



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

Request for Quotation

RFQ NUMBER
DEP14417

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF
**CHUCK BOWMAN
 304-558-2157**

RFQ COPY
TYPE NAME/ADDRESS HERE

Tetra Tech NUS, Inc.
 661 Andersen Drive
 Pittsburgh, PA 15220-2745

SHIP TO

ENVIRONMENTAL PROTECTION
 DEPARTMENT OF
 OFFICE OF AML&R
 601 57TH STREET SE
 CHARLESTON, WV
 25304 304-926-0499

| DATE PRINTED | TERMS OF SALE | SHIP VIA | F.O.B. | FREIGHT TERMS |
|--------------|---------------|----------|--------|---------------|
| 09/11/2008 | | | | |

BID OPENING DATE: **10/22/2008** BID OPENING TIME: **01:30PM**

| LINE | QUANTITY | UOP | CAT NO | ITEM NUMBER | UNIT PRICE | AMOUNT |
|--|----------|-----|--------|-------------|------------|--------|
| 0001 | 1 | JB | | 906-29 | NA | NA |
| <p>GEORGES CK. PORTALS/PUTNEY IMPOUNDMENT</p> <p>EXPRESSION OF INTEREST</p> <p>THE WEST VIRGINIA PURCHASING DIVISION, FOR THE AGENCY, THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, IS SOLICITING EXPRESSIONS OF INTEREST FOR PROFESSIONAL ENGINEERING DESIGN SERVICES AND CONSTRUCTION MONITORING SERVICES AT THE GEORGES CK. PORTALS/PUTNEY IMPOUNDMENT IN KANAWHA CO., WV PER THE FOLLOWING BID REQUIREMENTS AND ATTACHED SPECIFICATIONS.</p> <p>BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THIS CONTRACT IS AUTOMATICALLY NULL AND VOID AND IS TERMINATED WITHOUT FURTHER ORDER.</p> | | | | | | |

RECEIVED
 2009 OCT 22 A 10:09
 PURCHASING DIVISION
 STATE OF WV

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

| | | |
|---|---------------------------|-----------------------------------|
| SIGNATURE <i>Mark P. [Signature]</i> | TELEPHONE 412-921-8916 | DATE October 21, 2008 |
| TITLE Pittsburgh Operations Manager | 95-4660169 | ADDRESS CHANGES TO BE NOTED ABOVE |

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



TETRA TECH

Mark Speranza, PE
Pittsburgh Operations Manager

October 21, 2008

Mr. Chuck Bowman, Buyer
State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Subject: **RFQ# DEP14417**
Expression of Interest (EOI) for Professional Engineering Design Services and Construction Monitoring Services at the Georges Creek Portals/Putney Impoundment Project, Kanawha County, West Virginia; Tetra Tech Vendor ID : 317151437

Dear Mr. Bowman:

Tetra Tech NUS, Inc. (Tetra Tech) is pleased to present the State of West Virginia, Department of Administration Purchasing Division (State) and the West Virginia Department of Environmental Protection (WVDEP), Office of Abandoned Mine Lands & Reclamation (AML) our Expression of Interest (EOI) to provide engineering and construction monitoring services for the Georges Creek Portals/Putney Impoundment project. This submittal includes one original plus one copy of our EOI. As requested, the EOI contains a concise summary of Tetra Tech's corporate history and the experience, qualifications, and performance data of our staff as summarized in a completed "AML Consultant Confidential Qualification Questionnaire (CCQQ) and the "AML and Related Project Experience Matrix" (RPEM).

Tetra Tech is a national engineering company with an extensive pool of engineering resources. Our AML related experience includes projects located throughout the United States and South America. Tetra Tech's experience in the eastern United States lies mostly with the seasoned engineers of its Pittsburgh-based staff. In particular, Thomas Gray, PE and Biff Cummings, PE have a combined 62 years of engineering experience with over 37 associated with mining and AML related projects. Both have worked with a multitude of AML related problems throughout the Appalachian coal fields. These problems are similar to those identified at the Georges Creek Portals/Putney Impoundment project, such as water diversion, unstable highwalls, exposed refuse, exposed and leaking mine portals, abandoned debris and structure management, streambank protection, and un-vegetated areas. Mr. Gray previously was the Branch Manager for a consulting firm located in Charleston, WV and is experienced with WVDEP AML projects. He also co-authored Chapter 8.7 of the SME's Mining Engineering Handbook that addresses "*Mine Closure, Sealing, and Abandonment.*"

In addition to the 166 people in our Pittsburgh office, Tetra Tech also provides services to clients in the areas of water resources, watershed and water quality assessment, watershed modeling, and Total Maximum Daily Load (TMDL) development in support of the WVDEP, Division of Water and Waste Management (DWWM) out of our Charleston, WV office. Tetra Tech's Charleston Office Manager, Jon Ludwig, is extremely knowledgeable of watersheds and the water quality issues where these projects are located, having worked on the TMDL model for this watershed.

Tetra Tech NUS, Inc.
661 Andersen Drive, Pittsburgh, PA 15220
Tel 412.921.8746 Fax 412.921.40404 www.ttnus.com



TETRA TECH

Mr. Chuck Bowman, Buyer
October 21, 2008, Page 2 of 2

Supplementing Tetra Tech will be Allegheny Surveying Inc. (ASI) located in Weston, and Bridgeport, WV; H.C Nutting/Terracon, located in Charleston, WV; and, consultant Richard (Dick) Gray, PG, of DiGioia, Gray and Associates, LLC. ASI is experienced with WV AML projects and will provide surveying and mapping services on an as needed basis. H.C. Nutting/Terracon will provide geotechnical drilling services. Mr. Richard Gray will provide expert review of the project, attending the project start-up meeting, assist in selecting efficient and effective solutions, and provide a review of the plans and specifications.

Tetra Tech personnel have managed numerous mining, environmental, water resource, and remediation projects in West Virginia and throughout the country. We believe the combination of our local field operations and management personnel coupled with our AML expertise will effectively address these important environmental issues.

Tetra Tech appreciates the opportunity to submit our qualifications to you for this project. If you have any questions about the information provided, please contact Mr. Thomas Gray at 412.921.8794.

Very Truly Yours,

Mark P. Speranza, PE
Pittsburgh Operations Manager

Thomas A. Gray, PE
Energy and Natural Resources Group Manager

Enclosures

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

PROJECT NAME
Georges Creek Portals/Putney
Impoundment Project

DATE (DAY, MONTH, YEAR)
21/10/2008

FEIN 95-4660169
DUNS # 04-967-1456

1. FIRM NAME
Tetra Tech NUS, Inc. - Pittsburgh, PA

2. HOME OFFICE BUSINESS ADDRESS
Foster Plaza 7 - 661 Andersen Drive
Pittsburgh, PA 15220-2745

3. FORMER FIRM NAME
NA

4. HOME OFFICE TELEPHONE
412-921-7090

5. ESTABLISHED (YEAR)
1966

6. TYPE OWNERSHIP
Individual Partnership
Corporation Joint-Venture

6a. WV REGISTERED DBE
(Disadvantaged Business Enterprise)
YES NO
NO

7. PRIMARY AML DESIGN OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. AML DESIGN PERSONNEL EACH OFFICE
Foster Plaza 7 - 661 Andersen Drive Pittsburgh, PA 15220-2745/412-921-7090/Tom Gray/20

8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM
Mark Speranza, PE - Operations Manager
Mark Perry, PE - Regional Manager (Mining Engineer)
412-921-7090

9. PERSONNEL BY DISCIPLINE

| | | | |
|---------------------------|------------------------|---------------------------------|----------------------------|
| 32 ADMINISTRATIVE | 2 ECOLOGISTS | LANDSCAPE ARCHITECTS | 1 STRUCTURAL ENGINEERS |
| ARCHITECTS | ECONOMISTS | MECHANICAL ENGINEERS | <u>3</u> SURVEYORS |
| 4 BIOLOGIST | 1 ELECTRICAL ENGINEERS | <u>3</u> MINING ENGINEERS | TRAFFIC ENGINEERS |
| 8 CADD OPERATORS | 10 ENVIRONMENTALISTS | PHOTOGRAMMETRISTS | OTHER |
| 12 CHEMICAL ENGINEERS | 1 ESTIMATORS | PLANNERS: URBAN/REGIONAL | <u>45</u> |
| 19 CIVIL ENGINEERS | 15 GEOLOGISTS | SANITARY ENGINEERS | |
| 3 CONSTRUCTION INSPECTORS | HISTORIANS | 1 SOILS ENGINEERS SPECIFICATION | |
| DESIGNERS | 4 HYDROLOGISTS | WRITERS | |
| DRAFTSMEN | | | <u>166</u> TOTAL PERSONNEL |

TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: 4
 *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 NA

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

| | | |
|--|---|--|
| <p>NAME AND ADDRESS: Allegheny Surveys, Inc 80 U.S. Highway 33 East Weston, WV 26452</p> | <p>SPECIALTY: Surveying</p> | <p>WORKED WITH BEFORE _____ Yes X _____ No</p> |
| <p>NAME AND ADDRESS: DiGioia, Gray and Associates, LLC 570 Beatty Road Monroeville, PA 15146</p> | <p>SPECIALTY: AML Expert Support</p> | <p>WORKED WITH BEFORE X _____ Yes _____ No</p> |
| <p>NAME AND ADDRESS: H.C. Nutting/Terracon 912 Morris Street Charleston, WV 25301</p> | <p>SPECIALTY: Geotechnical Drilling</p> | <p>WORKED WITH BEFORE X _____ Yes _____ No</p> |
| <p>NAME AND ADDRESS:</p> | <p>SPECIALTY:</p> | <p>WORKED WITH BEFORE _____ Yes _____ No</p> |
| <p>NAME AND ADDRESS:</p> | <p>SPECIALTY:</p> | <p>WORKED WITH BEFORE _____ Yes _____ No</p> |
| <p>NAME AND ADDRESS:</p> | <p>SPECIALTY:</p> | <p>WORKED WITH BEFORE _____ Yes _____ No</p> |
| <p>NAME AND ADDRESS:</p> | <p>SPECIALTY:</p> | <p>WORKED WITH BEFORE _____ Yes _____ No</p> |
| <p>NAME AND ADDRESS:</p> | <p>SPECIALTY:</p> | <p>WORKED WITH BEFORE _____ Yes _____ No</p> |

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

YES **Description and Number of Projects:** Tetra Tech staff and consultants have completed over 100 abandoned mine land projects. The listing in Attachment C is only a partial listing. Thomas Gray has been working on abandoned mine reclamation projects for the past 21 years, many in West Virginia. Our consultant, Richard Gray, has been involved with mine reclamation since the early 1980s. He has completed over 100 projects in West Virginia for the WVDEP. They worked together on many of these projects. Tetra Tech has been involved with mine reclamation for many years in the western U.S. and has made a commitment to providing similar services in the Appalachian coalfields. We have an office in Charleston, WV that has worked for WVDEP and would add mine reclamation staff if needed.

NO

B. Is your firm experienced in Soil Analysis?

YES **Description and Number of Projects:** Tetra Tech has conducted thousands of soil investigations worldwide that included sampling and analysis. Along with this site work we have provided thousands of reports presenting the results of the investigations. We have extensive specialized experience and technical competence in providing soil sampling and analysis services, including performing more than 6,000 environmental site characterizations, including mining sites, and more than 1000 geotechnical investigations. Tetra Tech has trained and experienced field sampling crews available in our lead design office.

NO

C. Is your firm experienced in hydrology and hydraulics?

YES **Description and Number of Projects:** Tetra Tech has over three decades of corporate experience in hydrology and hydraulics. Our expertise and knowledge in evaluating hydrologic systems is applied to specific water resource project types including; water resource and flood damage assessment, flood control design (including channels, levees, detention basins and bank protection, hydraulic structure designs, erosion/sedimentation studies, stream restoration and wetland design projects, dam and levee safety evaluations, reservoir operation/optimization studies, flood-control and floodplain management studies and mapping, development of flood warning systems, dam break flood studies and contingency planning, stormwater drainage design, surface and groundwater supply analysis. The basis of these hydrologic studies is the application of HEC software such as; **HEC-HMS, Geohms, HECFFA, HEC-SSP, HEC-DSSVue, HEC-Ressim, CWMS and legacy software such as HEC-1, HEC-5, HEC-DSS, and COED.**

NO

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

YES Description and Number of Projects

NO Tetra Tech regularly subcontracts these activities and has teamed with Allegheny Survey, Inc. to provide these services

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 has extensive expertise modeling, designing, and installing reliable, safe and cost-effective water transmission and distribution systems. Our experience encompasses all aspects of transmission and distribution systems, including large diameter water mains, distribution piping, booster pumping stations, storage tanks, and metering facilities. Tetra Tech's has performed domestic waterline design projects nationwide for the hundreds of municipalities and water authorities for whom we work.

NO

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

YES

Description and Number of Projects: Tetra Tech's Pittsburgh office is currently involved with three acid mine drainage projects. The Gladden discharge project is a passive treatment design for an acidic discharge that averages over 900 gpm. A mine pump station is currently being designed at an acid mine drainage treatment plant. Tetra Tech is also consulting on a sodium hydroxide treatment plant design for an acidic discharge that averages about 30 gpm. Our current staff has also been involved with many other AMD evaluation projects and abatement design while working for other consultants.

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 | |
| Gray, PE, Thomas A. | | YEARS OF AML DESIGN EXPERIENCE: 22 | YEARS OF AML RELATED DESIGN EXPERIENCE: 34 |
| Group Manager - Energy and Natural Resources | | YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 16 | |

Brief Explanation of Responsibilities:

Mr. Gray is an experienced mining engineer and has been involved with abandoned mine reclamation for the past 22 years. He is a recent addition to Tetra Tech and is currently working on the reclamation design of the Gladden mine discharge in western Pennsylvania. Other Tetra Tech mine reclamation projects in which he is involved are the treatment of an acidic discharge for Penn DOT, subsidence evaluation for a mine in Colorado, and a pump station and pipeline design for a mine in Pennsylvania. He previously worked at GAI Consultants, Inc. and managed their Charleston, WV office in the 1990s. Since 2000, Mr. Gray has managed or was a senior consultant on 53 projects involving reclamation of abandoned mines. This includes 30 projects that he managed for the Office of Surface Mining. He also managed open end design contracts for the PADEP and the Maryland Bureau of Mines. A letter attesting to Mr. Gray's work with these agencies is attached to this submittal. Mr. Gray has also consulted to WV DOH on mining issues, most recently on a project site in Harrison County in 2007. Projects for the WVDEP that Mr. Gray was involved in include Omega mine grouting, Owings mine reclamation, Majesty mine reclamation, Godby Branch water supply extension, and Left Hand Fork Refuse fire control. He has published over 30 articles related to mining and reclamation, including the chapter entitled, "Mine Closure, Sealing, and Abandonment" in SME's Mining Engineering Handbook. He will be the Project Manager for this work. EDUCATION (Degree, Year, Specialization) **BS, 1973, Mining Engineering**

| | | |
|--|--|--|
| MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS | | REGISTRATION (Type, Year, State) |
| Engineers (SME) - Pittsburgh section Distinguished Member, Society of American Military Engineers | | Professional Engineer 26978-E, 1978, Pennsylvania |
| | | Professional Engineer 17048, 1989, Maryland |
| | | Professional Engineer 11628, 1980, Virginia |
| | | Professional Engineer 10523, 1988, West Virginia |

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 | |
| Berenbrok, PE, Allan R. | | YEARS OF AML DESIGN EXPERIENCE: 1 | YEARS OF AML RELATED DESIGN EXPERIENCE: 1 |
| Senior Project Manager | | YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 28 | |

Brief Explanation of Responsibilities:

Mr. Berenbrok has 28 years of municipal utility design, site development and construction management experience that includes small diameter water lines, booster stations, sanitary sewers, storm sewers, public utilities and roadway maintenance and repair. He recently began working on AML projects and is currently working on the Gladden project in South Fayette township. He recently completed mine seal design in Ohio. Three other AML design projects are just getting started. His experience with water authorities and municipalities provides the first hand experience in working with the authority, the water customers (private and commercial), railroads, other utilities and local/state roadway jurisdictions regarding the submission and acquisition of permits. Relevant design experience includes hydraulic modeling of current and proposed systems, hydrant flow testing, booster station design and evaluation, writing specifications, preparation of bid packages and contract documents, cost estimating, bid phase services, shop drawing review, construction inspection and construction management. He has extensive knowledge of easements and rights of ways through public and private property. His experience with municipalities and water design projects includes West Virginia, Pennsylvania, North Carolina, California, Florida and Virginia.

EDUCATION (Degree, Year, Specialization) **BS, 1980, Civil Engineering MS, 1984, Systems Management**

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:
none

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.)

**Cummings, PE, Biff D.
 Senior Engineering Consultant**

Brief Explanation of Responsibilities:

Mr. Cummings is a registered professional engineer with over 29 years of experience specializing in civil engineering, geotechnical, and geo-environmental engineering. Mr. Cummings has expertise in geotechnical engineering and investigations to include mine reclamation, waste and soil consolidation, slope stability, settlement analysis, mine subsidence, and fill placement. His experience also includes the full range of civil site designs for commercial and industrial developments along with abandoned mine land reclamation (mine drainage and seals, regrading and vegetation of spoil piles, landslide investigation and abatement, subsidence abatement, mine and spoil fires, and stream channel restoration). Mr. Cummings has performed AML related activities under contracts in West Virginia, Ohio, Maryland, and Virginia, and performed subsidence evaluations for private companies and OSM in Pennsylvania, West Virginia, Ohio, and Maryland. His experience also includes design, mine permitting, and closure of waste disposal areas such as lagoons, landfills, and coal refuse dams. Additionally, Mr. Cummings has particular expertise with remedial design and remedial actions that include closure plans, synthetic and clay caps, leachate collection, slurry and sheet pile walls, groundwater collection systems, waste removal, and in-situ stabilization.

EDUCATION (Degree, Year, Specialization) **BS, 1978, Civil Engineering
 Graduate Studies in Geotechnical Engineering, University of Pittsburgh**

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:
American Society of Civil Engineers

REGISTRATION (Type, Year, State)
 Professional Engineer 033238-E, 1984 Pennsylvania
 Professional Engineer 062.059306, 2006, Illinois
 Professional Engineer 21197-E, 2005, Alabama
 Professional Engineer 015871, 2004, West Virginia
 Professional Engineer 10403586, 2004 Indiana
 Professional Engineer 57675, 1994, Ohio

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 | |
| Ludwig, Jon - Charleston Office Manager | | YEARS OF AML DESIGN EXPERIENCE: 8 | YEARS OF AML RELATED DESIGN EXPERIENCE: 10 |
| | | YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 0 | |

Brief Explanation of Responsibilities:

Mr. Ludwig is the director of the Charleston, WV office of Tetra Tech's TMDL and Water Resources Center. He is a senior environmental scientist with over 10 years experience providing technical and management support to federal, state, regional, and private clients in the areas of water resources, watershed and water quality assessment, watershed modeling, and Total Maximum Daily Load (TMDL) development. In support of EPA Region 3 and West Virginia Department of Environmental Protection Division of Water and Waste Management (WVDEP DWWM), he has served as project manager in the development of over 1,900 EPA approved TMDLs in West Virginia. Currently, he serves as project manager for the existing TMDL contract with WVDEP DWWM that includes the development of TMDLs for total iron, total manganese, dissolved aluminum, pH, selenium, fecal coliform bacteria, and biological impairments throughout the state of West Virginia. Mr. Ludwig also oversees development of a stressor identification process for biologically impacted streams throughout West Virginia including development of macroinvertebrate tolerance values. Mr. Ludwig also has extensive experience implementing various hydrologic and water quality models, including EFDC, SWMM, BASINS, HEC-2, HEC-RAS, LSPC, GWLF, HSPF, WASP, and DESC-R. He is knowledgeable about all the watersheds in the State including the one containing this project.

EDUCATION (Degree, Year, Specialization) MS, 1997, Environmental Pollution Control
BS, Environmental Science

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
American Water Resource Association
Water Environment Federation

REGISTRATION (Type, Year, State) None

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 | |
| Gray, PG, Richard E., Principal - DiGioia, Gray & Associates, LLC | | YEARS OF AML DESIGN EXPERIENCE: 25 | YEARS OF AML RELATED DESIGN EXPERIENCE: 25 |
| | | YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: | 10 |

Brief Explanation of Responsibilities:

Mr. Gray will consult with Tetra Tech and assist in selecting the design approach for the team. He will also be used to conduct a peer review of the design plans and specifications before they are finalized. He is highly regarded in the AML design field. He was the project manager on all of GAI's AML projects for the WV DEP from 1983 to 1995 and served as a technical consultant for all of the GAI projects with WV DEP from 1995 until 2005.

EDUCATION (Degree, Year, Specialization) Graduate Studies in Geology
BS, Civil Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
American Society of Civil Engineers
American Association for the Advancement of Science
Society of American Military Engineers

REGISTRATION (Type, Year, State)
Registered Professional Geologist: CA, DE, FL, F, IN, NC, SC, VA, WY, KY, PA, IL, AL
Certified Engineering Geologist; CA

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

AutoCAD (2008), TR-55, STABL5, HEC-HMS, GeoHMS, HECFFA, HEC-SSP, HEC-DSSVue, HEC-ResSim, CWMS and legacy software such as HEC-1, HEC-5, HEC-DSS, and COED

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 |
|--|--|---|-----------------------------|------------------|
| Gladden Mine Drainage; Passive Treatment Design; South Fayette Township, Allegheny County, PA | South Fayette Conservation Group 515 Millers Run Road Morgan, PA 15064 | Investigation and passive treatment system design, including surveying, wetland delineation, H&H evaluation, plans and specifications | \$500,000 | 15% |
| Pump Station Design; Canterbury Mine; Apollo, PA | Murray Energy One Industrial Drive Wheeling, WV 26003 | Design of floating pump station, including pump selection, power supply and pipeline | \$150,000 | 50% |
| Rock Springs Subsidence Mitigation Rock Springs, WY | Wyoming Dept of Environmental Quality, Abandoned Mined Lands Division, 122 West 25th St, Herschler Building Cheyenne 82002 | Assessment of subsidence hazards within the City of Rock Springs where historic underground coal mining resulted in moderate to severe subsidence. | \$2,100,000 | 30% |
| Bauxite Residue Seepage Assessment, Subsurface Investigation and Groundwater/Surface Water Assessment from tailing dam on previously mined land, Bauxite, AR | Alcoa Arkansas Reclamation 1401 Bauxite Cutoff Rd Bauxite, Arkansas 72015 | Perform a subsurface investigation and install wells and piezometers to assess groundwater conditions and flow patterns. Installed manometers and performed flow measurements in surrounding streams to determine flow and chemical characteristics of surface water. Design surface and groundwater containment systems. | \$1,000,000 | 80% |
| SPL Consolidation, Closure Design Project, Listerhill, AL | Alcoa, Inc 201 Isabella Street Pittsburgh, PA 15212 | Develop/design a closure plan to consolidate and cap residual materials from past process activities at a closed aluminum manufacturing plant. | \$600,000 | 20% |
| Seal Design of Three Mine Openings, Eastern Ohio | Confidential Client Ohio | Designed mine seals consisting of structural concrete to resist uplift pressure of a hydraulic gradient. | \$300,000 | 95% |

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 |
| Jonathan Run Acid Rock treatment plant design; Snowshoe, PA | Consulting | Penn DOT Clearfield, PA | December, 2008 | \$130,000 | Review of design and technically assist during the design process. |
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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) |
|--|---|-----------------------------|------|-------------------------|
| SWMU Closure Feasibility Study and Design including cover design for South End Landfill, New Martinsville, WV | Bayer Corporation State Route 2 New Martinsville, WV 26155 | 1,200,000 | 2004 | NO |
| Mud Lake Reclamation involving slope regrading, revegetation, and stream relocation, Listerhill, AL | Alcoa Remediation Management, Inc. 201 Isabella Street Pittsburgh, PA 15212 | 650,000 | 2006 | YES |
| East St Louis, Site Remediation Design and Oversight of waste removal and disposal. East St. Louis, IL | Alcoa Remediation Management, Inc. 201 Isabella Street Pittsburgh, PA 15212 | 250,000 | 2006 | YES |
| Bauxite Residue Disposal Area seepage assessment and subsurface drainage collection system design and construction oversight, Hurricane Creek, Bauxite, AR | Alcoa Arkansas Reclamation 1401 Bauxite Cutoff Rd Bauxite, Arkansas 72015 | 500,000 | 2004 | YES |
| Sherwin Dike Upgrade, collect soil samples, performed testing and analysis and grading plans associated with efforts to stabilize and heighten 3.5 mile dike, Corpus Christi, TX | Alcoa Remediation Management, Inc. 201 Isabella Street Pittsburgh, PA 15212 | 2,500,000 | 2006 | YES |
| | | | | |
| | | | | |
| | | | | |

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 | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

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.

SEE ATTACHED LETTERS OF RECOMMENDATION FOR TOM GRAY, PE, FROM PADEP AND MARYLAND DEPT OF THE ENVIRONMENT
SEE PROJECT DESCRIPTIONS ATTACHED TO ATTACHMENT C

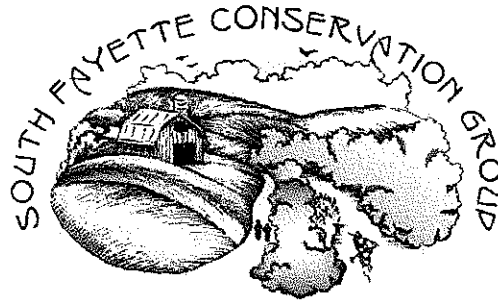
20. The foregoing is a statement of facts.

Signature: Mark P. Speranza

Printed Name: Mark P. Speranza PE

Title: Pittsburgh Operations Manager

Date: October 21, 2008



September 5, 2008

To whom it may concern,

I want to express my appreciation to both Tom Gray and Tetra Tech NUS, Inc. for their ongoing efforts to design an abandoned mine discharge passive treatment system that the South Fayette Conservation Group will be able to submit for Growing Greener funding in 2009. The meeting of August 28th, held to discuss the design of the settlement ponds with Rich Beam of Pa. DEP BAMR, was insightful and informative. As the result of the meeting, a smart strategy has been decided upon for moving forward with this project.

I would recommend both Tom and Tetra Tech to anyone considering undertaking an AMD project. Tom was the designer of our recently completed Fishing Run Restoration/Maude Mine Reclamation Project. The project won the South Fayette Conservation Group a 2008 Western Pa. Environmental Award. The project has also won a 2008 Office of Surface Mining Reclamation Award for the Bureau of Abandoned Mine Reclamation.

Tom and everyone at Tetra Tech is always very responsive to our needs as we tackle permitting issues, adjacent landowner concerns, grant paperwork requests and the coordination of all project partners. Tetra Tech has also been willing to work with us financially in order to help us achieve our required 15% cost match for the grant funds.

As we continue to tackle the problems of abandoned mine drainage within our township, we look forward to maintaining a strong working relationship with Tom and all of the employees at Tetra Tech NUS, Inc.

Sincerely,

Amy Smith
President, South Fayette Conservation Group

Working to conserve, protect and enhance our natural and recreational resources.

515 Millers Run Road, Morgan, PA. 15064



Pennsylvania Department of Environmental Protection

286 Industrial Park Road
Ebensburg, PA 15931-4119
September 3, 2008

Bureau of Abandoned Mine Reclamation

814-472-1800

Tetra Tech NUS, Inc.
661 Andersen Drive
Pittsburgh, PA 15220-2745

Re: Consulting Work

To Whom It May Concern:

This letter is to verify that Thomas Gray, while with his former employer GAI, provided consulting work to PA-DEP, Bureau of Abandoned Mine Reclamation. Most recently, Mr. Gray was involved in a technical evaluation of the potential use of ten mine pools for water storage, with treatment and discharge during low-flow conditions. I was the DEP's project coordinator for this evaluation.

Mr. Gray and his staff were responsive, professional, and completed all work in a timely manner and under budget. All items in the scope of work were fully addressed.

Please contact me at the above phone number if you would like to further discuss this project and Mr. Gray's involvement.

Sincerely,

Pamela J. Milavec, Chief
Environmental Services Section
Cambria Office



MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore MD 21230

410-537-3000 • 1-800-633-6101

Martin O'Malley
Governor

Water Management Administration
Mining Program – Bureau of Mines
160 South Water Street
Frostburg, Maryland 21532

Shari T. Wilson
Secretary

Anthony G. Brown
Lieutenant Governor

Bob Summers
Deputy Secretary

February 14, 2008

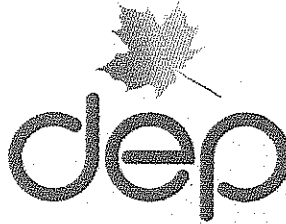
To Whom It May Concern:

I have worked with Mr. Tom Gray since 2002 as the contract monitor for the Maryland Bureau of Mine's technical service contract and the Chief of the Maryland Abandoned Mine Land Program. During that time, Mr. Gray was assigned tasks to perform technical services related to coal mining and coal mine reclamation. In general, the work consisted of geotechnical evaluations, acid mine drainage evaluations, water supply evaluations and acid mine drainage treatment system enhancements.

Mr. Gray's work was always of the highest quality and completed within the assigned time frame. I attribute his success to his experience and ability to understand a wide range of issues. He communicated effectively by providing work updates and was able to resolve a variety of technical and administrative issues before committing time and resources, maximizing the value of his services to the State. I would recommend him to any person or agency considering contracting for his services. If you have any questions, please feel free to contact me at (301)689-1460 or by email at mgarner@allconet.org.

Sincerely,

Michael P. Garner, Chief
Abandoned Mine Land Program
Maryland Bureau of Mines



west virginia department of environmental protection

Division of Water and Waste Management
601 5th Street, S. E.
Charleston, WV 25304
Phone number: (304) 926-0495
Fax number: (304) 926-0496

Joe Manchin III, Governor
Randy C. Huffman, Cabinet Secretary
www.wvdep.org

September 17, 2008

To whom it may concern:

This letter serves as a recommendation for the utilization of Tetra Tech and Jon Ludwig for future water resources projects.

Tetra Tech has supported WVDEP's total maximum daily load (TMDL) development efforts over the past six years. The scope and magnitude of the TMDL program requires very aggressive project schedules that progress simultaneously. It is critical that these schedules are maintained because new, large projects begin each year, incrementally increasing the workload as the TMDL program cycles through five hydrologic groupings of West Virginia watersheds. The strong leadership of Tetra Tech's management team and the exceptional performance of their technical staff have provided WVDEP with high-quality and cost-effective products under past and existing contracts.

I have personally worked with Jon Ludwig since 2001, and I highly recommend the water resource management services of him and Tetra Tech.

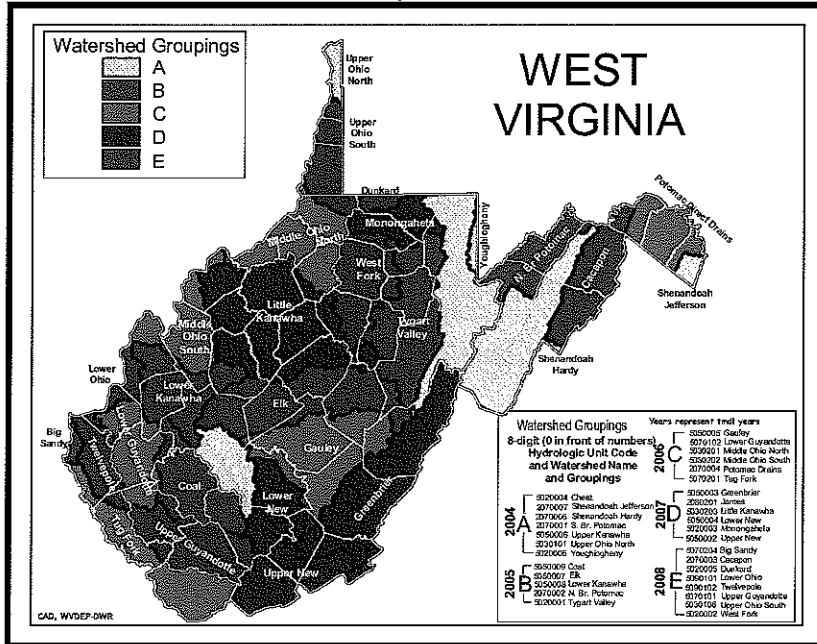
Sincerely,

David A. Montali
TMDL Program Manger



West Virginia Department of Environmental Protection (WVDEP) is committed to implementing a comprehensive watershed based TMDL process that reflects the requirements of the TMDL regulations, provides for the achievement of water quality standards, and ensures that ample stakeholder participation is achieved in the development and implementation of TMDLs.

From 1997 through September 2003, USEPA Region 3 developed West Virginia TMDLs, under the settlement of a 1995 lawsuit, Ohio Valley Environmental Coalition, Inc., West Virginia Highlands et al. v. Browner et al. The lawsuit resulted in a consent decree between the plaintiffs and USEPA. The consent decree established a rigorous schedule for TMDL development and required TMDLs for the impaired waters on West Virginia's 1996 Section 303(d) list. While EPA was working on developing TMDLs, WVDEP concentrated on building its own TMDL program. With the help of a TMDL stakeholder committee, the agency secured funding from the state legislature and created the TMDL section within the Division of Water and Waste Management.



The TMDL stakeholder committee consisted of 22 members with balanced interests among extractive and manufacturing industries, environmental advocates, agriculture, forestry, state and federal government, sportsmen associations, and municipalities. The committee made recommendations for WVDEP TMDL development and supported general revenue funding.

Since October 2003, West Virginia's TMDLs were and continue to be developed by Tetra Tech under contract to WVDEP. While accommodating the remaining TMDLs required by the consent decree, Tetra Tech generates numerous other TMDLs under a comprehensive watershed based approach. TMDLs are developed according to the Watershed Management Framework cycle. The framework divides the state into 32 major watersheds and operates on a five year rotation process. The watersheds are divided into five hydrologic groups (groups A - E).

Prior to the existence of the TMDL Program, WVDEP stream monitoring and NPDES permit reissuance activities were organized in accordance with the Framework. The TMDL program was then designed to be synchronized with the monitoring and implementation schedule of the Framework creating a fully integrated watershed based program. The TMDL development process begins with pre-TMDL water quality monitoring and source identification and characterization. Informational public meetings are held in the affected watersheds. Data obtained from pre-TMDL efforts are compiled, and the impaired waters are modeled to determine baseline conditions and the gross pollutant reductions needed to achieve water quality standards.

WVDEP then presents its allocation strategies in a second public meeting, after which Final TMDL reports are developed. The draft TMDL is advertised for public review and comment, and a third informational meeting is held during the public comment period. Public comments are addressed, and the draft TMDL is submitted to USEPA for approval.

Client Name
West Virginia Department of Environmental Protection (WVDEP)

Project Highlights

- Met EPA's rigorous schedule as defined in a consent decree
- 22 Member Stakeholder Committee
- WVDEP has created unique ways to integrate large-scale, watershed based TMDLs

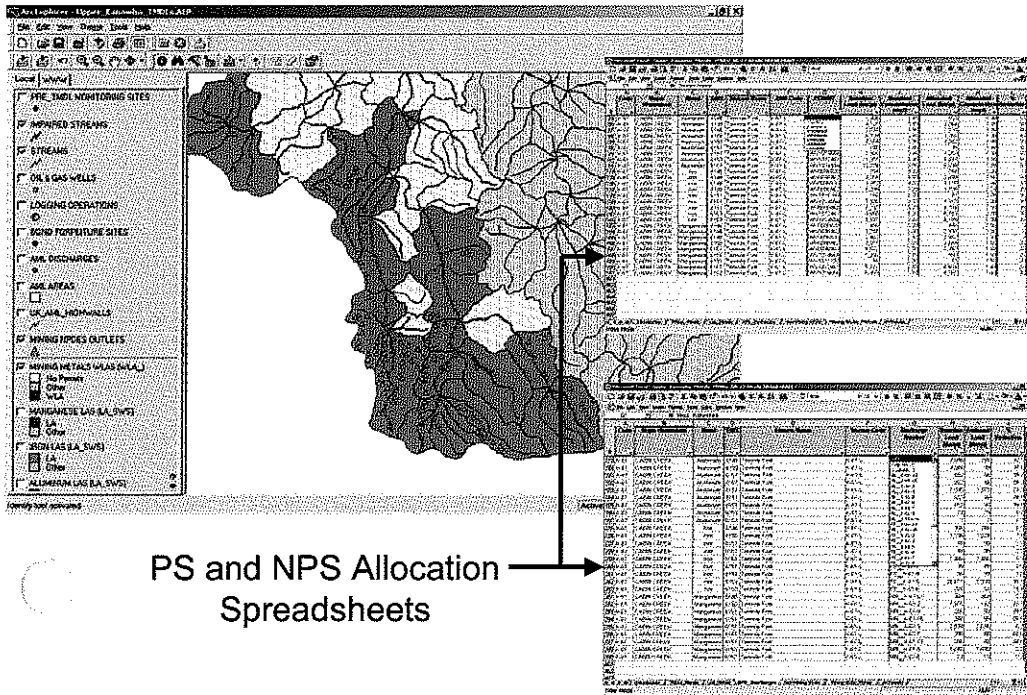
Project Cost
\$500,000

Completion Date
On-going

WVDEP's 48-month development process enables the agency to carry out an extensive data generation and gathering effort to produce scientifically defensible TMDLs. WVDEP strategically plans water quality monitoring prior to TMDL development where numerous monitoring locations are established and a comprehensive suite of analytes are sampled. This fine scale monitoring resolution coupled with identification and characterization of problematic sources through field-based source tracking activities provides a sound basis for assessment and TMDL development for all streams and impairments within the watershed.

In addition, Tetra Tech has created unique ways to integrate large-scale, watershed based TMDLs with fine-scale, highly technical methodologies that produce "implementable" TMDLs in a cost-effective manner. The comprehensive watershed based approach typically includes all known impairments in the watershed and involves a multi-faceted modeling approach to address total recoverable metals, dissolved metals, acidity (pH), bacteria, and biological impairments. This watershed based approach allows Tetra Tech to maximize efficiency throughout all phases of TMDL development and thereby minimizing funding requirements of their TMDL program. Since 2003, Tetra Tech has completed over 1,300 EPA approved TMDLs (428 streams) with another 675 (250 streams) currently under development.

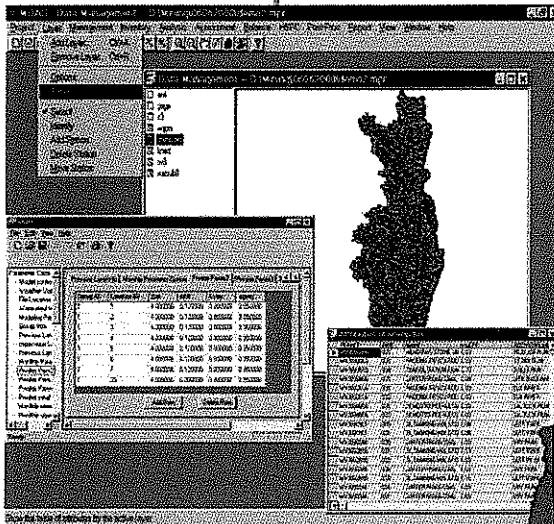
ArcExplorer GIS Viewer



PS and NPS Allocation Spreadsheets

data) is included on a CD-ROM. To further improve the "usability" of the TMDLs, Tetra Tech developed a series of interactive tools to provide TMDL implementation guidance. These tools are designed to simplify and assist "implementers" (nonpoint source staff and permit writers) in using the TMDLs to develop watershed plans and issue/renew permits. An interactive ArcExplorer geographic information system (GIS) project allows the user to explore the spatial relationships of the source assessment data, as well as further details related to the data. Users are also able to "zoom in" on streams and other features of interest. In addition, spreadsheet tools (in Microsoft Excel format) were developed to provide the data used during the TMDL development process, and the detailed source allocations associated with successful TMDL scenarios. These tools provide guidance for selection of implementation projects as well as for permit issuance and are also included on the TMDL Project CD.

Tetra Tech also has designed a "TMDL on CD" concept where all relevant TMDL information (TMDL Reports and Appendices, Technical documentation, and supporting



Tetra Tech is recognized as a nationwide leader in hydraulic and hydrological analyses for hydraulic features and other infrastructure planning, design, and construction. In addition, Tetra Tech offers specialized experience and technical competence in hydraulic, hydrodynamic, watershed, storm water, groundwater, and water quality modeling; data collection and analysis; environmental analysis and compliance; and stream and lake restoration. This nationwide expertise coupled with extensive experience gained through conducting the many TMDL studies provides Tetra Tech with a thorough understanding of the dynamic hydrologic, hydraulic, and water quality processes associated with AMD throughout West Virginia.

Client Name
WVDEP

Project Highlights

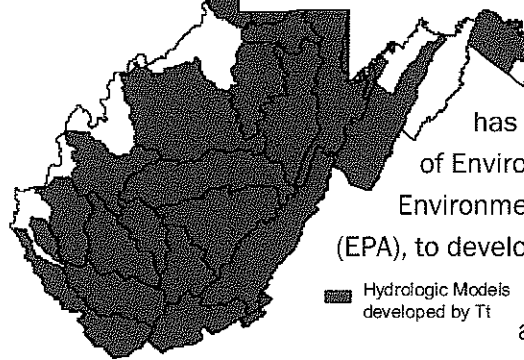
- Hydrologic Modeling
- AML Source Tracking & Assessment
- AMD Water Quality Modeling

Project Cost

\$4,100,000

Completion Date

November 2003 - Present



Hydrologic Models developed by Ti

Over the past 8 years, Tetra Tech has supported West Virginia Department of Environmental Protection (WVDEP) and Environmental Protection Agency Region 3 (EPA), to develop and fine-tune a Total Maximum Daily Load (TMDL) methodology to address various water quality

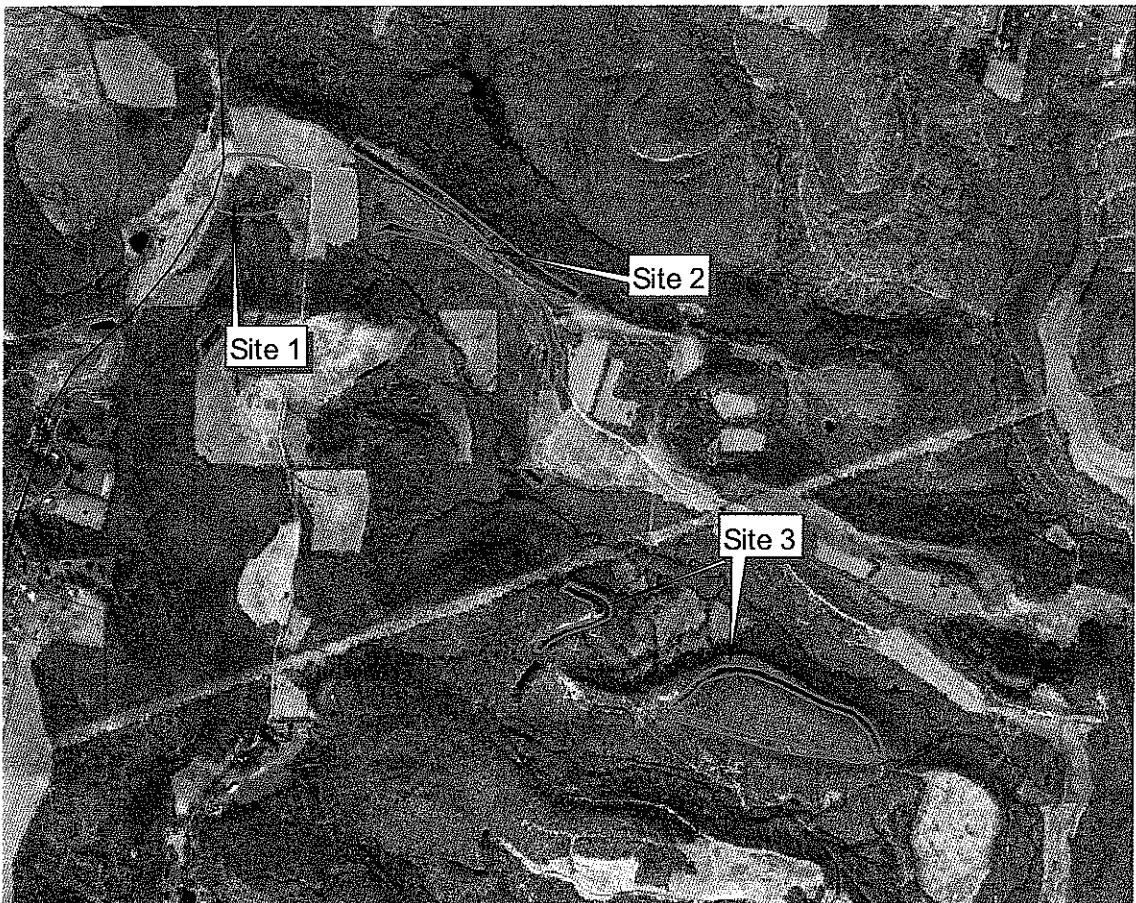
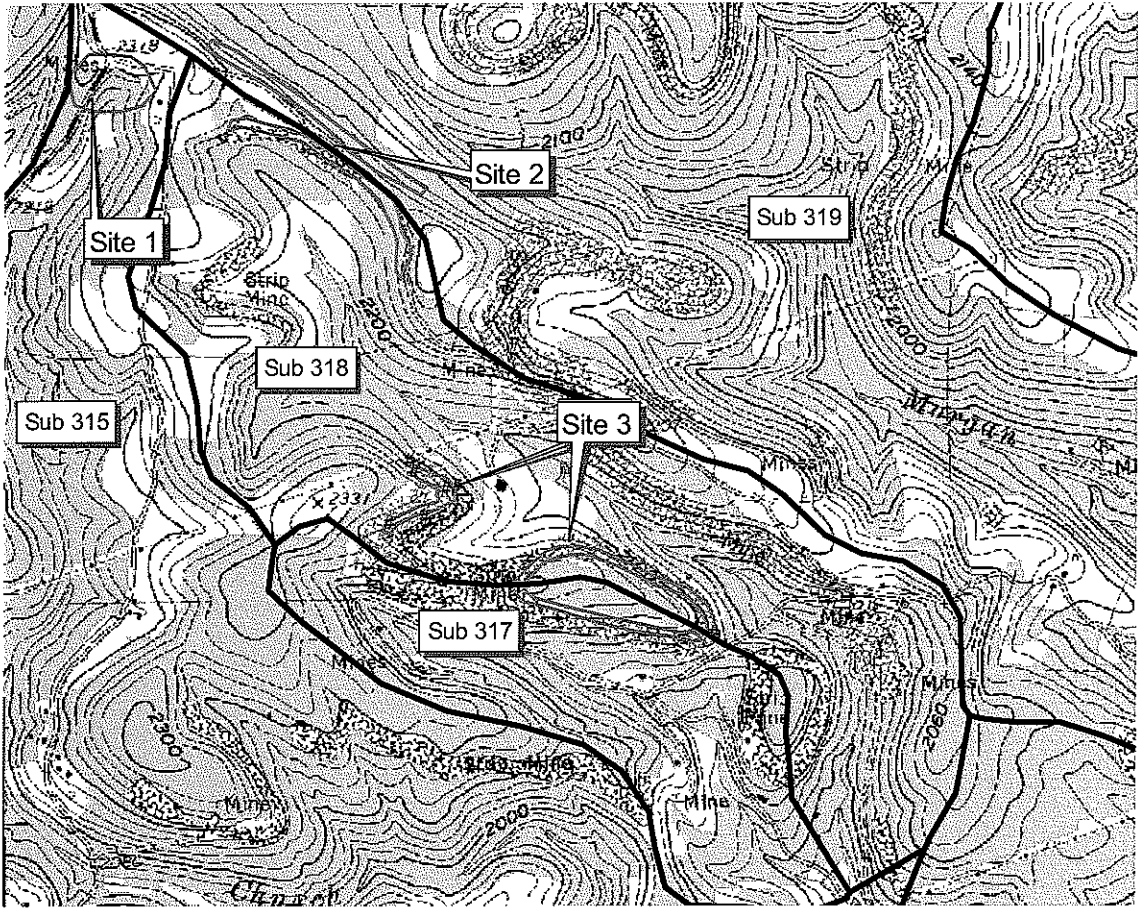
impairments due to acid mine drainage in West Virginia. This innovative modeling approach, the Mining Data Analysis System (MDAS), was developed by Tetra Tech to simulate hydrologic and water quality conditions throughout large watersheds. MDAS is a comprehensive GIS, dynamic modeling, and analysis package that provides the ability to overcome the difficult simulation of a large-scale watershed while maintaining a great level of detail (i.e., segmenting watersheds into hundreds of smaller hydrologic units to address impairments in small nested tributaries). The watershed modeling process involved the compilation of meteorological, land use, stream and land use-specific hydrology and pollutant data; hydrologic calibration and water quality calibration; and generation of nonpoint source and in-stream flows and pollutant loadings. In order to account for the multiple mining related sources, additional land use categories that are specific to AMD were represented as nonpoint sources (e.g. high walls, portals, and disturbed land from abandoned mines). Since 2003, Tetra Tech has been the exclusive TMDL contractor for WVDEP and as an ongoing effort, Tetra Tech staff routinely work with WVDEP staff to identify hydrologic and water quality characteristics of abandoned mines throughout West Virginia. Furthermore, Tetra Tech has a great deal of experience querying WVDEP's AML databases, which we have access to through a virtual private network connection from our Charleston, WV, office.



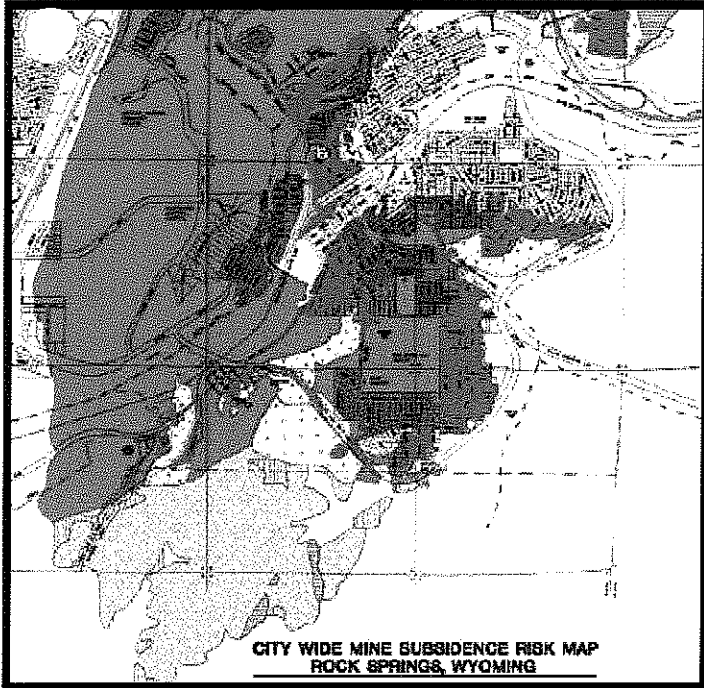
TETRA TECH

To date, Tetra Tech has constructed and calibrated hydrologic models that cover more than 82% of West Virginia. Furthermore, hydrologic models are currently setup for the sites described in this RFQ at a scale the hydrologic impacts of these sites can be simulated and evaluated. The Church Creek/Manown Highwall site is located in the Cheat River TMDL watershed model. Site 1 is located in headwaters of TMDL subwatershed 315, Site 2 is located on the ridge that startles subwatersheds 318 and 319, and Site 3 is mostly located in subwatershed 318 and over the watershed divide into 317. WVDEP and Tetra Tech have worked together to characterize the hydrologic and water quality impacts from mining sources. Sources such as acid mine drainage from numerous seeps at Site 3 not only pose human health risks but environmental risk and violations to the water quality standards. The table below characterizes a small portion of the water quality data from seeps located at Site 3 that have been sampled from 2003 through 2007 by WVDEP (SRG and WAS) and Friends of Cheat watershed association.

| Sample ID | Date | Flow GPM | PH | Specific Cond uS/cm | Total Al mg/l | Dis Al mg/l | Total Fe mg/l | Dis Fe mg/l | Total Mn mg/l | Hot Acidity mg/l | Sulfate mg/l | TSS mg/l |
|--------------|------------|----------|------|---------------------|---------------|-------------|---------------|-------------|---------------|------------------|--------------|----------|
| MC50B-375-1A | 1/17/2007 | 115 | 2.03 | 1079 | 20.85 | 19.35 | 8.13 | 8.03 | 1.45 | | 300 | 3 |
| MC50B-375-1B | 11/18/2003 | 9 | 2.67 | 1263 | 19.00 | 17.60 | 8.05 | 7.55 | 1.47 | 252.00 | 465 | 1 |
| MC50B-375-1C | 3/10/2004 | 54 | 2.90 | 1020 | 11.60 | 10.20 | 4.39 | 4.01 | 1.09 | 179.00 | 167 | 1 |
| MC50B-375-1D | 5/24/2004 | 62 | 2.62 | 965 | 15.00 | 12.90 | 5.07 | 4.18 | 1.36 | 252.00 | 228 | 1 |
| MC50B-375-1E | 2/22/2005 | 273 | 3.10 | 1030 | 14.40 | 13.60 | 4.66 | 4.54 | 1.26 | 203.00 | 242 | 2 |
| MC50B-375-1F | 4/4/2005 | 54 | 3.80 | 950 | 11.50 | 11.50 | 4.03 | 4.00 | 1.10 | 156.00 | 183 | 1 |
| MC50B-375-1G | 6/27/2005 | 1 | 2.90 | 800 | 12.80 | 11.40 | 2.71 | 2.43 | 1.31 | 344.00 | 180 | 8 |
| MC50B-375-1H | 8/23/2005 | 2 | 3.10 | 870 | 12.90 | 12.00 | 4.21 | 4.06 | 1.53 | 185.00 | 334 | 2 |
| MC50B-375-1I | 9/13/2005 | 0 | 3.20 | 880 | 15.70 | 12.30 | 4.01 | 2.99 | 1.66 | 234.00 | 240 | 2 |
| MC50B-375-1K | 2/7/2006 | 30 | 2.80 | 1150 | 18.00 | 17.30 | 6.58 | 6.28 | 1.40 | 525.00 | 579 | 1 |



Locations of the Church Creek Manown Highwall Sites in Modeled Subwatersheds



The Wyoming Abandoned Mine Lands (AML) Project 17.6A is a State-Wide ID/IQ contract for mitigating coal mine subsidence hazards awarded to Tetra Tech by the Wyoming Department of Environmental Quality Abandoned Mine Lands Division. Initial work under this contract includes assessment of subsidence hazards within the City of Rock Springs where historic underground coal mining from the 1860s to 1950s resulted in approximately 900 acres of the city being undermined and a history of moderate to severe subsidence as a result.

Although subsidence mitigation efforts have been implemented through a number of previous projects for AML and the Bureau of Mines by others, Tetra Tech was selected for the current work on the basis of the unparalleled qualifications of its multi-disciplinary project team including specialists in geological engineering, forensic geotechnics,

geophysical investigations, underground mine design and grouting. Detailed geomechanical characterization of the subsurface conditions coupled with highly advanced state-of-the-art geophysical imaging and processing techniques to delineate mine voids are being used to allow subsidence risks to be accurately quantified and focused, cost-effective mitigation solutions to be developed.

Client Name
Wyoming Department of
Environmental Quality Abandoned
Mine Lands Division

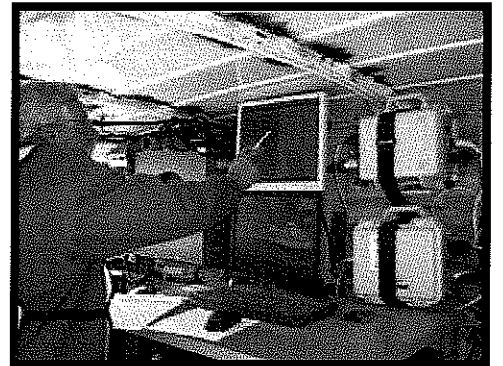
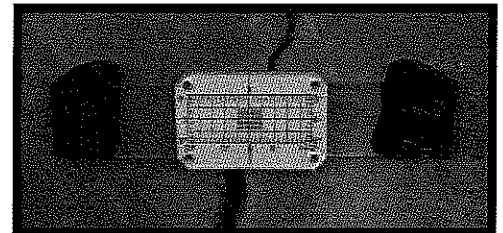
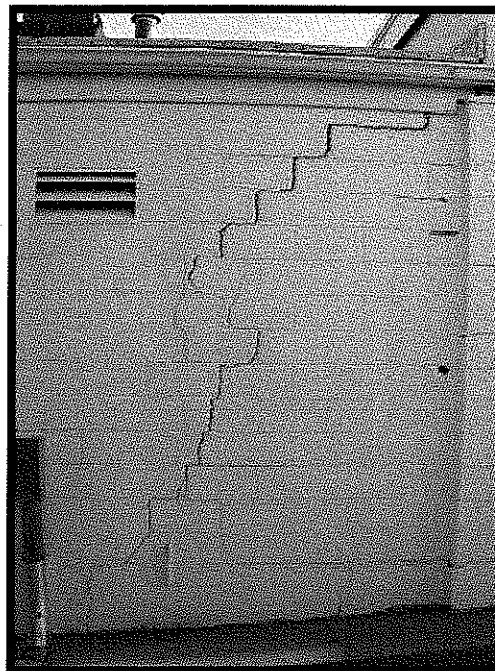
Project Highlights

- Extensive use of GIS to assimilate data from thousands of existing borings
- State-of-the-art geophysical imaging
- Subsurface Investigations
- Air quality monitoring for mine gases
- Structural distress surveys and structural monitoring
 - Subsidence hazards assessment
- Public meeting participation

Project Cost
\$2,100,000

Completion Date
On-going

complex world





The South Fayette Conservation Group was awarded a grant from the Pennsylvania Department of Environmental Protection (PADEP) Bureau of Abandoned Mine Land Reclamation to design a passive treatment system to treat the Gladden Mine discharge. They retained Tetra Tech to complete this design. The scope of work for the abandoned mine site includes:

- Surveying and topographic mapping of the existing discharge and adjoining area along Millers Run.
- Exploration of the site to include; installation of two mine pool monitoring wells, site reconnaissance, wetland delineation, and a preliminary passive system design.

Client Name
South Fayette Conservation Group

Project Highlights

- Treatment of acidic/iron contaminated water
- When completed will restore Millers Run and improve water quality in Chartiers Creek
- Includes iron oxide recovery

Project Cost
\$500,000

Completion Date
On-going

- Final design and permitting of the passive treatment system, to include final passive treatment design, erosion and sedimentation control permitting, Chapter 105 stream and floodplain encroachment permitting [including using Federal Emergency Management Agency's (FEMA) model to conduct a hydraulic study of the floodway], construction drawings, specifications, and report.
- Water sampling and analysis.
- Iron oxide recovery plan.





Tetra Tech conducted an engineering evaluation of alternatives to restore reaches of Powderly Creek impacted by acid mine drainage (AMD). The creek had been impounded, choked with fine sediments, and buried by mine tailings. Tetra Tech collected soil, water, and aquatic biology samples to assess the aquatic and riparian habitat, and prepared a detailed HEC-RAS hydraulic model to help evaluate stream restoration alternatives.

Because impacts to stream flows, floodplains, bank and bed materials, and stream location had been severely impacted by coal mining activities, geomorphologic modeling was essential for the successful development of stable stream restoration designs.

Overland and in-stream sediment loads, hydraulics, bed forms, stream profile, impoundment and wetland impacts, and potential management practices were evaluated to fully describe site geomorphology with and without the restoration projects. Geomorphic resources included USACE documents such as EM 1110-2-4000, EM 1110-2-1418, ERDC-CHL TR-01-28, and the "WES Stream Investigation and "Streambank Stabilization Handbook."

Tetra Tech prepared restoration options including wetland improvements, wetland creation, stream restoration, stream channel relocation, development of floodplains that appropriately link to the restored stream, low head floodwalls, potential breaching of other low head dams, and creation of stormwater BMPs. Passive systems for treating acid mine drainage (AMD) were incorporated into the designs with treatment units located in the riparian corridor. The detailed designs of the selected alternative to restore the Powderly Creek watershed included a geomorphic evaluation, sediment load study, MCACES costs, construction documents, dam modifications, and passive AMD treatment systems.

Client Name

Baltimore District U.S. Army Corps of Engineers

Project Highlights

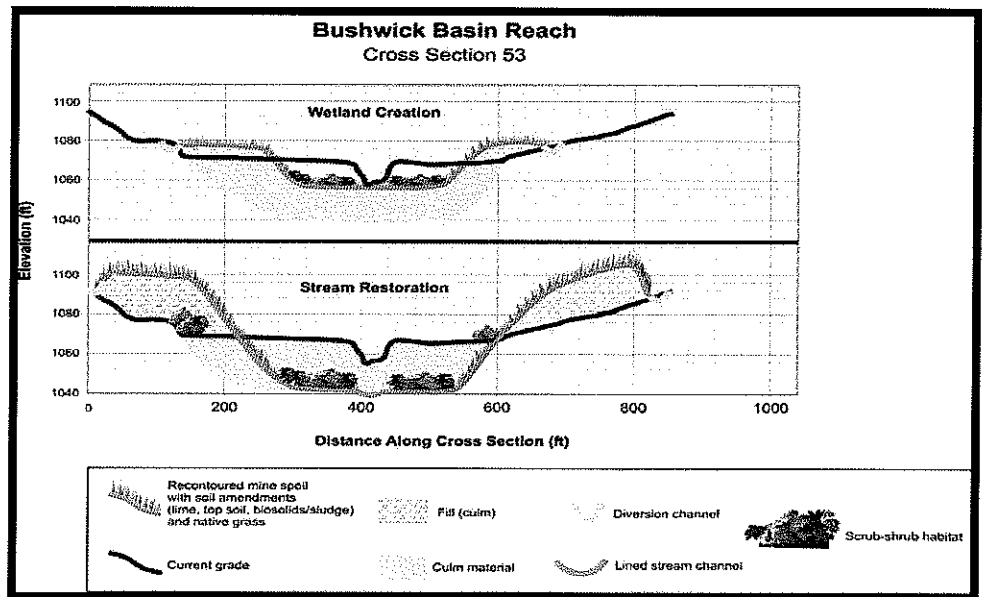
- Geomorphic modeling and sediment load analysis
- HEC-RAS hydraulic modeling
 - Passive AMD treatment alternatives evaluated
- MCACES cost estimate and preparation of construction documents

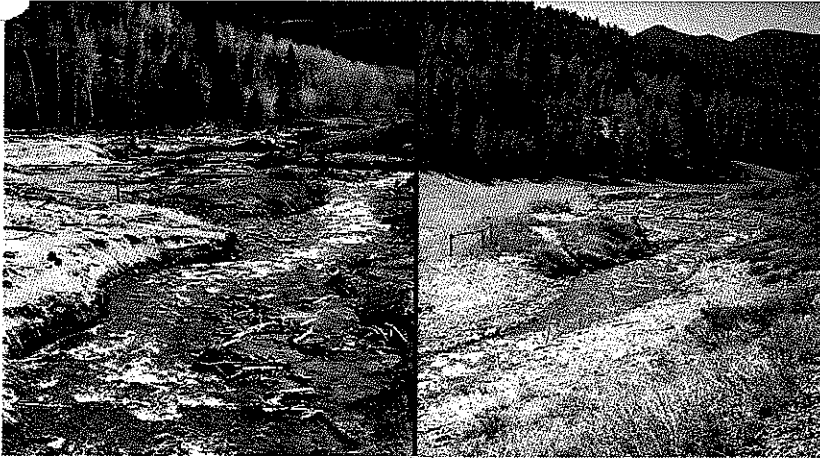
Project Cost

\$335,000

Completion Date

2005





Before

Restored

By working together, representatives from government, private industry, and the public have developed and are implementing proactive and expedited watershed-based solutions to the environmental effects of historical mining and milling in the Bonanza Mining District.

Tetra Tech managed the project on behalf of the Bonanza Group and provided the necessary environmental science and engineering services to complete the site characterization, acquire necessary permits and authorizations, and implement response actions.

Client Name
ASARCO Incorporated

Project Highlights

- *Stream channel segment restored to stable meander pattern after removal of valley-fill tailings impoundment*
- *Numerous in-place closures of fluvially-deposited tailings*
- *Consolidation and capping of selected tailing deposits and impoundments*
- *Numerous stream bank stabilization measures*

Project Cost
Confidential

Completion Date
1999

Response actions include in-place and on-site tailings and mine waste consolidation and closure, storm water controls, stream rehabilitation and riparian zone enhancements, revegetation, control of acid mine drainage, and passive water treatment.

As part of the project, stream banks have been stabilized and riparian zones restored along approximately four miles of Kerber Creek impacted by historic tailing impoundments and fluvially deposited tailings. This stream rehabilitation work has included relocating a one-half mile long segment of the creek to a new, stable, meandering channel after removal of a valley-fill tailings impoundment.

Stream stabilization measures include placement of rock barbs, vortex weirs, log revetments, and riparian trees and shrubs. The riparian zone enhancements and revegetation of the areas have served to both stabilize stream banks and improve water quality.



**Sediment Control/Mine Waste Pile Remediation
Clear Creek/Central City Superfund Site**

Gilpin County, Colorado



Tetra Tech performed professional engineering and surveying services for the planning and design of water quality improvements in the North Clear Creek watershed. The Clear Creek/Central City Superfund Site encompasses many mine waste rock piles dating back to the mid-19th century gold rush days. Abandoned waste rock piles contaminated the watershed with acid mine drainage and contaminated sediments. This project reduces runoff contact with the waste rock, collects sediments for future removal, and provides flood control to Central City and the Town of Black Hawk.

Key project elements include:

Client Name
Colorado Department of Public
Health and Environment

Project Highlights

- Dam and Channel Design
- Geotechnical Design
- Construction Documents
- Construction Administration

Project Cost
\$1,400,000

Completion Date
2007

- Hydraulic and geotechnical design of two rock fill dams with heights exceeding 25 feet
- A soil nail wall with a natural stone veneer to protect Gregory Gulch
- Design of runoff and runoff control ditches to minimize water contact with five waste rock piles
- Stone protection of waste rock pile toes adjacent to the creeks
- Construction observation and administration
- Interfacing with the Colorado Department of Public Health and Environment, the Environmental Protection Agency, and local municipalities
- Iron oxide recovery plan

STATE OF WEST VIRGINIA
Purchasing Division**PURCHASING AFFIDAVIT****VENDOR OWING A DEBT TO THE STATE:**

West Virginia Code §5A-3-10a provides that: 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 the debt owed is an amount greater than one thousand dollars in the aggregate.

PUBLIC IMPROVEMENT CONTRACTS & DRUG-FREE WORKPLACE ACT:

West Virginia Code §21-1D-5 provides that: Any solicitation for a public improvement construction contract shall require each vendor that submits a bid for the work to submit at the same time an affidavit that the vendor has a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the West Virginia Code. A public improvement construction contract may not be awarded to a vendor who does not have a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the West Virginia Code and who has not submitted that plan to the appropriate contracting authority in timely fashion. For a vendor who is a subcontractor, compliance with Section 5, Article 1D, Chapter 21 of the West Virginia Code may take place before their work on the public improvement is begun.

ANTITRUST:

In submitting a bid to any agency for the state of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the state of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the state of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the state of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership or person or entity submitting a bid for the same materials, supplies, equipment or services and is in all respects fair and without collusion or fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

LICENSING:

Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, the vendor must provide all necessary releases to obtain information to enable the Director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

CONFIDENTIALITY:

The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendors should visit www.state.wv.us/admin/purchase/privacy for the Notice of Agency Confidentiality Policies.

Under penalty of law for false swearing (West Virginia Code §61-5-3), it is hereby certified that the vendor acknowledges the information in this said affidavit and is in compliance with the requirements as stated.

Vendor's Name: Tetra Tech NUS, Inc.

Authorized Signature: Mark P. Spang

Date: October 21, 2008