ECSI ,LLC ENGINEERS ■ CONSULTANTS ■ SCIENTISTS ■ INTERNATIONAL

ENGINEERING SERVICES

TECHNICAL PROPOSAL

Mapping & Design Services
Masteller Coal Company
S-125-82 & S-10-85
Mineral County, WV
DEP 16555

State of West Virginia
Department of Environmental Protection
Office of Special Reclamation

July 22, 2014

07/21/14 09:35:33AM
West Virginia Purchasing Division

1345 North State Route 2 ■ New Martinsville, WV 26155
340 South Broadway, Ste. 200 ■ Lexington, KY 40508
Phone: 304.398.4979
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Offices World Wide

July 17, 2014

Mr. Frank Whittaker
State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street, East
Charleston, WV 25305

RE: RFQ No. DEP16555
Mapping & Design Services
Masteller Coal Company (S-125-82 & S-10-85)
Mineral County, WV
Opening 1:30 PM, July 22, 2014

Dear Mr. Whittaker:

ECSI, LLC (ECSI) is pleased to submit this response to the above- referenced solicitation (the "Project").

ECSI has been in the environmental and mining engineering/permitting business for 31 years. During its 31 years ECSI has successfully designed over 1,000 mining and reclamation plans and obtained state and federal permits for: mining, reclamation, spoil handling, drainage, spoil storage, hollow fills, roadway construction, revegetation and designs for associated field operations. That experience, along with ECSI's experience with designs for numerous abandoned mine land (AML) and acid mine drainage (AMD) sites, is directly applicable to the Project at hand and is set forth in more detail in the attachments following this introductory letter.

ECSI understands this solicitation includes mapping of mine permit areas, property owner boundaries, and engineering design services to assist the Office of Special Reclamation Projects in completing land reclamation and water treatment. ECSI has assembled a professional team to respond to the stated requirements of the solicitation and that team is experienced and extraordinarily well-suited for these tasks.

ECSI fully appreciates that it will be charged with providing field surveys and mapping, complete design documents to address re-grading of refuse piles, correcting drainage, elimination of highwalls/pits, and sealing/closing open portals constituting the Project. The first step would include a characterization of the Project which may include geotechnical investigation; soil and refuse sampling and analysis; identification of any drainage including AMD (at the site); locating and marking all existing utilities, whether public or private; and any other environmental issues that may be present. The project would then proceed through the remaining Tasks including the Preliminary Design and Final Design. With ECSI's long experience designing mining, reclamation and remediation plans at active mine sites, as well as AMD and AML sites, it believes it is very well suited for this Project.

ECSI intends to provide field survey services for this Project from our office located in New Martinsville, West Virginia with primary design support from Pikeville, Kentucky office personnel. Specialized staff will be provided by other ECSI offices located in Lexington, Kentucky; Corbin, Kentucky; and Lawrenceville, Illinois, as required.

In direct response to your stated evaluation criteria, we offer the following:

A. West Virginia Registered Professional Engineers in Primary Office: Our proposed project manager Andy Willis, a Registered West Virginia PE, manages the personnel in our New Martinsville office. In addition to Mr. Willis, ECSI also has four (4) additional WV Registered Professional Engineers to assist on the project.
B. Reclamation Engineering Design Experience of the Primary Office's WV Registered PE: Mr. Willis has served as ECSI's Director of Appalachian Regional Offices (Williamson and Pikeville) for over 15 years, and has directed all of the reclamation and mining services work undertaken by those offices during that time.
C. Available WV-AML Design Team Members within the Primary Office: Our West Virginia office includes professional personnel with direct reclamation experience. In addition to Mr. Willis' West Virginia PE registration, our West Virginia office also includes a WV Registered Professional Surveyor; a WV Engineer-in-Training; a Biologist; and two (2) CAD Technicians. Additional survey personnel and CAD support will be provided by our Pikeville office.
D. Civil, Structural, Geological, Hydrological and AMD Treatment Expertise: ECSI has all of these design capabilities in-house with the exception of structural engineering. We have two WV-registered civil engineers, both with strong hydrology/hydraulics background; three WV-registered mining engineers, all with prior AMD experience; and three licensed professional geologists.
E. Ability to utilize Arcview, AutoCad and SedCad: Our engineers/technicians work in AutoCad Map 3D and have the ability to import and export ArcView shape files. We implement the Carlson Civil and Mining modules within the AutoCad Map 3D framework to efficiently streamline our design work. Our engineers are very knowledgeable of the SedCad software, having used that program on sediment structure designs for the past 20 plus years. ECSI personnel have a close working relationship with Dr. Richard Warner, developer of SedCad, providing Beta testing of new releases; and working in conjunction with him on many mining projects.

In conclusion, ECSI has a strong interest in undertaking this Project, and offers some of the most experienced civil/mining/environmental engineers and geological professionals in the region. As shown on the attached resumes, some of the professionals have in excess of 30 years of experience with the mining and earth moving industries. ECSI also brings AML design experience and, very importantly, successes with its demonstrated work on the sites described in the attached **Relevant Projects** tab. ECSI has the resources and available manpower to meet the Project deadlines as set forth in the solicitation.

ECSI appreciates the opportunity to respond to this solicitation and is anxious to proceed. We can be reached by email at awillis@engrservices.com.

Sincerely,

Andy Willis

Andy Willis, P.E.
Senior Vice President

Affidavit

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.

ECSI, LLC

(Company)

Douglas Mynear

(Authorized Signature)

Douglas K. Mynear, PE, Vice President/Director

(Representative Name, Title)

859.233.2103 859.259.3394

(Phone Number) (Fax Number)

July 18, 2014

(Date)

RFQ No. 16555

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 exceed five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (*W. Va. Code* §61-5-3) that 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: ECSI, LLC

Authorized Signature: Douglas Myrean Date: July 18, 2014

State of Kentucky

County of Fayette, to-wit:

Taken, subscribed, and sworn to before me this 18th day of July, 2014.

My Commission expires September 26, 2017.

AFFIX SEAL HERE

KIMBERLY M. FERRERO NOTARY ID NO. 495929 PUBLIC STATE AT LARGE, KY.

NOTARY PUBLIC Kimberly M Ferrero

Attachment B

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

PROJECT NAME	DATE (DAY, MONTH, YEAR)	FEIN
DEP16555 **Professional Mapping & Design Services** **Masteller Coal Company S-125-82 & S-10-85** **Mineral County, WV**	**18-Jul-2014**	**27-3277647**

1. FIRM NAME	2. HOME OFFICE BUSINESS ADDRESS	3. FORMER FIRM NAME
ECSI, LLC	**340 S. Broadway** **Lexington, KY 40508**	**Engineering Consulting Services, Inc.** **Tri-State Engineering** **Mining Consulting Services, Inc.** **Sammons Surveying, Inc.**

4. HOME OFFICE TELEPHONE	5. ESTABLISHED (YEAR)	6. TYPE OWNERSHIP	6a. WV REGISTERED DBE (Disadvantaged Business Enterprise)
859-233-2103	**2011**	**Limited Liability Company**	**NO**

7. PRIMARY AML DESIGN OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. AML DESIGN PERSONNEL EACH OFFICE
1345 North State Route 2, New Martinsville, WV 26155 / 304.398.4979 / D. Andy Willis, PE, PS / 4
340 S. Broadway, Ste 200, Lexington, KY 40508 / 859.233.2103 / J. Steven Gardner, PE, PS / 8

8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM	8a. NAME, TITLE, & TELEPHONE NUMBER - OTHER PRINCIPALS
J. Steven Gardner, PE, PS - President/CEO	**Andy Willis, PE, PS - Senior Vice President**
John Mye, PE - CFO	**Edmundo LaPorte, PE - Senior Vice President**
Joe Zaluski - Executive Vice President	**Charles Reeves, PE - Vice President**
Jan Amos - Treasurer/Controller	**Douglas Mynear, PE - Vice President**
Tim Grady, PE - Senior Vice President	**Karen Rose, EIT - Senior Project Manager**
George Rusk, Esq. - Vice President, Asst. Secretary	**Julie Ross, PG, CPG - Senior Geologist**

9. PERSONNEL BY DISCIPLINE: **Total Company Personnel followed by Primary Office Personnel in Parenthesis**

6(1) ADMINISTRATIVE	— ECOLOGISTS	— LANDSCAPE ARCHITECTS	— STRUCTURAL ENGINEERS
— ARCHITECTS	— ECONOMISTS	— MECHANICAL ENGINEERS	**4(1) SURVEYORS**
2(1) BIOLOGIST	— ELECTRICAL ENGINEERS	**10(2) MINING ENGINEERS**	— TRAFFIC ENGINEERS
13(1) CADD OPERATORS	— ENVIRONMENTALISTS	— PHOTOGRAMMETRISTS	— OTHER
— CHEMICAL ENGINEERS	— ESTIMATORS	— PLANNERS:URBAN/REGIONAL	
2(0) CIVIL ENGINEERS	**3(0) GEOLOGISTS**	— SANITARY ENGINEERS	
— CONSTRUCTION INSP.	— HISTORIANS	— SOILS ENGINEERS	
— DESIGNERS	1(0) HYDROLOGISTS	— SPECIFICATION WRITERS	42(4) TOTAL PERSONNEL
1(0) DRAFTSMEN			

TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: 1 (5 Total WV PE's)
***RPEs other than Civil and Mining must provide supporting documentation that qualifies them to supervise and perform this type of work.**

10. HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE? ☐ YES ☐ NO **N/A - Not a Joint Venture**

11. OUTSIDE KEY CONSULTANTS/SUB-CONSULTANTS ANTICIPATED TO BE USED. Attach "AML Consultant Qualification Questionnaire".		
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ____ Yes ____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ____ Yes ____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ____ Yes ____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ____ Yes ____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ____ Yes ____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ____ Yes ____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ____ Yes ____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ____ Yes ____ No
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ____ Yes ____ No

12. A. Is your firm experienced in Acid Mine Drainage water treatment and remediation?

YES Description and Number of Projects: **During its 30-year history, ECSI (and former entity names) have worked on numerous AML/AMD projects. Some representative projects have included the: (1) Dollar Branch Remediation and Wetlands Design in Harlan County, KY (this project involved 40-acres and 2000-feet of impacted stream and included removal of coal refuse materials from stream banks, bank stabilization, stream restoration, erosion controls, long-term revegetation plan, as well as the design of a wetland treatment system to handle acid drainage from the area); (2) Headwaters AML Enhancement & Coal Fines Recovery in Muhlenberg, KY (this project involved the design for recovery of coal fines from two disposal sites and a reclamation plan to reclaim the disturbed areas, and the development of a long-term passive treatment system for AMD produced at the site); (3) Kentucky Berwind Land Company Environmental Assessment, Cleanup and Remediation, Pike County, KY (this project involved a comprehensive site assessment of a 20,000-acre property containing multiple mining and industrial sites); (4) Roadside Processing AMD Remediation and Reclamation, McCreary County, KY (this project involved development of a reclamation plan to reclaim the site of a former coal processing facility and included an MSHA-class fresh water impoundment for treatment of AMD and several slurry disposal ponds).**

B. Is your firm experienced in soil analysis and coal refuse analyses?

YES Description and Number of Projects: **ECSI has on staff three (3) professional geologists and three (3) mining engineers with expertise in slope stability analyses. ECSI has provided numerous reclamation design plans for mining companies seeking bond release, and this work has included preparation of reclamation plans for refuse removal, slope stabilization, stream restoration, revegetation, and drainage handling. We have also worked with mining companies on coal fines recovery projects for the beneficial reuse of materials from existing refuse piles.**

C. Is your firm experienced in hydrology and hydraulics for handling mine water discharges on mining sites?

YES Description and Number of Projects: **ECSI has several engineers with experience in hydrology and hydraulics, including groundwater hydrogeology studies. Most of our mining permit projects (which number in the hundreds each year) involve the development of mine site hydrology and design of associated sediment ditches and ponds. ECSI personnel also have experience in stream restoration projects, which involve the initial determination of stream flow parameters to enable proper sizing and location of the restoration channel and its components. ECSI has two employees with level 2 Rosgen stream restoration training, and one employee with level 4 training. Two of ECSI's civil engineers have training and experience in implementing HEC-RAS stream modeling program, HEC-HMS site hydrology program, and several other hydrology/hydraulic software programs. Representative projects include surface water management and erosion and sediment control design for: (1) Minera Panama Copper Mine, Republic of Panama (30 sediment ponds were designed, and erosion sediment controls were designed for 7 large support facility areas at the mine site that is currently under construction; (2) Gramalote Gold Mine, Provendicia, Colombia (design of 10 sediment ponds to serve the large gold mine site during construction activities. Also, provided a conceptual design and cost estimate for rerouting the Guacas River around the proposed mine pit); Hanson Aggregates Groundwater Evaluation Model, Wood County, OH (assessed the potential impacts on groundwater by a proposed quarry extension).**

D. Does your firm produce its own aerial photography for development of contour mapping and have your own surveying crew?

YES Description and Number of Projects: **ECSI has two in-house survey crews. For this project, we propose to use our field survey crew stationed in our New Martinsville, WV office. This crew will be led by Dale Harrison, PS, a licensed land surveyor with over 20 years' experience in mine surveying.**

NO ECSI does not have in-house aerial mapping capability and we typically subcontract for this work when needed. We do have the in-house capability of developing base mapping from available GIS database sources, including LiDAR, DEM files and recorded mine maps. LiDAR files have proven to be a reliable and cost-effective source for developing contour maps and visualizing the site in 3D.

E. Is your firm experienced in design of highwall elimination, grading and material handling plans for land reclamation?

YES ECSI has on staff three (3) professional geologists and three (3) mining engineers with expertise in material handling, material volume calculations and slope stability analyses. These personnel routinely provide design services on our mining and reclamation projects, including valley fill designs, highwall backfilling and reclamation projects. Recent projects they have completed include: (1) Slope stability analysis for two large waste material fills for Minera Panama Copper Mine, Republic of Panama (one of the fill areas was designed to hold 500,000 cubic meters of waste material; (2)London Mountain View Slope Failure, London, KY (this project involved the design of repairs to correct a slope failure at a medical complex); (3) Allan Hollen AML Reclamation (project involved the analysis and design of repairs for five(5) abandoned mine sites in eastern KY, many involving slope stability issues. ECSI engineers also routinely perform stability analyses of hollow fills associated with surface mining designs performed on the hundreds of permitting actions completed by ECSI each year.

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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:
Gardner, J. Steven **President/CEO**	**37**	**37**	**0**

Brief Explanation of Responsibilities

Overall management and direction of firm. Specialized experience in environmental assessments, hydrology, environmental remediation, sensitive land-use issues, civil/environmental/mining engineering design, health and safety issues, due diligence studies and forensic investigations.

EDUCATION (Degree, Year, Specialization)
M.S., 1991, Mining Engineering, University of Kentucky
B.S., 1974, Biosystems and Agricultural Engineering, University of Kentucky

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
KYBOELS,SME, NSPE, KSPE, NCEES, ACEC, KCSA, ASMR, KCA, COA **(2015 President Elect for SME)**	**P.E.,1988, #10319, WV; P.S., #1424, WV** **P.E., 1979, KY#11187; 1979, TN#13257; 1981, VA#12458; 2007, PA#PE074572; 2009, CO#42921**

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:
Willis, Dayne A. **Project Manager** **Civil/Environmental/Mining Engineer**	**26**	**26**	**0**

Brief Explanation of Responsibilities

Project manager for selected projects and manager of ECSI's New Martinsville, WV and Pikeville, KY offices. Specialized experience in environmental site analysis, stream restoration, environmental permitting, reclamation and remediation, project management, mine planning and design, construction inspection, mine feasibility, coal and aggregates reserve analyses, and MSHA refuse modifications.

EDUCATION (Degree, Year, Specialization)
B.S., 1987, Mining Engineering, Ohio State University

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
ACEC, KCA, WVCA, COA, KCSA, WVCMI	**P.E., 1994, #12208, WV; P.S., #1492, West Virginia** **P.E., 1995, KY#18915; 1999, VA#0402-034017; 1997, OH#E-62112; 2009, MD#37945**

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:
LaPorte, Edmundo J. **Senior Vice President** **Director of Mining**	**25**	**25**	**0**

Brief Explanation of Responsibilities

Director of mining services for ECSI. Responsible for coordinating multiple geotechnical engineering projects; development of mine plans and financial models for both local and international clients; inspection design and certification of coal mines; technical consulting; evaluation of technical and financial feasibility of surface and underground mining operations; as well as preparation and research of expert testimony.

EDUCATION (Degree, Year, Specialization)
B.S., 1987, Civil Engineering, University of Rafael Urdaneta

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:	REGISTRATION (Type, Year, State)
SME, NSPE, ASCE, ACEC, American Concrete Institute, Association of Energy Engineers, American Rock Mechanics Association, International Association of Engineers	**P.E.,2006, KY#24476; 2007,WV#17201; 2007,VA#043460; 2007,TN#111870; 2010,AR#14206; 2010,TX#105481; 2008,NM#18632; 2008,OH#72862; 2007,KS#19670; 2007,IN#10708870; 2007,AL#29076; 2010,LA#0035828; 2010,PA#PE077424; 2007,NC#032983; NCEES #30460**

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:
Stoltz, Jason R. **Senior Mining Engineer**	**13**	**13**	**0**

Brief Explanation of Responsibilities

Mr. Stoltz's areas of technical expertise include impoundment designs (hydrology, static and seismic stability, regulatory (SMCRA, Miner ACT, CWA, etc.), underground mine breakthrough analysis, foundation designs, monitoring, material testing and compliance, etc.), drill and blast designs, explosives handling, slope stability (static, seismic, remedial measures, etc.), construction engineering, rock mechanics, ground control, soil and rock testing, surface water hydrology, subsidence analysis and remediation, very large fill design, surface mine reclamation, approximate original contour (AOC), mine planning, mine safety, bulk material handling, underground mining and mine engineering, safety, fluid statics and dynamics, and deformable solids.

EDUCATION (Degree, Year, Specialization)
M.S., 1998, Mining Engineering, University of Kentucky
B.S., 1993, Mining Engineering, University of Kentucky

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
SME	**P.E., 2001, KY#21772** **P.E., IN#PE11300545** **P.E., 2014, IL#062-066012**

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:
Reeves, Jr., Charles R. **Vice President**	**40**	**40**	**0**

Brief Explanation of Responsibilities

Mr. Reeves' forty plus years' experience has afforded him opportunities to work with many regulatory agencies and gain a thorough understanding of applicable regulations and statutes. He manages all mine seal installation and inspection projects for the company. His previous experience includes various positions with Peabody Coal Company over a twenty-five year period from Section Foreman to Senior Mine Engineer. Prior to joining ECSI 6 years ago, he served as Facility Manager for Carbontronics Fuels Management, LLC where he oversaw the operations of a Section 29 Synthetic Fuel Plant.

EDUCATION (Degree, Year, Specialization)
B.S., 1973, Civil Engineering/Mining Option, University of Kentucky

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
NSPE, KSPE, ACEC, SME	**P.E., 1978, KY#10671** **IL #062.061087, AR #13531, AL #29834,** **PA# PE076628, IN #PE10810052**

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:
Rose, Karen D. **Manager of Permitting**	**20**	**20**	**0**

Brief Explanation of Responsibilities

Manager of Permitting, responsible for the coordination of environmental, ownership/control and mine permit applications for ECSI. In this role she acts as a liaison between regulatory personnel and the mining industry. Has extensive experience with 401, 404, and 402 permits as well as SMCRA. Performs background research and site investigations in association with environmental studies and assessments and has extensive experience dealing with landowners in negotiating property access. Completed several courses and seminars related to stability analysis and sediment control designs including REAME. Has completed all four levels of Rosgen Natural Stream Design training.

EDUCATION (Degree, Year, Specialization)
B.S., 2003, Mining Engineering, University of Kentucky
Rosgen (Levels 1 through 4) Natural Stream Restoration Training

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
ACEC, AIMMPE, COA, KCA, SMME	**E.I.T., 2006, #13020, Kentucky**

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:
Mittle, Seth **Graduate Mining Engineer** **Project Manager**	**3**	**3**	**0**

Brief Explanation of Responsibilities

Mr. Mittle serves as Project Manager handling permitting and environmental compliance/inventory assessments. He is responsible for the timely completion of SMCRA mining permits for contour and area surface mining sites and room and pillar underground mines. He also assists in certifying mine seals, surveying, mapping, and resource evaluation.

EDUCATION (Degree, Year, Specialization)
B.S., 2010, Mining Engineering, University of Kentucky

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
	E.I.T., 2011, KY#14270 Mining

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:
Elkins, Brent **Project Manager**	**5**	**5**	**0**

Brief Explanation of Responsibilities

Mr. Elkins serves as Project Manager for selected projects. He is responsible for the timely completion of mining permits and any necessary updates to permits already submitted to the Department of Environmental Protection. He also prepares 401 and 404 Permits and Community Impact Statements. Mr. Elkins oversees the surveying completed on mining areas, proposed mining sites, and all haul roads.

EDUCATION (Degree, Year, Specialization)

B.S., 2008, Chemical Engineering, West Virginia University Institute of Technology

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
	E.I.T., 2008, WV #8849

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:
Mynear, Douglas K. **Director, Civil & Environmental**	**0**	**37**	**37**

Brief Explanation of Responsibilities

Director of Civil & Environmental Services. Responsible for all civil design and the oversight and coordination of project teams. Specialized experience in hydrological/hydraulic studies, drainage design, site planning/design, highway/roadway design, water distribution, storm and sanitary sewers, and erosion and sediment control design.

EDUCATION (Degree, Year, Specialization)
M.S., 1975, Biosystems & Agricultural Engineering (specializing in Hydrology), University of Kentucky
B.S., 1975, Biosystems & Agricultural Engineering, University of Kentucky

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
NSPE, KSPE, ACEC, SAME, ASDSO **LEED Accredited Professional** **Certified Professional in Erosion & Sediment Control**	**P.E., 1984, #9438, West Virginia** **P.E., 1980, #11760, Kentucky**

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:
Lumm, Donald K. **Senior Professional Geologist**	**0**	**32**	**0**

Brief Explanation of Responsibilities

Dr. Lumm has over thirty years geological experience with various research, government, academic and consulting agencies. Expertise areas include field and subsurface mapping, coal reserve appraisal, coalbed methane desorption testing and analysis, geophysical log analysis, and the generation and analysis of gravity and magnetic data. In addition, he has authored or co-authored over thirty publications and has been an adjunct professor of geology at numerous community colleges.

EDUCATION (Degree, Year, Specialization)
Ph.D, 1998, Geology, University of Kentucky
M.S., 1988, Geology, Vanderbilt University
B.S., 1981, Geology, Southern Illinois University at Carbondale

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
SME, KSPG, American Institute of Professional Geologists	**P.G., 1993, KY #406;** **IL #196-000314, IN #1824**

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:
Harrison, Dale A. **Professional Land Surveyor**	**0**	**28**	**0**

Brief Explanation of Responsibilities

Serves as Land Surveyor for selected projects, planning and conducting all surveying throughout the life of the project. Senior Engineering Technician and is involved with surveying, mine design and permitting. Licensed Land Surveyor in West Virginia and a licensed Professional Land Surveyor in Kentucky. Has performed topographic, property, boundary, mine and construction surveys since 1978 and GPS surveys since 1998.

EDUCATION (Degree, Year, Specialization)
Course work at Glenville State College, Glenville, West Virginia

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
WVSPS, KAPS	**P.S., #996, West Virginia** **P.L.S., #3461, Kentucky**

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:

Brief Explanation of Responsibilities

EDUCATION (Degree, Year, Specialization)

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

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE AML DESIGN SERVICES
• Topcon Hiper Plus - Real Time Kinematic Global Positioning System (GPS-RTK) capable of sub-centimeter accuracy for static (control) surveys, and a 1-1.5 cm accuracy for RTK surveys
• Topcon GR-3 GPS, with integrated digital radios and Glonass
• Topcon GTS-605 Series / 5 second accuracy Total Station with Onboard Data Collection
• Topcon Series Prismless Total Station with Onboard Data Collection
• Carl Zeiss Ni 2 Level with Accessories
• Magnetic Locator
• Underground surveying required health and safety gear
• AutoCad Map 2013
• Carlson Civil Suite 2013
• REAME 2008 - Stability Analysis of Earth Slopes Software
• SEDCAD 4 - Sediment Analysis Software
• RIVERMorph - Stream Restoration Design Software
• HydroCAD - Stormwater Modeling Software
• Topcon GPS Processing Software
• GPS Trackmaker

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

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	NATURE OF YOUR FIRM'S RESPONSIBILITY	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETE
Various WV, KY and OH mine design and permit projects through the Central Appalachian Coalfields	Varies	Preparation of mine permits for state and US Army Corps of Engineer approval	Approximately $1.5M combined fee per year	Ongoing activity
Rogers Road Stormwater Improvements Project Lexington, KY	Lexington-Fayette Urban Co. Government Div. of Water Quality 125 Lisle Avenue Lexington, KY	Surveys and preparation of construction documents for approximately 2000 feet of concrete box culvert.	Estimated at $2.9M $100K (ECSI Fee)	75%
Patricia Arnow Property Wetlands Reserve Program Boundary Survey Pulaski Co., KY	USDA - Natural Resources Conservation Service Lexington, KY	Perform boundary surveys for 2 donated parcels of land to be set aside for wetland reserve program	$22K (ECSI Fee)	99%
Tenke Fungurume Mine Stormwater Management & Embankment Design Democratic Republic of Congo	Freeport-McMoRan Mining Company 333 N. Central Ave. Phoenix, AZ 85004	SedCad Analysis of mine drainage and design of earthen embankment sediment structures.	$200K (ECSI Fee)	5%
Coal Fines Recovery Corbin & Irvine, KY	Bowie Refined Coal, LLC 600 Dutchman's Lane, 11th Floor Louisville, KY	Preparation of mine permits for state and federal agencies. All surveying required for construction.	N/A	Ongoing Activity
Emerald Mine Water Retaining Bulkheads Waynesburg, PA	Emerald Coal Resources, LP 158 Portal Road Waynesburg, PA 15370	Design water retaining bulkheads for the mine to submit to MSHA	$60K (ECSI fee)	95%
No. 7 Mine Water Retaining Bulkheads Adger, AL	Walter Energy No. 7 Mine 4795 Sealy Ann Mountain Road Adger, AL 35006	Change use of mine seals to water retaining bulkheads for the mine to submit to MSHA	$36K (ECSI fee)	95%
No. 4 Mine Water Retaining Bulkheads Brookwood, AL	Walter Energy No. 4 Mine 14730 Lock 17 Road Brookwood, AL 35444	Design water retaining bulkheads for the mine to submit to MSHA	$35K (ECSI fee)	90%

TOTAL NUMBER OF PROJECTS:	TOTAL ESTIMATED CONSTRUCTION COSTS: $

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
None					

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)
South Charleston Flooding Evaluation Charleston, WV	Huddleston Bolen, LLP 611 Third Avenue Huntington, WV	$23K (fee)	2014	N/A
Patricia Arnow Property Wetlands Reserve Program Boundary Survey Pulaski County, KY	USDA - Natural Resources Conservation Service Lexington, KY	$22K (fee)	2014	N/A
Mina de Cobra Panama Surface Water Management and Erosion & Sediment Control Design, Republic of Panama	Minera Panama, SA 195 The West Mall Toronto, Ontario Canada, M9C 5K1	$6.2B (Mine Construction) $425K (ECSI Fee)	2013	Under Const.
Mineral Exploration & Mining Feasibility Study Western Kentucky	Appalachian Spar, LLC (confidential)	$3M (fee)	2013	N/A
Groundwater Evaluation Model Wood County, Ohio	Hanson Aggregates Midwest, Inc. 207 Old Harrods Creek Rd. Louisville, KY 40253	N/A	2013	N/A
Allan Hollen Group AML Reclamation Design Clay/Leslie Counties, KY	Commonwealth of Kentucky Finance & Admin. Cabinet Division of Engineering 403 Wapping Street Frankfort, KY 40601	$506K (Est. Const.)	2013	Pending
Licking River Cumulative Impacts Assessment, Environmental, Licking River Watershed, KY	Stites & Harbison,PLLC 2300 Lexington Financial Center Lexington, KY 40508	N/A $550K (Study Fee)	2013	N/A
Modifications to Warren Paving Barge Fleeting Area Slatts Lucas Quarry Livingston County, Kentucky	Warren Paving, Inc. 562 Elks Lane Rd. P.O. Box 572 Hattiesburg, MS	$20K (fee)	2013	Pending
London Mountain View Slope Failure Repairs London, KY	London Mountain View, LLC 100 London Mountain View Drive, Ste 200 London, KY 40741	$185K	2013	Yes

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)
Surveying & Volume Calculations Five KY Quarry Locations	Bluegrass Materials Co. 1700 Patrick Way, Unit B Bowling Green, KY	$17.5K (fee)	2013	N/A
Reserve Analysis Slats Lucas Quarry Livingston Co., KY	Warren Paving, Inc. 562 Elk Lake Rd. Hattiesburg, MS	$150K (fee)	2013	N/A
Flood Claim Investigation Gilbert & Pigeon Creeks West Virginia	Huddleston Bolen, LLP 611 Third Avenue Huntington, WV	N/A	2012	N/A
Marion Branch Surface Mine Reclamation Pikeville, KY	Rhino Energy, LLC 424 Lewis Hargett Circle Ste. 250 Lexington, KY	Unknown (part of overall mine reclamation)	2012	Yes
Fly Ash Embankment Closure Stratton Branch Ivel, KY	Newbridge Services, Inc. 340 South Broadway Lexington, KY	$1.3M	2012	Yes
Gooseneck Surface Mine Reclamation Pike County, KY	Rhino Energy, LLC 424 Lewis Hargett Circle Ste. 250 Lexington, KY	Unknown (part of overall mine reclamation)	2011	Yes
Mountaineer Mine Closure Certification Wharncliffe, WV	Arch Coal, Inc. 300 Corporate Centre Drive Scott Depot, WV 25560	$600K	2011	Yes
Lebanon Quarry Stream Relocation/Restoration Lebanon, KY	Nally & Haydon, LLC 40 Lucknow Court Bardstown, KY 40004	$45K (fee)	2011	Yes

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)
Phase I Environmental Site Assessment & Reserve Analysis Magoffin County, KY	Virginia National Bank 404 People Place Charlottesville, VA	$12K (fee)	2011	N/A
Upper Laurel Creek Stream Mitigation Lawrence County, KY	MACTEC Engineering & Consulting 2456 Fortune Dr. Lexington, KY 40509	$9K (fee)	2010	Yes
East Fork Little Sandy River Stream Restoration, Lawrence County, KY	Enviro-Pro, Inc. 40 Judge Drive Eastern, KY 41622	$79K (fee)	2010	Yes
North Fork KY River Cumulative Impacts Assessment, Environmental, Kentucky River Watershed, KY	Jackson-Kelly, PLLC 175 East Main St. Lexington, KY 40502	$750K (fee)	2010	N/A
Portal 31 Exhibition Mine Lynch, KY	Southeast Education Foundation 700 College Rd. Cumberland, KY 40823	$120K (fee)	2009	Yes
Coal Recovery During Highway Construction Pike County, KY	Bizzack, Inc. 2265 Executive Drive Lexington, KY		2009	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
Gramalote Gold Mine Surface Water Management and Erosion & Sediment Control Design Provendicia, Colombia	AngloGold Ashanti, Ltd.	$62K (ECSI Fee)	2013	Still in Planning	Sigma, LLC
Stream Protection Rule Environmental Impact Statement Nationwide	U.S. Office of Surface Mining Reclamation & Enforcement Washington, DC	N/A $1.3M (ECSI Fee)	2011	N/A	Polu Kai Services
Competent Person's Report Chinese Coal Resource Evaluation Shanxi Province, China	BMI Appraisals Limited	N/A $45K (ECSI Fee)	2013	N/A	Gustavson Associates, LLC
Big Run Mine Subsidence Evaluation for Big Run Landfill Boyd County, KY	Kenvirons, Inc. 452 Versailles Road Frankfort, KY	N/A	2011	N/A	Kenvirons, 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.

ECSI, LLC (ECSI), a Lexington-headquartered firm, brings together a diverse group comprised of 41 professionals with engineering and environmental backgrounds, including mining, civil and environmental engineers, land surveyors, hydrogeologists, geologists, environmental scientists, permitting specialists and biologists. ECSI was founded as a Lexington firm by our current President, Steve Gardner, and has a 30-year history of providing various engineering, environmental and surveying services to clients throughout Kentucky and neighboring states. In addition to the Lexington office, ECSI operates branch offices in Pikeville, Corbin, and Marion, Kentucky; New Martinsville, West Virginia; and Lawrenceville, Illinois.

ECSI, LLC has been in the environmental and mine permitting business for 30+ years. During this period ECSI has successfully designed over 1,000 mining and reclamation plans and obtained state and federal permits for: mining, reclamation, spoil handling, drainage, spoil storage, hollow fills, roadway construction, revegetation plans and designs for associated field operations. That experience, along with ECSI's experience with designs for numerous abandoned mine land (AML) and acid mine drainage (AMD) sites, is directly applicable to the advertised project.

Specific to the advertised project, ECSI offers the following relevant credentials:

- Long-standing (20 years) West Virginia office location
- Five (5) West Virginia Registered Professional Engineers, seven (7) total PE's in company.
- Two (2) West Virginia Registered Professional Land Surveyors, three (3) total PLS's in company
- Ten (10) Mining Engineering graduates, including five (5) licensed PE's; three (3) EIT's
- Two (2) Senior Civil Engineers, both with 35+ years' experience and licensure in West Virginia
- Personnel with Rosgen Natural Stream Design training (one with Level 4 certification, two with Level 2)
- Personnel with extensive SedCad experience. ECSI routinely works on projects with Dr. Richard Warner, developer of SedCad.
- Certified Professional in Erosion & Sediment Control
- Three (3) Professional Geologists, two with Ph.D.'s
- Two (2) Biologists, with one located in West Virginia office
- Mine Seal Design and Inspection expertise
- Expertise in embankment and slope stability

With regard to the project required design services:

Design of Drainage Conveyances

ECSI has several engineering personnel with specialized experience in drainage design. With reference to our 30 years of mine design experience, this drainage design includes stream relocations, diversion ditches, groin ditches, on-bench and in-stream sediment structures. However, our hydrological and hydraulic design expertise extends well beyond those mine-site capabilities through the experience of our civil engineering group. Our civil group offers additional experience in floodplain management studies; HEC-RAS stream modeling; storm sewer and urban drainage design; highway culvert design; and large-scale watershed modeling. We also offer personnel with expertise in stream restoration design, with three of our people trained in Rosgen Natural Stream Design techniques. Recent projects that demonstrate our mine-site drainage capabilities include two international projects on which we provided surface water management and erosions and sediment control design. These large mine-sites involved sediment ponds ranging in size from 1-acre to 100-acres; bench ditches and side of fill (groin) ditches; ditches for diversion of ''clean'' runoff around fills; and flocculation systems for treatment of sediment-laden runoff.

Installation of Mine Seals and Bat Gate Mine Seals

ECSI has unique qualifications in the design and certification of mine seals; having worked with most of the approved mine seal manufacturers, including ITW, Strata, LineX, and Minova. Charles Reeves, PE has inspected

and provided final certification on hundreds of seals during the past 5 years for companies including Cumberland Coal Resources, Emerald Coal Resources, Drummond Coal, Cliffs Natural Resources, and Walter Energy. Mr. Reeves has also worked directly with Strata and LineX on the design of several seals including the 50psi Medium Strength StrataCrete Plug Seal; 120psi Medium Strength StrataCrete Plug Seal; 120psi Reinforced StrataCrete Plug Seal; and LineX Block and Blue Seal. With regard to sealing mine openings where bat access must be implemented, we are aware from our personnel that have previously performed engineering work at Mammoth Cave National Park, that this entails more than just constructing a metal bar opening for the bats to pass through. Depending on the species of bat and shape/size of the opening, special design modifications will likely be necessary to attract and/or retain the bat population in the mine.

Refuse Reclamation

ECSI has provided numerous reclamation design plans for mining companies that were seeking final bond release on previously mined sites. This work has included preparation of reclamation plans for refuse removal, drainage improvements, slope stabilization, stream restoration, revegetation, oxide drains and wetlands for water treatment, as well as construction bid documents, construction management, surveying and final reclaimed site monitoring. We have also worked with (and are currently working with) companies constructing ''coal fines recovery'' operations to remine refuse piles and remove coal fines for beneficial use. We have worked with the Commonwealth of Kentucky's Abandoned Mine Land program with designs to reclaim several AML sites; and also worked with surety companies in cleaning up sites where the original operator was in bankruptcy.

Access Road Construction

ECSI engineers have a wide range of road design experience, extending from gravel/dirt mine site access roads through 4-lane urban highway designs. We recognize that each situation has its limits on design criteria (grade, degree of curvature, surfacing) and drainage considerations. ECSI implements the use up-to-date digital terrain files in conjunction with Carlson Civil Suite to maximize the efficiency of roadway design. Where up-to-date contour mapping files are not available, we can extract 3D digital models from LiDAR data files.

Underdrain Installation for Subsurface Drainage

ECSI has provided designs for hundreds of valley fills and provided each with rock underdrains sized to fit the drainage area or fill volume. Additionally, we have designed underdrain systems with perforated pipe networks to enhance the flow through the drains. We typically utilize an Excel spreadsheet model to size underdrains systems, where state regulations do not specify minimum sized drains. Our 3 professional geologists provide additional expertise in groundwater flow and have completed many hydrogeological studies involving groundwater flow within or from underground mining operations. In fact, several law firms routinely utilized our services on legal cases involving groundwater, subsidence and flooding from mine blowouts.

Demolition of Abandoned Mine Related Structures

ECSI has provided related services on several mine properties where reclamation or cleanup of the site was necessary. One example of this involved a 20,000-acre site owned by Kentucky Berwind Land Company. Numerous problem sites were identified that included chemical containers, barrels, drums, under¬ground storage tanks, mining equipment, transformers, containers, as well as open illegal household dumps on the property. One site contained almost 17,000 drums and containers. ECSI assisted the cleanup contractor, Enviro-Pro, Inc., through Phase II and Phase III monitoring cleanup of the property.

Revegetation of Disturbed Areas

All of our permit applications require post land-use plans and revegetation specifications. Typically, these plans are designed to maximize the recovery or introduction of native flora and fauna back into the mine site. ECSI personnel have been very involved in the Appalachian Regional Reforestation Initiative (ARRI) and in promoting the use of reforestation techniques on disturbed mine sites. One of our biologists has served as the President/CEO of the Appalachian Wildlife Foundation, and is acutely aware of the importance of proper revegetation of disturbed mine areas.

20. The foregoing is a statement of facts. Signature: Douglas Mynear Title: **VP/Director Civil/Env.** Printed Name: **Douglas K. Mynear, PE, CPESC, LEED AP**	Date: **July 18, 2014**

Attachment C

EXPRESSION OF INTEREST
Masteller Coal Company S-125-82 S-10-85
DEP16555

AML and RELATED PROJECT EXPERIENCE MATRIX

PROJECT	Exp. Basis C=Corp. P=Personal *	Additional Info Provided in Section (s) **	PROJECT EXPERIENCE REQUIREMENTS														PRIMARY STAFF PARTICIPATION/CAPACITY P=Professional *** M=Management									
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation	Portal/Shaft Closure	Hydrologic/Hydraulic Design/Eval.	Remining Evaluation	Mine/Refuse Fire Abatement	Subsidence Investigation Mitigation	Hazardous Waste Disposal	Project Specifications	Water Quality Evaluation/Nligation/Replacement	Construction Inspection/Management	Water Treatment	Equipment/Structure Removal	Stream Restoration	Geotechnical/Stability	Andy Willis, PE, PS Civil & Mining Engineer, Project Mgr.	J. Steven Gardner, PE Principal-in-Charge	Edmundo LaPorte, PE, RPEQ, Mining Engineer	Jason Stoltz, PE, Mining Engineer	Charles Reeves, PE, Mining Engineer	Karen Rose, EIT, Jr. Mining Engineer	Seth Miltie, EIT, Jr. Mining Engineer	Douglas Mynear, PE Civil Engineer - Hydrologist	Donnie Lumm, PG, Hydrogeologist	Dale Harrison, PS, PLS Land Surveyor
AML Reclamation - Allan Hollen Group	C		✓	✓	✓				✓		✓	✓					✓	M		P			P		P		
Environmental Remediation - Auxier Open Dump	C									✓	✓		✓			✓		P	M				P				P
Headwaters AML Enhancement	C		✓				✓				✓	✓	✓	✓		✓			M			P	P				
Dollar Branch Remediation & Wetlands Design	C		✓								✓	✓	✓	✓	✓	✓	✓		M				P				
AMD Remediation & Reclamation - Andalex	C		✓								✓	✓	✓	✓	✓	✓			M				P				
Groundwater Evaluation Model - Hanson	C					✓												M							P		
East Fork Little Sandy Stream Mitigation	C												✓			✓		M					P				P
Reclamation & Remediation - Roadside Processing	C		✓								✓	✓		✓	✓				M				P				
Surface Water Management - Gramalote Gold Mine	C					✓											✓			P					M		
Surface Water Management - Minera Panama	C					✓											✓			P			P	P	M		
Mine Rehabilitation - Portal 31 Exhibition Mine	C				✓						✓				✓			P	M				P				
Slope Failure Repairs - London Medical Office Park	C										✓						✓								M		
Strata Mine Seals	C				✓						✓								P		P	M	P	P			

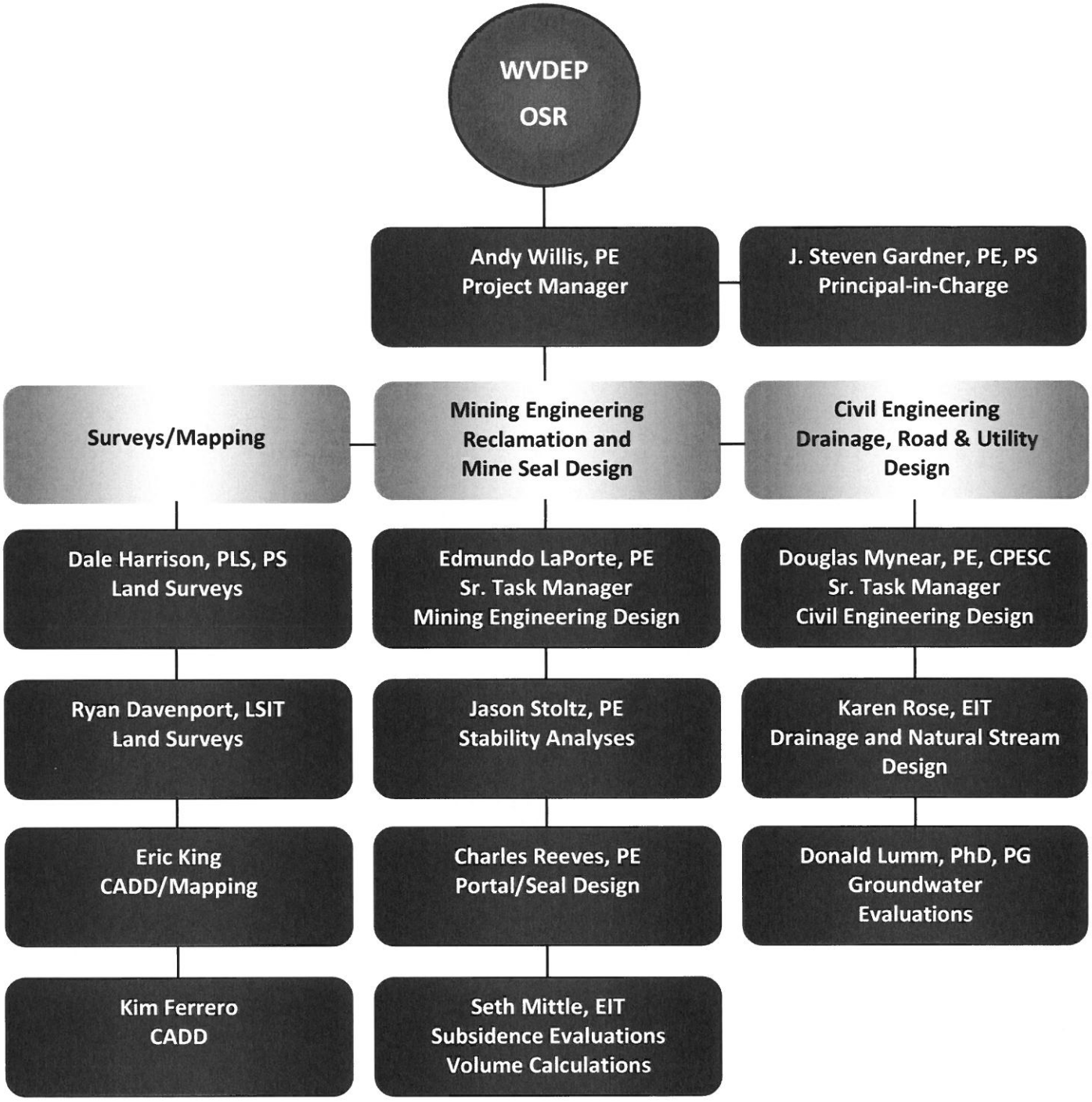
* List whether project experience is corporate or personnel based or both.

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

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

Team Resumes

TEAM ORGANIZATION CHART



J. STEVEN GARDNER, P.E., P.S. — President/CEO

Licenses:
Professional Engineer:
KY #11187, TN #13257,
WV #10319, VA #012458,
PA #PE074572, CO #42921
NCEES #32398

Professional Surveyor:
WV #1424

Education:
M.S., Mining Engineering, University of Kentucky
B.S., Agricultural Engineering, University of Kentucky
Environmental Systems Certificate, University of Kentucky

Professional Affiliations:
Kentucky Geological Survey Advisory Board - Appointment 2012-2015
Kentucky Board of Licensure for Professional Engineers & Land Surveyors - Appointment 2004-2012
Co-Editor - Coal Mining Reference Book, Fifth & Sixth Editions

Associations:
Society of Mining, Metallurgy & Exploration Registered Member
National Society of Professional Engineers
Kentucky Society of Professional Engineers
National Council of Examiners for Engineering & Surveying
American Society of Mining Reclamation
American Council of Engineering Companies of Kentucky – EEC Mining Subcommittee Member



Mr. Gardner is a licensed Professional Engineer, graduate Mining Engineer and Agricultural Engineer. Providing professional environmental and mining engineering services for over 35 years, his consulting practice focuses on sensitive land use issues, reclamation liability, environmental, health and safety issues, mining and quarry operations, due diligence studies, and industrial heritage projects.

Since its inception thirty years ago, ECSI has prepared thousands of mine plans and permit actions in Kentucky, West Virginia, Ohio, Indiana, Tennessee, and Virginia. These mines range from small underground mines to large scale longwall and multi-seam surface mines to preparation plant facilities with refuse and slurry disposal fills. In addition to coal mining permits, ECSI has also built a reputation in the hard rock industry, providing a multitude of services such as mine permitting, spill prevention plans, and surveying.

Mr. Gardner serves many professional organizations, including being Chairman of the Government and Public Affairs Committee of the Society of Mining, Metallurgy and Exploration's (SME) and has been nominated to be the Society's 2015 President. He has served as a member and past chairman of the Kentucky Board of Licensure for Professional Engineers and Surveyors and is a member and past chairman of the UK's Mining Engineering Foundation. The Governor recently appointed him to the Kentucky Geological Survey Advisory Board and he also serves on UK's Biosystems and Agricultural Engineering Advisory Board.

Mr. Gardner's areas of expertise include mine planning and design, environmental permitting, mine reclamation, mine feasibility, coal and aggregates reserve analysis, environmental site analysis and design, and MSHA refuse modifications. Early in his career he served on a mine rescue team. He has completed projects throughout the U.S. coalfields as well as internationally in Colombia, Morocco and Ghana. Relevant projects include:

Dollar Branch Refuse Area & Wetlands Design, Cumberland Surety Insurance Co., Harlan County, Kentucky
This project included stream bank remediation and wetlands design

Associations:
Kentucky Coal Association - Environmental Committee
Kentucky Oil & Gas Association

Publications/ Presentations
"A Mine is a Terrible Thing to Waste: Kentucky's Portal 31 Exhibition Mine". In *The Mining History Journal*, Vol. 19, P. 58-68, 2012.
Chairman GEM Session, "The Community of Mining: From Disasters to Sustainability Communications is the Key". Society of Mining, Metallurgy & Exploration Annual Conference, Salt Lake City, Utah, 24-27 February, 2008.
Gardner, J.S. and Sainato, P., "Mountaintop Mining and Sustainable Development in Appalachia." In *Mining Engineering*, Vol. 59, Issue 3, P. 48-55, 2005.
Gardner, J.S., Houston, K.E. and Campoli, A., "Alternatives Analysis for Coal Slurry Impoundments." In *Mining Engineering*, Vol. 56, Issue 8, P. 47-52, 2004.

for a 40 +/- acre area with 2,000 feet of stream. Refuse material was removed, banks stabilized, and erosion controls put in a place to facilitate a long-term re-vegetation plan.

Auxier Open Dump Cleanup, Remediation & Stream Channel Restoration, Waste Management, Inc., Floyd County, Kentucky
As a subcontractor to Enviro-Pro, Inc., ECSI provided engineering and surveying assistance for the cleanup of the largest, illegal, open dump in the state of Kentucky. Waste Management, Inc. funded this project in cooperation with the Kentucky Natural Resources and Environmental Protection Chapter and the CSX Railroad. The project involved stream channel restoration, removal of garbage from forested areas with minimal disturbance and final revegetation. Mr. Gardner oversaw this project and also served as lead design engineer.

Reclamation & Remediation, Roadside Processing, McCreary County, Kentucky
Roadside Processing is a former coal processing facility initially developed before SMCRA, but much of the site came under SMCRA jurisdiction later. The coal processed and the waste produced was highly acidic and toxic. ECSI was contracted to develop a reclamation plan to reclaim the disturbed areas on the site which includes an MSHA class fresh water impoundment which is currently used for the treatment of AMD (acid mine drainage) and several slurry (fine coal waste) disposal ponds. An additional charge is for ECSI to develop long-term passive treatment systems for the AMD produced at the site. This site borders the Daniel Boone National Forest and is located near the Big South Fork National River and Recreation Area. Government agencies involved with this project include: MSHA, KYDNR Div of Permits, and KyDEP Div of Water.

Remediation, Reclamation, Wetlands Redesign, and Stream Channel Stabilization, Wyatt Tarrant & Combs Attorneys, McLean and Ohio Counties, Kentucky
ECSI was hired for the final reclamation of a property in Western Kentucky. This project involved redesign of drainage plans including stream channels and stabilization, design of anoxic drains and wetlands, aeration construction management, surveying, and monitoring.

AML Reclamation Design, Clay and Leslie Counties, Kentucky
This project involved engineering design for the reclamation of five (5) Abandoned Mine Land sites located in Clay and Leslie Counties, Kentucky. ECSI conducted file research, developed site characterizations and completed conceptual, preliminary, and final designs for each location. Necessary permits were obtained and consents from landowners gathered during the course of the project. Conditions found during site reconnaissance included open mine portals, disturbed surface areas, mine water discharge, substandard effluent flows, garbage piles, highwall instability, slope stability issues, backfill failure, and subsidence. Mr. Gardner performed a peer review for this project.

D. ANDY WILLIS, P.E.

Senior Vice President,
Appalachian Regional Offices

Licenses:
Professional Engineer:
KY #18915, OH #E-62112, WV #12208, VA #034017, MD #37945

Professional Surveyor:
WV #1492

Education:
Bachelor of Science, Mining Engineering - Ohio State University

Certifications:
Certified MSHA Impoundment Instructor #M86730288

Training:
HEC-RAS
Coal Refuse Disposal Facility Seminar: Simplified Seismic Design – Geo/Environmental Associates, Inc.

Associations:
National Society of Professional Engineers
Kentucky Society of Professional Engineers
Society of Mining, Metallurgy & Exploration
Association of State Dam Safety Officials
Ohio Aggregates & Industrial Minerals Association
Tug Valley Mining Institute
West Virginia Coal Mining Institute
Society of Petroleum Engineers



Mr. Willis, a licensed engineer, serves as the Director of the Appalachian Regional Offices for ECSI. He serves as Senior Project Manager for selected projects and has over twenty-five years experience in the coal and aggregates market throughout Appalachia and the Midwest.

His areas of expertise in mining, civil, and environmental resources include:

- Surface and underground coal and aggregates mine planning and design
- Environmental permitting (including SMCRA and CWA)
- Reclamation management and design
- Coal and aggregate reserve analysis and calculations
- Mine feasibility using geologic modeling
- MSHA refuse modifications
- Mine extraction and subsidence modeling
- Litigation support as expert witness for environmental legal cases
- Environmental site analysis
- Construction inspection
- Inspection and certification of underground coal mine seals
- Mine surveying
- MSHA Mine Seal Plans

He served as Project Manager on the following projects:

AML Reclamation Design
Clay and Leslie Counties, Kentucky
This project involved engineering design for the reclamation of five (5) Abandoned Mine Land sites located in Clay and Leslie Counties, Kentucky. ECSI conducted file research, developed site characterizations and completed conceptual, preliminary, and final designs for each location. Necessary permits were obtained and consents from landowners gathered during the course of the project. Conditions found during site reconnaissance included open mine portals, disturbed surface areas, mine water discharge, substandard effluent flows, garbage piles, highwall instability, slope stability issues, backfill failure, and subsidence. Mr. Willis served as the Project Manager and lead design engineer for this project.

Fly Ash Fill Remediation
Floyd County, Kentucky

This project involved the engineering re-design of a coal combustion fly ash fill closure. The use of coarse refuse material from an adjacent associated facility was specified for final reclamation of the Stratton Branch Fly Ash Fill to comply with an agreed order with the Commonwealth of Kentucky, Energy and Environment Cabinet. Mr. Willis was responsible for geotechnical designs of the final reclamation. ECSI also provided surveying services and oversight during construction.

Underground Mine Seal Installation Certification
Consol Energy – 50 psi mine seal certifications
Patriot Coal – 120 psi mine seal certifications
Dickenson-Russell Coal Co. – 120 psi mine seal certifications
Mingo Logan Coal Company – 120 psi mine seal certifications
Clintwood Elkhorn Mining Company – 50 psi mine seal certifications
Paramont Coal Company – 120 psi mine seal certifications
Ohio Valley Coal Company – 120 psi mine seal applicability certifications
American Energy Corporation – 120 psi mine seal applicability certifications
Since the MINER Act of 2005, more stringent regulations have been in place for the installation of mine seals. Serving as Project Manager, Mr. Willis assists Operators in the plans needed to install mine seals and in the inspections and certifications of those seals.

Frontier Insurance Co. Reclamation and Liability Assessments
Utah, West Virginia, Kentucky
Reclamation cost and liability assessments for Frontier Insurance Company. Assessed reclamation liabilities on mining permits. Project encompassed approximately 60 sites in Utah, West Virginia and Kentucky.

Horsepen Creek Stream Restoration
Hampden Coal
Gilbert, West Virginia
This project involved survey work and the design for the installation and eventual removal of two 120 inch diameter culverts following mining and the restoration of the stream channel and its riparian zone. It also included documentation included in a 401 Water Quality Certification application and a U.S. Army Corps of Engineers Section 404 Individual Permit application.

Bent Branch Hydrogeologic Investigation
McCoy Elkhorn Coal Corporation
Kimper, Kentucky
ECSI was retained to investigate a series of subsidence and groundwater depletion claims for McCoy Elkhorn Coal Corporation's (MECC) Smith Fork Mine No. 1 in Pike County, Kentucky. Claims of subsidence damage to homes and groundwater well damage were received from residences and/or rental properties located on Bent Branch of Johns Creek, which is adjacent to mining conducted by MECC.

EDMUNDO J. LAPORTE, P.E., P.ENG, C.P.ENG, RPEQ

Senior Vice President
Director - Mining Services

Licenses:

Professional Engineer:
KY#24476, VA#043460, TN#111870, WV#17201, AR#14206, TX#105481, NM#18632, OH#72862, KS#19670, IN#PE10708870, AL#29076, LA#PE0035828, PA#PE077424, NC#032983
NCEES #30460

Chartered Professional Engineer:
Australia, #3802017

Registered Professional Engineer of Queensland:
#10736

Professional Engineer:
Alberta - Canada, #115326
Venezuela, #64915

Education:

Bachelor of Science, Civil Engineering - University of Rafael Urdaneta, Maracaibo, Venezuela
Master of Business Administration (Ongoing) – EUDE – European School for Business and Management

Certifications:

Certified Person/Qualified Person under NI 43-101 and JORC Reporting

Associations:

Society of Mining, Metallurgy & Exploration Registered Member
National Society of Professional Engineers
American Society of Civil Engineers
Association of Mining Analysts
AACE International



Mr. Laporte, a licensed engineer, serves as Director of Mining Services for ECSI. He has participated in multiple metal, coal and hard rock mining projects in the USA and in South America. These include underground operations in epithermal narrow vein deposits in Mexico; large open pit copper mines in Chile and Argentina; underground limestone, sandstone and oil shale mines in the USA; underground coal mines in the USA and Colombia; and multiple open pit coal and hard-rock projects in South America and the USA. Mr. Laporte is licensed in multiple jurisdictions in the United States; in Alberta, Canada; in Australia (Chartered Engineer) and is also a Registered Professional Engineer in Queensland.

Mr. Laporte is responsible for coordinating multiple geotechnical engineering projects; development of mine plans and financial models for both local and international clients; inspection design and certification of coal mines; technical consulting; evaluation of technical and financial feasibility of surface and underground mining operations; as well as preparation and research of expert testimony. His experience includes:

Chinese Coal Resource Evaluation
Chonsheng, Fengxi, and Xingtao Mines – Shanxi Province, China
Mr. Laporte served as Project Manager writing a Competent Person's Report (required documentation for the Hong Kong Stock Exchange) for a client prior to the purchase of interest in an energy group with mine holdings in China. Independent checking of the resource calculations, reserve calculations and economics were required. Resource categories were determined following JORC rules and coal quality data was assessed to determine plant recovery and yield. Drill hole information was used to determine resource availability.

White River Oil Shale Scoping Study, Utah
Mr. Laporte served as Project Manager conducting a scoping level study for Conocco Phillips of an oil shale operation in Utah. Project included mine planning as well as operating and capital cost estimations.

Peruvian Mine Plans, Alto Chicama Mines – Northern Peru
Mr. Laporte served as Project Manager developing mine plans and mine safety programs for two coal mines in northern Peru for Diagnost. Seguridad Op. Carbón. Coal on these properties appears

Associations: (Cont.)
American Concrete Institute
Association of Energy Engineers
American Rock Mechanics Association
International Association of Engineers
Association of Professional Engineers, Geologists, and Geophysicists of Alberta
Prospectors & Developers Association of Canada (PDAC)
The Institution of Engineers Australia
Board of Professional Engineers Queensland
Colegio de Ingenieros de Venezuela

in vertical seams. A drilling program was also developed.

Third Party Review of Coal Mine, Trinidad, Colorado
Mr. Laporte served as Project Manager producing a third party reasonableness review with findings and expert opinion on an NI 43-101 Technical Report prepared for an ongoing due diligence process through which LG International Corp. intends to acquire the New Elk Coal Mine in Colorado. In addition to reviewing the Report, Mr. Laporte also visited the site to observe the operations and interview mine personnel.

Colombian Coal Mine Development, La Preciosa Mine – Colombia
Mr. Laporte served as Project Manager providing comprehensive engineering services for the development of a coal mining operation in Colombia on behalf of C.I. Exportadora Interamerican Coal, S.A. (CISA). Mining engineering services included mine design and planning, safety training, equipment selection, and coordination of discipline-specific consultants and subcontractors.

Mr. Laporte's prior experience includes:

Senior Project Manager - International and Domestic
Marshall Miller & Associates, Lexington, Kentucky
Responsible for coordinating multiple geotechnical engineering projects related to hydro dams, ash impoundments and gypsum stacks; development of mine plans and financial models for both local and international clients; inspection design and certification of coal mine seals in accordance with the latest MSHA regulations; technical consulting activities for adjustment of losses related to business interruptions of copper mining operations; evaluation of technical and financial feasibility of surface and underground limestone and sandstone operations; preparation and research of expert testimony.

Senior Engineering Consultant
Marshall Miller & Associates, Lexington, Kentucky
Responsible for coordinating MM&A's consulting services with foreign clients in Latin America; development of mine plans and financial models for both local and international clients; coordination of geotechnical engineering activities such as site exploration, laboratory testing and data interpretation; preparation of design solutions for slope stability, foundation design, earthworks (including field inspection and construction administration activities); coordination of exploration projects, feasibility studies, mine design, mine permits; preparation of mineral valuations and financial studies for bankruptcy proceedings and acquisitions; preparation of erosion and sedimentation plans for mining operations and/or industrial facilities; preparation of reasonableness studies and other bankable documents for domestic clients; inspection of surface and underground coal mines.

JASON R. STOLTZ, P.E. Director of Engineering Services, Midwest Region

Licenses:
Professional Engineer:
KY #21772, IN #PE11300545
IL#062-066012

Education:
Master of Science, Mining Engineering – University of Kentucky

Certifications:
MSHA Qualified Impoundment Inspector
Alabama Mine Foreman

Training:
National Mine Health and Safety Academy Graduate

Associations:

Mr. Stoltz, a licensed engineer in Kentucky and Indiana, serves as the Director of Engineering Services for ECSI's Midwest Region. He has worked extensively in both private industry and the public sector. His experience in the public sector, which has included positions at MSHA, OSM, Kentucky Department for Natural Resources and TVA, provides clients with unique knowledge of regulatory issues and equally unique solutions to problems.

His areas of technical expertise include impoundment designs (hydrology, static and seismic stability, regulatory (SMCRA, Miner ACT, CWA, etc.), underground mine breakthrough analysis, foundation designs, monitoring, material testing and compliance, etc.), drill and blast designs, explosives handling, slope stability (static, seismic, remedial measures, etc.), construction engineering, rock mechanics, ground control, soil and rock testing, surface water hydrology, subsidence analysis and remediation, very large fill design, surface mine reclamation, approximate original contour (AOC), mine planning, mine safety, bulk material handling, underground mining and mine engineering, safety, fluid statics and dynamics, and deformable solids.

Tennessee Valley Authority - Most recently, Mr. Stoltz was the senior technical expert for coal commodities at TVA. In this position, he developed, documented, and enhanced multiple, complex, national coal commodity price forecasts. These forecasts are the basis for TVA coal purchases, hedging, strategic and business planning, risk analyses, and plant dispatch processes. Utilizing his knowledge of the US coal industry, short and long-term supply and demand drivers, and TVA systems he coordinated a consistent, dynamic, collaborative, and transparent process meeting the needs of key TVA stakeholders. These forecasts assimilate TVA centric views of national coal, transportation, and reagent markets.

United States Department of the Interior, Office of Surface Mining Reclamation and Enforcement (OSMRE)– Mr. Stoltz served as mining engineer for the OSMRE Lexington Field Office, Program Support Branch from 2008 to 2011. In this role, he provided engineering support for the Kentucky OSMRE, oversight and support of Kentucky's regulatory/primacy program of the Department of Natural Resources - Division of Mine Reclamation and Enforcement (DMRE), and acted as instructor for the OSMRE National Technology Transfer Program (NTTP). Mr. Stoltz was also a member of the team composing new coal mining environmental regulations pertaining to stream buffer zone and Approximate Original Contour (AOC) issues. Mr. Stoltz was the lead in engineering issues and technical negotiations for the OSMRE in Kentucky on multiple special studies with other federal agencies,

state agencies, and citizen interest groups in Kentucky and West Virginia which require the preparation and submittal of technical findings reports, guidance documents, and/or recommended regulatory or policy changes.

United States Department of Labor, Mine Safety and Health Administration (MSHA), District 8 – From 2004 to 2007, Mr. Stoltz was responsible for engineering and regulatory reviews on underground mine ventilation plans, mine ventilation maps, fire protection engineering, fire prevention and remediation, impoundments, impoundment designs (hydrology, static and seismic stability, regulatory, underground mine breakthrough analysis, foundation designs, monitoring, material testing and compliance, etc.), and refuse disposal facilities. He additionally performed technical compliance inspections and generated citations on underground mine ventilation systems, impoundments, refuse disposal facilities, and general mine safety. The plan review and inspection activities required interaction with coal company officials, miners' representatives (unions), and interagency technical staff. He was an "Authorized Representative" of the Secretary of Labor (enforcement officer) and a graduate of the National Mine Health and Safety Academy (25 week training), which qualified him as a Journeyman Mine Inspector.

Kentucky Department for Natural Resources, Division of Mine Reclamation and Enforcement (DMRE) – Mr. Stoltz served as an Environmental Engineer Consultant with DMRE from 2001 to 2004 His responsibilities included the review of complex engineering designs, large construction and earth moving operations, the development of engineering and regulatory guidelines, providing technical guidance to senior department officials, coordinating reviews with other state and federal agencies (USDOI Office of Surface Mining, USDOL MSHA, and KY Division of Water), conducting meetings with the design engineers, negotiating changes in construction plans and plan specifications, and advising the junior engineering staff of 10 – 15 people. His primary focus was the review of Class C, High Hazard, slurry and freshwater impoundment designs. These designs evaluated static and seismic embankment and slope stability, underground mine breakthrough analysis, foundation designs, monitoring, material testing and compliance, sediment control, storm water hydrology, flood analysis, dam breach, the design of hydraulic control features, ground subsidence, rock stability, geomaterial strength testing, pumping stations, ditches, etc. Some of the more complex impoundments included multiple stage upstream embankments, embankment crest heights exceeding 300 ft, and storage volumes in excess of 1 million acre-ft. Other special projects were also assigned addressing novel design approaches. Other areas of technical proficiency and consultation include refuse disposal, surface and underground mining, drill and blast designs, mining under bodies of water, earthen and rock fill designs, best management practices for environmental compliance, mine valuation and design, rock mechanics, fluid dynamics, and mine safety.

CHARLES R. REEVES, JR., PE **Vice President/Director**

Licenses:
Professional Engineer:
KY #10671, IL #062.061087
AR #13531, AL #29834,
PA# PE076628,
IN #PE10810052

Education:
Bachelor of Science, Civil Engineering, Mining Option - University of Kentucky

Certifications:
Certified Person/Qualified Person under NI 43-101
KY Certified Surface Mine Foreman #S34185
KY Certified Underground Mine Foreman #A57976
KY Certified Underground Mine Inspector #C1798
KY Certified Surface Miner #ME0002426
KY Certified Underground Miner #ME0002426
KY Certified Mine Emergency Technician #ME15312989
Certified MSHA Surface Instructor #M50112014
Certified MSHA Underground Instructor #M50112014

Associations:
Society of Mining, Metallurgy & Exploration
Kentucky Society of Professional Engineers
Holmes Safety Association
Central Indiana Council



Mr. Reeves' forty plus years' experience has afforded him opportunities to work with many regulatory agencies and gain a thorough understanding of applicable regulations and statutes. He manages all mine seal installation and inspection projects for the company. His previous experience includes various positions with Peabody Coal Company over a twenty-five year period from Section Foreman to Senior Mine Engineer. Prior to joining ECSI 6 years ago, he served as Facility Manager for Carbontronics Fuels Management, LLC where he oversaw the operations of a Section 29 Synthetic Fuel Plant. Mr. Reeves' relevant work experience includes:

Underground Seal Development
Strata Mine Services
This project involves the development of underground mine seals that adhere to new construction standards adopted by MSHA requiring 120 psi blast strength. Mr. Reeves and ECSI have worked with this client to receive MSHA approval on two underground mine seals with two additional seal designs under review.

Underground Seal Installation Certification
Various Clients
Since the MINER Act of 2005, more stringent regulations have been in place for the installation of mine seals. Serving as Project Manager, Mr. Reeves assists Operators in the plans needed to install mine seals and in the inspections and certifications of those seals.

Slurry Recovery
Confidential Client
ECSI is managing and assisting an operator to obtain all necessary governmental plans required to comply with present laws for the removal of coal fines and the reclamation of coal impoundments. Mr. Reeves is working on permit applications at this time and coordinated a drilling program to find voids in the old works.

SPCC Plan, Air Permit Modification, KPDES Renewal
Warren Paving - Crittenden and Livingston Counties, Kentucky

Mr. Reeves is the Project Manager for this modification to the Air Quality Permit issued for a limestone quarry and barge loading facility on the Cumberland River. He is also completing the Spill Prevention, Control and Countermeasures Plan (SPCC Plan) for the facility in addition to handling the Kentucky Pollutant Discharge Elimination System (KPDES) renewal. ECSI prepared the original surface mining permit, air quality permit, water permits, and a section 10 Corps of Engineers permit for the design and construction of the limestone quarry and barge loading facility. Permits require an analysis of the impact on the community, the waterways, fish and wildlife, and potential archaeological and historical sites. Assessment of wetlands, surface and groundwater flow, threatened or endangered species potentially in the area, and potential archaeological or historical sites as well as advertisement and input of the community-at-large are or may be required. Reclamation planning and environmental mitigation planning are required.

Cumulative Impact Assessment (CIA)
ICG - Middle Fork of the Kentucky River
This project involves the development of cumulative impact assessment protocols and CIA report for a client in preparation for a U.S. Army Corps of Engineers 404 Permit. The CIA includes taking a cross-section of impacts within a HUC8 watershed (360,000 acres), collecting and analyzing macroinvertabrate sampling and surface water monitoring. ECSI led a team of engineers, biologists, and geologists in developing sampling protocols, data compilation, and analysis. Mr. Reeves worked on this large project with a multi-disciplinary team.

Carbontronics Fuels Management, LLC
Indiana
Served as Facility Manager and Facility Engineer for a Section 29 Synthetic Fuel Plant.
- Directed management and laborers in dredging operation, coal preparation plant, and synthetic fuel pelletizing plant
- Directed a 300 acre reclamation project working with MSHA, IDEM, DNR and other regulatory agencies
- Oversaw construction project that involved the dismantling of the plant and the rebuilding at a different location within a 90 day time frame
- Maintained production and controlled cost of the 24 hour/7 days a week operation.

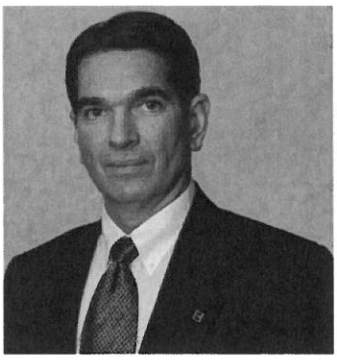
Peabody Coal Company
Kentucky and Indiana
Served as Senior Mine Engineer, Senior Project Engineer, Manager Mine Planning, Shift Mine Foreman, Construction Superintendent, Chief Industrial Engineer, Industrial Engineer, and Section Foreman.
- Supervised $25 million mine construction project during all phases over 18 months
- Supervised 100 employee work force
- Developed underground mine plans including mine layouts, labor plans, capital and operating costs
- Conducted Time and Motion Studies on various surface and underground equipment to maximize equipment usage and minimize operating costs

DOUGLAS K. MYNEAR, P.E., LEED AP **Vice President/Director**
Civil & Environmental Engineering Services

Licenses:
Professional Engineer:
KY #11760, WV #9438
LEED Accredited Professional:
U.S. Green Building Council
Certified Professional in Erosion and Sediment Control #7418

Education:
Master of Science, Agricultural Engineering/Urban Hydrology - University of Kentucky
Bachelor of Science, Agricultural Engineering - University of Kentucky

Training:
LEED Training Workshop - U.S. Green Building Council
How to Write and Implement a SWPPP to Meet NPDES Requirements – International Erosion Control Association
Stormwater and Urban Water Systems Modeling Conference - Computational Hydraulics International
XP-SWMM Training, Caice Software Corporation
Microstation Drafting, Lexington Community College
Drainage Design Workshop, Kentucky Transportation Cabinet
Highway Capacity Workshop, University of Kentucky College of Engineering
Soil Bioengineering Conference, Louisville Metropolitan Sewer District



Mr. Mynear serves as ECSI's Director of Civil & Environmental Engineering Services where he is responsible for all civil design and the oversight and coordination of project teams. He is a civil engineer experienced in hydrological/hydraulic studies, drainage design, site planning/design, highway/roadway design, water distribution, storm and sanitary sewers, wastewater pretreatment, and recreational facility design. For 32 years prior to joining ECSI, Mr. Mynear served as Supervising Engineer of the civil engineering division at a local branch office of a large engineering company. His relevant experience includes:

Nally and Haydon Stream Restoration, Lebanon, Kentucky
Project Manager for the design of stream restorations associated with the Lebanon rock quarry. Project involves the restoration of streams previously displaced by the mining activities.

Hydrologic Analysis and Sediment Ponds Design
Gramalote Gold Mine – Providencia, Colombia
Project Manager for evaluation and conceptual design of 12 sediment ponds serving the various waste material dumps/ mining infrastructure facilities on the project; and an evaluation of the waste material handling sequence and placement to determine if there was a more cost effective method. The first task that ECSI performed was an evaluation of the feasibility study recommendation for routing of the Rio Guacas around the proposed mine pit.

Clay City High Flow Diversion Channel
Clay City, Kentucky
Project manager and project hydrologist/hydraulic engineer for the study and design of a high flow diversion channel to relieve flooding problems in Clay City. Project involved the design of a 2,100-foot-long by 25-foot flat bottom high flow diversion channel cutting from the Red River on the north side of Clay City to the south side. Included HEC-RAS analyses to quantify expected flood reductions and the preparation of a Letter of Map Revision (LOMR) for the Federal Emergency Management Agency.

Associations:
National Society of Professional Engineers
Bluegrass Chapter of Professional Engineers
American Society of Civil Engineers
Society of American Military Engineers
American Council of Engineering Companies of Kentucky – EEC Environmental Subcommittee Member

Hydrologic/Sedimentologic Analysis and Sediment Ponds Design, Minera Panama SA – Cocle del Norte, PanamaProject Manager for the hydrologic and sedimentologic analysis and preliminary design of twenty-five (25) independent sediment ponds at the port facility associated with the proposed Mina de Cobre Panama copper mine project located on the north coast of the Republic of Panama. Hydrologic analyses were conducted using two different design storms. Pre-development condition analyses were also conducted to allow comparison of the developed-condition pond discharge rates to existing. Additional services provide on the project included erosion and sediment control design for several large waste material storage areas and stability analyses of those material storage areas.

West Hickman Watershed Stormwater Modeling
Lexington, Kentucky
Project manager for the performance of SWMM stormwater model for the West Hickman watershed (roughly 10,000 acres (4,045 hectares)).

Mammoth Cave Roads
Mammoth Cave, Kentucky
Project manager for the design for repairs and/or realignment of approximately 9 miles (14.5 kilometers) of roadways within Mammoth Cave National Park. Design included roadway repairs/repaving; intersection realignments; and roadway widening.

Construction Management Services for Mammoth Cave Water System Rehabilitation
Mammoth Cave, Kentucky
Project manager for the construction inspection of approximately 12-miles of replacement water
system mains for Mammoth Cave National Park.

Cost Analysis for City of Martin Sanitary Sewer System Replacement
Martin, Kentucky
Project engineer on preparing cost estimate using MCACES software for replacement of entire City of Martin sewer system in conjunction with a Huntington District, Army Corps of Engineers flood protection project.

Blue Licks State Park Utilities
Robertson County, Kentucky
Project engineer for the design of new sanitary sewers and water distribution lines, two new lift stations, replacement of existing gravity sewer, and expansion of existing sewage treatment plant.

KAREN ROSE, EIT **Senior Project Manager**

Licenses:
Engineering in Training: KY#13020

Education:
Bachelor of Science, Mining Engineering - University of Kentucky

Certifications:
Rosgen Level I – Fluvial Geomorphology for Engineers
Rosgen Level II – River Morphology & Applications
Rosgen Level III – River Assessment & Monitoring
Rosgen Level IV – River Restoration & Natural Channel Design

Training:
Hydrogeomorphic Functional Assessment of High-Gradient Ephemeral & Intermittent Streams – USACOE
Basic Dendrology & Native Tree Identification – Bernheim Arboretum & Research Forest
Advanced Blast Design – University of Kentucky
Principles of Stability Analysis and Analysis of Slopes

Associations:
Society of Mining, Metallurgy and Exploration
American Institute of Mining, Metallurgical, and Petroleum Engineers
Kentucky Coal Association-Environmental Committee Member, Mine Permitting Subcommittee Member



Ms. Rose, Senior Project Manager, is responsible for the coordination of environmental and mine permit applications for ECSI. For over twenty years she has been involved in the design, construction and reclamation of surface and underground mine facilities, as well as processing and loading.

Ms. Rose also serves as a liaison between the mining industry and federal and state regulatory agencies. As liaison she serves on several joint committees with industry and regulatory agencies and regularly attends agency meetings to keep up-to-date on any regulatory changes.

Her areas of expertise in mining, civil and environmental resources include:

- Environmental permitting (including SMCRA, CWA, and Title V)
- Reclamation management and design
- Stream analysis and restoration plans
- Coal reserve analysis and calculations
- Mine extraction and subsidence modeling
- Environmental site analysis and background research

Her relevant projects include:

AML Reclamation Design
Clay and Leslie Counties, Kentucky
This project involved engineering design for the reclamation of five (5) Abandoned Mine Land sites located in Clay and Leslie Counties, Kentucky. ECSI conducted file research, developed site characterizations and completed conceptual, preliminary, and final designs for each location. Necessary permits were obtained and consents from landowners gathered during the course of the project. Conditions found during site reconnaissance included open mine portals, disturbed surface areas, mine water discharge, substandard effluent flows, garbage piles, highwall instability, slope stability issues, backfill failure, and subsidence. Ms. Rose performed background research for this project.

Dollar Branch Refuse Area & Wetlands Design
Cumberland Surety Insurance Co. - Harlan County, Kentucky
This project included stream bank remediation and wetlands design for a 40 +/- acre area with 2,000 feet of stream. Refuse material

was removed, banks stabilized, and erosion controls put in a place to facilitate a long-term re-vegetation plan. Ms. Rose served as part of the design team for this project.

Remediation, Reclamation, Wetlands Redesign, and Stream Channel Stabilization
Wyatt Tarrant & Combs Attorneys - McLean and Ohio Counties, Kentucky
ECSI has been hired for the final reclamation of a property in Western Kentucky. This project involves redesign of drainage plans including stream channels and stabilization, design of anoxic drains and wetlands, aeration construction management, surveying, and monitoring. Ms. Rose provided DNR permitting services, drainage plans and mapping services.

Sediment Control Analysis/Design
A & G Coal Corp. - Black Mountain, Kentucky
This project involved sediment control analysis and design for a proposed surface mine in an Outstanding Resources Watershed. Ms. Rose completed site studies, surveys, and designs of experimental sediment control structures to decrease/
prevent any impact to the biological community from the mining activity.

Reclamation and Liability Assessments
Frontier Insurance Company
Utah, West Virginia, Kentucky
Reclamation cost and liability assessments for Frontier Insurance Company. Assessed reclamation liabilities on mining permits. Project encompassed approximately 60 sites in Utah, West Virginia and Kentucky. Ms. Rose completed permit research, made site visits, and assessed liabilities on several of the sites.

Hydrologic/Sedimentologic Analysis and Sediment Ponds Design
Minera Panama SA – Cocle del Norte, Panama
This project involved the hydrologic and sedimentologic analysis and preliminary design of thirteen (13) independent sediment ponds at the port facility associated with the proposed Mina de Cobre Panama copper mine project located on the north coast of the Republic of Panama. Hydrologic analyses were conducted using two different design storms. Pre-development condition analyses were also conducted to allow comparison of the developed-condition pond discharge rates to existing. Ms. Rose designed the ponds and performed hydrologic and sedimentologic analysis of the ponds using SedCAD modeling software.

Sediment Control Assessment
Patriot Coal Corporation - Bluegrass Operations Complex
Ms. Rose served as Project Manager for this project analyzing 23 existing dugout and embankment basins associated with 9 DNR permits to determine efficiency of each basin. Utilizing aerial photography, mapping, as-built surveys, mine depletion maps and observations from site visits, SEDCAD modeling was updatedto identify effluent exceedances, lack of adequate freeboard, and any short-circuits. Once all data was input and analyses completed, Ms. Rose made recommendations to decrease total suspended solids.

SETH MITTLE, EIT **Project Manager**

Licenses:
Engineering in Training:
KY#14270

Education:
Bachelor of Science, Mining Engineering - University of Kentucky

Training:
Principles of Stability Analysis of Slopes
Forest Management Service – Tree Identification, Pennyrile State Park

Associations:
Society of Mining, Metallurgy and Exploration

Awards:
Old Timer's Award 2011 - Mining Engineering Department of the University of Kentucky



Mr. Mittle serves as Project Manager handling permitting and environmental compliance/inventory assessments. He is responsible for the timely completion of SMCRA mining permits for contour and area surface mining sites and room and pillar underground mines. He also assists in certifying mine seals, surveying, mapping, and resource evaluation.

- Uses 3D data and SurvCADD software to:
  - Calculate volumes of overburden using 2 surface grids
  - Calculate excess material volume for earthwork projects
- Utilize REAME(Rotational Equilibrium Analysis of Multilayered Earthworks) software for design of slope stability for fills, ponds, etc
- Determine stability of underground mine pillars and maximum extraction ratio with planned subsidence
- Geologic modeling and reserve calculations for feasibility studies
- Determine coal and mineral processing plant yield
- Mine and construction haul road design

He has previous experience working in surface and underground mining operations at the Grand Rivers limestone quarry in Kentucky and Consol Energy's Buchannan coal mine in Virginia, respectively. This includes work in quality control of rock and water samples, blasting, large equipment operation, budgeting, surveying, and underground mining. Additionally, he has assisted in a University of Kentucky Mining Engineering Department research project involving the analysis of froth floatation collectors for performance.

Chinese Coal Resource Evaluation
Chonsheng, Fengxi, and Xingtao Mines – Shanxi Province, China
A Competent Person's Report, required documentation for the Hong Kong Stock Exchange, was written for a client prior to the purchase of interest in an energy group with mine holdings in China. Independent checking of the resource calculations, reserve calculations and economics were required. Mr. Mittle assisted in determining resource categories using JORC rules. He assessed the coal quality data to determine the plant recovery and yield. He also completed the majority of the drafting associated with different resource categories and possible reserves utilizing drillhole information.

Fill Placement Optimization Process
Marion Branch Mine Renewal No. 3
CAM Mining, LLC – Pikeville, Kentucky
This project involved developing a material placement plan for an area that incorporates the avoidance and minimization of stream disturbance. The general methodology includes the generation of regrade configuration; defining reasonable alternate sites to hollow fills; minimizing the extent of streams used in hollow fill construction; and increasing the placement of additional material on the mining bench and utilizing adjacent areas. Mr. Mittle managed this project, overseeing any drafting and calculations done to produce this report.

Mine Seal Oversight Oak Grove Mine
Cleveland Cliffs/IMS - Bessemer, Alabama
Technical oversight and certification of underground mine seals was required for continuation of operations. Mr. Mittle assisted in inspection of 5 seal sites. He assessed the cleaning operations and general site conditions of the mine. He held technical discussions on proposed construction methodology and logistic requirements and participated in general discussions of the project schedule.

Bevins Fork Mine
Cambrian Coal Corporation – Surface Coal Mining Application
This project involved raising a valley fill above the original ridge line elevation. Due to the lack of COE 404 permits, the operator required additional storage for four adjacent surface mining permits. In addition to redesigning the valley fill, Mr. Mittle modeled an expansion to a overburden material storage site and performed stability analysis using REAME addressing both circular and non-circular aspects.

Production Analysis New Elk Coal Mine
Company or client - Trinidad, Colorado
Mr. Mittle observed the development stage of a surface coal mining operation and reviewed the production plans. Mr. Mittle assisted in determining resources in order to calculate probable production tonnage. He assisted in writing final report for possible investment group.

Subsidence Control Plan
Mine No. 68
James River Coal Company – Jeff, Kentucky
This project involved showing how subsidence will be prevented by having adequate support pillars. Mr. Mittle was assigned to design the pillars using coal strength results from the laboratory tests. Mr. Mittle assessed protected areas using guidelines in the Reclamation Advisory Memorandum No. 107 and established minimum safety factors the pillars were required to meet. Mr. Mittle oversaw the calculations and the drafting to show where different extraction percents were possible.

DONALD K. LUMM, PhD, CPG **Senior Professional Geologist**

Licenses:

Professional Geologist: KY#406, IL #196-000314, IN #1824

Certified Professional Geologist #CPG-8987: American Institute of Professional Geologists

Certified Kentucky Assessor

Senior Kentucky Assessor

Education:

Doctor of Philosophy, Geology– University of Kentucky
Master of Science, Geology – Vanderbilt University
Bachelor of Science, Geology – Southern Illinois University at Carbondale
Associate of Arts – Lincoln College

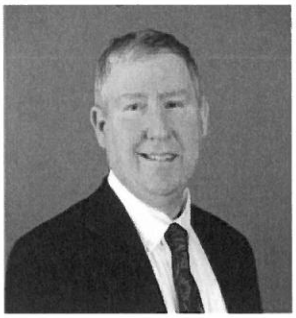
Associations:

American Institute of Professional Geologists
American Association of Petroleum Geologists
Society of Mining Engineers
Illinois Mining Institute
Illinois Geological Society
Indiana-Kentucky Geological Society
Kentucky Society of Professional Geologists
The Society of Organic Petrology
American Council of Engineering Companies of Kentucky

Selected Publications:

Lumm, D.K., & Mills, J.A., 2005, "Geographic Information Systems (GIS) and Unmined Coal Valuation in Kentucky": Abstract presented to the Kentucky Property Valuation Administrators Fall Conference, Louisville, Kentucky.

Lumm, D.K., 2004, "Geologic Hazards in Kentucky": Abstract presented to the Kentucky Property Valuation Administrators Fall Conference, Covington, Kentucky.



Dr. Lumm has over thirty years geological experience with various research, government, academic and consulting agencies. Expertise areas include field and subsurface mapping, coal reserve appraisal, coalbed methane desorption testing and analysis, geophysical log analysis, and the generation and analysis of gravity and magnetic data. In addition, he has authored or co-authored over thirty publications and has been an adjunct professor of geology at numerous community colleges. His experience includes:

Industrial Mineral Exploration, Appalachian Basin
Dr. Lumm serves as Exploration Geologist and is overseeing the drilling operations for an ongoing industrial mineral exploration project.

Senior Geologist – Marshall Miller & Associates
Data collection and mapping of coal and limestone deposits, underground and surface coal and limestone mine mapping, coal and limestone reserve estimation and analysis, core logging, coalbed methane desorption testing and analysis, and analysis of coal and various industrial minerals deposits located on potential conservation easements. Also performed "reasonableness of review" studies for active limestone operations seeking permit revisions. Properties evaluated were located in the Central Appalachian Basin and Illinois Basin.

Mineral Assessor – Kentucky Revenue Cabinet
Subsurface mapping and evaluation of coal deposits and computer estimation of reserve tonnages and assessments of privately owned parcels. Review of drill hole data, stratigraphic correlation of coal seams, computer generation of coal thickness and structure maps, and review of active and abandoned coal mine maps, permit maps, surface infrastructure maps and other data to qualify and quantify coal reserves and tax assessments for the Commonwealth of Kentucky.

Research Associate – Illinois State Geological Survey
Geologic field mapping of bedrock and subsurface mapping of fault zones and associated coal bearing strata. Interpretation of the nature, age, extent and origin of fault zones and reporting of results in abstracts, journals, and publications. Mapping and collection of samples in surface and underground coal mines, limestone quarries, and fluorspar mines. Location of study areas was in southern Illinois and adjacent parts of western Kentucky and southeastern Missouri.

DALE HARRISON, PLS, PS **Professional Land Surveyor**

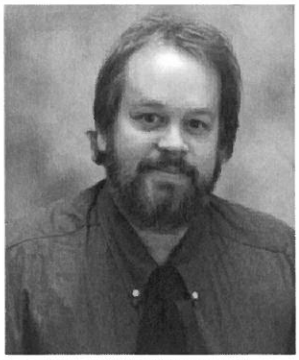
Education:
Coursework at Glenville State College, Glenville, West Virginia

Training:
Geology, Underground, Surface - Carlson Modules

Registrations:
KY: Professional Land Surveyor #3461
WV: Professional Land Surveyor #996

Certifications:
EPA Method 9 Visible Emission Certified
Certified MSHA Impoundment Inspector
Certified Underground / Surface Miner

Associations:
Kentucky Association of Professional Surveyors
West Virginia Society of Professional Surveyors



Mr. Harrison serves as Land Surveyor for selected projects, planning and conducting all surveying throughout the life of the project. He also serves as Senior Engineering Technician and is involved with surveying, mine design and permitting. He is a licensed Professional Land Surveyor in Kentucky and a licensed Land Surveyor in West Virginia. Mr. Harrison has been performing topographic, property & boundary, and mine & construction surveys since 1978. He is also experienced with GPS surveying techniques. Mr. Harrison's relevant projects include:

Auxier Open Dump Cleanup and Remediation, Floyd County, Kentucky
$1 million project with ECSI providing engineering and surveying assistance for the cleanup of the largest, illegal, open dump in the state of Kentucky. The project included stream channel restoration, removal of garbage from forested areas with minimal disturbance and final revegetation, and negotiation of access with private property owners and the CSX Railroad.

Calvin Slurry Impoundment Expansion, Lee County, Kentucky
This project involved the removal of an in-stream sediment control pond and road crossing culvert and the restoration of the stream channel and its riparian zone. Construction methods and post-restoration monitoring are covered in these plans.

Donaldson Branch Stream Restoration, Hampden Coal, Gilbert, West Virginia
This project involved design for the removal of the sediment control structure and freshwater pond, the restoration of the stream channel and its riparian zone, documentation included in a 401 Water Quality Certification application, and a U.S. Army Corps of Engineers Section 404 Nationwide Permit 21 application.

Horsepen Creek Stream Restoration, Hampden Coal, Gilbert, West Virginia
This project involved survey work and design for the installation and eventual removal of two 120 inch diameter culverts following mining and the restoration of the stream channel and its riparian zone. It also included documentation included in a 401 Water Quality Certification application and a U.S. Army Corps of Engineers Section 404 Individual Permit application.

Relevant Projects

AML RECLAMATION DESIGN - ALLAN HOLLEN GROUP

Client: **Kentucky** Energy and Environment Cabinet, Division of Abandoned Mine Lands
Location: Clay and Leslie Counties, Kentucky
Services Provided: Civil, Environmental, and Mining Engineering, Geological and Surveying

This project involved engineering design for the reclamation of five (5) Abandoned Mine Land sites located in Clay and Leslie Counties, Kentucky. ECSI conducted file research, developed site characterizations and completed conceptual, preliminary, and final designs for each location. Necessary permits were obtained and consents from landowners gathered during the course of the project.



Unstable slope

Conditions found during site reconnaissance included open mine portals, disturbed surface areas, mine water discharge, substandard effluent flows, garbage piles, highwall instability, slope stability issues, backfill failure, and subsidence.

- Key ECSI Personnel:
  Steve Gardner, PE
  Andy Willis, PE
  Julie Ross, PG, CPG
  Karen Rose, EIT
  Gabe Shepherd
  Eric King



Eroded drainage path from bench



Mine portal opening



Caved-in Portal

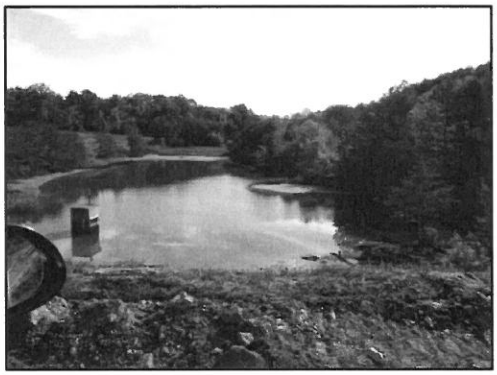


Subsidence

RECLAMATION & REMEDIATION
ROADSIDE PROCESSING

Client: Roadside Processing
Location: McCreary County, Kentucky
Services Provided: Civil, Environmental and Mining Engineering, Geological and Surveying

Roadside Processing is a former coal processing facility initially developed before SMCRA, but much of the site later came under SMCRA jurisdiction. The coal processed and waste produced was highly acidic and toxic. ECSI was contracted to develop a reclamation plan to reclaim the disturbed areas on the site which includes an MSHA-class fresh-water impoundment currently used for the treatment of AMD (acid mine drainage) and several slurry (fine coal waste) disposal ponds. The three-phase plan included the dismantling of the old plant and support facilities and the installation of wetland berms, an emergency spillway and anoxic limestone drains.



ECSI also developed long-term passive treatment systems for the AMD produced at the site. This site borders the Daniel Boone National Forest and is located near the Big South Fork National River and Recreational Area.

Government agencies involved with this project include:

- MSHA
- KYDNR Division of Permits
- KYDEP Division of Water.

Status: Completed

Contract Value: $ 100,000

- Key ECSI Personnel:
  Steve Gardner, PE, PS
  Julie Ross, PG, CPG
  Karen Rose, EIT

AMD REMEDIATION, STREAM RESTORATION & WETLANDS DESIGN
DOLLAR BRANCH

Client: Cumberland Surety Insurance Co.
Location: Cumberland, Kentucky
Services Provided: Civil, Environmental, and Mining Engineering, Geological, and Surveying

Dollar Branch Coal Corporation abandoned a coal preparation plant and refuse disposal area in Harlan County. ECSI was retained by the insurance company holding surety bonds on the site to evaluate the feasibility of reclamation. The coal refuse area had encroached on the stream adjoining the site and was discharging highly-acidic water. The area consisted of approximately 40 acres and 2,000 feet of impacted stream. The site was a high-profile area near the Pine Mountain Settlement School and its remediation involved several regulatory agencies. At the time of cleanup, this was considered the worst AMD site in the state.

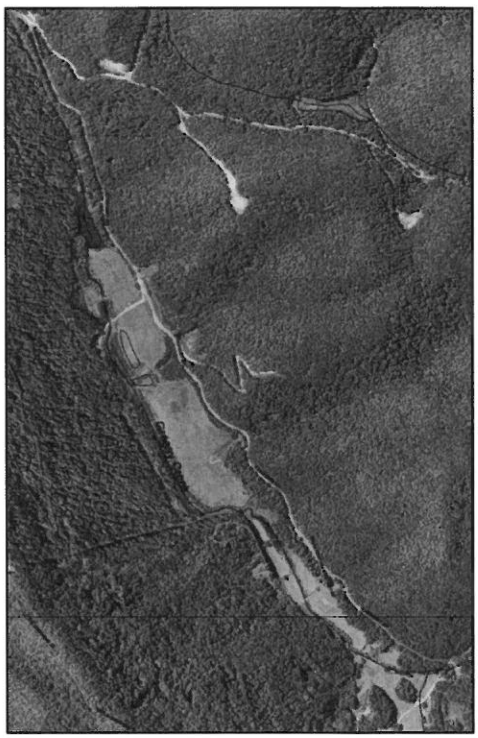


Site before Remediation

ECSI's design plans involved removal of coal refuse materials from the stream banks, bank stabilization and stream restoration, erosion controls, and a long-term revegetation plan, as well as design of a wetland treatment system to handle the acid drainage from the area. The design plans were subject to a multi-federal and state agency review and negotiation.

ECSI personnel worked hand-in-hand with the client in negotiations with regulatory agencies to accomplish the goal of final reclamation of this sensitive area. Negotiations were also necessary with landowners to satisfy their concerns and with the nearby school, which intended to use the area in its environmental education program.

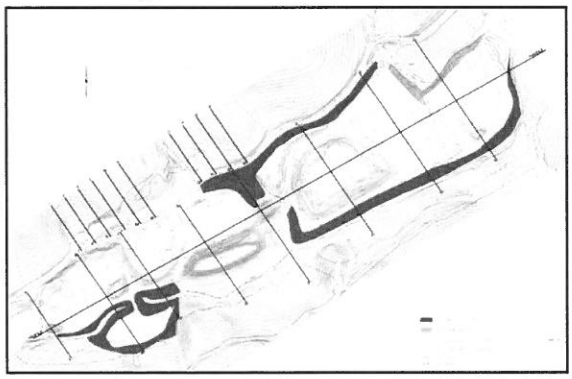
The project was completed on time and very successfully cleaned up the worst AMD site in the state at that time.



Site after Remediation

Status: Completed

- Key ECSI Personnel:
  Steve Gardner, PE, PS
  Julie Ross, PG, CPG
  Karen Rose, EIT
  Eric King



Site Plan

AML ENHANCEMENT, AMD DESIGN AND COAL FINES RECOVERY HEADWATERS, INC.

Client: Headwaters, Inc.
Location: Muhlenberg County, Kentucky
Services Provided: Civil, Environmental, and Mining Engineering

ECSI assisted in preparation of the AML Enhancement plan and DNR permits to recover coal fines from pre-law slurry impoundments.

River Queen is a former coal mining and processing facility initially developed before SMCRA, but much of the site later came under SMCRA jurisdiction. It is located on the Wendell H. Ford Regional Training Center in Muhlenberg County.



ECSI was contracted to develop an AML Enhancement Plan for the recovery of coal fines from two disposal sites and a reclamation plan to reclaim the disturbed areas. Visual signs of degraded water quality were observed in the water draining from these two coal refuse disposal sites. Drainage from these areas flows into small streams which eventually flow from Cypress Creek into Cypress Swamp and finally drain into the Green River.

In addition, ECSI was requested to modify certain SMCRA permits to recover and process additional coal fines in conjunction with EPA slurry injection permits. The coal refuse from the two areas was dry excavated using mobile equipment to haul the material to a mixing station where water was added to create a slurry, and then pumped to the Minuteman Plant to recover the coal. The Minuteman Plant uses a wet process to remove the ash and dirt from the coal refuse slurry and recover the fine coal.

As coal refuse removal operations were completed in an area that will not be redisturbed, the area was scarified and graded and the required cover material redistributed. Redistribution of topsoil as directed by DAML is sometimes necessary to achieve post project reclamation goals.

Additionally, ECSI was charged with the development of long-term passive treatment systems for the AMD produced at the site.

Government agencies involved with this project included: KYDNR Division of Permits, KYDOW, and Kentucky Army National Guard.

Status: Approved

- Key ECSI Personnel:
  Steve Gardner, PE, PS
  Charlie Reeves, PE
  Karen Rose, EIT



Site before remediation showing poor vegetation and water quality, rills and gullies

AMD REMEDIATION AND RECLAMATION
ANDALEX RESOURCES

Client: Wyatt, Tarrant & Combs, LLP
Location: McLean and Ohio Counties, Kentucky
Services Provided: Civil, Environmental, and Mining Engineering, Geological and Surveying

Andalex Resources closed its Kentucky mining operations to focus on operations in Utah. The company had two remaining sites in Kentucky that required final reclamation. Both sites had water quality problems which were delaying final bond release.



Area before treatment

ECSI worked with attorneys representing the company and negotiated plans with the state that would allow final bond release. The project involved the redesign of the reclamation plan, drainage, stream restoration, oxide drains and wetlands, as well as construction bid documents, construction management, surveying, and monitoring.

ECSI provided civil, environmental, and mining engineering, geological services, and surveying services to accomplish the long term goal of bringing water quality into compliance with applicable state standards. ECSI also supervised construction and monitored final performance. In negotiating with private landowners and regulatory agencies, ECSI was able to accomplish the final reclamation goal: bringing water quality into compliance with applicable state standards.

Status: Completed

- Key ECSI Personnel:
  Steve Gardner, PE
  Julie Ross, PG, CPG
  Karen Rose, EIT



Area before treatment

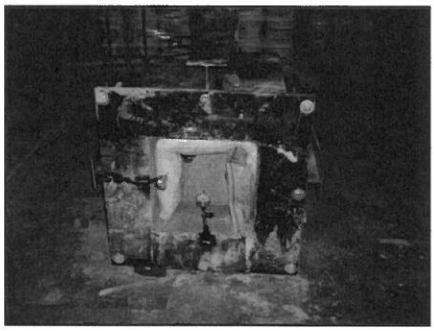


Area after treatment

MINE SEAL DESIGN
STRATA MINE SERVICES

Client: Strata Mine Services
Locations: Nationwide
Services Provided: Engineering Design

MSHA regulatory changes have increased the strength requirements for blast resistance of mine seals from the previous 20-psi design strength to the present 50-psi and 120-psi blast standards.



Strata Mine Services retained ECSI to design seals under the Emergency Temporary Standard (ETS) and under the final ruling. ECSI assembled a team of qualified engineers and technicians to test, design, and calculate what was necessary to submit and receive certification of a mine seal by MSHA. Strata, with the assistance of ECSI, received the first seal approval under the ETS for their seal called the StrataCrete 120-psi Medium Strength Plug Seal. ECSI also designed the 50-psi Plug Seal and the 120-psi Reinforced StrataCrete Mine Seal. Designs under MSHA's final ruling include an installation manual for Operators, Contractors, and MSHA for use in determining the suitability and construction of each seal.



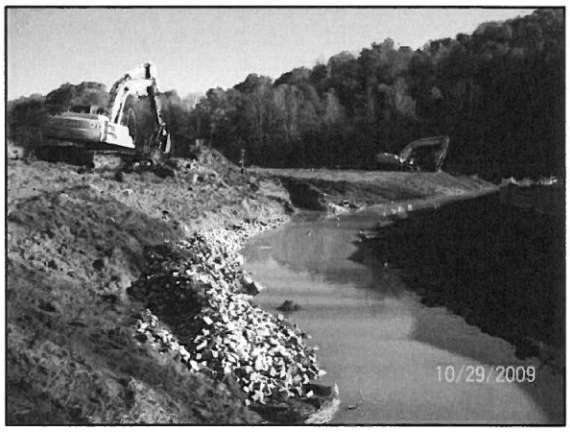
ECSI is continuing to work closely with Strata in other designs such as reinforced plug seals and high strength concrete plug seals so Strata will have a seal applicable to most mining situations.

Status: On-going

- Key ECSI Personnel:
  Steve Gardner, PE, PS
  Charles Reeves, PE

STREAM MITIGATION
EAST FORK LITTLE SANDY

Client: Enviro-Pro, Inc.
Location: Lawrence County, Kentucky
Services Provided: Pre- and Post-Construction Surveys, Construction Inspections



ECSI was subcontracted by Enviro-Pro, Inc. to provide pre- and post-construction surveys, and to act as construction inspector during the construction of this 1.4 mile stream mitigation project. Initially, ECSI conducted pre-design surveys of the entire 10-acre stream valley project area and provided that information to Mactec Engineering & Consulting for use in the design process.

Once the designs were completed, ECSI provided centerline stakeout of the stream structures to be constructed and provided on-site assistance to the construction contractor with the layout and placement of these structures. ECSI's assigned construction inspector was additionally responsible for management and scheduling of the equipment operators and general labor personnel with respect to daily tasks including new channel construction, shaping of the old channel, building instream structures and reclaiming any excess spoil. Tasks were scheduled for proper sequencing of equipment operators while guiding them with stakeout stream channel locations, providing cut and fill stakes, and instream structure locations.



In addition, ECSI performed as-built structure surveys as the job progressed and established horizontal control points for future monitoring of the stream. These as-built surveys were then used to compare the actual construction to the initial survey in the calculation of cut and fill volumes.

Overall length of the stream is 7,242 feet.

- Key ECSI Personnel:
  Andy Willis, PE, PS
  Karen Rose, EIT
  Dale Harrison, PLS, PS
  Gabe Shepherd
  Jacob Shepherd

SEDIMENT CONTROL DESIGN FOR MINE SUPPORT FACILITIES
MINERA PANAMA COPPER MINE

Client: Minera Panama SA
Location: Coclesito, Panama
Services Provided: Sediment Control Design, Hydrologic Evaluation

ECSI, LLC provided hydrologic and sediment control measures (silt fence, diversion channels and sediment weep berms) for several individual mine support areas, including the security entrance area, a 600-man worker encampment compound, a 500-man worker encampment compound, EPCM office and temporary construction camp area, and the tailings management facility Saprolite dump areas associated with the proposed Mina de Cobre Panama copper mine project. The Mina de Cobre Panama mine site is located near Coclesito, approximately 20-kilometers inland from the north coast of the Republic of Panama. The open-pit mine site will consist of three mine pits with a total concession area of over 33,500 acres. Concentrated ore from the mine site will be transported to a port facility through slurry pipelines. Development of the proposed mine has been estimated to cost approximately $5.5B.

In completing the erosion control designs for these support areas, ECSI performed a hydrologic analysis for the individual subcatchment areas, and evaluated the size of weep berm necessary to remove sediment from storm runoff for a 60mm storm rainfall event. Weep berms are an innovative way to collect excess stormwater from the construction site and slowly release flows (through rock filters constructed in the berm) to the surrounding forest for further sediment removal prior to reaching the stream. Diversion channels were proposed as a means of routing the runoff around the construction to the weep berm locations, and profiles were provided for the channels.

In addition to the design of erosion control designs for mine support area, ECSI also designed twenty-nine (29) sediment ponds ranging in size from 1-acre to 100-acres in surface area for the mine and port sites. The sediment ponds were designed to meet specific design criteria and permitting requirements provided by the Owner. Hydrologic analyses were conducted using two different design storms, an 60mm, 24-Hr rainfall event (2-Yr) rainfall event for sedimentology analysis; and a 394mm, 24-Hr (100-Yr) rainfall event for sizing the emergency spillway. Pre-development condition analyses were also conducted to allow comparison of the developed-condition pond discharge rates to existing. Ponds were designed to meet a peak sediment effluent concentration of 1,000 mg/liter.

This project involved:

- Hydrologic analysis of the affected areas and proposed silt fencing, diversion channels and determination of required size of weep berms
- Preparation of CADD drawings for the proposed erosion control measures
- Preparation of report discussing proposed erosion control measures
- Design using metric units of measurement

The erosion control analysis, report and drawings for each area were completed on an expedited schedule, typically 1-week in duration. The accelerated schedule was necessary to meet Client's internal timeline to proceed with facility construction.

Status: Completed

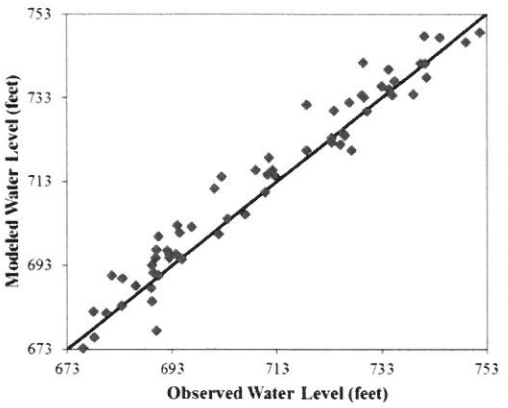
Contract Value: Individual Task Order under $ 375K overall contract.

- Key ECSI Personnel:
  Douglas K. Mynear, PE, LEED AP
  Karen Rose, EIT
  Eric King

GROUNDWATER EVALUATION MODEL
HANSON AGGREGATES MIDWEST

Client: Hanson Aggregates Midwest
Location: Wood County, Ohio
Services Provided: Environmental Engineering and Geological

ECSI, LLC was contracted by Hanson Aggregates Midwest to assess potential impacts on groundwater as a result of dewatering activities from a proposed quarry extension on the northwest side of North Baltimore, Wood County, OH. The proposed quarry is 142 acres in area, with bottom elevation of 580 feet above mean sea level (msl). To evaluate the impacts, ECSI constructed a steady state groundwater flow model for the primary aquifer underlying the quarry and nearby area. The model was based on existing hydrogeological information collected mostly from the Ohio Department of Natural Resources (ODNR) and U.S. Geological Survey (USGS) using U.S. Geological Survey's MODFLOW-2000 software. In this model, the aquifer was conceptualized as a single confined/unconfined layer, covering 100 square miles horizontally and 300 feet vertically. The calibrated model was then used to evaluate potential drawdowns resulting from dewatering activities of the proposed quarry. The model results show the simulated regulatory cone of depression of 10 feet drawdown extends to a maximum distance of approximately four miles from the quarry.



Max. Residual : 12.5 (ft)	Num. of Observations: 63
Min. Residual: -12.6 (ft)	Root Mean Square: 5.1 (ft)
Residual Mean: -2.0 (ft)	Normalized RMS: 6.8 (%)
Abs. Res. Man: 3.9 (ft)	Correlation Coefficient: 0.976

Figure 8. Modeled vs. Observed Water Levels

Status: Completed

- Key ECSI Personnel:
  Andy Willis, PE, PS

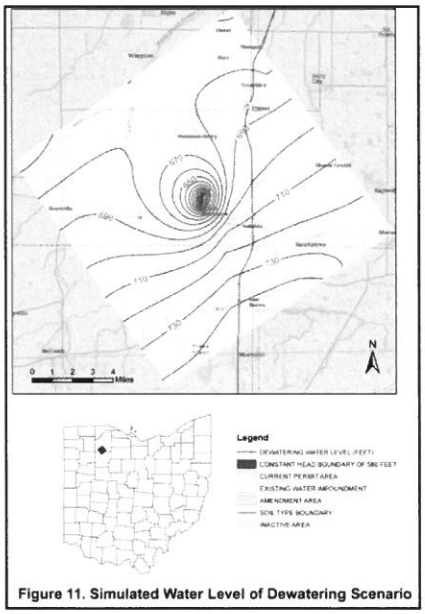


Figure 11. Simulated Water Level of Dewatering Scenario

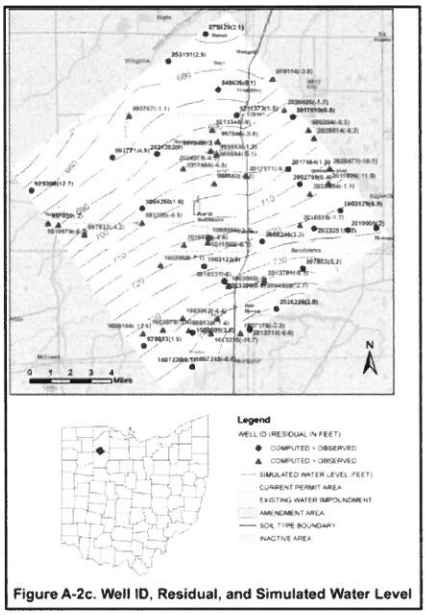


Figure A-2c. Well ID, Residual, and Simulated Water Level

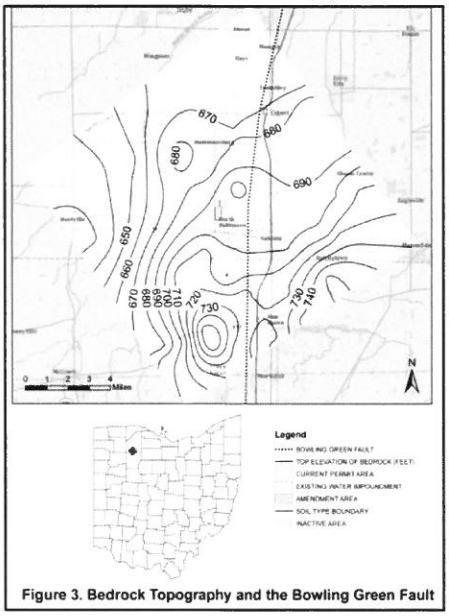


Figure 3. Bedrock Topography and the Bowling Green Fault

ECSI LLC

ENVIRONMENTAL REMEDIATION & STREAM CHANNEL RESTORATION
AUXIER OPEN DUMP CLEANUP

Client: Waste Management, Inc.
Enviro-Pro, Inc.
Location: Floyd County, Kentucky
Services Provided: Engineering and Surveying Assistance



As a subcontractor to Enviro-Pro, Inc., ECSI provided engineering and surveying assistance for the cleanup of the largest, illegal, open dump in the state of Kentucky. Waste Management, Inc. funded this project in cooperation with the Kentucky Natural Resources and Environmental Protection Chapter and CSX Railroad. The reclaimed area was restored to its original contour, with walking trails and an historic Civil War gun emplacement overlooking the Big Sandy River that was uncovered during cleanup. The project involved stream channel restoration, removal of garbage from forest areas with minimal disturbance, and final revegetation.

Status: Completed

Contract Value: $1,000,000

- Key Personnel:
  J. Steven Gardner, PE, PS
  Andy Willis, PE, PS
  Dale Harrison, PS, PLS

SLOPE FAILURE REPAIRS

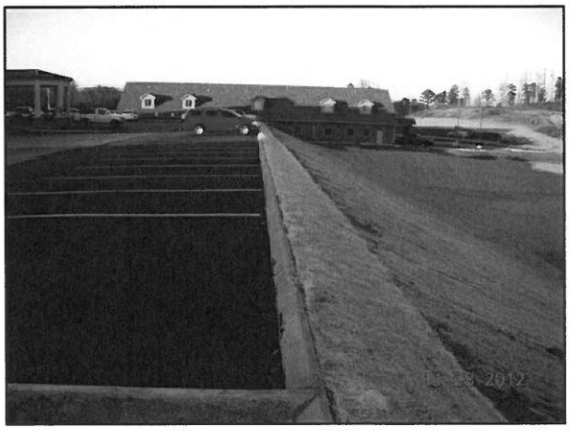
Client: London Mountain View, LLC
Location: London, Kentucky
Services Provided: Civil Engineering Design, Field Surveys, Construction Administration Services



This project involved field surveys, geotechnical investigation and final design of repairs for a failed slope within the Moonbow Medical Office Park located in London, Kentucky. The slope failure had already resulted in severe damage to the parking facilities and potentially threatened the stability of the adjacent orthopedic and sports medicine building. The failed slope was approximately 30-feet in height and was deemed to be the result of improper compaction during initial construction combined with underground water intrusion. ECSI subcontracted for geotechnical drilling services and concluded from those tests that the underlying substrate was adequate to support the slope and associated parking lot.

In order to reconstruct the slope and ensure stability, ECSI proposed a design that would remove the failed slope material; cut benches into the natural ground; install an underdrain system; followed by reconstruction and compaction of the slope with intermittent layers of biaxial polyester geogrid material placed to reinforce the embankment. The construction was accomplished in a very short five (5) week period timeframe to ensure that the repair was completed prior to the onset of winter weather. In addition to the slope reconstruction, the project included the replacement of the concrete curb along the entire slope and adjacent asphalt pavement.

This project involved:



- Field topographic surveys
- Geotechnical drilling and investigation of slope failure
- Final design of slope failure repairs
- Construction administration

Final design plans were submitted in September 2012 and the project was subsequently advertised for construction bids. Construction was completed within five weeks.

Status: Completed

Contract Value: $19,000

- Key ECSI Personnel:
  Douglas K. Mynear, PE, LEED AP
  Fred Eastridge, PE, PLS
  Eric King

GRAMALOTE GOLD MINE, ANGLO GOLD ASHANTI

Client: Sigma, LLC
Location: Providencia, Colombia
Services Provided: Surface water management and erosion control design

ECSI worked as a subconsultant to Sigma, LLC on water and waste material management studies for a large gold mine project planned near Providencia, Colombia. The project will be owned-operated by AngloGold Ashanti Ltd, and is located approximately 225 kilometers northwest of the capital city of Bogotá.

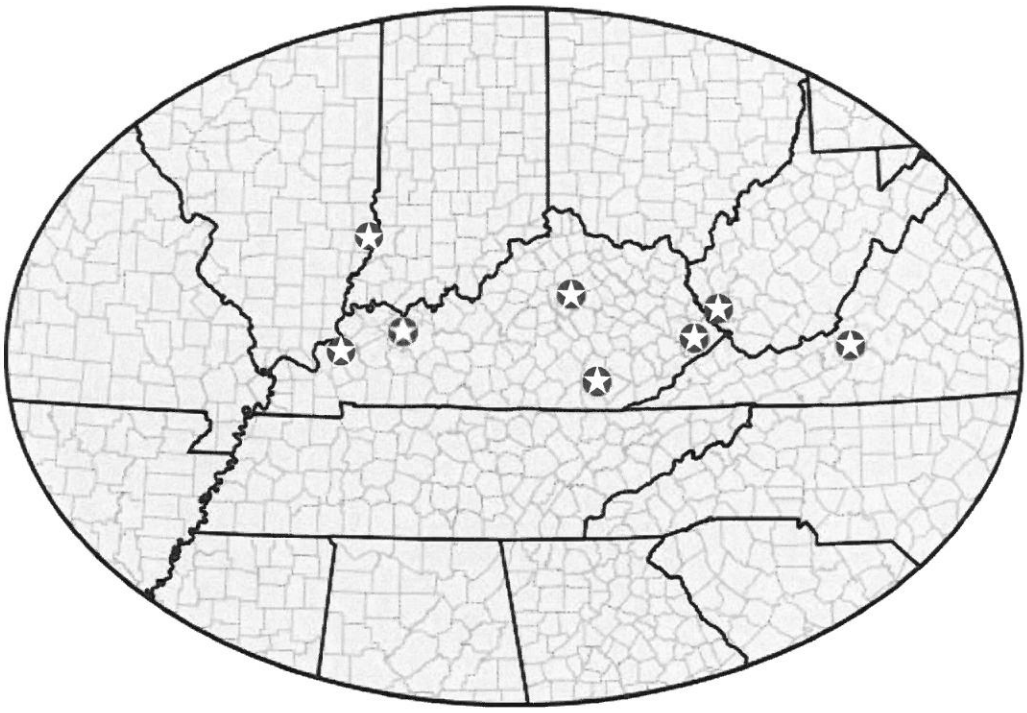
ECSI's tasks on the project involve evaluation and conceptual design of sediment ponds serving the various waste material dumps on the project; and an evaluation of the waste material handling sequence and placement to determine if there was a more cost effective and efficient method.

The first task that ECSI performed was an evaluation of the feasibility study recommendation for routing of the Rio Guacas around the proposed mine pit. The feasibility study recommended the stream be diverted through a 530-meter long by 10-meter diameter tunnel which in turn emptied into a concrete-lined channel leading to the larger Rio Nus waterway. The estimated construction cost for this diversion was approximately $21M. Besides the high construction cost, the proposed route would result in the stream being diverted to a different watershed than existing, and would release flows to the Rio Nus that were not passed through sediment ponds. The ECSI/Sigma team evaluated four conceptual alternative routings for the stream to determine feasibility and potential cost savings. These included two open diversion channel options traversing along either the rim of the Gramalote mine pit or along the first bench of the pit for reconnection with the Rio Guacas downstream of the pit; a shorter/smaller 3-meter diameter tunnel to divert flow back to the Rio Guacas downstream of the pit; and a 15-meter open channel along the approximate shorter tunnel route. These alternatives were presented to the client for consideration as a potential means to save from $5-10M in construction cost.

The ECSI/Sigma team also evaluated the planned placement of the waste rock and low-grade ore stockpiles. These large disposal (132M cubic meter waste rock facility and 10.2M cubic meter low grade ore) stockpiles are used for permanent storage (waste rock) and temporary storage (low-grade ore). The ECSI/Sigma team recognized that the stockpiles could be reconfigured such that up to 10M cubic meters of waste rock material could be diverted to construct a foundation pad upon which the low-grade ore stockpile could be subsequently placed. This diversion of material would reduce the roundtrip haul distance for the 10M cubic meters of material from approximately 8 kilometers to 4 kilometers, thus resulting in a significant cost savings to the project.

With regard to water management, ECSI/Sigma sized and provided conceptual drawings for fourteen (14) sediment ponds serving the mine site. The sediment ponds served catchment areas ranging from 7.5 hectares to 1200 hectares in size. The ponds were designed to provided sediment capture for a 75mm storm event, and to safely pass a 500-yr, 249mm storm event through the associated emergency spillway.

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Mission Statement

"With problems there are always opportunities.

We view problems and ECSI's ability to solve them

a major asset. Looking for solutions that create value

and opportunity is our primary mission."

J. Steven Gardner, P.E.
President & CEO

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