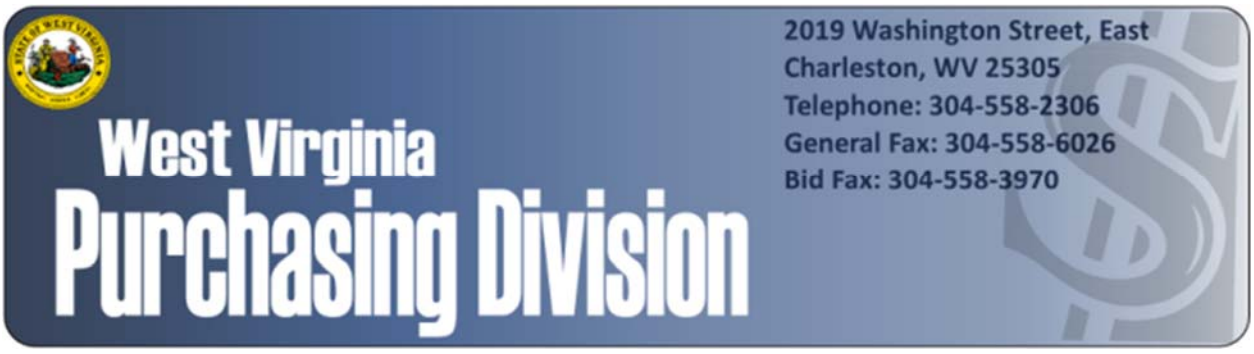

The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at ***wvOASIS.gov***. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at ***WVPurchasing.gov*** with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

Header 1

List View

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

Procurement Folder: 1047618
Procurement Type: Central Purchase Order
Vendor ID: 000000232671
Legal Name: TETRA TECH INC
Alias/DBA:
Total Bid: $0.00
Response Date: 06/21/2022
Response Time: 16:17
Responded By User ID: katie.pugh
First Name: Katie
Last Name: Pugh
Email: katie.pugh@tetratech.co
Phone: 740-298-9062

SO Doc Code: CEOI
SO Dept: 0313
SO Doc ID: DEP2200000014
Published Date: 6/22/22
Close Date: 6/27/22
Close Time: 13:30
Status: Closed
Solicitation Description: EOI - 2022 AML Contract 5 Project North
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:	1047618
Solicitation Description:	EOI - 2022 AML Contract 5 Project North
Proc Type:	Central Purchase Order

Solicitation Closes	Solicitation Response	Version
2022-06-27 13:30	SR 0313 ESR06022200000007598	1

VENDOR

000000232671
TETRA TECH INC

Solicitation Number: CEOI 0313 DEP2200000014

Total Bid: 0 **Response Date:** 2022-06-21 **Response Time:** 16:17:36

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	Professional Svcs - Laurel Point (Travinski) Mine Openings				0.00

Comm Code	Manufacturer	Specification	Model #
81100000			

Commodity Line Comments:

Extended Description:

Professional Svcs - Laurel Point (Travinski) Mine Openings

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	Professional Svcs - Left Fork of Little Sandy Subsidence				0.00

Comm Code	Manufacturer	Specification	Model #
81100000			

Commodity Line Comments:

Extended Description:

Professional Svcs - Left Fork of Little Sandy Subsidence

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
3	Professional Svcs - McAlpin (Lambert) Landslide				0.00

Comm Code	Manufacturer	Specification	Model #
81100000			

Commodity Line Comments:

Extended Description:

Professional Svcs - McAlpin (Lambert) Landslide

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
4	Professional Svcs - Smith Run Portal				0.00

Comm Code	Manufacturer	Specification	Model #
81100000			

Commodity Line Comments:

Extended Description:

Professional Svcs - Smith Run Portal

TETRA TECH

June 22, 2022

Mr. Joseph E. Hager III
Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

Re: EOI- 2022 AML Contract 5 Project North CEOI 0313 DEP2200000014

Dear Mr. Hager,

Please find enclosed Tetra Tech's Expression of Interest (EOI) for the 2022 AML Contract 5 Project North CEOI 0313 DEP2200000014

Tetra Tech has completed numerous similar mine reclamation and remediation projects in the past for numerous clients which include, but not limited to, landslide analyses design/remediations, design of portal seals, reclamation of coal refuse sites, highwall elimination, drainage design, mitigation of AMD drainage, and design or drainage facilities associated with the mining industry. Individual personnel to be assigned to these projects have as much as forty (40) to forty-five (45) years' experience in the mining industry addressing these items.

If you should have any questions or concerns please contact me at eric.cavazza@tetratech.com or via phone at (412) 522-9764.

Sincerely,

Eric C. Cavazza

Eric Cavazza, P.E., M.S.
Project Manager

EEC
Enclosures

Tetra Tech
947 Canyon Road, Morgantown, WV 26508
www.tetratech.com

TETRA TECH

Project 1: Laurel Point (Travinski) Mine Opening -EOI

Project 2: Left Fork of Little Sandy Subsidence – EOI

Project 3: McAlpin (Lambert) Landslide – EOI

Project 4: Smith Run Portal – EOI

Attachment A

Attachment B

WVDEP-AMLR
EOI – Laurel Point (Travinski) Mine Openings

1. **Background:** Tetra Tech has extensive experience in the remediation and resolution of Civil/Mining Engineering projects.

   Upon receipt of the formal notice to proceed, Tetra Tech would attend an on-site project kick-off meeting at the site with WVDEP personnel to discuss the project issues and work plan to reach a consensus on the technical approach for the site. The kick-off meeting would also provide the opportunity for WVDEP personnel to express to Tetra Tech their concerns, objectives, and initial thoughts on the project for discussion. Upon completion of the on-site project kick-off meeting a *Document of Understanding* will be prepared by Tetra Tech for the Project Area for review and input by WVDEP to create a work plan and goal-oriented document for the project.

   Base mapping will be required for the project. It is Tetra Tech's assumption the mapping will be provided for the project, in which case, some additional checks, spot locations, and potential additional feature items may be required to be located for design purposes. If the base mapping is to be developed by Tetra Tech, a sub-contract surveying company will be utilized for these services.

   Based on the initial and available information, a preliminary conceptual plan will be prepared for review by WVDEP personnel. The preliminary conceptual plan will identify the general layout of the site, specific issues identified, proposed water routing, areas of additional concern and in the case of land stability issues, soil borehole locations associated with the proposed geotechnical investigation. A geotechnical sampling plan will be developed for the site in order to address issues identified by the WVDEP/Tetra Tech team members. The soil sampling will be conducted, and appropriate testing will be performed by Tetra Tech's in-house soils laboratory.

   The requested responses to the project goals and objectives as stipulated within the EOI are listed below:

   Location: This project is Located southwest of the City of Westover, in Monongalia County, WV.

2. **Projects and Goals:** The project is for the mitigation of open and collapsed portals.

2.1. **NEPA tasks and IIJA compliance.**

Tetra Tech will use OSMRE REG-1, Handbook on Procedures for Implementing the National Environmental Policy Act (NEPA Handbook) (Revised 2019). Depending on the significance of the actual and potential impacts of the proposed project, one of three potential analytical approaches under NEPA may apply: 1) Categorical Exclusion (CE); 2) Environmental Assessment (EA), which may result in a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS); 3) Environmental Impact Statement (EIS) and Record of Decision (ROD).

To determine IIJA compliance Tetra Tech will follow the Guidance on the Bipartisan Infrastructure Law (BIL) (Pub. L. 117-58), Abandoned Mine Land Grant Implementation provided by OSMRE.

2.2. **Determine legal ownership of properties and provide legal documentation to substantiate legal ownership findings (if required).**

Tetra Tech will research legal ownership of properties by conducting a thorough search of deed records at the county courthouse and provide legal documentation to substantiate legal ownership findings (if required).

2.3. **Develop construction plans and technical specifications for all aspects to reclaim mine portals, demolition of structures (silo, buildings, etc.), drainage controls and systems, slope stabilization, coal refuse reclamation, stream restoration, subsidence repair, limits of disturbance, storm water and erosion and sediment control, regrade and revegetation, and all other conditions encountered on the project sites.**

Reclaim Mine Portals & Demolition of Structures: Tetra Tech has extensive experience in the development and design of mine portal seals. Designs have included drilling from a location above and at an angle from the proposed seal and injecting designed grout to form the seal blockage and have also utilized polyurethane foam as a portal seal. This technique of designing and developing the portal seal has proven to be more effective and safer than excavating at the portal entry location then constructing the concrete or concrete block portal seal. However, mine portals will be sealed in accordance with WVDEP approved methods. If endangered species are present, such as various bat species, appropriate bat gates or other structures will be incorporated into the project design. Although it is Tetra Tech's understanding, based on information provided by Mike Sheehan, former WVDEP AML&R Program Administrator and

current Tetra Tech employee, that the WVDEP's practice for mine openings is to presume presence of endangered bat species. Therefore, appropriate bat gates or other structures will be incorporated into the project design unless instructed otherwise by the WVDEP.

Tetra Tech will take a full inventory of the site and ensure that demolition of necessary structures is taken care of in a safe and efficient manner.

Drainage Control and Systems: Drainage areas within the project area will be determined. If possible, diversion ditches will be located in the upstream area in order to control and divert the drainage around the project area. All drainage ditches, swales, underdrains and culverts will be sized and designed in accordance with standard engineering practices. Size, slope, and lining of the proposed ditches and culverts will be specified on the plans and be based on required storm events. Design of drainage conveyances, including drainage channels, underdrains and /or other controls to safely convey water off-site will be designed in accordance with standard engineering practices and will fully consider the safety of the existing public dwellings and structures near the project areas. Hydrologic and hydraulic analyses will be performed for the site and existing structures. HydroCAD Stormwater Modeling program will be utilized in analyzing and sizing drainage structures for the project.

Slope Stabilization: In order to develop the construction plans and technical specification for slope stabilization, the development of the geotechnical investigation plan will be completed. The geotechnical plan would consist of the drilling and sampling of soils in the vicinity of the landslide. Tetra Tech will provide a geotechnical engineer on site during the drilling operations. The number, locations, and depths of borings would be dependent on the extent and size of the landslide. In addition to the sampling of soils, the geotechnical boring plan would attempt to identify existing slip planes, the extent and locations of any perched aquifers as well as elevation of phreatic surfaces at the completion of the drilling and 24 hours thereafter. Soil testing would be completed by Tetra Tech's in-house soil laboratory located in Morgantown, West Virginia. Potential soil tests and number of tests to be conducted would be determined following the geotechnical drilling and sampling operations but could possibly include the following tests:

Potential Soil Tests

- Visual Description
- Grain Size Analyses
- Hydrometer Test
- Moisture Content
- Direct Shear
- Standard Proctor
- Atterberg Limits

Plan and cross section views will be developed to provide the design of the stabilization and remediation of the landslide area. Plan and cross section views will provide the location and

design parameters of the final slope configuration and will show the location and details of proposed subsurface drainage underdrains, final slopes, proposed keyways, and typical detail slope saw-cut excavation as part of the reconstructed/stabilized slope. Stability analyses will be completed utilizing the Slide 2 program to assist in determining the stable configuration of the final slope configuration with a minimum standard safety margin of 1.5. Specifications will be developed indicating compaction requirements such as degree of compaction, optimum moisture, plus or minus variance on moisture, lift thickness and other quality control parameters for compaction during construction.

Coal Refuse Reclamation: Reclamation measures such as, but not limited to re-soiling and revegetation of the area, excavating and relocating the spoil/refuse to another location on the site to be buried, re-soiled and revegetated. The spoil/refuse should be properly compacted prior to re-soiling and revegetation. Alkaline addition may be considered if water quality issues associated with the coal refuse are being targeted for remediation.

Stream Restoration: Streams that have been physically damaged or disrupted due to abandoned mine impacts that are identified for restoration in the project scope of work will be restored in accordance with WV DEP and USACE specifications and requirements. Streams impaired due to abandoned mine drainage impacts that are identified for restoration in the project scope of work will be evaluated for the cause of the impairment and for potential AMD treatment options. If AMD treatment is specified in the scope of work, recommendations will be presented to WV DEP for concurrence before final design and permitting is undertaken.

Subsidence Repair: A detailed analysis of the subsidence will be performed. If necessary, subsidence modeling will be performed to ensure future subsidence is mitigated. Plans for subsidence repair will be made for the unique ground conditions observed.

Limits of Disturbance, Erosion and Sediment Control & Regrade and Revegetation: Detailed grading plans will be provided showing existing contours, proposed final grading contours, cross sections, location of Erosion and Sedimentation Control devices such as silt fence, super silt fence, sumps, swales, erosion control blankets, compost filter socks and other erosion control devices. In addition, a proposed seeding and revegetation plan will be included on the plans and within the specifications.

The Erosion and Sediment Control Plans (E&SCP) will include:

- Narrative and description of Best Management Practices (BMPSs)
- Construction Sequence
- Narrative and description of post-construction stormwater management

- E&SCP with detail drawings
    - A general vicinity location map
    - Erosion and Sediment Control plan sheets
    - Post Construction Stormwater Management plan sheets

E&SCP details will be per the WVDEP's E&S standards manual.

Detailed design plans and specification will be prepared for other conditions encountered on the project site. Other conditions may include the following:

Design of temporary and permanent access or accesses for construction and future maintenance. Temporary and permanent access will be designed utilizing AutoCad software. Plan view, designed profile, and roadway cross sections shown at an appropriate interval will be prepared and will be included within the final drawing package. Typical sections will be shown to indicate design features such as roadway cross slopes, pavement composition (gravel, asphalt, or concrete) and thickness, side slopes of embankments/cut slopes and proposed ditching. The roadway will be designed in accordance with WVDEP mining and reclamation standards, or other standards as determined by WVDEP. Final design of the roadway will attempt to design the roadway to a balanced cut/fill situation, if possible. Cut and fill quantities will be listed on the plans.

Construction drawings and specifications will be developed based on the design concept approved by WVDEP and in conformance with the WVDEP Guidelines for Preparation of Design Plans & Specifications. Drawings will be 24" x 36" format and produced from base mapping files in AutoCAD 2019 format. Final drawings and specifications will be provided for use for review by WVDEP and for use by the selected contractor. Plans and specifications will be prepared

Detailed specifications will be prepared in a manner compatible with the WVDEP contracting documents and consistent with base specifications available from the WVDEP website. Complete technical specifications in Microsoft Word will be provided with the final submission.

2.4. **Obtain/maintain/release all required permits.**

Tetra Tech will prepare and submit to obtain the required permits as determined at the Pre-Design Meeting. Required permit applications will be prepared for submittal for the project. All required plans, specifications and required additional data will be included within the application. Required permits may include the following:

- 401/404 Stream and Wetland Permits

- Construction Stormwater General Permit
- WVDOH Occupancy Permit (Driveway Permit)
- NPDES Modification
- Any other local, state, or federal permit identified as being required for the project

2.5. **Provide resident project representative, QA/QC certification, and prepare daily field activity logs summarizing construction activities.**

Tetra Tech will provide a qualified resident project representative, QA/QC certification, and prepare daily field activity logs summarizing construction activities.

WVDEP-AMLR

EOI – Left Fork of Little Sandy Subsidence

1. **Background:** Tetra Tech has extensive experience in the remediation and resolution of Civil/Mining Engineering projects.

   Upon receipt of the formal notice to proceed, Tetra Tech would attend an on-site project kick-off meeting at the site with WVDEP personnel to discuss the project issues and work plan to reach a consensus on the technical approach for the site. The kick-off meeting would also provide the opportunity for WVDEP personnel to express to Tetra Tech their concerns, objectives, and initial thoughts on the project for discussion. Upon completion of the on-site project kick-off meeting a *Document of Understanding* will be prepared by Tetra Tech for the Project Area for review and input by WVDEP to create a work plan and goal-oriented document for the project.

   Base mapping will be required for the project. It is Tetra Tech's assumption the mapping will be provided for the project, in which case, some additional checks, spot locations, and potential additional feature items may be required to be located for design purposes. If the base mapping is to be developed by Tetra Tech, a sub-contract surveying company will be utilized for these services.

   Based on the initial and available information, a preliminary conceptual plan will be prepared for review by WVDEP personnel. The preliminary conceptual plan will identify the general layout of the site, specific issues identified, proposed water routing, areas of additional concern and in the case of land stability issues, soil borehole locations associated with the proposed geotechnical investigation. A geotechnical sampling plan will be developed for the site in order to address issues identified by the WVDEP/Tetra Tech team members. The soil sampling will be conducted, and appropriate testing will be performed by Tetra Tech's in-house soils laboratory.

   The requested responses to the project goals and objectives as stipulated within the EOI are listed below:

   Location: The project is located south of the Town of Tunnelton, in Preston County, WV, off County Route 70 (Number 4 Road).

2. **Projects and Goals:** The project is for the mitigation of a stream capture in a

subsidence feature, and multiple other subsidence features. Design of an access road will be required. Trash and other debris have been dumped into some subsidence features which will require removal from the site to be disposed of properly.

2.1. **NEPA tasks and IIJA compliance.**
Tetra Tech will use OSMRE REG-1, Handbook on Procedures for Implementing the National Environmental Policy Act (NEPA Handbook) (Revised 2019). Depending on the significance of the actual and potential impacts of the proposed project, one of three potential analytical approaches under NEPA may apply: 1) Categorical Exclusion (CE); 2) Environmental Assessment (EA), which may result in a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS); 3) Environmental Impact Statement (EIS) and Record of Decision (ROD).

To determine IIJA compliance Tetra Tech will follow the Guidance on the Bipartisan Infrastructure Law (BIL) (Pub. L. 117-58), Abandoned Mine Land Grant Implementation provided by OSMRE.

2.2. **Determine legal ownership of properties and provide legal documentation to substantiate legal ownership findings (if required).**
Tetra Tech will research legal ownership of properties by conducting a thorough search of deed records at the county courthouse and provide legal documentation to substantiate legal ownership findings (if required).
It has been explained by Mike Sheehan that this project may have an uncooperative landowner which may require exploration of alternative access routes or the use of police powers. This can be discussed with the WVDEP during the pre-design meeting.

2.3. **Develop construction plans and technical specifications for all aspects to reclaim mine portals, demolition of structures (silo, buildings, etc.), drainage controls and systems, slope stabilization, coal refuse reclamation, stream restoration, subsidence repair, limits of disturbance, storm water and erosion and sediment control, regrade and revegetation, and all other conditions encountered on the project sites.**
Mitigation of a stream capture in a subsidence feature, and multiple other subsidence features & vertical openings: The site has well defined subsidence features in two areas along an unnamed tributary of the Left Fork of Little Sandy Creek and an obvious vertical opening entering the mine workings. Subsidence feature shall be cleaned of trash, which will be disposed of in proper manner, then filled and compacted with suitable material found on-site. The vertical opening shall be filled with non-calcareous stone then capped

with a concrete pad and brought to grade with suitable material on-site. Caution will be emphasized when approaching the opening, particularly with heavy equipment.

Design of access road: Temporary access will be designed utilizing AutoCad software. Plan view, designed profile, and roadway cross sections shown at an appropriate interval will be prepared and will be included within the final drawing package. Typical sections will be shown to indicate design features such as roadway cross slopes, gravel thickness, side slopes of embankments/cut slopes and proposed ditching. The roadway will be designed in accordance with WVDEP mining and reclamation standards or other standards as determined by WVDEP. Final design of the roadway will attempt to design the roadway to a balanced cut/fill situation, if possible. Cut and fill quantities will be listed on the plans.

Drainage Control: Drainage areas within the project area will be determined. If necessary, diversion ditches will be located upstream of the project areas in order to control and divert stream flow around the project area. All drainage ditches, swales, and culverts will be sized and designed in accordance with standard engineering practices. Size, slope, and lining of the proposed ditches and culverts will be specified on the plans and be based on required storm events. Hydrologic and hydraulic analyses will be performed for the site and existing structures. HydroCAD Stormwater Modeling program will be utilized in analyzing and sizing drainage structures for the project.

Detailed plans will be provided showing existing features and stream conditions, proposed channels with cross sections and final stream conditions, location of Erosion and Sedimentation Control devices such as silt fence, super silt fence, sumps, swales, erosion control blankets, compost filter socks and other erosion control devices. In addition, a proposed seeding and revegetation plan will be included on the plans and within the specifications.

Limits of Disturbance, Erosion and Sediment Control & Regrade and Revegetation: Detailed grading plans will be provided showing existing contours, proposed final grading contours, cross sections, location of Erosion and Sedimentation Control devices such as silt fence, super silt fence, sumps, swales, erosion control blankets, compost filter socks and other erosion control devices. In addition, a proposed seeding and revegetation plan will be included on the plans and within the specifications.

The Erosion and Sediment Control Plans (E&SCP) will include:

- Narrative and description of Best Management Practices (BMPSs)
- Construction Sequence

- Narrative and description of post-construction stormwater management
- E&SCP with detail drawings
    - A general vicinity location map
    - Erosion and Sediment Control plan sheets
    - Post Construction Stormwater Management plan sheets
    - E&SCP details will be per the WVDEP's E&S standards manual.

Construction drawings and specifications will be developed based on the design concept approved by WVDEP and in conformance with the WVDEP Guidelines for Preparation of Design Plans & Specifications. Drawings will be 24" x 36" format and produced from base mapping files in AutoCAD 2019 format. Final drawings and specifications will be provided for use for review by WVDEP and for use by the selected contractor. Plans and specifications will be prepared.

Detailed specifications will be prepared in a manner compatible with the WVDEP contracting documents and consistent with base specifications available from the WVDEP website. Complete technical specifications in Microsoft Word will be provided with the final submission.

Slope Stabilization: In order to develop the construction plans and technical specification for slope stabilization, the development of the geotechnical investigation plan would be completed. The geotechnical plan would consist of the drilling and sampling of soils in the vicinity of the landslide. Tetra Tech will provide a geotechnical engineer on site during the drilling operations. The number, locations, and depths of borings would be dependent on the extent and size of the landslide. In addition to the sampling of soils, the geotechnical boring plan would attempt to identify existing slip planes, the extent and locations of any perched aquifers as well as elevation of phreatic surfaces at the completion of the drilling and 24 hours thereafter. Soil testing would be completed by Tetra Tech's in-house soil laboratory located in Morgantown, West Virginia. Potential soil tests and number of tests to be conducted would be determined following the geotechnical drilling and sampling operations but could possibly include the following tests:

Potential Soil Tests

- Visual Description
- Grain Size Analyses
- Hydrometer Test
- Moisture Content
- Direct Shear
- Standard Proctor
- Atterberg Limits

Plan and cross section views will be developed to provide the design of the stabilization and remediation of the landslide area. Plan and cross section views will provide the location and design parameters of the final slope configuration and will show the location and details of proposed subsurface drainage underdrains, final slopes, proposed keyways, and typical detail slope saw-cut excavation as part of the reconstructed/stabilized slope. Stability analyses will be completed utilizing the Slide 2 program to assist in determining the stable configuration of the final slope configuration with a minimum standard safety margin of 1.5. Specifications will be developed indicating compaction requirements such as degree of compaction, optimum moisture, plus or minus variance on moisture, lift thickness and other quality control parameters for compaction during construction.

2.4. **Obtain/maintain/release all required permits.**

Tetra Tech will prepare and submit to obtain the required permits as determined at the Pre-Design Meeting. Required permit applications will be prepared for submittal for the project. All required plans, specifications and required additional data will be included within the application. Required permits may include the following:

- 401/404 Stream and Wetland Permits
- Construction Stormwater General Permit
- WVDOH Occupancy Permit (Driveway Permit)
- NPDES Modification
- Any other local, state, or federal permit identified as being required for the project

2.5. **Provide resident project representative, QA/QC certification, and prepare daily field activity logs summarizing construction activities.**

Tetra Tech will provide a qualified resident project representative, QA/QC certification, and prepare daily field activity logs summarizing construction activities.

WVDEP-AMLR
EOI – McAlpin (Lambert) Landslide

1. **Background:** Tetra Tech has extensive experience in the remediation and resolution of Civil/Mining Engineering projects.

   Upon receipt of the formal notice to proceed, Tetra Tech would attend an on-site project kick-off meeting at the site with WVDEP personnel to discuss the project issues and work plan to reach a consensus on the technical approach for the site. The kick-off meeting would also provide the opportunity for WVDEP personnel to express to Tetra Tech their concerns, objectives, and initial thoughts on the project for discussion. Upon completion of the on-site project kick-off meeting a *Document of Understanding* will be prepared by Tetra Tech for the Project Area for review and input by WVDEP to create a work plan and goal-oriented document for the project.

   Base mapping will be required for the project. It is Tetra Tech's assumption the mapping will be provided for the project, in which case, some additional checks, spot locations, and potential additional feature items may be required to be located for design purposes. If the base mapping is to be developed by Tetra Tech, a sub-contract surveying company will be utilized for these services.

   Based on the initial and available information, a preliminary conceptual plan will be prepared for review by WVDEP personnel. The preliminary conceptual plan will identify the general layout of the site, specific issues identified, proposed water routing, areas of additional concern and in the case of land stability issues, soil bore hole locations associated with the proposed geotechnical investigation. A geotechnical sampling plan will be developed for the site in order to address issues identified by the WVDEP/Tetra Tech team members. The soil sampling will be conducted, and appropriate testing will be performed by Tetra Tech's in-house soils laboratory.

   The requested responses to the project goals and objectives as stipulated within the EOI are listed below:

   Location: The project is located north of the City of Bridgeport, in Harrison County, WV, at the western side of the community of McAlpin, WV, off Harrison County Route 707 (Shinns Run Road).

2. **Projects and Goals:** The project is for the stabilization of a dangerous landslide and associated AMD issues on a recently completed AML project.

2.1. **NEPA tasks and IIJA compliance.**

Tetra Tech will use OSMRE REG-1, Handbook on Procedures for Implementing the National Environmental Policy Act (NEPA Handbook) (Revised 2019). Depending on the significance of the actual and potential impacts of the proposed project, one of three potential analytical approaches under NEPA may apply: 1) Categorical Exclusion (CE); 2) Environmental Assessment (EA), which may result in a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS); 3) Environmental Impact Statement (EIS) and Record of Decision (ROD).

To determine IIJA compliance Tetra Tech will follow the Guidance on the Bipartisan Infrastructure Law (BIL) (Pub. L. 117-58), Abandoned Mine Land Grant Implementation provided by OSMRE.

2.2. **Determine legal ownership of properties and provide legal documentation to substantiate legal ownership findings (if required).**

Tetra Tech will research legal ownership of properties by conducting a thorough search of deed records at the county courthouse and provide legal documentation to substantiate legal ownership findings (if required).

2.3. **Develop construction plans and technical specifications for all aspects to reclaim mine portals, demolition of structures (silo, buildings, etc.), drainage controls and systems, slope stabilization, coal refuse reclamation, stream restoration, subsidence repair, limits of disturbance, storm water and erosion and sediment control, regrade and revegetation, and all other conditions encountered on the project sites.**

Stabilization of a dangerous landslide: In order to develop the construction plans and technical specification for slope stabilization, the development of the geotechnical investigation plan will be completed. The geotechnical plan would consist of the drilling and sampling of soils in the vicinity of the landslide. Tetra Tech will provide a geotechnical engineer on site during the drilling operations. The number, locations, and depths of borings would be dependent on the extent and size of the landslide. In addition to the sampling of soils, the geotechnical boring plan would attempt to identify existing slip planes, the extent and locations of any perched aquifers as well as elevation of phreatic surfaces at the completion of the drilling and 24 hours thereafter. Soil testing would be completed by Tetra Tech's in-house soil laboratory located in Morgantown, West Virginia. Potential soil tests and number of tests to be conducted would be determined following

the geotechnical drilling and sampling operations but could possibly include the following tests:

Potential Soil Tests

- Visual Description
- Grain Size Analyses
- Hydrometer Test
- Moisture Content
- Direct Shear
- Standard Proctor
- Atterberg Limits

Plan and cross section views will be developed to provide the design of the stabilization and remediation of the landslide area. Plan and cross section views will provide the location and design parameters of the final slope configuration and will show the location and details of proposed subsurface drainage underdrains, final slopes, proposed keyways, and typical detail slope saw-cut excavation as part of the reconstructed/stabilized slope. Stability analyses will be completed utilizing the Slide 2 program to assist in determining the stable configuration of the final slope configuration with a minimum standard safety margin of 1.5. Specifications will be developed indicating compaction requirements such as degree of compaction, optimum moisture, plus or minus variance on moisture, lift thickness and other quality control parameters for compaction during construction. Plans will also indicate the location of Erosion and Sedimentation Control devices such as silt fence, super silt fence, sumps, swales, erosion control blankets, compost filter socks and other erosion control devices. In addition, a proposed seeding and revegetation plan will be included on the plans and within the specifications.

Mine drainage: This site has a collapsed and draining portal. A proper wet seal or conveyance pipe must be installed. This may be accomplished by excavation or a horizontal bore. The preferred strategy can be discussed with the WVDEP during the pre-design meeting. Prior to either of these activities a piezometer may be installed into the mine workings, above the opening to measure and monitor water elevations. Once clear access into the workings has been achieved, either by excavation or a horizontal bore, an appropriate seal and channel will be designed to convey the water off-site. The plan would consider the quantity, flow rate and chemical properties of the AMD drainage. Alternative solutions would be considered within the final design.

Drainage Control: Drainage areas within the project area will be determined. If possible, diversion ditches will be located in the upstream area in order to control and divert the drainage around the project area. All drainage ditches, swales, underdrains and culverts will be sized and designed in accordance with standard engineering practices. Size, slope,

and lining of the proposed ditches and culverts will be specified on the plans and be based on required storm events. Design of drainage conveyances, including drainage channels, underdrains and /or other controls to safely convey water off-site will be designed in accordance with standard engineering practices and will fully consider the safety of the existing public dwellings and structures near the project areas. Hydrologic and hydraulic analyses will be performed for the site and existing structures. HydroCAD Stormwater Modeling program will be utilized in analyzing and sizing drainage structures for the project.

Detailed grading plans will be provided showing existing contours, proposed final grading contours, cross sections, location of Erosion and Sedimentation Control devices such as silt fence, super silt fence, sumps, swales, erosion control blankets, compost filter socks and other erosion control devices. In addition, a proposed seeding and revegetation plan will be included on the plans and within the specifications.

Limits of Disturbance, Erosion and Sediment Control & Regrade and Revegetation: Detailed grading plans will be provided showing existing contours, proposed final grading contours, cross sections, location of Erosion and Sedimentation Control devices such as silt fence, super silt fence, sumps, swales, erosion control blankets, compost filter socks and other erosion control devices. In addition, a proposed seeding and revegetation plan will be included on the plans and within the specifications.

The Erosion and Sediment Control Plans (E&SCP) will include:

- Narrative and description of Best Management Practices (BMPSs)
- Construction Sequence
- Narrative and description of post-construction stormwater management
- E&SCP with detail drawings
    - A general vicinity location map
    - Erosion and Sediment Control plan sheets
    - Post Construction Stormwater Management plan sheets
    - E&SCP details will be per the WVDEP's E&S standards manual.

Detailed design plans and specification will be prepared for other conditions encountered on the project site. Other conditions may include the following:

- <u>Design of portal seal and regrade</u>. Tetra Tech has extensive experience in the development and design of the mine portal seals. Designs have included drilling from a location above and at an angle from the proposed seal and injecting

designed grout to form the seal blockage. Designs have also utilized polyurethane foam as a portal seal. This technique of designing and developing the portal seal has proven to be more effective and safer than excavating at the portal entry location then constructing the concrete or concrete block portal seal. Mine portals will be sealed in accordance with WVDEP approved methods. If endangered species are present, such as various bat species, appropriate bat gates or other structures will be incorporated into the project design.

- Design of temporary and permanent access or accesses for construction and future maintenance. Temporary and permanent access will be designed utilizing AutoCad software. Plan view, designed profile, and roadway cross sections shown at an appropriate interval will be prepared and will be included within the final drawing package. Typical sections will be shown to indicate design features such as roadway cross slopes, pavement composition (gravel, asphalt, or concrete) and thickness, side slopes of embankments/cut slopes and proposed ditching. The roadway will be design in accordance with WVDEP mining and reclamation standards or other standards as determined by WVDEP. Final design of the roadway will attempt to design the roadway to a balanced cut/fill situation, if possible. Cut and fill quantities will be listed on the plans.

Construction drawings and specifications will be developed based on the design concept approved by WVDEP and in conformance with the WVDEP Guidelines for Preparation of Design Plans & Specifications. Drawings will be 24" x 36" format and produced from base mapping files in AutoCAD 2019 format. Final drawings and specifications will be provided for use for review by WVDEP and for use by the selected contractor. Plans and specifications will be prepared

Detailed specifications will be prepared in a manner compatible with the WVDEP contracting documents and consistent with base specifications available from the WVDEP website. Complete technical specifications in Microsoft Word will be provided with the final submission.

2.4. **Obtain/maintain/release all required permits.**

Tetra Tech will prepare and submit to obtain the required permits as determined at the Pre-Design Meeting. Required permit applications will be prepared for submittal for the project. All required plans, specifications and required additional data will be included within the application. Required permits may include the following:

- 401/404 Stream and Wetland Permits
- Construction Stormwater General Permit
- WVDOH Occupancy Permit (Driveway Permit)
- NPDES Modification
- Any other local, state, or federal permit identified as being required for the project

2.5. **Provide resident project representative, QA/QC certification, and prepare daily field activity logs summarizing construction activities.**

Tetra Tech will provide a qualified resident project representative, QA/QC certification, and prepare daily field activity logs summarizing construction activities.

WVDEP-AMLR
EOI – Smith Run Portal

1. **Background:** Tetra Tech has extensive experience in the remediation and resolution of Civil/Mining Engineering projects.

   Upon receipt of the formal notice to proceed, Tetra Tech would attend an on-site project kick-off meeting at the site with WVDEP personnel to discuss the project issues and work plan to reach a consensus on the technical approach for the site. The kick-off meeting would also provide the opportunity for WVDEP personnel to express to Tetra Tech their concerns, objectives, and initial thoughts on the project for discussion. Upon completion of the on-site project kick-off meeting a *Document of Understanding* will be prepared by Tetra Tech for the Project Area for review and input by WVDEP to create a work plan and goal-oriented document for the project.

   Base mapping will be required for the project. It is Tetra Tech's assumption the mapping will be provided for the project, in which case, some additional checks, spot locations, and potential additional feature items may be required to be located for design purposes. If the base mapping is to be developed by Tetra Tech, a sub-contract surveying company will be utilized for these services.

   Based on the initial and available information, a preliminary conceptual plan will be prepared for review by WVDEP personnel. The preliminary conceptual plan will identify the general layout of the site, specific issues identified, proposed water routing, areas of additional concern and in the case of land stability issues, soil bore hole locations associated with the proposed geotechnical investigation. A geotechnical sampling plan will be developed for the site in order to address issues identified by the WVDEP/Tetra Tech team members. The soil sampling will be conducted, and appropriate testing will be performed by Tetra Tech's in-house soils laboratory.

   The requested responses to the project goals and objectives as stipulated within the EOI are listed below:

   Location: The site is located north of the City of Bridgeport, in Harrison County, WV, and off Harrison CR 24 (Meadowbrook Road).

2. **Projects and Goals:** The project is for the demolition of a concrete silo

(approximately 60-foot high, 40- foot diameter) and various other abandoned buildings and structures. Derelict equipment, vehicles, scrap metal, tires, etc., shall be removed from the site and be disposed of properly. Regrade and cover refuse with suitable soils. Install wet or modified wet mine seals in collapsed portals, design AMD drainage systems and conveyance channels.

2.1. **NEPA tasks and IIJA compliance.**

Tetra Tech will use OSMRE REG-1, Handbook on Procedures for Implementing the National Environmental Policy Act (NEPA Handbook) (Revised 2019). Depending on the significance of the actual and potential impacts of the proposed project, one of three potential analytical approaches under NEPA may apply: 1) Categorical Exclusion (CE); 2) Environmental Assessment (EA), which may result in a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS); 3) Environmental Impact Statement (EIS) and Record of Decision (ROD).

As part of the NEPA process, Tetra Tech will coordinate with the WV State Historic Preservation Officer (SHPO). Since the demolition of mine buildings is involved with this AML project, Tetra Tech will comply with the requirements for documentation of the features including completion of a Phase 1 Archeological Survey if required.

To determine IIJA compliance Tetra Tech will follow the Guidance on the Bipartisan Infrastructure Law (BIL) (Pub. L. 117-58), Abandoned Mine Land Grant Implementation provided by OSMRE.

2.2. **Determine legal ownership of properties and provide legal documentation to substantiate legal ownership findings (if required).**

Tetra Tech will research legal ownership of properties by conducting a thorough search of deed records at the county courthouse and provide legal documentation to substantiate legal ownership findings (if required).

2.3. **Develop construction plans and technical specifications for all aspects to reclaim mine portals, demolition of structures (silo, buildings, etc.), drainage controls and systems, slope stabilization, coal refuse reclamation, stream restoration, subsidence repair, limits of disturbance, storm water and erosion and sediment control, regrade and revegetation, and all other conditions encountered on the project sites.**

Design to demolish / dismantle and remove concrete silo: The concrete silo shall be dismantled by mechanical means or, depending on the proximity of occupied dwellings and any other safety concerns, may be felled by blasting then broken up. All silo materials

shall be broken into manageable pieces (<5') to be buried on-site unless directed otherwise by the WVDEP.

Design to demolish and waste structures and derelict equipment: Unless directed otherwise by the WVDEP any materials that can be safely and legally buried on-site will be disposed of in this manner, all other materials must be hauled to an appropriate landfill for disposal, weight tickets from the landfill will be required. Derelict equipment shall be hauled off-site and scrapped.

Regrade and cover refuse: Refuse shall be regraded and capped with suitable soil found on-site. In the event a suitable soil cannot be found, a borrow area would need to be identified. This may be discussed during the pre-design meeting. Soil testing would be completed by Tetra Tech's in-house soil laboratory located in Morgantown, West Virginia. Alkaline addition may also be considered if desired by WV DEP to prevent or ameliorate AMD seeping or discharging from the refuse material.

Install wet or modified wet mine seals in collapsed portals: Tetra Tech has extensive experience in the development and design of the mine portal seals. Designs have included drilling from a location above and at an angle from the proposed seal and injecting designed grout to form the seal blockage. Designs have also utilized polyurethane foam as a portal seal. This technique of designing and developing the portal seal has proven to be more effective and safer than excavating at the portal entry location then constructing the concrete or concrete block portal seal. However, mine portals will be sealed in accordance with WVDEP approved methods. If endangered species are present, such as various bat species, appropriate bat gates or other structures will be incorporated into the project design. Although it is Tetra Tech's understanding, based on information provided by Mike Sheehan, former WVDEP AML&R Program Administrator and current Tetra Tech employee, that the WVDEP's practice for mine openings is to presume presence of endangered bat species. Therefore, appropriate bat gates or other structures will be incorporated into the project design unless instructed otherwise by the WVDEP.

AMD drainage systems and conveyance channels: Drainage areas within the project area will be determined. If possible, diversion ditches will be located in the upstream area in order to control and divert the drainage around the project area. Acid mine drainage (AMD) water will be identified on the plans. All drainage ditches, swales, underdrains and culverts will be sized and designed in accordance with standard engineering practices. Size, slope, and lining of the proposed ditches and culverts will be specified on the plans and be based on required storm events. Design of drainage conveyances, including drainage channels, underdrains and /or other controls to safely convey water off-site will be designed in accordance with standard engineering practices. Hydrologic and hydraulic analyses will be performed for the site and existing structures. HydroCAD Stormwater

Modeling program will be utilized in analyzing and sizing drainage structures for the project.

Detailed grading plans will be provided showing existing contours, proposed final grading contours, cross sections, location of Erosion and Sedimentation Control devices such as silt fence, super silt fence, sumps, swales, erosion control blankets, compost filter socks and other erosion control devices. In addition, a proposed seeding and revegetation plan will be included on the plans and within the specifications.

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- <u>Design of temporary and permanent access or accesses for construction and future maintenance.</u> Temporary and permanent access will be designed utilizing AutoCad software. Plan view, designed profile, and roadway cross sections shown at an appropriate interval will be prepared and will be included within the final drawing package. Typical sections will be shown to indicate design features such as roadway cross slopes, pavement composition (gravel, asphalt, or concrete) and thickness, side slopes of embankments/cut slopes and proposed ditching. The roadway will be

design in accordance with WVDEP mining and reclamation standards or other standards as determined by WVDEP. Final design of the roadway will attempt to design the roadway to a balanced cut/fill situation, if possible. Cut and fill quantities will be listed on the plans.

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- 401/404 Stream and Wetland Permits
- Construction Stormwater General Permit
- WVDOH Occupancy Permit (Driveway Permit)
- NPDES Modification
- Any other local, state, or federal permit identified as being required for the project

2.5. **Provide resident project representative, QA/QC certification, and prepare daily field activity logs summarizing construction activities.**

Tetra Tech will provide a qualified resident project representative, QA/QC certification, and prepare daily field activity logs summarizing construction activities.

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE **Attachment "A"**

PROJECT NAME	DATE (DAY, MONTH, YEAR)	FEIN
EOI – 2022 AML Contract 5 Project North	22, June 2022	95-4148514

1. FIRM NAME	2. HOME OFFICE BUSINESS ADDRESS	3. FORMER FIRM NAME
Tetra Tech, Inc	947 Canyon Rd, Morgantown, WV 26508	

4. HOME OFFICE TELEPHONE	5. ESTABLISHED (YEAR)	6. TYPE OWNERSHIP	6a. WV REGISTERED DBE (Disadvantaged Business Enterprise)
304-212-3600	1966	Corporation	NO

7. PRIMARY AML DESIGN OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. AML DESIGN PERSONNEL EACH OFFICE
Morgantown, 947 Canyon Rd, Morgantown, WV 26508/304-534-4021/Mark Speranza, PE/ 10 People
Pittsburgh, 661 Andersen Dr, Pittsburgh, PA, 15220/412-921-7090/Mark Speranza, PE/116

8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM	8a. NAME, TITLE, & TELEPHONE NUMBER - OTHER PRINCIPALS
Mr. Mark Perry, PE – Unit President	Mr. Eric Cavazza, PE – Project Manger – 412-522-9764

9. PERSONNEL BY DISCIPLINE

— ADMINISTRATIVE 2012	— ECOLOGISTS 152	— LANDSCAPE ARCHITECTS 19	— STRUCTURAL ENGINEERS 98
— ARCHITECTS 130	— ECONOMISTS 138	— MECHANICAL ENGINEERS 70	— **SURVEYORS 60**
— **BIOLOGIST 300**	— ELECTRICAL ENGINEERS 60	— **MINING ENGINEERS 70**	— TRAFFIC ENGINEERS
— **CADD OPERATORS 170**	— ENVIRONMENTALISTS 746	— PHOTOGRAMMETRISTS 12	— OTHER 13,714
— CHEMICAL ENGINEERS 304	— ESTIMATORS 271	— PLANNERS: URBAN/REGIONAL96	
— **CIVIL ENGINEERS 588**	— **GEOLOGISTS 367**	— SANITARY ENGINEERS70	
— CONSTRUCTION INSPECTORS61	— HISTORIANS 3	— SOILS ENGINEERS 34	— TOTAL PERSONNELL 20,000 Personnel Company Wide
— DESIGNERS	— HYDROLOGISTS 115	— SPECIFICATION WRITERS 140	
— DRAFTSMEN 200			

TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: 7
***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? XX YES ☐ NO

11. OUTSIDE KEY CONSULTANTS/SUB-CONSULTANTS ANTICIPATED TO BE USED. Attach "AML Consultant Qualification Questionnaire".		
NAME AND ADDRESS: Dieffenbauch & Hritz LLC 1095 Chaplin Road Suite 200 Morgantown, WV 26501	SPECIALTY: Surveying Services	WORKED WITH BEFORE ___X__ Yes _____ No
NAME AND ADDRESS: Core Drilling, LLC 620 Lincoln Avenue Bentleyville, PA 15314	SPECIALTY: Geotechnical Drilling	WORKED WITH BEFORE __X___ Yes _____ No
NAME AND ADDRESS: Geotechnics 544 Braddock Avenue East Pittsburgh, PA 15112	SPECIALTY: Soil Testing	WORKED WITH BEFORE __X___ Yes _____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE _____ Yes _____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE _____ Yes No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE _____ Yes _____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE _____ Yes _____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE _____ Yes _____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE _____ Yes _____ No

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

YES Description and Number of Projects: Tetra Tech has extensive experience with AML/Mine Reclamation Engineering. Tetra Tech is currently working on several AML projects in several states. Tetra Tech has also worked on AML related projects within the state of West Virginia. In the last 5 years Tetra Tech has performed 20+ of these types of projects.

B. Is your firm experienced in Soil Analysis?

YES Description and Number of Projects: Tetra Tech has a whole team dedicated to Geotechnical investigations including soil analysis. In the last 5 year this team has performed 20+ projects specifically associated with Soil Analysis.

C. Is your firm experienced in hydrology and hydraulics?

YES Description and Number of Projects: Tetra Tech has performed several project looking at hydrology and hydraulics, specifically Tetra Tech specializes in mine pool analysis and AMD treatment systems. In the last 5 years Tetra Tech has performed 20+ projects looking at hydrology and hydraulics.

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

YES Description and Number of Projects: Tetra Tech does produce its own Aerial Photography with the use of drone technology and we use that photography to develop contour mapping. We use this service across all disciplines and industries with hundreds of flights and maps developed on a yearly basis.

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: Tetra Tech's large size and extensive resources provides for skilled individuals in various disciplines, Tetra Tech does have experience in domestic waterline design in conjunction with other projects.

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

YES Description and Number of Projects: Tetra Tech has a whole team dedicated to Acid Mine Drainage projects, we are currently working on 5 projects specifically looking at AMD treatment with 10+ projects completed in the last 5 years.

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		
Cavazza, Eric E. P.E.	YEARS OF AML DESIGN EXPERIENCE: 37	YEARS OF AML RELATED DESIGN EXPERIENCE:37	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities

Mr. Eric Cavazza has over thirty-seven (37) years of extensive experience administering state and federal environmental programs including extensive experience managing the development, design and construction of environmental restoration projects to eliminate hazards and restore environmental degradation associated with abandoned mine lands. He served as Pennsylvania's AML Program Director for 9 years before retiring from there in December 2020.

EDUCATION (Degree, Year, Specialization)

BS, 1983 Mining Engineer/ MS, 1995 Environmental Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
SME	PE in PA (1989)

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		
Hynes, Gregory PE	YEARS OF AML DESIGN EXPERIENCE: 31	YEARS OF AML RELATED DESIGN EXPERIENCE:31	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities

Mr. Hynes has 31 years of professional engineering experience including utility pipelines and abandoned mine land reclamation. Additionally, he has designed and permitted numerous mine surface facilities, oil and gas well pad sites, potable water distribution systems, stormwater conveyance systems, sanitary sewerage systems, and developed E&S control plans.

EDUCATION (Degree, Year, Specialization)

BE, 1987 Civil Engineer/ MS, 1997 Civil Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
SME	PE 1993 PA, PE 1998 OH, PE 1998 WV

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		
Sheehan, Mike	YEARS OF AML DESIGN EXPERIENCE: 25	YEARS OF AML RELATED DESIGN EXPERIENCE: 25	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities

Mr. Mike Sheehan has over twenty-five (25) years of extensive experience in mining reclamation, including thirteen (13) years administering state environmental programs including extensive experience managing the development, design and construction of environmental restoration projects to eliminate hazards and restore environmental degradation associated with abandoned mine lands, forfeited mine lands and abandoned landfills.

EDUCATION (Degree, Year, Specialization)

BS, 1993, Environmental Protection Science

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)

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		
Yost, Gregory P.G.	YEARS OF AML DESIGN EXPERIENCE: 12	YEARS OF AML RELATED DESIGN EXPERIENCE: 12	YEARS OF DOMESTIC

Brief Explanation of Responsibilities

Mr. Yost has experience with subsurface geotechnical investigations, including utilizing the information obtained to implement in foundation design. Additionally, Mr. Yost has construction experience comprising of well pads and compressor pads, pipeline right-of-way remediation, and landslide remediation. His experience also encompasses the evaluation of slope stability applied to cut slopes, fill slopes, and landslide susceptible slopes. Mr. Yost has experience analyzing rock formations for depositional environment, strike, dip, and rock structure including joints, faults, and discontinuities. Mr. Yost has experience with identifying and flagging wetland areas and performing investigation in determining contamination of both water and soil.

EDUCATION (Degree, Year, Specialization)

BS, 2009, Geology

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
	PG, 2015 PA

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		
Trexler, Heather, PG	YEARS OF AML DESIGN EXPERIENCE: 18	YEARS OF AML RELATED DESIGN EXPERIENCE:18	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities

Ms. Trexler has over 18 years of professional experience with responsibilities for proposal preparation, staff oversight, job and budget tracking, technical report preparation, and client development for coal mining, natural gas and environmental projects. She is the Department Manager of the Energy and Natural Resources Group in the Pittsburgh office and leads projects requiring a multi-disciplinary team of professionals including engineering, geology, hydrogeology, and ecology. Projects activities for coal mining development include mine abandonment designs and the preparation of permits to state agencies in Pennsylvania and West Virginia for mine expansions and associated surface activities. Additional technical projects include the evaluation of current and potential mine pools and reviewing current and potential impacts to water resources.

EDUCATION (Degree, Year, Specialization)
BS, 2001, Geology MS, 2003, Geology

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
SME	PG, 2007, PA

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		
Kearns, Michael PE,MS.	YEARS OF AML DESIGN EXPERIENCE: 25	YEARS OF AML RELATED DESIGN EXPERIENCE: 25	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 40

Brief Explanation of Responsibilities
Mr. Kearns has 40 years of professional engineering experience including diverse experience in the mining industry, utility pipelines, abandoned mine land reclamation. Additionally, he has designed and permitted numerous mine surface facilities, oil and gas well pad sites, potable water distribution systems, stormwater conveyance systems, sanitary sewerage systems, site development for industrial and commercial facilities, slope remediation analyses and has developed E&S control plans for hundreds of facilities.

EDUCATION (Degree, Year, Specialization)
BS Civil Engineering 1977, MS Civil Engineering 1982

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
ASCE(Life Member), NSPE	PE – WV (1981), OH (1991), PA (1992), MD (2021)

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE AML DESIGN SERVICES
Microsoft Office Professional and Microsoft Project
Bentley Pond Pack (Haestad methods)
Adobe Photoshop
Adobe Acrobat
AutoCAD Map 3D
AutoDesk Civil 3D
ESRI ArcGIS
ESRI ArcView
Bently Flow Master (Haested Methods)
Bentley HEC-Pack
STBL5M
Groundwater Vistas
GMS
Autodesk Storm and Sanitary Analysis
Hydro CAD
SLIDE II STABILITY ANALYSIS PROGRAM

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
Pell Run Doser Upgrade Project, Preston County WV	WVDEP AML 101 Cambridge Place Bridgeport, WV 26330	Prime Contractor	$750,000	10%
Jennings Run Doser, Design, Allegany County, MD	Maryland Department of the Environment 160 S Water Street Frostburg, MD 21532	Prime Contractor	$59,000	80%
Gladden AMD Treatment Plant, South Fayette Township, Allegheny County PA	South Fayette Conservation Group 515 Millers Run Road Morgan, PA 15064	Prime Contractor	$13.5 Million	90%
WVDEP OSR Royal Coal Bond Forfeiture Fayette County WV	WVDEP OSR 1159 Nick Rahall Greenway Fayetteville, WV 25840	Prime Contractor	$250,000	95%
Glenn Springs Holdings Bird Mine Treatment, Tire Hill Pennsylvania	Glenn Springs Holdings 5 Greenway Plaza, Suite 10 Houston, TX 77046	Prime Contractor	Confidential	Ongoing
Quakake Treatment Plant Carbon County Pennsylvania	PADEP BAMR 2 Public Square 5th Floor Wilkes-Barre, Pennsylvania 18701	Prime Contractor	$1.2 Million	60%
Blacklick Creek Treatment Facility	PADEP BAMR 400 Market Street Harrisburg, PA 17106	Prime Contractor	$1.9 Million	75%

TOTAL NUMBER OF PROJECTS: Tetra Tech is currently conducting thousands or projects nationwide for the purpose of the EOA only a sample is provided	TOTAL ESTIMATED CONSTRUCTION COSTS: $+15 Million

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

PROJECT NAME, TYPE AND LOCATION	NATURE OF FIRMS RESPONSIBILITY	NAME AND ADDRESS OF OWNER	ESTIMATED COMPLETION DATE	ESTIMATED CONSTRUCTION COST	
				ENTIRE PROJECT	YOUR FIRMS RESPONSIBILITY
NA	NA	NA	NA	NA	NA

17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD				
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
WV Land Stewardship Larosa Fuels Marion County WV	WV Land Stewardship Corporation 709 Beechurst Ave Morgantown, WV 26505	$136,000	2018	Yes
Dolph Underground Mine Fire, Lackawanna County, PA	PADEP BAMR 400 Market Street Harrisburg, PA 17106	$15 Million	2018	Yes
Wingfield Pines Inflow Reconstruction Project, Upper St. Clair Township, Allegheny County PA	Allegheny Land Trust 416 Thorn Street Sewickley, PA 15143	$1 Million	2019	Yes
Kempton Sludge Disposal Line Garrett County MD	Maryland Department of the Environment 160 S Water Street Frostburg, MD 21532	$385,000	2019	Yes
Frush Enterprises Bond Forfeiture Harrison County WV	WVDEP OSR 1159 Nick Rahall Greenway Fayetteville, WV 25840	$152,000	2017	Yes
Buffalo Coal Mt. Storm, WV	WV Land Stewardship Corporation 709 Beechurst Ave Morgantown, WV 26505	$269,170	2018	Yes
Rasuch Creek Treatment Plant Upgrades Schuykill County PA	PADEP BAMR 2 Public Square 5th Floor Wilkes-Barre, Pennsylvania 18701	$200,000	2018	Yes
Tetra Tech had conducted thousands or projects nationwide for the purpose of the EOA only a sample is provided				

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

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST OF YOUR FIRM'S PORTION	YEAR	CONSTRUCTED (YES OR NO)	FIRM ASSOCIATED WITH
NA	NA	NA	NA	NA	NA

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

Tetra Tech has extensive knowledge and vast resources to allow for a comprehensive approach to any problem. Tetra Tech works extensively with Abandoned Mine Lands and is well versed on solutions to any problem. Tetra tech has a strong presence in West Virginia in Fairmont and Charleston, with offices in Pittsburgh, PA and St. Clairsville, OH regularly performing work in the state. The Tetra Tech Pittsburgh office has worked with WVDEP on several Special Reclamation projects throughout the state.

20. The foregoing is a statement of facts.

Signature: 

Title: Project Manager

Date: 06-21-22

Printed Name: Eric E. Cavazza

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/Nitigation/Replacement	Construction Inspection/Management	Water Treatment	Eq;uipment/Structure Removal	Stream Restoration	Geotechnical/Stability	Eric Cavazza, PE	Gregory Hynes, PE	Gregory Yost, PG	Michaeal Kearns PE	Other Project Team Personnel	Other Tetra Tech Personnel
PADEP Gladden Acid Mine Drainage Treatment Plant	C&P	Yes		X		X					X	X	X	X		x	X	M	P	p	P	P	M
Wingfiield Pines Inflow Reconstruction	C&P	Yes				X					X	X	X	X						P	P	P	M
WVDEP OSR Royal Coal Bond Forfeture	C&P	Yes	x			X					x						X				P	P	M
WVDEP Pell Run Doser	C&P	Yes				X					X			X		X	X			P	P	P	M
Jennings Run Doser	C&P	Yes				X					X	X	X	X			X			P		P	M
PADEP Black Lick Creek	C&P	Yes			X	X					X			X			X				M	P	M
PADEP Dolph Mine Fire	C&P	Yes				X		X														P	P
PADEP Rausch Creek	C&P	Yes												X	X							P	P
WVDEP OSR Frush Enterprises Bond Forfeture	C&P	Yes	X														X					P	P
WVLSC Larosa Fuels	C&P	Yes	X			X						X		X	X				M			P	P
Glenn Springs Holdins Bird Mine Treatment	C&P	Yes				X			X		X	X	X	X			X	M	P	P		P	P
Quakake Treatment Plant	C&P	Yes				X						X		X			X	M				P	P
WVLSC Buffalo Coal	C&P	Yes	X			X						X		X					M			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 "B"