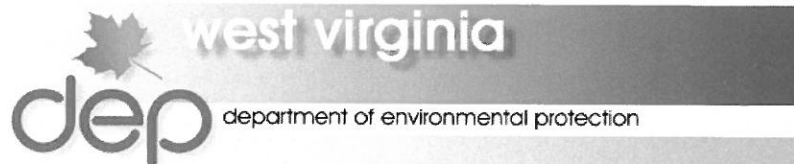




**Expression of Interest
for
Professional Engineering Design Services and
Construction Monitoring Services for the
Booths Ck. (Browning Farm) Mines Design
Marion County, WV**

RFQ # DEP16430

01/08/14 02:44:59PM
West Virginia Purchasing Division





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

Solicitation

NUMBER
DEP16430

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF:
FRANK WHITTAKER
304-558-2316

RFQ COPY

TYPE NAME/ADDRESS HERE

VENDOR

SHIP TO

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

DATE PRINTED
12/04/2013

BID OPENING DATE: 01/09/2014 BID OPENING TIME 1:30PM

LINE	QUANTITY	UOP	CAT NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	JB		906-29		
				BOOTH'S CK (BROWNING FARM) MINES DESIGN		
				EXPRESSION OF INTEREST		
				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 BOOTH'S CREEK (BROWNING FARM) MINES, MARION COUNTY, WEST VIRGINIA PER THE FOLLOWING BID REQUIREMENTS AND ATTACHED SPECIFICATIONS.		
				***** THIS IS THE END OF RFQ DEP16430 ***** TOTAL:		

SIGNATURE <i>Donna M. Rice</i>	TELEPHONE 304-212-4390	DATE 01-07-2014
TITLE Office Manager	FEIN 16-1006700	ADDRESS CHANGES TO BE NOTED ABOVE

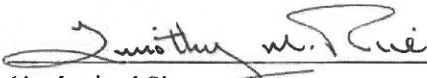
WHEN RESPONDING TO SOLICITATION, INSERT NAME AND ADDRESS IN SPACE ABOVE LABEL 'VENDOR'

CERTIFICATION AND SIGNATURE PAGE

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

Hatch Mott MacDonald

(Company)


 (Authorized Signature)

Timothy M. Rice, Office Manager

(Representative Name, Title)

304-212-4390

(Phone Number)

304-594-2814

(Fax Number)

01-07-2014

(Date)

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: DEP16430

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

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

Addendum Numbers Received:

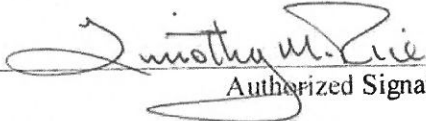
(Check the box next to each addendum received)

- | | |
|---|--|
| <input type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

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

Hatch Mott MacDonald

Company



Authorized Signature

01-07-2014

Date

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

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

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

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

DEFINITIONS:

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

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

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

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

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Hatch Mott MacDonald

Authorized Signature: *[Handwritten Signature]* Date: 1/7/14

State of West Virginia

County of Monongalia, to-wit:

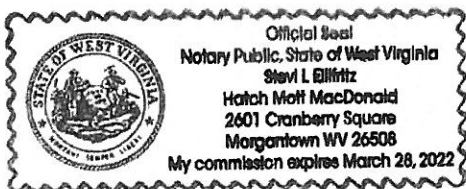
Taken, subscribed, and sworn to before me this 07 day of January, 2014.

My Commission expires March 28, 2022.

AFFIX SEAL HERE

NOTARY PUBLIC

[Handwritten Signature]
Purchasing Affidavit (Revised 07/01/2012)



Cover Letter

Section 1 – Corporate History & Experience

Section 2 – CCQQ – Attachment “B”

Section 3 – RPEM – Attachment “C”



**Hatch Mott
MacDonald**

2601 Cranberry Square
Morgantown, WV 26508
T 304.212.4390 F 304.594.2814
www.hatchmott.com

January 07, 2014

Mr. Frank Whittaker
West Virginia Department of Environmental Protection
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

**RE: RFQ # DEP 16430
Expression of Interest for Professional Engineering Design Services and
Construction Monitoring Services for Booths Ck. (Browning Farm) Mines Design
Marion County, WV**

Dear Mr. Whittaker:

Hatch Mott MacDonald (HMM) is pleased to submit this proposal to provide professional engineering design services and construction monitoring services for the West Virginia Abandoned Mine Lands (AML) and Reclamation Program. This project focuses on reclamation design which is a core discipline for HMM. Our managers have successfully designed numerous designs to address similar issues throughout the region.

Our Morgantown and Charleston offices have several staff members that collectively have more than 100 years of direct design and management experience with AML design projects of all kinds. The Morgantown office employs a total staff of 20 with 3 separate design teams. These design teams consist of an AML experienced lead project manager, a CADD designer, and the necessary support staff to effectively complete this project on time and within budget. The Charleston office now employs 16 staff and also has a full design team functioning from that location. Also, please note that 2 members of our staff are certified in Natural Stream Design.

HMM has recently provided design services on several projects for WVDEP-AML that are very similar in scope to this project. We presently have experience and back up data of the most current and up to date design details and specifications being used on your projects. Our experienced staffs are knowledgeable with pricing and construction, trained in e-permitting, and are prepared to provide our services right through the design and bidding phases as needed. The many years of staff experience on AML projects makes it easy for us to provide support during the construction phases as well.

We appreciate the opportunity to submit this Expression of Interest and look forward to continuing our working relationship.

Respectfully submitted,

Hatch Mott MacDonald

Richard L. Steinhart, PE
Vice President
T 412.497.2910 F 412.497.2940
richard.steinhart@hatchmott.com

Timothy M. Rice
Senior Associate
T 304.212.4388 F 304.594.2814
timothy.rice@hatchmott.com

[corporate history & experience]

INTRODUCTION

With a lineage stretching back over a century, involvement in the design and construction of the most ambitious infrastructure projects and a multi-disciplined staff with comprehensive engineering skills, Hatch Mott MacDonald (HMM) possesses the practical knowledge and experience needed to meet the technical challenges of any given project. Our approach is strictly client-focused – with a corporate commitment to engineering excellence. HMM provides services for all aspects of engineering projects, from feasibility studies and surveys through design, to project and program management, construction management and supervision, start-up and operations.

LOCAL OFFICES

HMM is headquartered in Millburn, New Jersey and has many offices throughout North America. Regionally, our offices are located at:

405 Capitol Street Suite 601 Charleston, WV 25301 T:304.356.3010 F: 304.357.9222	2601 Cranberry Square Morgantown, WV 26508 T 304.212.4390 F 304.594.2814	Gateway View Plaza 1600 West Carson Street Pittsburgh, PA 15219 T 412.497.2900 F 412.497-2901
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CONSULTING AREAS

The resources of HMM are available through the following consulting areas:

- ◆ Construction Engineering Services
- ◆ Contract Operations
- ◆ Environmental Compliance & Remediation
- ◆ Environmental Site Assessment & Remediation
- ◆ Geographical Information Systems
- ◆ Hazardous Waste Management
- ◆ Hydraulic Infrastructure Evaluation & Rehabilitation
- ◆ Hydrogeological Services
- ◆ Industrial Wastewater Management
- ◆ Information Technology & Management
- ◆ Mining Environmental Services
- ◆ Municipal Engineering and Planning
- ◆ Pipeline Services
- ◆ Rails-To-Trails Projects
- ◆ Recreational Facilities
- ◆ Recycling/Solid Waste Management
- ◆ Site Development Engineering
- ◆ Storage Tank Management
- ◆ Stormwater & Watershed Management
- ◆ Transportation Engineering
- ◆ Wastewater Engineering and Management
- ◆ Water Supply Management
- ◆ Wetland / Ecological Studies

STAFFING

Hatch Mott MacDonald was formed as a joint venture between Hatch Associates of Canada, a leading design engineering firm, and Mott MacDonald, headquartered in London, an infrastructure and education consulting engineering firm. The combined resources of Hatch Associates and Mott MacDonald offer a worldwide engineering staff of over 20,000 people. In 2001, HMM acquired the environmental consulting firm of Killam Associates to offer water, wastewater and environmental services throughout North America. Our total US staff is now approximately 2,400 engineers, scientists and technical support personnel.

MANAGEMENT STRATEGIES

HMM uses the “Project Team” approach to efficiently manage and complete projects on time and within specified budgets. A Project Manager directs the team and interfaces with the client to ensure an uninterrupted flow of information. Capable managers draw upon the versatile personnel at HMM to provide pertinent technical knowledge relative to a particular project.

Hatch Mott MacDonald’s engineering professionals are fully supported by extensive computer resources (CADD, graphics, and an Information Technology staff), and highly trained field crews for surveying and environmental sampling and monitoring.

From the analysis stage to project implementation, the professional staff of HMM provides clients with cost-effective engineering and planning solutions for their environmental problems. HMM’s outstanding reputation is based upon dedicated service to clients and demonstrated technical abilities.

Hatch Mott MacDonald is proud of its established reputation, which is based on efficient project management, technical expertise, and knowledge of regulatory requirements. These features are reflected in HMM’s success at maintaining long-term client relationships. Experienced staff and an organizational approach make HMM extremely competent in meeting a client’s needs, now and in the future.

The Morgantown office able to provide four to five different design teams simultaneously, and the Charleston office is currently staffed to provide one design team. These teams generally consist of a Project Engineer and the necessary design, drafting, and support staff.

EXPERIENCE AND QUALIFICATIONS

Hatch Mott MacDonald (HMM) is a full-service consulting engineering firm offering both public and private clients a complete range of services from conceptual, feasibility/ planning studies and environmental assessment through preliminary and detailed design to procurement, construction engineering inspection and project and construction management services, as well as operations and maintenance. Headquartered in New Jersey, HMM has hundreds

of staff located in the northeast and Mid-Atlantic regions. More than 2,400 employees in 70+ offices throughout the U.S. and Canada will support the local staff. This project will be performed from our Morgantown, WV office.

Our resources in the Appalachian Coal region have grown steadily over the past few years. HMM's focus on mining services has led to a staff of over 60 individuals in this service area. More specifically, the Charleston and Morgantown offices have over 35 staff members dedicated directly to the mining and energy service area, including engineers, geologists, biologists, scientists, and support staff. This growth is attributed to our corporate commitment to the industry and the values established by HMM. Hatch, one of our parent companies, has been in business for 50 years and focuses on mining services on an international level.

Mining Environmental Services

HMM offers a full spectrum of mining and mining-related environmental and design engineering services. Successfully completed projects range from reserve analyses, permitting and feasibility studies to complex mining and reclamation plans for surface and underground mining installation, prep plants and refuse handling facilities. Versatility is demonstrated by a proven ability to work with large and small operators. Personnel are accustomed to communicating effectively with both multi-department international companies and sole proprietors.



Surface Mining

- ◆ Surface Mining Permits
- ◆ Auger Mining Permits
- ◆ Feasibility Studies
- ◆ Land Reclamation & Remediation
- ◆ Permit Transfers
- ◆ Pre-Blast Surveys
- ◆ Acid Mine Discharge (AMD) Remediation

Underground Mining

- ◆ Deep Mine Permits
- ◆ Mine Design & Mapping
- ◆ Ventilation Plans
- ◆ Subsidence Plans
- ◆ Surface Support Plans
- ◆ Air Shaft Design & Coordination
- ◆ Incidental Boundary Revisions (IBR)
- ◆ Pre-Subsidence Surveys

Support Facilities

- ◆ Preparation Plant Permits
- ◆ Coal Yard & Loadout Permits
- ◆ Refuse Pile Reprocessing Permits
- ◆ Site Planning
- ◆ Air Quality Permits
- ◆ Coal Refuse/Fly Ash Permits
- ◆ Coal Refuse/Fresh Water Impoundments
- ◆ Portal Facilities Design & Construction Management

Mine Planning

- ◆ Geological Exploration
- ◆ Reserve Studies
- ◆ Economic Evaluations
- ◆ Aerial Mapping
- ◆ Drilling
- ◆ Environmental Site Assessment
- ◆ Natural Stream Design
- ◆ Stream Mitigation



Professional Surveying

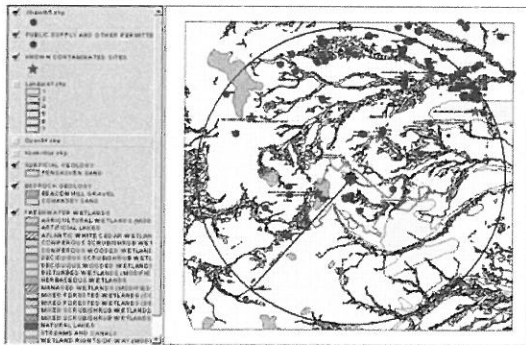
- ◆ Underground Coal Mine Surveys
- ◆ Stockpile Volumetric Surveys
- ◆ Construction Surveys
- ◆ Boundary Retracement
- ◆ Topographic Surveys
- ◆ Horizontal & Vertical Control Networks
- ◆ GIS/GPS Surveys

Operations Support

- ◆ Small Operator Assistance Program (SOAP) Preparation
- ◆ Thermal-graphic Equipment Analyses
- ◆ Machine & Equipment Appraisal & Analyses
- ◆ Conveyor System Analyses
- ◆ Electrical System Analyses

Geographic Information Systems

Over the last decade, HMM has responded to its clients' growing needs for Geographical Information System (GIS) through investments in software, hardware and employee training. The ability of GIS to integrate central databases with mapping that can be shared throughout an organization is making this information technology a standard for government agencies, utilities and private companies. HMM provides a full range of GIS services in the areas of: water/wastewater utility, stormwater utility, municipal government, hydrology and hydraulics, and natural resources.

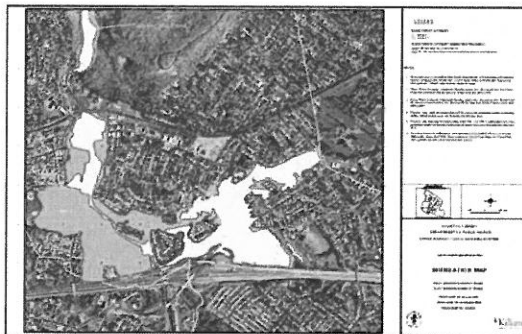


Software Capabilities

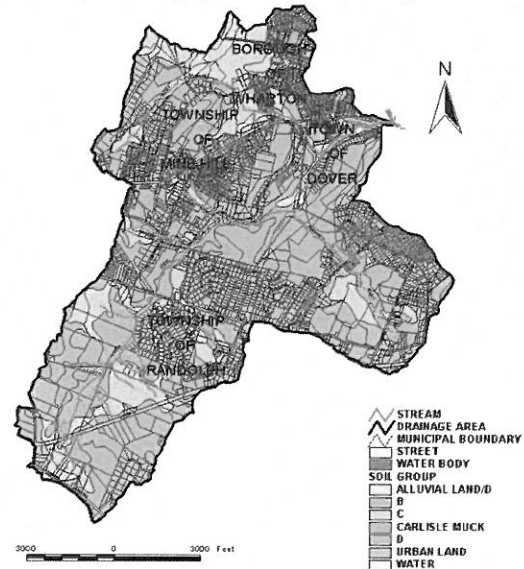
- ◆ Infrastructure Modeling
- ◆ Document Management
- ◆ Hydrologic/Hydraulic Modeling
- ◆ Groundwater Modeling
- ◆ Coordinate Geometry (COGO)
- ◆ Geographical Positioning Systems (GPS)
- ◆ Digital Elevation/Terrain Modeling
- ◆ Integration of Third Party Modeling Software
- ◆ Internet/Intranet

Software Applications

- ◆ ARC/INFO©
- ◆ ArcView©
- ◆ ArcCAD
- ◆ ArcFM
- ◆ AutoCAD/AutoCAD Map
- ◆ Microstation



Major Soil Grouping In Jackson Brook Drainage Area



Hardware Resources

- ◆ Hewlett-Packard 1055 & 755 Design Jet Plotters
- ◆ Dell Precision Workstation (750 MHz Processors with 256K RAM)
- ◆ Network through a 6300 Dell PowerEdge Server
- ◆ RAID-5 Array for Data Storage
- ◆ XEROX 8830 Scanners & Printers

Construction Engineering Services

HMM's established reputation in providing construction observation and project management services is based upon the firm's experienced professionals' technical expertise and knowledge of the construction field. Interaction with the firm's various design teams is undertaken so that the latest technologies will be implemented with the highest efficiency. State-of-the-art laser and computerized surveying equipment and techniques are employed for data gathering, processing, reporting and construction control.



Project Management

- ◆ CPM Scheduling Review
- ◆ Cost Controls
- ◆ Shop Drawing Review
- ◆ Payment Requests Processing
- ◆ Change Order Management
- ◆ Record Plan Preparation
- ◆ Claims Avoidance/Dispute Resolution
- ◆ Progress Meetings
- ◆ Information Management



Facilities

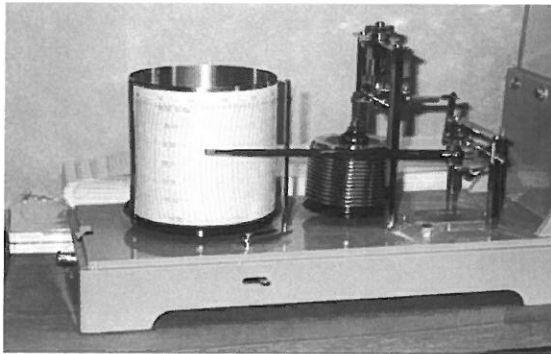
- ◆ Wastewater & Water Treatment Facilities
- ◆ Mining Facilities
- ◆ Biosolids Removal Facilities
- ◆ Pumping Stations
- ◆ Dams & Dikes
- ◆ Materials Recycling Facilities
- ◆ Solid Waste Transfer Stations
- ◆ Vehicle Maintenance Facilities
- ◆ Parking Garages
- ◆ Storage Facilities
- ◆ Airport Hangars & Terminals
- ◆ Office & Administration Buildings
- ◆ CSO & SSO Rehabilitation
- ◆ Sanitary Sewers & Water Mains
- ◆ Recreational Facilities

Resident Engineering

- ◆ Construction Surveys
- ◆ Construction Observation
- ◆ Concrete Testing & Inspection
- ◆ Safety Monitoring

Hydrogeological Services

HMM's hydrogeological specialists are employed on a wide range of projects, from small urban properties to entire watersheds. The majority of our staff holds advanced degrees and are registered professionals. They evaluate and develop groundwater resources; delineate contamination and predict impacts on human and ecological receptors; provide the technical basis for the design of subsurface wastewater disposal, construction dewatering and aquifer remediation systems; generate hydrogeologic models, frame computer simulations and perform statistical analyses for risk assessments and resource prospecting; provide full technical assistance in permitting in all these areas; provide peer review for the work of outside hydrogeologists; advise legal counsel and provide expert testimony.



Groundwater Resources

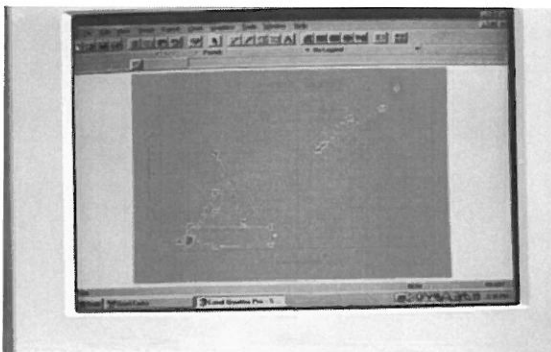
- ◆ Resource Evaluations
- ◆ Water Allocation Permits
- ◆ Well-Head Protection Area Delineation
- ◆ Diversion Impact Assessments

Dewatering

- ◆ Dewatering System Design
- ◆ Temporary Water Allocation Permits
- ◆ Dewatering Permits-by-Rule

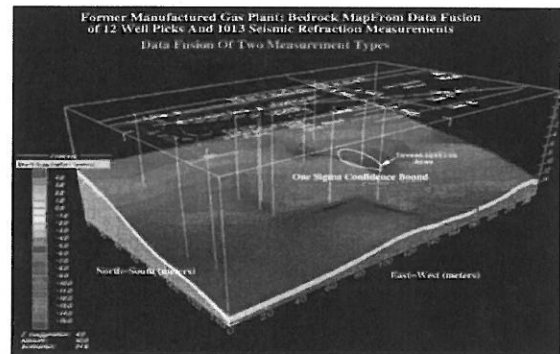
Discharge to Groundwater

- ◆ Hydraulic Mounding Analysis
- ◆ Discharge to Groundwater Permits
- ◆ Dilution Modeling



Remedial Design

- ◆ Plume Control
- ◆ Treated Wastewater Disposal System Design
- ◆ Contaminant Fate & Transport Modeling
- ◆ Technical Support for Natural Remediation
- ◆ Aquifer Reclassification
- ◆ Ground Water Chemistry
- ◆ Expert Testimony
- ◆ Peer Review



Landfill Investigations

- ◆ Leachate Generation & Control Modeling
- ◆ Landfill Gas Venting System Design
- ◆ Aquifer Impact Assessments

Aquifer Investigations

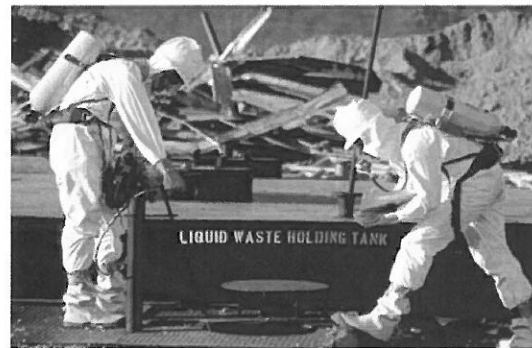
- ◆ Pumping Test Design & Analysis
- ◆ Aquifer Modeling
- ◆ Simulation of Groundwater Flow
- ◆ Aquifer/Surface Water Interaction Analyses

Environmental Compliance Services

Effective management of ongoing environmental compliance issues is often difficult, especially as many companies continue to cutback on non-production personnel. As a result, many EH&S managers find themselves overloaded with multiple tasks. HMM can be a valuable resource that EH&S managers can use to more effectively and efficiently manage their company's environmental obligations, stay up-to-date with current state and federal regulatory trends, identify areas where cost-effective waste reduction measures can be implemented, and receive an objective third-party review of the company's environmental compliance level and/or liabilities. HMM can add value to the company's bottom line and help the management team to refocus resources on product quality and customer service, while staying abreast of regulatory changes and compliance issues.

Periodic Reporting

- ◆ Annual SARA Reports (312/313)
- ◆ Annual Air Emission Reports
- ◆ Monthly DMR Sampling / Reports
- ◆ POTW Pretreatment Sampling / Reports
- ◆ Hazardous Waste Biennial Reports
- ◆ Residual Waste Biennial Reports
- ◆ Chemical Analysis of Wastes
- ◆ Source Reduction Strategies
- ◆ Storage Tank Registrations / Inspections



Contingency Planning

- ◆ Environmental Compliance Audits
- ◆ SPCC Plan Preparation / Recertification
- ◆ PPC Plan Preparation / Recertification
- ◆ Environmental Emergency Response Plans
- ◆ Storm Water Pollution Prevention Plans
- ◆ Hazard Communication Plans
- ◆ Risk Management Plans
- ◆ Training

Wastewater Management

- ◆ NPDES Part I/ Part II Permit Applications
- ◆ POTW Permit Applications
- ◆ Storm Water Runoff Permit Applications
- ◆ Treatment Plant Troubleshooting
- ◆ Toxicity Reduction Evaluations



Air Quality

- ◆ RFD Applications
- ◆ Plan Approval Applications
- ◆ Title V Permit Applications
- ◆ PSD / Permit Modifications
- ◆ System Testing / Balancing

Ecological Services

Hatch Mott MacDonald provides a wide range of scientific and environmental expertise needed to successfully address complex environmental problems and to design practical, cost-effective solutions. HMM is committed to assisting its clients by guiding projects through both the regulatory process and the construction phase utilizing cost effective design and engineering while protecting and enhancing the environment. We have provided ecological services to many types of clients including public and private utilities, state and municipal authorities and agencies, commercial site developers, energy companies, residential and other private property owners, municipalities and institutions. Our scientists and field technicians have the necessary technical expertise required to design and execute ecologically-focused surveys and studies and the capability to set a strategic course of action for projects to be successfully licensed and permitted at all regulatory levels.



Regulatory Compliance

- ◆ Agency Consultation and Coordination
- ◆ Ecological Resources Policy Development
- ◆ Environmental Audits
- ◆ Environmental Compliance Inspection
- ◆ Environmental Impact Statements and Assessments
- ◆ Environmental Monitoring
- ◆ Environmental Risk Assessment
- ◆ Expert Testimony and Litigation Support
- ◆ Federal, State and Local Permitting

Environmental Technology

- ◆ Bioengineering
- ◆ Bioremediation and Phytoremediation
- ◆ Engineered Wetlands for Water Treatment
- ◆ Ecological Restoration



Ecological Resource Surveys/Studies

- ◆ Biota and Ecosystem Baseline Surveys
- ◆ Ecological Resource Management
- ◆ Ecological Risk Assessment
- ◆ Habitat Evaluation and Assessment
- ◆ Rare, Threatened and Endangered Species Assessment
- ◆ Soils, Sediments and Water Quality Investigations
- ◆ Wetland Delineation and Assessment
- ◆ Wetland Mitigation, Replication and Monitoring



Other Related Services

- ◆ Erosion and Sedimentation Control Plans
- ◆ GPS Survey
- ◆ GIS Applications
- ◆ Stormwater Management Plans
- ◆ Vegetation Management Plans
- ◆ Landscape Planting Plans

Environmental Site Assessment and Remediation

For nearly two decades, HMM has performed Phase I/Phase II environmental site assessments at hundreds of sites. They have consulted with multi-national and local buyers of property, assisting them with their due diligence efforts prior to acquisition of new companies or properties. On properties where contamination is present in excess of acceptable levels, HMM has designed and implemented remediation measures. Such remediation projects have been completed under a variety of environmental programs, including CERCLA (Superfund), RCRA Corrective Action, ISRA, Pennsylvania Act 2 and other state Brownfield programs. Projects have been completed on numerous sites that have soil and/or groundwater contaminated with chlorinated solvents, petroleum from leaking storage tanks, heavy metals, PCBs, and other organic compounds. Our design engineers are specialists in groundwater collection and treatment, waste removal and facility closure design, and our field staff is fully equipped and instrumented, and appropriately trained and medically monitored.



Environmental Site Assessments

- ◆ Phase I Site Assessments (ASTM)
- ◆ Transaction Screening Assessments
- ◆ Phase II Site Investigations
- ◆ Geophysical Surveys
- ◆ Monitoring Well Installations/Borings
- ◆ Soil, Air & Water Sampling
- ◆ Waste Sampling & Characterization
- ◆ Groundwater Flow Modeling
- ◆ Contaminant Transport Modeling
- ◆ QA/QC Plans



Remedial Design

- ◆ Feasibility Studies / Alternatives Analysis
- ◆ Physical/Chemical Treatment
- ◆ Biological Treatment
- ◆ Thermal Treatment
- ◆ Recovery Well Designs
- ◆ Soil Vapor Extraction
- ◆ Air Sparging
- ◆ Hydraulic Containment
- ◆ Closure Plans
- ◆ Pilot & Demonstration Programs
- ◆ Cost Estimating
- ◆ Risk Based Corrective Action
- ◆ Natural Remediation Compliance Plans
- ◆ Permitting



Site Remediation

- ◆ Contract Administration
- ◆ Construction Oversight Services
- ◆ System Operations & Maintenance
- ◆ Closure Reporting
- ◆ Post-Remediation Monitoring
- ◆ Expert Testimony

Water Supply Management

HMM has demonstrated a unique combination of talent and experience in meeting hydraulic and water supply engineering challenges for over 60 years. The firm has demonstrated particular strength and developed broad experience in water system planning, hydraulic analysis, design, rehabilitation and implementation. We can provide a full range of water supply management services including hydraulic analyses, planning and feasibility studies, preliminary and final designs, preparation of contract drawings and specifications, construction cost estimates, time schedule outlines, bid analyses, complete resident engineering services during project construction and development of operation and maintenance manuals, as well as start-up assistance and operator training.



Planning

- ◆ Master Planning for Water Supply & Treatment
- ◆ Resource Management
- ◆ Resource Inventories
- ◆ Grant & Loan Application Assistance

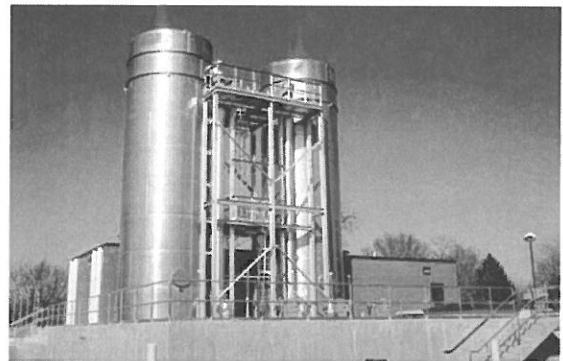
Construction Services

- ◆ Field Services
- ◆ Liaison Representation
- ◆ Construction Management
- ◆ Contract Administration



Investigative Studies

- ◆ Hydraulic Analysis
- ◆ System Pressure & Fire Flow Analysis
- ◆ Water Quality Treatability
- ◆ Rate Studies
- ◆ Feasibility Studies
- ◆ Valuations
- ◆ Expert Testimony



Design

- ◆ Water Supply
- ◆ Water Treatment
- ◆ Air Stripping
- ◆ Pumping Stations
- ◆ Transmission & Distribution Pipelines
- ◆ Storage Facilities
- ◆ Rehabilitation
- ◆ Treatment Plant Optimization & Management

[CCQQ - Attachment "B"]

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

Attachment "B"

PROJECT NAME Booths Ck. (Browning Farm) Mines Design		DATE (DAY, MONTH, YEAR) 01/07/2014		FEIN 16-1006700																																					
1. FIRM NAME Hatch Mott MacDonald LLC		2. HOME OFFICE BUSINESS ADDRESS 111 Wood Avenue South Iselin, NJ 08830-4112		3. FORMER FIRM NAME Hatch Associates Consultants, Inc. (Est. 1955) Mott MacDonald Group (Est. 1902)																																					
4. HOME OFFICE TELEPHONE 973-379-3400	5. ESTABLISHED (YEAR) 1972	6. TYPE OWNERSHIP Individual Corporation Partnership Joint-Venture		6a. WV REGISTERED DBE (Disadvantaged Business Enterprise) YES NO																																					
7. PRIMARY AML DESIGN OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. AML DESIGN PERSONNEL EACH OFFICE 2601 Cranberry Square, Morgantown, WV 26508, 304-212-4390, Timothy M. Rice, Area Manager/ Morgantown - 20																																									
8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM Richard L. Steinhart, PE, Senior Vice President			8a. NAME, TITLE, & TELEPHONE NUMBER - OTHER PRINCIPALS Timothy M. Rice, Morgantown Office Area Manager (304)212-4390																																						
9. PERSONNEL BY DISCIPLINE																																									
<table style="width:100%; border:none;"> <tr> <td style="width:25%;">— 28ADMINISTRATIVE</td> <td style="width:25%;">— 4ECOLOGISTS</td> <td style="width:25%;">— 3LANDSCAPE ARCHITECTS</td> <td style="width:25%;">— 89STRUCTURAL ENGINEERS</td> </tr> <tr> <td>— 18ARCHITECTS</td> <td>— 0ECONOMISTS</td> <td>— 41MECHANICAL ENGINEERS</td> <td>— 90SURVEYORS</td> </tr> <tr> <td>— 3BIOLOGIST</td> <td>— 46ELECTRICAL ENGINEERS</td> <td>— 2MINING ENGINEERS</td> <td>— 90TRAFFIC ENGINEERS</td> </tr> <tr> <td>— 352CADD OPERATORS</td> <td>— 79ENVIRONMENTALISTS</td> <td>— 0PHOTOGRAMMETRISTS</td> <td>— 916OTHER</td> </tr> <tr> <td>— 5CHEMICAL ENGINEERS</td> <td>— 26ESTIMATORS</td> <td>— 15PLANNERS:</td> <td></td> </tr> <tr> <td>— 264CIVIL ENGINEERS</td> <td>— 27GEOLOGISTS</td> <td> URBAN/REGIONAL</td> <td></td> </tr> <tr> <td>— 236CONSTRUCTION INSPECTORS</td> <td>— 0HISTORIANS</td> <td>— 28SANITARY ENGINEERS</td> <td></td> </tr> <tr> <td>— 29DESIGNERS</td> <td>— 2HYDROLOGISTS</td> <td>— 0SOILS ENGINEERS</td> <td>— 2393TOTAL PERSONNEL</td> </tr> <tr> <td>— 0DRAFTSMEN</td> <td></td> <td>— 0SPECIFICATION WRITERS</td> <td></td> </tr> </table>						— 28 ADMINISTRATIVE	— 4 ECOLOGISTS	— 3 LANDSCAPE ARCHITECTS	— 89 STRUCTURAL ENGINEERS	— 18 ARCHITECTS	— 0 ECONOMISTS	— 41 MECHANICAL ENGINEERS	— 90 SURVEYORS	— 3 BIOLOGIST	— 46 ELECTRICAL ENGINEERS	— 2 MINING ENGINEERS	— 90 TRAFFIC ENGINEERS	— 352 CADD OPERATORS	— 79 ENVIRONMENTALISTS	— 0 PHOTOGRAMMETRISTS	— 916 OTHER	— 5 CHEMICAL ENGINEERS	— 26 ESTIMATORS	— 15 PLANNERS:		— 264 CIVIL ENGINEERS	— 27 GEOLOGISTS	URBAN/REGIONAL		— 236 CONSTRUCTION INSPECTORS	— 0 HISTORIANS	— 28 SANITARY ENGINEERS		— 29 DESIGNERS	— 2 HYDROLOGISTS	— 0 SOILS ENGINEERS	— 2393 TOTAL PERSONNEL	— 0 DRAFTSMEN		— 0 SPECIFICATION WRITERS	
— 28 ADMINISTRATIVE	— 4 ECOLOGISTS	— 3 LANDSCAPE ARCHITECTS	— 89 STRUCTURAL ENGINEERS																																						
— 18 ARCHITECTS	— 0 ECONOMISTS	— 41 MECHANICAL ENGINEERS	— 90 SURVEYORS																																						
— 3 BIOLOGIST	— 46 ELECTRICAL ENGINEERS	— 2 MINING ENGINEERS	— 90 TRAFFIC ENGINEERS																																						
— 352 CADD OPERATORS	— 79 ENVIRONMENTALISTS	— 0 PHOTOGRAMMETRISTS	— 916 OTHER																																						
— 5 CHEMICAL ENGINEERS	— 26 ESTIMATORS	— 15 PLANNERS:																																							
— 264 CIVIL ENGINEERS	— 27 GEOLOGISTS	URBAN/REGIONAL																																							
— 236 CONSTRUCTION INSPECTORS	— 0 HISTORIANS	— 28 SANITARY ENGINEERS																																							
— 29 DESIGNERS	— 2 HYDROLOGISTS	— 0 SOILS ENGINEERS	— 2393 TOTAL PERSONNEL																																						
— 0 DRAFTSMEN		— 0 SPECIFICATION WRITERS																																							
<p>TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: <u> 3 </u></p> <p>*RPES other than Civil and Mining must provide supporting documentation that qualifies them to supervise and perform this type of work.</p>																																									
<p>Rich Steinhart is a WV-PE and is the "Engineer in Charge" for the Morgantown office. James Fetty and Bill Buckel are also WV-PE's in the Morgantown office. Gary Facemyer is a WV Registered Professional Engineer and is the Charleston, WV office manager.</p>																																									
10. HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE? <input type="checkbox"/> YES <input type="checkbox"/> NO N/A																																									

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

<p>NAME AND ADDRESS: Blue Mountain Aerial Mapping 11023 Mason Dixon Highway Burton, WV 26562</p>	<p>SPECIALTY: Aerial mapping</p>	<p>WORKED WITH BEFORE <u> X </u> Yes _____ No</p>
<p>NAME AND ADDRESS: Triad Engineering 4980 Teays Valley Road St. Albans, WV 25177</p>	<p>SPECIALTY: Geotechnical Drilling/Surveying</p>	<p>WORKED WITH BEFORE <u> X </u> Yes _____ No</p>
<p>NAME AND ADDRESS: Highland Engineering 1426 Memorial Drive Oakland, MD 21550</p>	<p>SPECIALTY: Surveying</p>	<p>WORKED WITH BEFORE <u> X </u> Yes _____ No</p>
<p>NAME AND ADDRESS: Pennsylvania Drilling Company 281 Route 30 Imperial, PA 15126</p>	<p>SPECIALTY: Geotechnical Drilling</p>	<p>WORKED WITH BEFORE <u> X </u> Yes _____ No</p>
<p>NAME AND ADDRESS: Test Boring Services, Inc. 142 Mong Road Scenery Hill, PA 15360</p>	<p>SPECIALTY: Geotechnical Drilling</p>	<p>WORKED WITH BEFORE <u> X </u> Yes _____ No</p>
<p>NAME AND ADDRESS: Sturm Environmental Services P.O. Box 650 Bridgeport, WV 26330-0650</p>	<p>SPECIALTY: Laboratory Analysis</p>	<p>WORKED WITH BEFORE <u> X </u> Yes _____ No</p>
<p>NAME AND ADDRESS: Industrial Lab Analysis, Inc. 65 – 36th Street Wheeling, WV 26003</p>	<p>SPECIALTY: Laboratory Analysis</p>	<p>WORKED WITH BEFORE <u> X </u> 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's personnel experienced in Abandoned Mine Lands Remediation/Mine Reclamation Engineering?

YES Description and Number of Projects: Several members of the WV office have a combined 100 years of AML design experience. They also have completed over 300 AML design projects.

NO

B. Is your firm experienced in Soil Analysis?

YES Description and Number of Projects: Our experienced staff routinely provides expertise to our mining and municipal projects. We have and continue to provide revegetation and reforestation (ARRI) design on AML, permitting, and municipal projects in West Virginia and surrounding states. HMM also has multiple staff with strong wetland delineation backgrounds and skills.

NO

C. Is your firm experienced in hydrology and hydraulics?

YES Description and Number of Projects: Our current projects include the study of hundreds of streams and drainage structures over a 1,400 square mile area in southwestern PA and north central WV. This work includes sampling, flow monitoring, modeling, mitigation, remediation, hydrologic and hydraulic analyses, and mapping

NO

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

YES Description and Number of Projects: _____

NO- We subcontract the aerial photography; however, in-house we provide GPS, surveying and development of the mapping as needed.

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

YES Description and Number of Projects: We have completed numerous waterline design projects and our in-house staff has more than 50 years of combined experience with aquifer degradation. James Fetty, PE, located in our Morgantown office, has over 20 years of waterline design and project management experience. Jim served as the Fairmont City Engineer for over 20 years. Gary Facemyer, Charleston Office Manager, has over 30 years of waterline design and management experience

NO

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

YES Description and Number of Projects: Our staff has personnel experience of over 50 AML projects related to AMD Design and Evaluation. Our staff has performed watershed analysis, doser design, passive system design, and chemical treatment facility planning.

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.) Rice, Timothy M. Project Engineer/ Project Director	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE: 26	YEARS OF AML RELATED DESIGN EXPERIENCE: 35	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 30

Brief Explanation of Responsibilities
Mr. Rice presently serves as Area Manager for the Hatch Mott MacDonald Morgantown, WV office.

Mr. Rice is experienced in project management, coordination and supervision for permitting, design, drafting, surveying and drilling projects. His expertise is in reclamation design; mining permits; design of acid mine drainage abatement plans; water resources studies; pre/post mining surveys; hydraulic and hydrological analysis; pre-blast surveys; slope stability analysis; geotechnical design; Phase I environmental audits; storm water management analysis and design; civil site designs; and commercial and residential inspections.

Mr. Rice has also received Levels I – IV of Natural Stream Channel Design Certification. He coordinated mitigation, remediation, and restoration projects for several clients in close proximity to the Morgantown office.

EDUCATION (Degree, Year, Specialization)
B.S., 1982 Civil Engineering
Level I, II, III, and IV Natural Stream Design, 2004

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State) EIT, West Virginia
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13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.) Law, Jeffrey L. Project Engineer/Project Manager	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE: 22	YEARS OF AML RELATED DESIGN EXPERIENCE: 30	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 24

Brief Explanation of Responsibilities
Mr. Law is a Project Engineer/Manager for Hatch Mott MacDonald. His experience includes design of AML reclamation plans, permit for 1,000-acre deep mine, barge loading facility, highway entrance permits, mine subsidence evaluations, impoundments, hydrology studies for refuse sites and public water supplies, and has designed storm water management plans for residential and commercial projects. His expertise is in mine subsidence remediation and design; mine facility layout and design; reclamation design; mining permits; design of acid mine drainage abatement plans; pre/post mining surveys; hydraulic and hydrological analysis; pre-blast surveys; slope stability analysis; geotechnical design; storm water management analysis and design; civil site designs; and commercial and residential inspections. Mr. Law has also conducted floodplain evaluations and construction inspection of commercial properties. Mr. Law has experience in project management, coordination and supervision for construction and design of various mining related projects.

EDUCATION (Degree, Year, Specialization)
B.S., 1983 Mining Engineering
A.A., 1980 Mining Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
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13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.) Fetty, James W. Project Engineer	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE: 3	YEARS OF AML RELATED DESIGN EXPERIENCE: 23	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 22

Brief Explanation of Responsibilities
Mr. Fetty's background is in the Municipal Engineering field. He was the City Engineer for the City of Fairmont, West Virginia for 21 years. He has been a Project Manager for numerous water distribution, storm sewer and sanitary sewer system projects. He has experience in the design, preparation of plans and specifications and construction monitoring for water distribution, storm drainage and sanitary sewer collection system projects. Mr. Fetty is also an experienced Project Manager for multiple AML projects including Heather Run #4, Whispering Woods and Rupert to Rainelle recently.

EDUCATION (Degree, Year, Specialization)
B.S., 1982 Civil Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
National Society of Civil Engineers
Water Environment Federation

REGISTRATION (Type, Year, State)
PE, West Virginia & Pennsylvania

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.) Buckel, William D. Project Manager	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE: 2	YEARS OF AML RELATED DESIGN EXPERIENCE: 12	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 2

Brief Explanation of Responsibilities
Mr. Buckel is a Project Manager at Hatch Mott MacDonald (HMM). Mr. Buckel's work experience has been primarily in the land surveying and civil engineering design areas. He has considerable experience in property, engineering and construction surveying, heavy construction administration, project engineering, inspection and supervision. He also has some sewer, water and surface mining design experience; AML project lay-out, supervision and execution, including start-up, post audit and compliance assurance. He has also done various permitting and project designs for many construction, coal mining and energy clients. Mr. Buckel has been the owner of his own consulting firm for over 23 years and has also worked for different construction companies, an electric utility, mining companies and design firms as well, on projects of various sizes and types.

EDUCATION (Degree, Year, Specialization)
BS Civil Engineering, University of Maryland 1980, Geotechnical

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
ASCE, Past Chairman and state representative of the Western Chapter of the Maryland Society of Surveyors, West Virginia Association of Land Surveyors

REGISTRATION (Type, Year, State)
PE, 1983, MD, PA, WV
LS, 1982, MD, 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		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Price, Bridget L. Engineer	8	10	4

Brief Explanation of Responsibilities
 Ms. Price serves as an engineer/designer at Hatch Mott MacDonald. Her past experience includes civil site design projects as well as mining and environmental permitting. She is knowledgeable with NPDES Stormwater Construction e-permitting, WVDEP General Water Pollution Control Permits, Individual Water Quality State 401 Certification permits, USACOE, Nationwide Permit compliance, Public Land permits and Highway Occupancy permits. Ms. Price is knowledgeable with basic hydraulic and hydrologic computations for drainage structures. She is also familiar with quantity estimates for materials, including earthwork volumetric computations, as well as specification writing. Bridget is very knowledgeable with AutoCADD Civil 3D and the associated design packages.

EDUCATION (Degree, Year, Specialization)
 BS, Civil Engineering Technology, Fairmont State University, 2004

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		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Facemyer, Gary D. Professional Engineer Professional Surveyor	20	32	32

Brief Explanation of Responsibilities
 Mr. Facemyer has been responsible for planning, design, permitting, construction management and construction of numerous abandoned mine land reclamation projects over a 20 year period. Projects included mine portal closures, high wall reduction or elimination, refuse piles, burning refuse, burning seams, landslides, stream restoration, drainage correction, acid mine drainage, water feasibility studies and water system designs.
 This work also included Special Reclamation (bond forfeiture) assessment, water testing, and AMD treatment.

EDUCATION (Degree, Year, Specialization)
 B. S. Civil Engineering WV Institute of Technology 1975

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
American Society of Civil Engineers – Past President WV American Council of Engineering Companies – WV WV Society of Professional Surveyors	Professional Engineer, WV OH PA MD VA KY Professional Surveyor, 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		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Moore, Brian K. Project Engineer	2	8	8

Brief Explanation of Responsibilities
 Mr. Moore has served as a Project Engineer and Task Manager for various water and wastewater conveyance projects. He has an extensive background in the development and quality control of hydrologic and hydraulic dynamic computer models using various computer programs. He has also generated base maps and plan-profile sheets for various infrastructure projects using automated computer methodologies. Mr. Moore also has site design experience including drainage and parking facilities for several different facilities.

EDUCATION (Degree, Year, Specialization)
 B.S., Civil/Environmental Engineering, 1998, Pennsylvania State University

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State) Professional Engineer, 2003, Ohio
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13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Roderick, Clayton K. Geologist	3	11	0

Brief Explanation of Responsibilities
 Mr. Roderick is experienced in coordination and supervision of coal exploration projects, coal and non-coal surface and deep mine permitting activities, hydrologic studies pertaining to surface and under-ground mine activities, geologic and geo-technical drilling projects, management of field operations for exploration and geo-technical projects and property damage evaluations due to geologic hazards.

EDUCATION (Degree, Year, Specialization)
 Earth Sciences, 1997, California University of Pennsylvania

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
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13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Green, John L. Surveyor	2	32	0

Brief Explanation of Responsibilities

Mr. Green is a Registered Professional Surveyor with over 30 years of experience in the engineering industry in surveying or survey related capacities and as an engineering design technician. He is expertly qualified in most conventional types of surveying with some experience in newer non-conventional types such as GPS surveying. He is also expertly qualified in the right-of-way plan process.

EDUCATION (Degree, Year, Specialization)

Civil Engineering Technology, 1976

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

American Congress on Surveying & Mapping
West Virginia Society of Professional Surveyors
National Society of Professional Surveyors
CGIS/LIS Association

REGISTRATION (Type, Year, State)

Professional Surveyor, 1991, WV - 901

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

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Reese, Jason S. CADD Designer	8	12	5

Brief Explanation of Responsibilities

Mr. Reese serves as CADD Designer at Hatch Mott MacDonald. His past experience includes AML design projects for the State of West Virginia. He is also knowledgeable with various forms of mine permitting in West Virginia and Pennsylvania. Mr. Reese is familiar with basic surveying techniques, storm water design, hydraulic and hydrologic computations, erosion and sediment control plans, and 3D Modeling using ACADD.

EDUCATION (Degree, Year, Specialization)

CADD, 1998, Monongalia County Vocational Center

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		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Chambers, Ricardo A. Engineer	1	3	0

Brief Explanation of Responsibilities
 Mr. Chambers joined Hatch Mott MacDonald in July of 2006 and is now working as an Engineer in the Morgantown office. His experience includes extensive fieldwork in environmental projects, data analysis and report compliances, groundwater monitoring, and hydrologic flow studies. He is proficient in operating numerous pieces of equipment including, but not limited to: a Trimble GeoXT GPS, a Marsh-McBirney Model T2000 Flow Meter and various other groundwater and surface water sampling instrumentation.

EDUCATION (Degree, Year, Specialization)
 MS, 2006, Environmental Engineering
 BS, 2004, Civil Engineering
 AS, 1999, Mathematical Science

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS American Society of Civil Engineers	REGISTRATION (Type, Year, State) EIT, West Virginia
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13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Cline, Jeremiah C. Engineer	2	4	0

Brief Explanation of Responsibilities
 Mr. Cline is experienced in ASTM Standard materials testing, construction and environmental inspection services, monitoring the many different physical parameters of streams, and GPS surveying. He is capable of making keen observations with respect to the effects of longwall mining to surface features above ground. At this time he is creating estimates for several large scale stream monitoring projects. Mr. Cline is also managing equipment and people in a dynamic schedule that he created to track all monitoring tasks for each of nearly 30 persons at 5 deep mine sites, on a daily basis. He has had several classes in natural stream design and stream restoration that includes Rosgen Level One – Fluvial Geomorphology for Engineers and other classes hosted by Canaan Valley Institute.

EDUCATION (Degree, Year, Specialization) BS, 2003, Civil Engineering Rosgen Level 1 – Fluvial Geomorphology for Engineers Rosgen Level 2 – River Morphology and Applications Rosgen Level 3 – River Assessment and Monitoring	Natural Stream Design Construction Management Workshop Introduction to Stream Surveying 10-Hour OSHA Training Course in Construction Safety & Health
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MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS ASCE – WV Northern Branch (President)	REGISTRATION (Type, Year, State) EIT, West Virginia
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14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE AML DESIGN SERVICES

FIELD EQUIPMENT

Sampling Equipment (water/solid)

Ponar Dredge (solids underwater)
Automatic Water Samplers
Hand Augers (soil)
EnCore™ Samplers
Disposable Field Filters, 0.45 micron
Bailers (disposable Polyethylene, PVC, Teflon)
Groundwater Pumps

Safety Equipment

O2, LEL, H2S, CO Meter
Hazmat Kit/Draeger Tubes
Tripod Confined Space Entry System
Personal Protective Equipment (PPE)

General Equipment

Air Compressor (electric powered, 110V)
Digital Camera
Electric 110V-220V Generator (gas powered)
Jar Test Apparatus
Settling Column
Field Kits (HACH)
Metering Pumps (0-500 ml/min)

Measuring Instruments

Marsh McBirney T2000 Flow Meter (open channel)
Fluorometer (water flow open channel)
Polysonics Flow Meter (closed pipe)
Water Level Recorder
Water Level Indicator (wells, tanks)
Interface Layer Probe (wells, tanks)
Recording Rain Gauge
pH/Conductivity/Temp Meter
pH/Temp Meter
ORP Meter
Specific Conductivity/Temp Meter
Photoionization Detector

Surveying Equipment

Portable Rangefinder
Brunton Compass
Total Station with Data Collector
GPS Submeter Unit
GPS RTK (Portable Base + Rover)
GPS RTK (Complete Unit)

General Office

Microsoft Word
Microsoft Excel
Microsoft PowerPoint
Microsoft Project
Microsoft Outlook
Adobe CS2 Suite

Design and Modeling

AutoCAD 2007
AutoDesk Land Desktop 2007 (civil/site)
Autodesk Civil 3D 2007 (civil/site)
MicroStation V8 2004
FlowMaster 2005 (flow design)
InfoWorks CS (hydraulic modeling)
XP-SWMM (hydraulic modeling)
InfoSewer (hydraulic analysis)
HEC-RAS (open channel modeling)
PENTOXSD for Windows (effluent limits)
WQM 7.0 (BOD/NH3 wasteload allocation)

GIS and Database

ArcGIS (GIS mapping and database mgmt.)
SQLServer (database management)
Oracle (database management)
Microsoft Access (simple databases)

OFFICE EQUIPMENT

Oce TDS 450 B/W Plotter (high speed, wide format)
Oce TCS 500 Color Plotter (high speed, wide format)
Oce Wide Format Color Scanner

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 DESIGN SERVICES COST	PERCENT COMPLETE
Fairmont (DAC) S, CS, P Marion County, WV	West Virginia Division of Environmental Protection	Subsidence Stabilization Plan	Design Phase	60%
Hilderbrand Highwall Monongalia County, WV	West Virginia Division of Environmental Protection	Reclamation Design, Mine Closures, Highwall Reduction, Regrade/Revegetation	\$37,919.40	100%
Pepper Portals and Drainage Barbour County, WV	West Virginia Division of Environmental Protection	Reclamation Design, Mine Closures, Highwall Reduction, Regrade/Revegetation	Design Phase	60%
Dale R. Trasher Gilmer County, WV	West Virginia Division of Environmental Protection	Reclamation Design, Mine Closures, Highwall Reduction, Regrade/Revegetation	\$49,248	100%
Winona Complex Fayette County, WV	West Virginia Division of Environmental Protection	Reclamation Design, Mine Closures, Highwall Reduction, Regrade/Revegetation	\$65,864	100%
Wheeling (15th Street) Mine Drainage Ohio County, WV	West Virginia Division of Environmental Protection	Mine Drainage Remediation, Investigation and Design	\$29,495	100%
Montana Mines Subsidence Marion County, WV	West Virginia Division of Environmental Protection	Subsidence Stabilization Plan	\$79,085	100%
Shinnston (Osborn) Subsidence Harrison County, WV	West Virginia Division of Environmental Protection	Subsidence Stabilization Plan	\$7,898	100%
Dotson Tipple Monongalia County, WV	West Virginia Division of Environmental Protection	Reclamation Design, Mine Closures, Highwall Reduction, Regrade/Revegetation	\$120,000	100%
Barker Portals & Strip Barbour County, WV	West Virginia Division of Environmental Protection	Reclamation Design, Mine Closures, Highwall Reduction, Regrade/Revegetation	\$149,000	100%
Heather Run No. 2 Preston County, WV	West Virginia Division of Environmental Protection	Reclamation Design, Mine Closures, Highwall Reduction, Channel Design	\$102,000	100%
Pendleton Creek Strip Tucker County, WV	West Virginia Division of Environmental Protection	Reclamation Design, Natural Stream Channel Design, ARRI Reforestation Plan	\$153,000	100%

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 (CONT'D)	ESTIMATED DESIGN SERVICES COST	PERCENT COMPLETE
Rupert to Rainelle Feasibility Study Greenbrier County, WV	West Virginia Division of Environmental Protection	Water feasibility study	\$30,960	100%
Whispering Woods Feasibility Study Monongalia County, WV	West Virginia Division of Environmental Protection	Water feasibility study	\$22,375	100%
Pallotta Subsidence Marion County, WV	West Virginia Division of Environmental Protection	Subsidence Stabilization plan	\$10,000	100%
Bethlehem (Toothman) Subsidence Harrison County, WV	West Virginia Division of Environmental Protection	Subsidence stabilization plan	\$10,058.00	100%
Douglas Avenue (Kingsland Mine Pool) Allegany County, MD	Maryland Department of Environment	Mine Pool Evaluation and Recommendations	\$22,602.50	100%
Stream Mitigation/ Restoration Project Southwestern, PA	Confidential Coal Client	Stream Mitigation and Restoration of approximately 100,000 lineal feet of stream affected by longwall mining.	\$5,000,000	On-going
Stream Monitoring Southwestern, PA	Confidential Coal Client	Stream monitoring of approximately 140 Miles per Month of stream affected by longwall mining.	\$11,000,000	On-going
TOTAL NUMBER OF PROJECTS: 19		TOTAL ESTIMATED COSTS: \$16,889,504.00		

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
East Side Access, New York, NY	Program Management. Design review and expert advise on the tunnel design and construction including ventilation systems and other fire/life safety issues. LIRR service into Grand Central Terminal. The new line will utilize the partially completed 63rd Street tunnel and construct approximately 5,000 feet of new tunnel into Grand Central Terminal.	Long Island Rail Road 469 7th Ave., 11th Floor New York, New York 10018	2009	\$4,300,000	\$17,000
Market Street Elevated Reconstruction Project, Philadelphia, PA	The aerial structure on the west side of SEPTA's Blue Line is being rebuilt where the at-grade track begins. The project spans over two miles and will be accomplished while SEPTA continues to operate service on the line.	Southeastern Pennsylvania Transportation Authority (SEPTA) 1234 Market Street, 11th Floor Philadelphia, Pennsylvania 19107	2008	\$200,000 (fee)	\$200
Dulles Airport People Mover Tunnels, Virginia/Washington DC	Design of the people mover, baggage and tug tunnel, including mechanical and electrical systems, ventilation systems and fire/life safety for all tunnels on the project. Involves 50,000 ft of tunnels ranging from 18-ft diameter to 40-ft diameter constructed by NATM and TBM, running beneath the airport operating area.	Metropolitan Washington Airports Authority 1 Aviation Circle Washington, D.C. 20001-6000	2007	\$900,000	25,800

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)
Stream Mitigation/Restoration Project Southwestern, PA Stream mitigation and restoration of approximately 100,000 lineal feet of stream affected by longwall mining.	Confidential Coal Client	\$5,000,000	2010	Yes
Stream Monitoring Southwestern, PA Stream monitoring of approximately 140 Miles per month of stream affected by longwall mining.	Confidential Coal Client	\$4,600,000	2010	N/A
Pond Restoration and Sealing Project Mannington, WV Restoration and liner installation on pond affected by longwall mining.	Confidential Coal Client	\$30,730	2008	Yes
Harrison County Trail (McWhorter to Clarksburg) Preparation of design plans, specifications, and bid documents for the conversion of an abandoned 14-mile CSX Railroad grade to a hiking/biking trail. Services included stormwater drainage design; trail surface design; wetland delineation; and bridge decking/rehabilitation. Harrison County, WV	Harrison County Planning Commission 301 West Main Street Clarksburg, WV 26301	\$655,000	2013	Yes
Storm Drainage & Flood Control Improvements Storm sewers, stream improvements, an earth dike & a pump station and installation of streamflow and rainfall gauging station equipment on the East and West Branches of the Rahway River. Services also included: Field Surveys, Wetlands Assessment, Hydrologic / Hydraulic Investigations, Cost Estimates, Cost Benefit Analysis, Flood Warning System, Flood Preparedness Plan. Essex County, NJ	Millburn Township 375 Millburn Avenue Millburn, NJ 07041	\$2,000	On-going	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
Columbus Crossover Taxiway, Port Columbus International Airport, Columbus, OH: Preliminary structural design engineering for the taxiway bridge(s) including an investigation of bridge types, structural systems, de-icing systems, costing and development of structural design considerations for final design.	Columbus Airport Authority 4600 International Gateway Columbus, OH 43219	\$30.87 M (Construction)	2006	Yes	RWA Associates
Westport Railroad Station, Westport, CT As part of an ADA compliance upgrade, a pedestrian tunnel had to be constructed under four live Metro-North Railroad tracks, which also carry the East Coast Main Line service between Boston and New York. HMM completed a feasibility study and subsequently designed and provided on site supervision for the construction of a 75 ft long jacked tunnel.	Connecticut Department of Transportation 2800 Berlin Turnpike, P.O. Box 317546 Newington, CT 06131-7546	\$2.5 M (Construction)	2003	Yes	TAMS Consultants
Easterly Advanced Facilities Plan, Cleveland, OH QA/QC of geotechnical data collection and reporting, feasibility and selection of tunnel and shaft excavation and lining systems. 30% design of tunnel linings and construction cost estimates for all tunnel construction contracts. This project involved 16-mi of CSO tunnels, from 20 to 27-ft in finished diameter and as deep as 200 feet traversing primarily through Chagrin Shale.	Northeast Ohio Regional Sewer District 3826 Euclid Ave. Cleveland, OH 44115-2504	\$166,000 Fee	2003	Yes	Haley & Aldrich, Inc.

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.

Hatch Mott MacDonald's talented staff and years of experience in meeting deadlines and delivering a quality product has made us a leader in mining/ mining related field. ENR's April 2013 Top 500 Design Firm List has Hatch Mott MacDonald (HMM) listed as 36. Additionally our current staff has over 100 years of AML experience in six different states and gives us the knowledge and understanding of project management and cost control to complete this project on time and within budget. We recently expanded with the opening of our Charleston, WV office to better serve WVDEP-AML and southern West Virginia.

20. The foregoing is a statement of facts.



Signature: _____ Title: Area Manager

Printed Name: Timothy M. Rice

Date: January 07, 2014

[RPEM – Attachment “C”]

Location

Marion County, WV

Client

West Virginia Department of
Environmental Protection

Project Type

Abandoned Mine Lands
Design

Services

- Surveying
- Geotechnical
Investigations
- Mapping
- Reclamation
Design
- Subsidence
Control Plan
- Construction
Plans and Details
- Construction
Specifications
- Engineering Cost
Estimate

On-Going

Project Description

This project is located in the City of Fairmont, in Marion County, West Virginia. The project located near the intersection of Locust Avenue and Benoni Avenue. This site consists of the stabilization of 2 two-story masonry and frame constructed houses, 1 garage, and a two-story masonry and frame constructed apartment complex, undrain drainage control for a masonry public building, and sealing of 3 mine entries. Project will include vertical and angled drilling, placement of grout or concrete in mine workings, mine seals, underdrain, and reclamation of work area.



Location

Barbour County, WV

Client

West Virginia Department of
Environmental Protection

Project Type

Abandoned Mine Land
Design

Services

- Surveying
- Geotechnical
Investigations
- Mapping
- Reclamation
Design
- Landslide
Remediation and
Repair
- Construction
Plans and Details
- Construction
Specifications
- Engineering Cost
Estimate

On-going**Project Description**

Hatch Mott MacDonald was retained by the client to provide an engineering design package for the reclamation and remediation of an abandoned surface mine in Barbour County, West Virginia. The project consists of approximately 1,800 linear feet of highwall (approx. 25-30 ft. high), two collapsed portals with mine drainage, small pit impounded pools and a landslide area. The highwall is mostly vertical and unvegetated with large pieces of overhanging rock that are actively slipping from the face. The collapsed mine portals are currently draining significant amounts of mine water with substantial iron (Fe) content as evidenced by the staining. Existing drainage channels from pit areas are poorly defined and flows disperse in several areas creating instability of the spoils.



Location

Monongalia County, WV

Client

West Virginia Department
of Environmental
Protection

Services

- Surveying
- Geotechnical Investigations
- Mapping
- Reclamation Plan
- Construction Plans and Details
- Construction Specifications
- Engineering Cost Estimate

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to provide an engineering design package for the reclamation and remediation of an abandoned surface mine in Monongalia County, WV. The surface mine had also encountered deep mine workings. The drainage from this area is tributary to the Monogahala River. There were two main sources of abandoned mine drainage which were also creating an impounded pool of very poor quality water. (See photo: pH of 2.5 and Fe>100 mg/L) A vertical fracture above the highwall caused by subsidence was also allowing surface water to infiltrate the mine workings and contribute to the amount of poor quality water. The mine openings were both designed to be sealed using wet seals and the vertical fracture was addressed by a surface seal design. The designs also provided for the discharge waters to be treated by limestone contact before leaving the reclaimed site.

HMM's work included all design documents necessary for construction and the project specific Corps of Engineers permits. The abandoned mine entries were sealed utilizing dry mine seals, wet mine seals, and bat gates. Drainage channels were designed to safely carry surface water as well as mine discharges utilizing limestone drains and channels as a form of treatment. A wetland is being designed to intercept and treat some of the AMD being generated on-site. All disturbed areas will be soil covered and revegetated.



Location

Fayette County, WV

Client

West Virginia Department
of Environmental
Protection

Services

- Surveying
- Geotechnical Investigations
- Mapping
- Reclamation Plan
- Construction Plans and Details
- Construction Specifications
- Engineering Cost Estimate

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to provide engineering design documents for the reclamation of an abandoned surface mine and coal loadout facility in Fayette County, WV. Pre-1977 surface and deep mining activities created an environmental impact along Keeney Creek. Steep refuse slopes were encroaching on the stream and threatening to cause blockage. Outslopes were unvegetated and allowing toxic runoff to occur. Design included stabilizing the streambanks along Keeney Creek, regrading steep outslopes to a stable configuration, designing stable drainage structures to eliminate erosion, and revegetating the impacted area. The loadout area was regraded to provide positive drainage, divert runoff away from potentially toxic areas, and revegetate. Four bat gates were installed in the mine openings along the highwall located above these areas.

HMM's work included all design documents necessary for construction and the project specific Corps of Engineers permits.



Location

Gilmer County, WV

Client

West Virginia Department
of Environmental
Protection

Services

- Surveying
- Geotechnical Investigations
- Mapping
- Reclamation Plan
- Construction Plans and Details
- Construction Specifications
- Engineering Cost Estimate

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to provide engineering design documents for the reclamation of an abandoned surface mine in Gilmer County, WV. This area consisted of approximately 2,700 linear feet of highwall ranging in height from 25-30 feet., two collapsed portals with mine drainage, remains of a 12'W x 10'H x 85'L coal load out, 5 mine cars, and miscellaneous trash. The highwall was mostly vertical and unvegetated with large pieces of overhanging rock that are actively slipping from the face. Four mine cars were underwater and the collapsed mine portals were submerged due to beavers building dams on the bench. The portals were the source of mine drainage flowing from the site.

HMM's work included the preparation of design documents that included the regrading of the area to eliminate or reduce the highwall and associated impounded water, reestablishing original contours, and reconnecting drainways that have been interrupted by mining activities. The design also included installing wet mine seals at the two portal locations that will direct the drainage safely off site. The dilapidated, unstable coal load out structure and the abandoned mine cars were razed and properly disposed of. A revegetation plan was established to ensure revegetation of all disturbed areas of the project.

HMM assisted the WVDEP with all necessary permitting requirements, regulatory meetings, the pre-bid meeting, the pre-construction meeting, and quality assurance during construction.



Location

Monongalia County, WV

Client

West Virginia Department
of Environmental
Protection

Services

- Surveying
- Geotechnical Investigations
- Mapping
- Acid Mine Drainage Abatement Plan
- Construction Plans and Details
- Construction Specifications
- Engineering Cost Estimate

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to provide an engineering design package for the remediation of an acid mine drainage discharge that is impacting the residents along 15th Street in Ohio County, Wheeling, WV.

The project site is located in Wheeling, West Virginia and consists of mine water entering the basements of Margaret Koller, of 175 15th Street, and Ron Thomas, of 173 15th Street. Mrs. Koller stated that water enters her basement out of the floor drain located to the rear of the basement. The basement floor is coated with iron staining confirming the presence of mine drainage. Mr. Thomas has similar problems in his basement.



Location

Monongalia County, WV

ClientWest Virginia Department
of Environmental
Protection**Services**

- Surveying
- Geotechnical Investigations
- Mapping
- Reclamation Plan
- Construction Plans and Details
- Construction Specifications
- Engineering Cost Estimate

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to provide engineering design documents for the reclamation of an abandoned surface mine in Monongalia County, WV. This abandoned mine land reclamation project consisted of three separate sites.

The first site included two dilapidated, unsafe coal tipple structures and the remains of a coal load out structure that were designed to be demolished and removed from the site. The site also included three sections of abandoned, unsafe highwall, four open mine portals, and approximately five acres of coal refuse material. The site was designed to be regraded such that the highwall areas were eliminated and original contours were reestablished. The mine portals were closed through installation of dry seals, wet seals, and bat gate seals, depending on the conditions of each portal. The refuse was regraded, covered, and amended to promote vegetation.

The second site consisted of approximately 2,500 feet of highwall. The highwall face ranged from vertical with overhanging rocks to sloughed in and vegetated. An existing local high school is located less than 500 feet from the top of the highwall. The site also include seven open mine portals. HMM's design consisted of eliminating the dangerous highwall and reestablishing the original contours. The mine portal locations were sealed using dry, wet, and bat gate mine seals where appropriate.

The third site consisted of the stabilization of a roadway and utility corridor that had been impacted due to the subsidence of the underground mine workings. HMM was responsible for geotechnical investigation, additional mapping to augment the provided aerial mapping, and the preparation of a stabilization design, bid plans and specifications, engineers estimate, and construction services for all three sites.

HMM's work included all design documents necessary for construction and the project specific Corps of Engineers permits. The abandoned mine entries were sealed utilizing dry mine seals, wet mine seals, and bat gates. The area was regraded to eliminate surface irregularities and provide positive drainage. Drainage channels were designed to safely carry surface water as well as mine discharges utilizing limestone drains and channels as a form of alkaline treatment. All disturbed areas will be soil covered and revegetated.



Location

Marion County, WV

Client

West Virginia Department
of Environmental
Protection

Services

- Surveying
- Geotechnical Investigations
- Mapping
- Grout Stabilization Plan
- Construction Plans and Details
- Construction Specifications
- Engineering Cost Estimate

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to provide engineering design documents for the stabilization of an abandoned deep mine in Marion County, WV.

This project included the stabilization of six residential structures and several garages. There were also three sinkhole features that were stabilized using geosynthetics and aggregate. HMM was responsible for geotechnical investigation, additional mapping to augment the provided aerial mapping provided, and the preparation of a stabilization design, bid plans and specifications, engineers estimate, and construction services. The sinkholes were stabilized using encapsulated aggregate plugs.

The work performed under this design included approximately 7800 linear feet of vertical and angled injection borings, placement of 5000 cubic yards of grout material, installation of 3 encapsulated aggregate plugs, site restoration, and revegetation. The engineers estimate for this project was \$1.1M.



Location

Tucker County, Thomas,
WV

Client

West Virginia Department
of Environmental
Protection

Services

- Surveying
- Geotechnical Investigations
- Mapping
- Reclamation Plan
- Natural Stream Design
- ARRI Reforestation
- Construction Plans and Details
- Construction Specifications
- Engineering Cost Estimate

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to provide engineering design documents for the reclamation of an abandoned surface mine in Tucker County, WV. Pre-law mining activities intercepted Pendleton Creek and has forced the stream flow to be directed into an abandoned deep mine complex that lies under the community of Thomas, WV. The introduction of this flow is causing deterioration of the coal pillars that support the mine roof and is also generating acid mine drainage (AMD) on the waters of the Blackwater River. Portions of the un-reclaimed surface mine are also generating AMD throughout the project site.

Pendleton Creek is a pristine, Tier III stream which flows southward for less than 2 miles before entering Pendleton Lake in Blackwater Falls State Park. Blackwater Falls is one of the most popular of West Virginia's thirty-four state parks, with Pendleton Lake being one of its many attractions. This lake is used for recreation by thousands of visitors each summer, and much of the land between the project's construction limits and the lake is U.S Fish and Wildlife designated wetlands.

HMM's work included all design documents necessary for construction and the project specific Corps of Engineers permits. Portions of the highwall were reclaimed to provide positive drainage of surface waters. Two separate streams were designed utilizing natural stream design techniques and geosynthetic liners to control losses and maintain stability. Regrading was proposed for selected portions of the abandoned surface mine to reduce the impact of AMD. All disturbed areas were revegetated using ARRI reforestation procedures and native species. The Pendleton Creek Strip project has been selected as the "Excellence in Reforestation" regional award winner for 2011. Also, the Pendleton Creek project has been nominated for the Office of Surface Mining National Reclamation Award, to be determined in the fall of 2012



Location

Preston County, WV

Client

West Virginia Department
of Environmental
Protection

Services

- Surveying
- Geotechnical Investigations
- Mapping
- Reclamation Plan
- Construction Plans and Details
- Construction Specifications
- Engineering Cost Estimate

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to provide engineering design documents for the reclamation of an abandoned surface mine in Preston County, WV. Pre-1977 surface and deep mining activities are creating an environmental impact on the headwaters of Heather Run. Sixteen (16) deep mine entries were left unsealed. Of these entries, only 6 are partially collapsed. Some entries are situated such that surface water drainage is allowed to enter the abandoned mine. Others are discharging acid mine drainage (AMD) at an approximate rate of 200 gpm. This AMD discharge is of poor quality, pH 2.6 and Fe > 10 mg/L. Also, approximately 2,000 linear feet of highwall was left abandoned; coal refuse and spoil was left un-covered, and scattered mine debris was left on the site. This site is generating AMD and discharging directly into Heather Run, a tributary of the Cheat River.

HMM's work included all design documents necessary for construction and the project specific Corps of Engineers permits. The abandoned mine entries were sealed utilizing dry mine seals, wet mine seals, and bat gates. The area was regraded to eliminate surface irregularities and provide positive drainage. Drainage channels were designed to safely carry surface water as well as mine discharges utilizing limestone drains and channels as a form of alkaline treatment. All disturbed areas will be soil covered and revegetated.



Location

Barbour County, WV

Client

West Virginia Department
of Environmental
Protection

Services

- Surveying
- Geotechnical Investigations
- Mapping
- Reclamation Plan
- Construction Plans and Details
- Construction Specifications
- Engineering Cost Estimate

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to provide engineering design documents for the reclamation of an abandoned surface mine in Barbour County, WV. Pre-1977 surface and deep mining activities have created an environmental impact on this site that is situated along the Tygart River. Approximately 6,000 lineal feet of highwall ranging in height from 30-45 feet was left un-reclaimed. Four deep mine portals were left unsealed. Scattered coal refuse and mine spoil are contributing to the production of acid mine drainage (AMD) on this site. This AMD is discharging directly into the Tygart River.

HMM's work included all design documents necessary for construction and the project specific Corps of Engineers permits. The abandoned mine entries were sealed utilizing dry mine seals, wet mine seals, and bat gates. Drainage channels were designed to safely carry surface water as well as mine discharges utilizing limestone drains and channels as a form of treatment. A wetland is being designed to intercept and treat some of the AMD being generated on-site. All disturbed areas will be soil covered and revegetated.



Location

Monongalia County, WV

Client

West Virginia Department of
Environmental Protection –
Office of Abandoned Mine
Lands & Reclamation

Project Type

Water

Services

Feasibility Study

Duration

Start date: January 2010

End date: July 2010

Project Description

Hatch Mott MacDonald (HMM) conducted a water supply feasibility study for the Whispering Woods Community in Monongalia County. The study focused on determining what affect pre-1977 mining activities may have had on the private water wells used by residents in the study area. This study area was comprised of two subdivisions linked by a county roadway. Both surface and deep mining had occurred within the watershed during both pre and post 1977 SMRCA laws which dictate available funding sources.

HMM Role

HMM was selected by the West Virginia Department of Environmental Protection – Office of Abandoned Mine Lands & Reclamation to provide engineering services necessary to conduct a water supply study for a location in Monongalia County, WV.

Highlights

The project has many challenges and opportunities including:

- ◆ Review of mining, geologic and hydrogeologic records
- ◆ Prepare maps of study area
- ◆ Collect and analyze water samples from private water wells
- ◆ Interview residents on the adequacy of their water source
- ◆ GPS of well locations
- ◆ Plotting of sample data on Piper Diagram

Location

Greenbrier County, WV

Client

West Virginia Department of
Environmental Protection –
Office of Abandoned Mine
Lands & Reclamation

Project Type

Water

Services

Feasibility Study

Duration

Start date: January 2010

End date: July 2010

Project Description

Hatch Mott MacDonald (HMM) conducted a water supply feasibility study for an area along Route 60 in Greenbrier County, West Virginia between the towns of Rainelle and Rupert. The study focused on determining what affect pre-1977 mining activities may have had on the private water wells used by residents in the study area. The study area included approximately 500 homes and businesses located along the Meadow River. The mining of multiple coal seams was researched and evaluated to determine potential impacts to the private water supplies of residents within the study area.

HMM Role

HMM was selected by the West Virginia Department of Environmental Protection – Office of Abandoned Mine Lands & Reclamation to provide engineering services necessary to conduct a water supply feasibility study in Greenbrier County, WV.

Highlights

The project had many challenges and opportunities including:

- ♦ Review of mining, geologic and hydrogeologic records
- ♦ Prepare maps of study area
- ♦ Collect and analyze water samples from private water wells
- ♦ Interview residents on the adequacy of their water source
- ♦ GPS of well locations
- ♦ Plotting of sample data on Piper Diagram

Location

Harrison County, WV

ClientWest Virginia Department
of Environmental
Protection**Services**

- Surveying
- Geotechnical Investigations
- Mapping
- Stabilization Plan
- Construction Plans and Details
- Construction Specifications
- Engineering Cost Estimate

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to provide engineering design documents for the stabilization of an abandoned deep mine in Harrison County, WV.

This project was performed under the WVDEP-Emergency Program and consisted of a single family residence which had experienced subsidence damages. The abandoned Pittsburgh coal workings were located approximately 40 feet beneath the structure. HMM provided the initial site assessment, historical data search, geotechnical investigation, and developed a grout stabilization plan. Design plans, construction specifications, engineers estimate, and a pre-bid meeting were performed. This fast tracked project was delivered to client within two weeks of initial contact and notification of emergency.

HMM's work included all design documents necessary for construction. Work included approximately 650 linear feet of vertical and angled injection borings and the placement of 700 cubic yards of grout. Engineers estimate was in excess of \$150,000.00.



Location

Harrison County, WV

Client

West Virginia Department
of Environmental
Protection

Services

- Surveying
- Geotechnical Investigations
- Mapping
- Mine Stabilization Plan
- Construction Plans and Details
- Construction Specifications
- Engineering Cost Estimate

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to provide engineering design documents for the stabilization of a shallow, abandoned deep mine in Harrison County, WV.

This project was performed under the WVDEP-Emergency Program and consisted of a single family residence which had experienced subsidence damages. Multiple sinkhole features had appeared in the surrounding lawn area and adjacent properties. The abandoned Pittsburgh coal workings were located approximately 35 feet beneath the structure. HMM provided the initial site assessment, historical data search, geotechnical investigation, and developed a grout stabilization plan. HMM prepared design plans, construction specifications, engineers estimate, and a pre-bid meeting was performed. This fast tracked project was delivered to client within two weeks of initial contact and notification of emergency.

Construction required by this design included in excess of 500 feet of vertical and angled injection borings and the placement of approximately 500 cubic yards of grout. Site restoration and revegetation was also performed. Construction estimate was approximately \$75,000.00.



Location

Marion County, WV

ClientWest Virginia Department
of Environmental
Protection**Services**

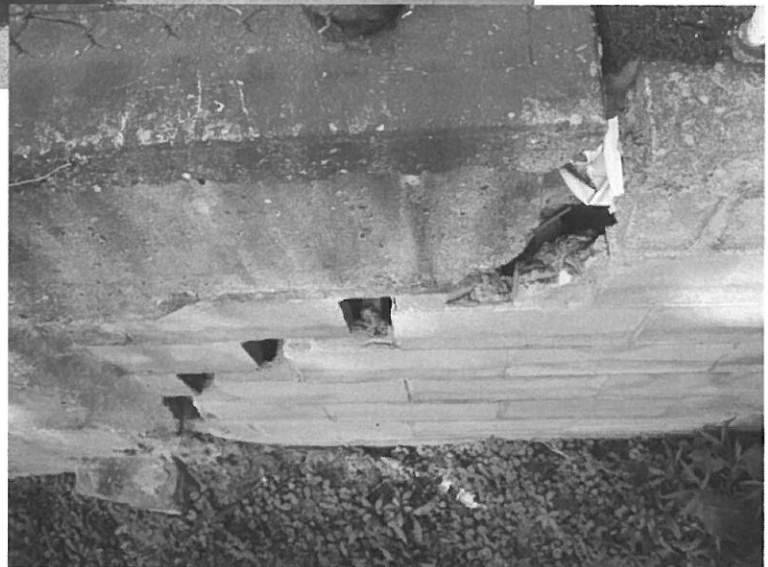
- Surveying
- Geotechnical Investigations
- Mapping
- Grout Stabilization Plan
- Construction Plans and Details
- Construction Specifications
- Engineering Cost Estimate

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to provide engineering design documents for the stabilization of an abandoned, deep surface mine in Marion County, WV. This project was performed under the WVDEP- Emergency Program and was completed within two weeks of initial notification.

This project involved the subsidence investigation and stabilization of a multi-unit apartment complex in downtown Fairmont, WV. An abandoned deep mine in the Pittsburgh coal seam was causing damage to the structure and had caused numerous water main leaks in the past. A previous geotechnical study had been performed and the drilling information was used to develop a stabilization plan. HMM was responsible for a site review, mapping, historical records search, development of a stabilization plan, bid plans and specifications, and a pre-bid meeting. Traffic control and pavement protection plans were part of this project.

Construction estimates included in excess of 1,500 linear feet of drilling and the placement of 900 cubic yards of grout. Estimated cost of project was \$225,000.00.



Location

Allegany County, MD

Client

Maryland Department of
Environment, Bureau of
Mines

Services

- Surveying
- Geotechnical Investigations
- Mapping
- Hydrologic Study
- Engineering Analysis and Failure Prediction
- Study Recommendations
- Engineering Cost Estimate

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to provide an engineering assessment of the existing conditions of a flooded, abandoned deep mine and its potential public safety concerns in Allegany County, MD.

This project involved the evaluation of the Kingsland deep mine located in Allegany County along Douglas Avenue in Lonaconing, Maryland for the potential of an uncontrolled discharge (blowout). The area had been extensively deep mined within the Pittsburgh coal seam. A recent “blowout” on the Tyson (Sewickley) seam, located above the Pittsburgh seam, prompted this investigation. HMM utilized subsurface investigations, field reconnaissance, surveying, and a review of the mining history to prepare a report of our findings. This report included an evaluation of the existing conditions, a risk assessment, the probable impacts of a blowout, potential methods to control a blowout, and recommendations for additional immediate action.

HMM’s work included an extensive historical review of the available mine workings records, development of a detailed comprehensive map depicting all known workings and intersections, field reconnaissance, water quality analysis, flow studies, and the installation of two permanent piezometers for mine pool studies. Study included breach analysis and damage predictions.



Location

Washington and Greene
Counties, PA

Client

Confidential Mining Client

Project Type

Market/Discipline area

Services

- Stream Data Collection and Management
- GIS and GPS Data Collection
- Landowner Contacts
- Area Logistics
- Project Scheduling
- Secure Information Exchange
- Integrated Web-based Project

Duration

2003-present

Construction Cost

\$4,000,000 annually

Project Description

This confidential coal mining client is among the nation's top energy companies. They mine more high-Btu bituminous coal than any other producer in the United States, and is the nation's leader in underground coal mining. The client has operations located throughout major US coal-producing regions. They are the largest producer of coal bed methane in the US. For 140 years, the client and its predecessor companies have been industry leaders in production, profitability, safety, and environmental stewardship. Hatch Mott MacDonald (HMM) is currently assisting this client in managing, and developing an extensive study of the streams that overlie longwall coal mines. The study involves studying and documenting the streams' flow; geomorphology, hydrology and noting any changes in streams or the surrounding ecosystem. The accurate and consistent, collection of the data is critical to the integrity and quality of the study. The end result is a significant amount of field data that accurately portrays the streams and watersheds of the mining surface areas.

HMM Role

Hatch Mott MacDonald (HMM) is currently assisting the client in managing, and developing an extensive study of the streams that overlie longwall coal mines. The study involves studying and documenting the streams' flow; geomorphology, hydrology and noting any changes in streams or the surrounding ecosystem. The accurate and consistent, collection of the data is critical to the integrity and quality of the study. The end result is a significant amount of field data that accurately portrays the streams and watersheds of the mining surface areas.

Project Highlights

- ♦ **Project Development** – The project development was undertaken by client and HMM teams. The data collection and entry as well as data management are critical to the success of the study. Additional areas of development include
 - Stream data collection techniques and equipment evaluation
 - GIS and GPS data collection and organization
 - Landowner contacts and area logistics
 - Project Scheduling and Information Exchange
 - Web based access to data
- ♦ **Data Collection** – Work included setting up flow monitoring stations along designated sections of streams within the study areas being long-wall mined. Over 600 different flow-monitoring stations and more than 144 miles per month of stream morphology are uploaded into Trimble Geo XH sub-foot GPS units and traversed every month. These units were then used to navigate to each individual site of study. Once sites were located, stream flow measurements, water samples and digital photos were taken. Any changes along the length of stream in the geologic rock structures, stream channel conditions or stream flow were documented photographed, and filmed and entered into the GPS. The stream flow measurements were taken using a Marsh-McBirney Flo-mate 2000. All flow-monitoring sites are monitored monthly at a minimum and daily on a maximum basis. All field data collected is entered into a large data base where the data can be queried and printed for the clients at any given time for regulatory agencies, historical record, or research for expansion in new permit areas.
- ♦ **Landowner Contacts and Logistics** – Managing the landowner contacts, issues, and incidents is essential to the continuity and success of the project. HMM coordinated this activity with the client's land agents and many other consultants being used by the client.
- ♦ **Project Scheduling and Information Exchange** – All HMM field teams and other field teams are scheduled using an open web based system developed by HMM called File Share. Mapping, documents and data can be shared and exchanged using the File Share system.
- ♦ **Web Based Access to Data** –HMM assisted the Client in developing an extensive web based data access system.

Location

Greene and Washington
Counties, PA

Client

Confidential Coal Client

Services

- Augmentation Work Plans
- Grout Injection Work Plans
- Subsurface Investigation Plans
- Stream Surveying
- Flow Monitoring
- Surface and Groundwater Monitoring
- GIS Mapping
- Hydrologic Modeling
- Channel Design
- Report Preparation
- Construction Inspection

Duration

2006-Present

Project Description

Hatch Mott MacDonald (HMM) was retained by a private coal client to assist in the mitigation and remediation of over 100,000 lineal feet of streams that have been affected by longwall mining.

Work includes surface and groundwater monitoring, hydrologic modeling, and subsurface investigations to determine minimum base flows for development of augmentation plans. Geologic conditions assessments are used to prepare mitigation plans and develop a grout injection design for remediating the loss segments of the affected streams. This grout injection design consists of a shallow, low-pressure injection of portland and bentonite to seal fractures and reduce water loss. Stream surveying of the remediation sites and control streams was used to establish a stable stream geometry that would effectively carry bankfull flows. Trimble GPS units and GIS software were used to develop maps showing the flow advancement downstream as construction progressed.

HMM performs the construction inspection and construction management of the project. This work includes full-time inspection, evaluation of contractor performance and work product, and approval of contractor quantities.



Location

Westmoreland, PA

ClientCrow's Nest Synfuels,
L.P.**Services**

- PADEP Permit
- MSHA Permit
- Erosion and Sediment Control Plan
- Mapping
- Surveying
- Surface and Groundwater Monitoring
- Annual Certification
- Reclamation Plan
- Closure Permits
- Construction Monitoring
- Channel Design
- Construction Inspection

Project Description

Hatch Mott MacDonald (HMM) was retained by the client to develop a permit for the re-processing of coal waste products at a site in Westmoreland County, Pennsylvania. The site was part of an abandoned surface mine and coal waste pile.

Work included all design and permitting associated with the initial opening of this facility. HMM was also retained to monitor the operations and perform quarterly certifications. Annual renewals, modifications and compliance was also part of HMM's duties. The project was successfully followed through the reclamation and bond release stages of all state and federal regulatory agencies.



Location

Harrison County, WV

Client

Harrison County
Commission, WV

Project Type

Flood Modeling/Mapping

Services

Site Characterization
Hydrologic/Hydraulic
Evaluations

Duration

July 2004 - March 2005

Project Description

The Lost Creek Floodplain Investigation provided the Harrison County Commission with detailed floodplain information for Lost Creek between the Town of Lost Creek corporate limit and Lost Creek's downstream confluence with the West Fork River. Prior to this investigation, Lost Creek was characterized as approximate Zone A on the Harrison County, WV (Unincorporated Areas) Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRMs). A final report was prepared for the Harrison County Planning Commission with all necessary documentation and analysis to support a revision to the Flood Insurance Rate Map for the Town of Lost Creek, WV.

HMM Role

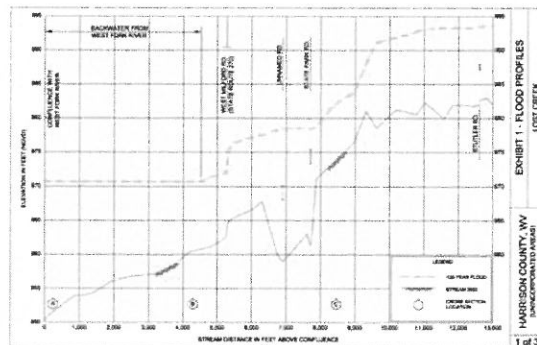
Site Characterization - HMM prepared the detailed flood hazard mapping for Lost Creek by conducting field investigations and performing detailed hydraulic evaluations within the project study area. A combination of traditional land surveying and GPS surveying were used to identify cross sections of Lost Creek at set intervals. HMM combined the new cross section survey data with USGS DEM data to create a new Triangular Irregular Network (TIN) in ArcView. Cross sections were automatically extracted from the GIS TIN using HEC-GeoRAS and imported into HEC-RAS for performing the hydrologic and hydraulic evaluations.

Hydrologic/Hydraulic Evaluations - HMM used HEC-RAS to establish the peak flow for the 100-year storm using current US Geological Survey (USGS) regression equations for rural watersheds. The resulting floodplain and floodway boundaries for the 100-year storm event were mapped on digital topographic maps overlaid with color aerial photographs. A water surface profile was established for the 100-year storm for the establishment of Base Flow Elevations along Lost Creek.



Project Highlights

- ◆ Development of hydrologic/hydraulic models
- ◆ Site characterization and delineation of Waterway flood elevation
- ◆ Deterioration of floodway boundaries and development of Flood Insurance Rate Map updates.



Harrison County Trail – McWhorter to Clarksburg Trail

Location

Harrison County, WV

Client

Harrison County

Services

- Stormwater Drainage Design
- Trail Head/Parking Layout
- Precast Arch Culvert Design
- Bridge Rehabilitation
- Construction Contract Administration
- Construction Inspection

Reference

Terry Schulte, Executive
Director
304-624-8690

Project Description

Hatch Mott MacDonald was retained by the Harrison County Commissioners to prepare design plans, specifications, and bid documents for the conversion of the abandoned 14-mile CSX Railroad grade to a hiking/biking trail.

Work included digitizing existing railroad right-of-way maps into AutoCAD format; evaluation of existing drainage structures; design of drainage rehabilitation; design of new drainage structures; trail surface design; preparation of clearing, grubbing, and tree pruning specifications; design of trail entrances, gates and fencing; design of access barriers (to prevent unauthorized motor vehicles from gaining entry to the trail); wetland delineation; and bridge decking/rehabilitation.

HMM will also perform the construction inspection and construction management of the project. This work will include full-time inspection; evaluation of contractor performance and work product, and approval of contractor invoices. The project was completed in the Fall of 2003.



Location

Bayard, WV

ClientConfidential Mining
Client**Project Type**

Hydraulic Analysis

Services

Hydraulic Analysis Study

DurationSeptember 2004 –
February 2005**Project Description**

The client had an inactive mine site where they were operating a treatment plant to treat acid mine drainage. During large storm events, the steep slopes of the site caused rapid increases in the flow conveyed through the onsite drainage network. These increases in flow resulted in sudden spikes in the flow rates entering the treatment plant. This project was conducted to provide an evaluation of alternatives for reducing the peak flow rates during storm events that would allow the treatment plant to maintain operation within a preferred flow range during.

**HMM Role**

HMM was tasked with performing a hydraulic and hydrologic study of the site and providing specific alternatives for reducing peak flows at the treatment plant. These alternatives included additional detention basins and the application of real time controls to better utilize storage available within the existing drainage network. HMM also provided supplementary services including collecting the necessary flow monitoring and rainfall data to calibrate the hydraulic model. In addition, HMM provided survey services of the various drainage paths throughout the site that forms the basis of the hydraulic model.

Highlights

- ◆ Performed GPS surveying of open drainage channels and various culverts throughout the site
- ◆ Collected flow monitoring data using both weirs (open channel) and area-velocity meters (culverts) in an aggressive chemical environment.
- ◆ Utilized the calibrated hydraulic model to evaluate various alternatives to reduce peak flows entering the treatment plant in addition to reducing the overall operational costs of the plant.



Impoundment Mitigation and Restoration Project

Location

Wetzel County, WV

Client

Confidential Coal Client

Services

- Grout Injection Work Plans
- Subsurface Investigation
- Surveying
- Utility camera survey
- GIS Mapping
- Liner Design
- Cost Analysis
- Construction Inspection

Project Description

Hatch Mott MacDonald (HMM) was retained by a private coal client to assist in the mitigation and remediation of an existing private impoundment that had been affected by longwall mining.

Work included investigation of subsurface data, groundwater monitoring, hydrologic modeling, and flow loss analysis. HMM developed a combination grout injection plan and geosynthetic liner design. This grout injection plan consisted of a shallow, low-pressure injection of a mixture of Portland cement and bentonite to seal fractures and reduce water loss. The geosynthetic liner design utilized an impermeable bentonite mat at select locations within the pond bottom. A utility camera was used to observe infiltration and leakage of the pipe principal spillway.

HMM performed the construction inspection and construction management of the project. This work included full-time inspection, evaluation of contractor performance and work product, and approval of contractor quantities.



