper Appalachian plateau. Pre-SMCRA mining had no reclamation requirements and extraction of high sulfur coal has contaminated a local watershed with high acidity, iron, and aluminum concentrations. The contaminants absolutely inhibit establishment of aquatic ecosystem and associated riparian buffer.

CEC APPROACH

The engineering design utilizes an existing, but ecologically barren delineated waterway under the jurisdiction of the United States Army Corps of Engineers (USACE). The bulk of construction will utilize onsite fill material requiring appropriate geotechnical engineering methods. Treatment system components will utilize bell siphons and plumbing requiring tight tolerances on elevations.

CEC completed topographic surveying and biological assessment of the terrestrial and aquatic species at the site. Water quality and hydrologic data was collected specifically to drive the engineering design. Calculations and bench testing were utilized to assess contaminant loads, acid neutralization rates, metal oxidation rates, appropriate reagent tonnages, and best management practice (BMP) sizing. CEC made substantial contributions to surface stabilization and erosion and sediment (E&S) control design including the use of fill compaction keys and turf reinforcement materials.

CEC balanced a combination of treatment efficacy with BMP sizing to determine the optimal cost-benefit scenario. Reduced contaminant loads will elicit establishment of aquatic habitat and benefit a downstream trout fishery. A diverse planting plan of native grasses, hardwoods, and evergreens will stabilize the site and provide healthy riparian ecosystem. Overall the project will work toward achieving Total Maximum Daily Load (TMDL) thresholds, which is a Clean Water Act Title 319 funding objective.

Header Photo: Existing acid-aluminum AMD seep discharging into pond

Civil & Environmental Consultants, Inc.

RECLAMATION OF FOUR BOND FORFEITURE SITES

OWNER/CLIENT

Stantec, Inc.

LOCATION

Northern West Virginia

CEC SERVICES

Site Grading/Earthwork Analysis

Stormwater Management/BMP Design

Hydrogeology and Groundwater Modeling

Groundwater/Surface Water Remediation Systems

Coal Refuse and Pavement Neutralization

Landowner Negotiations

Topographic Surveys

Calculation Brief

Construction Plans and Specifications

Bid Estimate and Engineer's Cost Estimate

OWNER OBJECTIVE

Stantec, Inc. is an international professional services company in the design and consulting industry that has more than 400 locations in North America and 7 locations internationally. Stantec was seeking assistance with reclamation projects at five bond forfeited sites in northern West Virginia. The sites include three RobLee Coal Company mines, one Energy Marking Company mine and one Buffalo Coal Company mine.

CEC APPROACH

Stantec awarded CEC the contract to develop reclamation plans for the five bond forfeited sites. CEC began the project by obtaining rights-of-entry from 12 different landowners as well as having those landowners sign waivers for access roads and ponds constructed by the mine operations. In addition, CEC was tasked with developing and implementing subsurface investigations, obtaining aerial photography with field control surveys, supplementing aerial photography with onsite field surveys, obtaining soil and refuse analyses, and reclamation design.

CEC performed topographic surveying and generated construction plans and specifications for the five project sites prior to construction. Improvements to 2.5 miles of access roads also had to take place before construction could begin.

The projects involved the design of approximately 1,080,000 cubic yards of balanced earthwork, three mine seals, rock toe drains, and approximately 3,500 feet of subsurface drains. During remediation, approximately 23,500 feet of ditches were constructed, 13 sediment control ponds with outlet structures were re-constructed, and approximately 830 feet of piping was installed. CEC also managed the revegetation of approximately 165 acres.

Three of the sites have been built successfully. The fourth site is currently under construction.

Civil & Environmental Consultants, Inc.

SHINNS RUN PORTAL

OWNER/CLIENT

West Virginia Department
of Environmental Protection

LOCATION

Shinnston, WV

CEC SERVICES

Site Grading/Earthwork Analysis

Stormwater Management/BMP Design

Hydrogeology and Groundwater Modeling

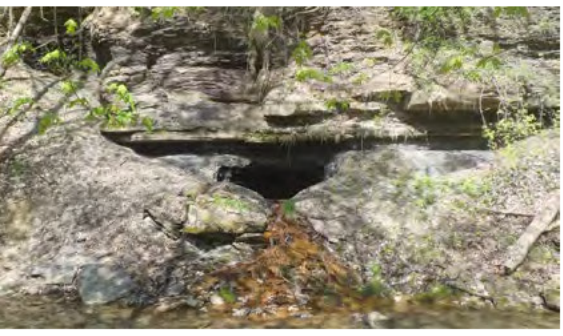
Groundwater/Surface Water
Remediation Systems

Topographic Surveys

Calculation Brief

Construction Plans and Specifications

Bid Estimate and Engineer's Cost Estimate



OWNER OBJECTIVE

The West Virginia Department of Environmental Protection (WVDEP) was seeking assistance with the reclamation design of the Shinns Run Portals Abandoned Mine Lands located near Shinnston in Harrison County, West Virginia. Past deep mining operations have captured stream flows, impacted Harrison County Route 13, and resulted in the formation of fifteen open, partially collapsed, or totally collapsed mine openings. The deep mined Pittsburgh coal seam is located in close proximity to several area homes, within the right-of-way of Harrison County Route 13, and within four vertical feet of Shinns Run Stream.

CEC APPROACH

CEC was awarded the contract to perform engineering services for the reclamation design of the Shinns Run Portals project. CEC performed field surveying tasks to complement aerial mapping supplied by the WVDEP; developed and implemented a subsurface investigation to quantify and qualify impounded mine pools; and performed a detailed preliminary investigation to include public and private records. The preliminary investigation obtained available deep mine maps, interviewed affected landowners, evaluated construction and drill access, and evaluated sources for materials to be used in reclamation of the project.

The project involved submittal and approval of an Army Corps of Engineers permit and a Hydraulic Engineering Center-River Analysis System (HEC-RAS) hydrologic evaluation of Shinns Run to determine potential flood impacts to residents' homes from installation of low water crossings in order to successfully seal all mine openings. CEC developed plans to seal two streambeds now flowing into the abandoned mine works through subsidence features. In addition, CEC led boring and jacking operations to place a pipe beneath Harrison County Route 13 and provide hydraulic relief to an area home. Approximately 900 linear feet of ditches, 1,000 linear feet of subsurface drains, 450 linear feet of stream bank protection, and 75 feet of roadbed protection were designed by CEC.

CEC performed topographic surveying; generated construction mapping; analyzed soil test results to determine soil amendments for vigorous vegetative growth; performed hydraulic and hydrologic studies and designed ditches and pipes; developed preliminary and final design construction plans and specifications; designed mine pool dewatering operations and mine drainage treatment plans; developed an engineer's cost estimate, bid schedule, and calculation brief; attended initial on-site, preliminary design, and final design meetings.

This project is currently under construction.

ARLINGTON (GAIN) HIGHWALL

OWNER/CLIENT

West Virginia Department of Environmental Protection

LOCATION

Arlington, West Virginia

CEC SERVICES

Site Grading/Earthwork Analysis

Stormwater Management/BMP Design

Hydrogeology and Groundwater Modeling

Groundwater/Surface Water Remediation Systems

Topographic Surveys

Calculation Brief

Construction Plans and Specifications

Bid Estimate and Engineer's Cost Estimate

OWNER OBJECTIVE

The West Virginia Department of Environmental Protection (WVDEP), Office of Abandoned Mine Lands oversees and facilitates the resolving of public safety issues as mine fires & subsidence, hazardous highwalls, mining-impacted water supplies, open shafts and portals, and other dangers resulting from mining before 1977. Such practices were established by the Surface Mining and Control Act and the creation of the Office of AML&R in 1981. The Office of Surface Mining provides oversight to the Office of AML&R.

The WVDEP, Office of Abandoned Mine Lands requested proposals to provide design services to eliminate falling/entrapment hazard from a previous reclamation operation.

CEC APPROACH

CEC performed a field visit to identify the problem area and make recommendations for elimination of the hazard. CEC provided GPS field survey tasks to map the problem area.

The project involved 570 linear feet of sediment control; 210 feet of ditches; 260 feet of pipes; 130 linear feet of subsurface drains; one manhole; one drop inlet; one headwall; one acre of Revegetation; topographic surveying to generate project mapping; hydraulic studies and design for ditches and pipes; sediment control design; revegetation plan; preliminary and final design; construction plans and specifications; engineers cost estimate, bid schedule, and calculation brief; initial on-site, preliminary design, pre-bid meeting; monthly reports and invoicing.

The project was completed in June 2015.

Civil & Environmental Consultants, Inc.

McALPIN PORTALS

OWNER/CLIENT

West Virginia Department of Environmental Protection

LOCATION

Bridgeport, WV

CEC SERVICES

Geotechnical Engineering

Site Grading/Earthwork Analysis

Slope Stability/Retaining Structure Design

Stormwater Management/BMP Design

Hydrogeology and Groundwater Modeling

Soil/Groundwater Remediation Systems

Topographic Surveys

Calculation Brief

Construction Plans and Specifications

Bid Estimate and Engineer's Cost Estimate

Landslide Remediation

OWNER OBJECTIVE

The McAlpin Portals Abandoned Mine Lands, located near Bridgeport in Harrison County, West Virginia, consisted of approximately 3,400 linear feet of high wall ranging from 30 to 50 feet in height, and ten collapsed mine entries, five of which were discharging acid mine drainage. The uncontrolled mine drainage runs over the hill causing further slope instability and threatening five homes located downhill.

CEC APPROACH

CEC was awarded a contract by the West Virginia Department of Environmental Protection (WVDEP) to perform engineering services for the reclamation design of the abandoned mine lands. CEC designed and implemented a drilling program to define slip limits and testing of spoil properties for slope stability. CEC also supplemented WVDEP mapping with field surveys of important project features such as seep, slip, coal refuse boundaries, and collapsed portal locations.

CEC provided Retaining Wall/Earth Moving Design Alternatives for four slips; reclamation design with 42,000 cubic yards of excavation; 9,200 linear feet of erosion and sediment control; 5,325 linear feet of ditches; 247 linear feet of pipes; 1,317 linear feet of subsurface drains; one manhole; a Gabion Basket Retaining Wall; subsidence hole mitigation; stream bank protection; five mine seals; 23 acres of revegetation; topographic surveying to supplement existing mapping; soil physical properties testing for slope stability; hydraulic studies and design for ditches and pipes; sediment control design; revegetation plan; preliminary and final design; construction plans and specifications; dewatering and AMD Treatment Plan.

This project is currently in the final review/approval stage with the WVDEP and will be let for bid in 2018.

Civil & Environmental Consultants, Inc.

HODGESVILLE (WRIGHT) MINE BLOW-OUT

OWNER/CLIENT

West Virginia Department of Environmental Protection

LOCATION

Hodgesville, WV

CEC SERVICES

Site Grading/Earthwork Analysis

Stormwater Management/BMP Design

Hydrogeology and Groundwater Modeling

Groundwater/Surface Water Remediation Systems

Topographic Surveys

Calculation Brief

Construction Plans and Specifications

Bid Estimate and Engineer's Cost Estimate

OWNER OBJECTIVE

The West Virginia Department of Environmental Protection (WVDEP), Office of Abandoned Mine Lands oversees and facilitates the resolving of public safety issues as mine fires & subsidence, hazardous highwalls, mining-impacted water supplies, open shafts and portals, and other dangers resulting from mining before 1977. Such practices were established by the Surface Mining and Control Act and the creation of the Office of AML&R in 1981. The Office of Surface Mining provides oversight to the Office of AML&R.

The WVDEP, Office of Abandoned Mine Lands requested proposals to provide design services to mitigate problems associated with an unexpected mine blow-out. This project was deemed an emergency project with a very short time frame for document submittal and awarding of the construction contract. The problem area was located approximately 300 feet behind a residence. On or about March 17, 2015 a mine blowout sent uncontrolled high flows of mine water down an existing ditchline. The uncontrolled flow sent mud, debris, and sediment down the ditchline plugging an existing drop inlet and pipe beneath US Route 20 and submerging US Route 20 beneath 10 inches of water for a period of time causing the road to be closed to traffic. After the initial surge, a 25-foot diameter pool approximately three feet deep developed directly adjacent to US Route 20 with the overflow directed down the east road ditchline. The West Virginia Department of Highways had removed debris from atop the drop inlet and re-established flow though the road pipe. The outlet end of the road pipe is submerged with mud and debris with water conveyed by the road pipe welling-up out of the ground and sheet flowing into nearby ditches.

CEC APPROACH

CEC's reclamation design included 12,500 cubic yards of excavation; two wet mine seals; 1,900 linear feet of sediment control; 531 linear feet of ditches; 116 feet of pipes; 355 linear feet of subsurface drains; one manhole; four acres of revegetation; topographic surveying to develop project mapping; soil testing; hydraulic studies and design for ditches and pipes; sediment control design; revegetation plan; preliminary and final design; construction plans and specifications; dewatering and AMD Treatment Plan; engineers cost estimate, bid schedule, and calculation brief; initial on-site, preliminary design, pre-bid meeting; monthly reports and invoicing.

The project was completed in November 2015.

Civil & Environmental Consultants, Inc.

ARKWRIGHT SLURRY IMPOUNDMENT

OWNER/CLIENT

CONSOL Energy, LLC/CNX Land Resources (Owner)

Mon-View LLC. (Client)

LOCATION

Monongalia County, WV

CEC SERVICES

Cone Penetrometer Testing

Geotechnical Investigation

Settlement Evaluation

Flood Routing

Site Grading Analysis

Closure Plan

Revegetation

Construction Support

OWNER OBJECTIVE

After the closure of the Arkwright mining complex near Morgantown, West Virginia, CONSOL Energy, LLC (CONSOL) opted to develop the site for commercial use. CONSOL contracted CEC to generate a closure plan for an inactive fine coal refuse (FCR) slurry impoundment. FCR is material contained within a slurry generated by the coal preparation process that settles and consolidates over time.

CEC APPROACH

CEC performed a geotechnical investigation and analysis, and provided a closure plan for the inactive FCR slurry impoundment. Piezo-Cone Penetrometer Testing (CPTU) was performed in the impoundment to assess the stability and compressibility of the FCR materials, and piezometers were installed within the impoundment and embankment.

CEC's investigation and analysis of the CPTU data determined that the impoundment and FCR was well-drained and that the FCR materials would compress up to 3.5 feet under the backfill placed during the closure of the impoundment. Consequently, no specialized treatments (such as grouting or wick drains) were needed to stabilize the FCR materials prior to development. Some areas, depending on the postdevelopment use, received fill surcharges to induce settlements prior to development. Settlement monitoring data was collected and analyzed in these areas prior to surcharge removal and final site development activities.

Closure of the impoundment entailed a complete breach of the embankment, and excavation and placement of approximately 1,300,000 cubic yards of fill. At completion, the site provided approximately 40 acres of level development area within the former mine waste disposal facility, of which approximately 30 acres were purchased by Wal-Mart Stores, Inc. for the construction of a new Wal-Mart Supercenter and Sam's Club.

Civil & Environmental Consultants, Inc.

BEECH HOLLOW POWER PROJECT
COAL REFUSE MINING AND RECLAMATION DESIGN AND PERMITTING

OWNER/CLIENT

Champion Processing, Inc.

LOCATION

Robinson Township, Pennsylvania

CEC SERVICES

Geotechnical and Civil Engineering

Coal Refuse Reclamation and Ash Disposal Permitting

Geologic and Hydrogeologic Characterization

OWNER OBJECTIVE

Champion Processing, Inc. required a geotechnical and civil engineering analysis for adding a co-generation power plant facilty to their 600-acre coal refuse disposal facility to reclaim coal refuse for fuel and disposal of ash back on the Champion coal refuse disposal area.

CEC APPROACH

CEC performed detailed geotechnical and civil engineering analyses for a 300 mW co-generation power plant facility, which included coordinating, performing and managing all aspects of the investigation, subsurface exploration, laboratory testing, development of soil and rock design parameters, foundation and construction design recommendations, slope stability analyses, retaining wall design, and road design.

Concurrently, CEC performed the coal refuse disposal permit modification for the existing 600-acre Champion Processing, Inc. (Champion) coal refuse disposal facility. CEC services included the design and permitting of the coal refuse reclamation and ash disposal operations, preparation of all permit application forms, acquisition of all necessary geologic and hydrogeologic data required for the application, developing coal refuse and ash strength properties and performing interim and long-term slope stability analyses, erosion & sedimentation and storm water management facility design, and coordination of the permit submittal and review process with the Pennsylvania Department of Environmental Protection.

Appendix E

Miscellaneous Forms

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: CEOI 0313 DEP2200000006

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

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

Addendum Numbers Received:
(Check the box next to each addendum received)

- ☐ Addendum No. 1
- ☐ Addendum No. 2
- ☐ Addendum No. 3
- ☐ Addendum No. 4
- ☐ Addendum No. 5
- ☐ Addendum No. 6
- ☐ Addendum No. 7
- ☐ Addendum No. 8
- ☐ Addendum No. 9
- ☐ Addendum No. 10

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

Civil & Environmental Consultants, Inc.
Company


Authorized Signature

January 11, 2022
Date

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

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.

Daniel Martinez, PE - Project Manager

(Name, Title)

Daniel Martinez, PE - Project Manager

(Printed Name and Title)

120 Genesis Boulevard, Bridgeport, WV 26330

(Address)

304-203-8655

(Phone Number) / (Fax Number)

dmartinez@cecinc.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.

By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law.

Civil & Environmental Consultants, Inc.

(Company)

Dennis E. Miller Vice President

(Authorized Signature) (Representative Name, Title)

Dennis Miller, PS - Vice President

(Printed Name and Title of Authorized Representative)

January 11, 2022

(Date)

304-933-3119 / 304-933-3327

(Phone Number) (Fax Number)

OMB # 1029-0119
Expiration Date:
10/31/2024

ABANDONED MINE LANDS (AML) CONTRACTOR INFORMATION FORM

You must complete this form for your AML contracting officer to request an eligibility evaluation from the Office of Surface Mining Reclamation and Enforcement (OSMRE) to determine if you are eligible to receive an AML contract. This requirement can be found under OSMRE's regulations at 30 CFR 874.16. **NOTE:** This form must be signed and **dated within 30 days** of submission to be considered for a current bid.

Part A: General Information

Business Name: Civil & Environmental Consultants, Inc.
Tax ID #: 25-1599565
Address: 333 Baldwin Road
City, State, & Zip: Pittsburgh, PA 15205
Phone Number: 412-429-2324
Email Address: _____

Part B: Obtain an Organizational Family Tree (OFT) from the Applicant Violator System (AVS)

If you plan to certify the existing AVS information or submit updates under Part C, you must include an OFT. Instructions for downloading an OFT from the AVS can be found at:
https://www.osmre.gov/resources/forms/OMB1029-0119instructions.pdf
If you require assistance you may contact the AVS Office by phone at: 800-643-9748, or by email at: avshelp@osmre.gov.

Part C: Certifying and updating information in the AVS

Select one of the options, follow the instructions for the selected option, sign, and date below.

I, _____, have express authority to certify that:
(Print Name)

☐ 1. Our business is listed in the AVS. The information is accurate, complete, and up to date. (If you select this option, you must attach an Entity OFT from the AVS to this form). Do not complete Part D.

☐ 2. Our business is in the AVS. The information needs to be updated. (If you select this option, you must attach an Entity OFT from the AVS to this form). Complete Part D to provide the missing or corrected information.

☐ 3. Our business is not listed in the AVS. The information needs to be added. Complete Part D to provide the information.

_____ Date

_____ Signature

_____ Title

OMB # 1029-0119
Expiration Date:
10/31/2024

Part D: OFT Information

Contractor's Business Name: Civil & Environmental Consultants, Inc.

If the current Entity OFT information for your business is incomplete in the AVS, or if there is no information in the AVS for your business, you must provide all of the following information as it applies to your business. Please include additional copies of this page if the space below is not sufficient to capture all information.

- Every officer (President, Vice President, Secretary, Treasurer, etc.);
- All Directors, Partners, and Members;
- All persons performing a function similar to a Director;
- Every person or business that owns 10% or more of the voting stock in your business;
- Any other person(s) who has the ability to determine the manner in which the AML reclamation project is being conducted.
- **Please list an end date for any person who is no longer with your business.**

Name: _____
Address: _____
City, State, Zip: _____
Begin Date: _____
End Date: _____
% Ownership: _____
Position/Title: _____
Phone Number: _____

Name: _____
Address: _____
City, State, Zip: _____
Begin Date: _____
End Date: _____
% Ownership: _____
Position/Title: _____
Phone Number: _____

Name: _____
Address: _____
City, State, Zip: _____
Begin Date: _____
End Date: _____
% Ownership: _____
Position/Title: _____
Phone Number: _____

Name: _____
Address: _____
City, State, Zip: _____
Begin Date: _____
End Date: _____
% Ownership: _____
Position/Title: _____
Phone Number: _____

PAPERWORK REDUCTION STATEMENT

The Paperwork Reduction Act of 1995 (44 U.S.C 3501) requires us to inform you that: Federal Agencies may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a current valid OMB control number. This information is necessary for all successful bidders prior to the distribution of AML funds, and is required to obtain a benefit.

Public reporting burden for this form is estimated to range from 15 minutes to one hour, with an average of 30 minutes per response, including time for reviewing instructions, gather and maintaining data, and completing and reviewing the form. You may direct comments regarding the burden estimate or any other aspect of this form to the Information Collection Clearance Officer, Office of Surface Mining Reclamation and Enforcement, 1849 C Street, NW, Room 4559, Washington, DC 20240.

West Virginia Ethics Commission

Disclosure of Interested Parties to Contracts

(Required by *W. Va. Code* § 6D-1-2)

Name of Contracting Business Entity: Civil & Environmental Consultants, Inc. **Address:** 120 Genesis Boulevard, Bridgeport, WV 26330

Name of Authorized Agent: Joseph Robinson **Address:** Same as Above

Contract Number: DEP2200000006 **Contract Description:** Francis Drainage Maintenance

Governmental agency awarding contract: WVDEP - AML

☑ **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.
   Novel Geo-Environmental, LLC
   Sturm Environmental Services
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: Joseph D. Robinson Date Signed: 1-6-2022

Notary Verification

State of WV, County of Harrison:

I, JOSEPH D. ROBINSON, 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 January day of 6, 2022.

Lori J. Miller
Notary Public's Signature

LORI J MILLER
Notary Public Official Seal
State of West Virginia
My Comm. Expires Sep 29, 2022
Civil & Environmental Consultants
600 Market Place Suite 200 Bridgeport WV 26330

To be completed by State Agency:

Date Received by State Agency: _____

Date submitted to Ethics Commission: _____

Governmental agency submitting Disclosure: _____

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 exceed 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: Civil & Environmental Consultants, Inc.

Authorized Signature: Joseph D. [illegible] Date: 1-6-2022

State of WV

County of Harrison, to-wit:

Taken, subscribed, and sworn to before me this 6 day of January, 2022

My Commission expires September 29, 2022

AFFIX SEAL HERE

LORI J MILLER
Notary Public Official Seal
State of West Virginia
My Comm. Expires Sep 29, 2022
Civil & Environmental Consultants
600 Market Place, Suite 200 Bridgeport WV 26330

NOTARY PUBLIC Lori J Miller

Civil & Environmental
Consultants, Inc.

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