

QUOTATION FOR:

PROCESSING AND IDENTIFICATION OF AQUATIC  
MACROINVERTEBRATE SAMPLES COLLECTED FROM WEST  
VIRGINIA WATERS FOR THE OFFICE OF WATER RESOURCES,  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

RFQ NO: DEP15456

22 June 2011

Prepared for:



Department of Administration  
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DEPARTMENT OF ENVIRONMENTAL PROTECTION  
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## **1.0 Introduction**

### **1.1 ESI**

Environmental Solutions & Innovations, Inc (ESI) as is a small, woman-owned business, as certified by the Small Business Association. We currently are in the process of extending that status to states, cities/municipalities, and various branches of the Federal Government.

ESI focuses on providing services for and assistance with compliance on natural resources issues under associated regulations such as the Clean Water Act, National Environmental Policy Act, and Endangered Species Act. Our services span the spectrum from field data collection through analysis, reporting, impact assessment, and mitigation. We have worked for many private and public clients within the state of West Virginia to provide ecological studies, project impact assessments, documentation, and agency coordination.

### **1.2 The ESI Team**

The project Team consists of ESI as the project lead and prime contractor and Kelly Nolan with Watershed Assessment Associates (WAA) may be subcontracted to provide QA/QC support and chironomid identification.

## **2.0 Project Management**

### **2.1 Project Initiation**

ESI is pleased to submit this proposal in response to the State of West Virginia's Request for Quotation DEP 15456, to provide all instrumentation necessary to identify aquatic organisms found in West Virginia waters for the Office of Water Resources. ESI and our personnel are uniquely qualified to provide the services requested as demonstrated by the following:

- We retain senior aquatic macroinvertebrate taxonomists
- We have processed benthic macroinvertebrate samples from locations throughout the East and Midwest, specifically West Virginia
- Our senior staff has provided litigation support
- Our senior taxonomist and support staff have completed similarly sized projects



- We understand the importance of quality assurance/quality control for projects that ultimately could end up in litigation

Immediately upon project award, the Project Manager for ESI, Mr. Casey Swecker, will open a clear channel of communications with the West Virginia Department of Environmental Protection, Division of Water Resources (WVDEP/DWR) Contracting Officer and/or technical representative to initiate and coordinate project activities, and to establish a working relationship.

## **2.2 Project Personnel and Duties**

The ESI Team has the capacity and expertise to complete the work that will be provided under this contract. Individuals from the ESI Team assigned to this project are experienced with completing studies of benthic macroinvertebrates, chains-of-custody, and participation in large complex projects.

### **2.2.1 Principal-in-Charge**

Dr. Virgil Brack, Jr. is ESI's Principal-in-Charge. He is responsible for assuring the quality of work performed and for committing personnel and other resources to the project. He has 30 years of experience with environmental studies, and has represented many clients from the public and private sector in a professional manner. A short resume is provided in Appendix A for Dr. Brack.

### **2.2.2 Project Manager and QA/QC Coordinator**

Mr. Casey Swecker is responsible for Project Management, interfacing with WVDEP/DWR personnel, oversight of QA/QC procedures, permanently mounting midges on slides once sorted, and sorting of macroinvertebrates. Mr. Swecker has managed many large complex contracts for state and government agencies and understands the importance of organization and quality of work being performed. Mr. Swecker's resume is provided in Appendix A.

### **2.2.3 Technical Oversight: NABS-Certified ID and QA/QC**

Dr. Thomas Jones is responsible for oversight and development of reference and voucher collections, identification of benthic macroinvertebrates once sorted, completion of data sheets, and expert testimony. Dr. Jones has managed many large contracts and completed numerous studies of benthic macroinvertebrates. Dr. Jones is certified by the North American Bethological Society (NABS) for identification down to genus level for Ephemeroptera, Plecoptera, and Trichoptera (EPT) taxa. Dr. Jones's resume is provided in Appendix A.

## **2.3 Large Project Management**

Staff members of the ESI Team have routinely worked on both small and large projects. The work completed under this contract is neither the largest or smallest "bug-picking" project on which they have worked. Drs. Jones and Enz completed a similar project with over 500 samples within the constraints of a similar timeframe. They have also completed large projects in related areas of expertise and



understand the requirements and constraints of an organized, disciplined project. As the size of project increases, requirements for project management and implementation of QA/QC procedures increase commensurately.

### **3.0 Experience: Sort and ID Benthic Macroinvertebrates**

#### **3.1 Staff Experience**

A resume for each staff member and subcontractor discussed below is provided in Appendix A.

##### **3.1.1 Project Manager: Mr. Casey Swecker**

Mr. Casey Swecker has conducted aquatic macroinvertebrate surveys for 9 years and is experienced in EPA's Rapid Bioassessment Protocols (RBP). He has conducted aquatic biological assessments and watershed monitoring in West Virginia, Maryland, Pennsylvania, Ohio, New Jersey, Kentucky, Arkansas, Tennessee, and Virginia. In the lab Mr. Swecker sorts, mounts midges, and identifies macroinvertebrates to the lowest practical taxonomic level, calculates appropriate metrics, and prepares reports for state and federal agencies. Mr. Swecker is pre-qualified by the Ohio Department of Transportation to complete work with freshwater macroinvertebrates and he is co-author of the taxonomic key for Crayfish of Maryland. Mr. Swecker holds numerous state scientific collecting permits and a U.S. Fish and Wildlife Service federal permit to collect over 25 species of federally threatened and endangered freshwater mussels.

##### **3.1.2 Identification: NABS Certified**

###### **3.1.2.1 Dr. Thomas Jones**

ESI's Technical team is lead by Dr. Thomas Jones. Dr. Jones will be responsible for identification of benthic macroinvertebrates once sorted, completion of data sheets, and expert testimony. Dr. Jones is NABS Level II, Eastern Group 2 (EPT) certified to genus level for EPT, and is pursuing NABS, Level II, Group 3 (chironomidae) certification by November 2011. Dr. Jones has worked extensively with macroinvertebrates (including chironomids) in West Virginia. He is recognized for the work he has completed on freshwater mussels, crayfish, and other aquatic insects, including both scholarly pursuits (and peer-review publications) and regulatory acumen. He has worked for a variety of regulatory agencies, or worked for clients subject to regulations of these agencies, including the U.S. EPA, state environmental regulators, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers. In addition to his work with benthic invertebrates, Dr. Jones has worked extensively with many other aquatic organisms – fish and herps, and water quality. These additional areas of expertise reinforce and broaden his understanding and interpretation of



unique or uncommon ecological situations.

### **3.1.2.2 Dr. John Enz**

Dr. John Enz, a well-known entomologist, will be responsible for identification of benthic macroinvertebrates once sorted, completion of data sheets, and expert testimony. Dr. Enz is NABS Level II, Eastern Group 2 (EPT) certified to genus level for EPT taxa, and has managed many large contracts and completed numerous studies of benthic macroinvertebrates. Dr. Enz conducted projects related to aquatic and terrestrial insects in West Virginia and taught aquatic entomology for over 10 years at Alderson-Broaddus College, West Virginia.

### **3.1.2.3 Mr. Kelly Nolan**

Mr. Kelly Nolan will be responsible for identification and mounting of midges (chironomids) once sorted. He may also provide QA/QC support for EPT taxa. He serves as Director of Environmental Services and Senior Taxonomist at Watershed Assessment Associates. He is a NABS certified genus level (eastern and western) EPT and Chironomid taxonomist. Mr. Nolan completed numerous stream bioassessment surveys and provided stream bioassessment and benthic macroinvertebrate taxonomy training to organizations, municipalities, state agencies, private corporations, and educational institutions.

### **3.1.3 Macroinvertebrate Sorting**

ESI will provide individuals experienced with the sorting of benthos in the laboratory, (i.e. bug picking), including individuals who are taking the personal and professional initiative to learn and improve their identification skills. Mr. Casey Swecker, Ms. Erin Basiger, Ms. Sarah Reeves, and Mr. Jason Duffey are available to participate in sorting (bug picking). Each has participated in sorting for a variety of projects, with varying taxonomic skills beyond that required for bug picking. Each views the sorting process as an opportunity to improve their taxonomic skills. Their personal interest adds to the QA/QC procedure, because as new taxon are spotted by sorters, they are brought to the attention of colleagues who are also sorting and to the attention of Drs. Jones and Enz, who complete the IDs, all of which adds to a collective learning experience and is a form of process improvement.

Ms. Erin Basiger is experienced with laboratory processing and identification of freshwater invertebrates to the lowest possible taxonomic group using dichotomous keys and by site. She is completing her Masters thesis on freshwater gastropods, a benthic macroinvertebrate.

Ms. Sarah Reeves has experience processing qualitative and quantitative benthic macroinvertebrate samples collected from lotic and lentic environments. She is responsible for sample chain-of-custody and processing progress through the laboratory, and other QA/QC functions. She participated in sorting samples used to produce a federally required annual report of Kentucky's stream integrity.

Mr. Jason Duffey has extensive experience surveying for aquatic macroinvertebrates using EPA's RBP. He has led and participated in many aquatic biological investigations.

### 3.2 Similar Project Experience

The following is a partial list of representative projects in which ESI personnel were responsible for identification of benthic macroinvertebrates, oversight of sorting, and QA/QC.

<b>Contracting Agency</b>	<b>Summary of Work</b>
West Virginia Department of Environmental Protection	Assessed in-stream stream structures in the Little Coal River using fish, benthic invertebrate, and habitat alteration data collected from a five mile stretch of the river
Acculab	Identified benthic insects and calculated West Virginia Stream Condition Index.
Acculab	Subsampled and identified benthic samples from West Virginia Department of Environmental Protection's long-term study sites
West Virginia Department of Natural Resources	Aquatic insects of the Kanawha and Ohio River
U.S. Army Corps. of Engineers	Ecological Assessment for the Lower Mud River Watershed Project, involving surveys of aquatic vertebrates and macroinvertebrates.
West Virginia EPSCORE and NASA Collaboration	Used optical imaging techniques to develop chironomid identification, a new technology for Insect Identification.
Ohio River Valley Water and Sanitation Commission	GIS mapping and database linking for the ORSANCO benthic insect data.
Ohio River Run	Assessed benthic fish populations using a trawl net; mussels, macroinvertebrates, snails, and substrate were sampled using SCUBA
Falls State Park, West Virginia	Pendleton Lake Backwater Bioassessment - Benthos and fish sampling, habitat assessment, water chemistry, fecal/ E coli, and herpetological diversity



## 4.0 Resumes and NABS Certification

As noted in the section above, Resumes and Certifications of ESI team members are provided in Appendix A as follows:

- Dr. Virgil Brack, Jr.: Project Principal
- Mr. Casey Swecker: Project Manager; QA/QC coordinator; Mollusk and Crayfish Identification; Bug Picker
- Dr. Thomas Jones: EPT NABS Certified Identification and ID QA/QC
- Dr. John Enz: EPT NABS Certified Identification and ID QA/QC
- Mr. Kelly Nolan: EPT/Chironomid NABS Certified Identification and ID QA/QC
- Ms. Erin Basiger: Bug Picker
- Ms. Sarah Reeves: Bug Picker
- Mr. Jason Duffey: Bug Picker

## 5.0 Selected Taxonomic References

The following are a selected list of references regularly used by ESI taxonomists for macroinvertebrate identifications:

- Merritt, R.W., K.W. Cummins, and M.B. Berg (eds.). 2008. An Introduction to the Aquatic Insects of North America. 4th edition/revised edition. Kendall/Hunt Publishing Company, Dubuque, Iowa.
- Peckarsky, B.L., P.R. Fraissinet, M.A. Penton, and D.J. Conklin, Jr. 1990. Freshwater Macroinvertebrates of Northeastern North America. Cornell University Press, Ithaca, New York.
- Pennak, R.W. 1989. Fresh-water Invertebrates of the United States - Protozoa to Mollusca. 3<sup>rd</sup> Edition. John Wiley and Sons, Inc., New York, New York. 628 pp.
- Pfeiffer, J., Kosnicki, E., Bilger, M., Marshall, B.D. and W. Davis. 2008. Taxonomic Aids for Mid-Atlantic Benthic Macroinvertebrates (Ephemeroptera: Baetidae; Pleoptera: Capniidae/Leuctridae; Diptera: Simuliidae). EPA-260-R-08-014. United States Environmental Protection Agency, Office of Environmental Information, Environmental Analysis Division, Washington, DC. Available online at: <http://www.epa.gov/bioindicators/html/publications.html>



- Smith, D.G. 2001. Pennak's Freshwater Invertebrates of the United States: Porifera to Crustacea 4th edition. John Wiley & Sons, New York.
- Jezerinac, R.F., G.W. Stocker, and D.C. Tarter. 1995. The Crayfishes (Decapoda: Cambaridae) of West Virginia. Ohio Biological Survey Bulletin. New Series. Vol. 10, No.1.
- Rogers, D.C. and M. Hill. 2008. Key to the Freshwater Malacostraca (Crustacea) of the MidAtlantic Region. EPA-230-R-08-017. United States Environmental Protection Agency, Office of Environmental Information, Environmental Analysis Division, Washington, DC. Available on-line at: <http://wwwv.epa.gov/bioindicators/pdf/EPA-230-R-08-017KeystotheFreshwaterMalacostracaoftheMid-AtlanticRegion.pdf>
- Tarter, D.C. and R.F. Kirchner. 1978. A new species of *Baetisca* from West Virginia (Ephemeroptera: Baetiscidae). *Entomological News* 189(9-10):209-213.
- Stewart, K.W. and B.P. Stark. 2002. Nymphs of North American stonefly genera (Plecoptera). Second Edition. The Caddis Press, Columbus, OH. 510 pp.
- Epler, J.H. 2006. Identification Manual for the Aquatic and Semi-Aquatic Heteroptera of Florida (Belostomatidae, Corixidae, Gelastocoridae, Gerridae, Hebridae, Hydrometridae, Mesoveliidae, Naucoridae, Nepidae, Notonectidae, Ochteridae, Pleidae, Saldidae, Velidae). Florida Department of Environmental Protection, Division of Water Facilities, Tallahassee, FL.
- Prather, A.L. and J.E. Morse. 2001. Easter Neactic *Rhyacophila* species, with revision of the *Rhyacophila invaria* group (Trichoptera: Rhyacophilidae). *Transactions of the American Entomological Society* 1127:85-166.
- Wiggins, G.B. 1996. Larvae of the North American Caddisfly Genera (Trichoptera). 2nd edition. University of Toronto Press, Toronto, Canada.
- Epler, J.H. 2001. Identification Manual for the Larval Chironomidae (Diptera) of North and South Carolina. North Carolina Department of Environmental and Natural Resources, Division of Water Quality, Raleigh, North Carolina.
- Gelhaus, I.K. 2002. Manual for the Identification of Aquatic Crane Fly Larvae for Southeastern United States. Unpublished.
- Parmalee, P.W. and A.E. Bogan. 1998. The Freshwater Mussels of Tennessee. University of Tennessee Press. Knoxville, Tennessee. 328 pp.

## 6.0 Internal QA / QC Procedures

Effective quality assurance and quality control (QA/QC) procedures and a clear delineation of QA/QC responsibilities are essential to ensure utility of environmental

monitoring data. Quality assurance and control is a continuous process implemented throughout a bioassessment program. All aspects of the study, including field collection, habitat assessment, lab processing, and data analysis are subject to QA/QC procedures. As with any scientific study, quality must be assured before results can be accepted. Quality assurance is accomplished through establishment of thorough investigator training, protocol guidelines, comprehensive field and lab data documentation and management, verification of data reproducibility, and instrument calibration (See Appendix B: ESI's Sorting and Identification QA/QC standards).

As this project focuses on laboratory processing, the following QA/QC procedures will be followed:

- Complete chain-of-custody forms that document receipt of samples provided by the State. The chain-of-custody forms are also used to track sample processing through the lab.
- Sorting efficiency evaluations on 5% of samples
- Re-identification of at least 5% of samples
- Voucher collection – with the exception of the reference collection, all specimens identified in the 200-organism sub-sample will be stored in a single sample vial and submitted to WVDEP/DWR biologists.
- Reference collection – each unique taxon identified during the study will be preserved in an individual vial, labeled, and provided to WVDEP/DWR biologists. This unique collection will represent all taxa identified from all watersheds during the current study.
- Experts will be contacted to verify identifications of taxa not occurring in the reference collection.

## **7.0 Data Recordation and Project Deliverables**

### **7.1 Data Analysis**

No data analysis or reporting is required under this contract – only completed “WVDEP/WAB BENTHIC MACROINVERTEBRATE LAB SHEETS”. Results submitted to WVDEP/DWR will include a bibliography of publications used to aid identification.

### **7.2 Other Deliverables**

In addition to the lab sheets, the following will be supplied to WVDEP/DWR:

- All sample jars, voucher specimens (i.e., all specimens in the 200 organism sub-sample not included in the reference collection), and reference collections (organisms collected from samples that represent each taxon – with confirmation from experts – identified in the study, used to aid in identification of project samples)
- Identification results on paper forms in Excel format, including QA/QC for sorting and identification
- Internal chain-of-custody from the time samples are obtained until results are accepted by WVDEP/DWR

ESI will maintain records of identification for at least 5 years

## **8.0 Reference Collection Development**

ESI will develop a reference collection of macroinvertebrates, consisting of one to several individuals of a taxon, as samples are processed. The individuals will be removed from the voucher sample and placed in the reference collection with sampling location and identification noted on the label. Where a tentative identification has been assigned, the taxon will be compared with a generic representative housed in Dr. Jones', Dr. Enz', and Mr. Nolan's reference collections.

## **9.0 Timetable**

Samples will be collected by WVDEP/DWR, between April and December, and batches of samples (approximately 3 times during sample collection) will be picked up by ESI and transported back to our facilities for sorting and identification. All samples for a year will be sorted, identified, and results submitted to WVDEP/DWR based on the timetable provided:

- 1 April Samples due 31 August
- 31 August Samples due 1 December
- 1 December Samples due 28 February

However, results of smaller, site-specific projects will be completed and made available to WVDEP/DWR within a negotiated time frame of not less than 1 month.

Additional support staff may participate on this project. Their resumes are available upon request.

Questions related to the proposal can be addressed to:

Mr. Casey Swecker, Aquatic Scientist

[CSwecker@environmentalsi.com](mailto:CSwecker@environmentalsi.com)

Phone: (513) 451-1777 x 17

Cell: (304) 633-5808

**APPENDIX A  
RESUMES**



## ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

Résumé

Virgil Brack, Jr., Ph.D.

### QUALIFICATIONS AND EXPERIENCE

Dr. Brack received his MBA from Xavier, Ph.D. in Wildlife Ecology from Purdue University, a Masters in Ecology, and a B.S. Wildlife Science. He is a Certified Wildlife Biologist (The Wildlife Society) and a Certified Senior Ecologist (Ecological Society of America).

He has been assisting clients with environmental compliance requirements for over 30 years and serves as CEO and Principal Scientist of ESI. In this role, he oversees ESI's projects to ensure timely delivery of a quality work product that meets or exceeds project objectives. His experience with many aspects of the natural environment and the regulations that affect them affords him the ability to provide comprehensive project oversight, and his position as principal allows him to commit the corporate resources necessary to meet the needs of our clients.

Dr. Brack has assisted clients meet a large variety of regulatory requirements, from field data collection through data analysis, impact assessment, reporting and permitting, under the Clean Water Act (CWA), National Environmental Policy Act (NEPA), and Endangered Species Act (ESA). Under the CWA he has permitted wetlands for extensive natural gas pipelines and highway projects. He has managed and directed large, multidisciplinary Environmental Impact Statements (EIS), Environmental Assessments (EA), and Categorical Exclusions (CE) under NEPA and under ESA, field studies through consultation under Sec. 7 for production of Biological Assessments and under Sec. 10 habitat conservation Plans, including the implementation of conservation measures. Dr. Brack is certified by INDOT, ODOT, and FHWA for NEPA project Management. He has worked with many lead agencies, such as OSM/state DEPs, FERC, FHWA/state DOTs, U.S. Army COE, USFWS, USFS, FAA, and FCC. He has worked with many aspects of terrestrial (small mammals, birds, reptiles and amphibians, game species, and habitat surveys), and aquatic ecology (fisheries, mussels, aquatic macroinvertebrates, bathymetry, hydrology, and water quality).

Dr. Brack has provided expert testimony for clients and understands the requirements for professionalism and quality workmanship. He is a primary author of dozens of peer-reviewed articles published in international, regional, and state professional journals.



## **ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.**

**Résumé**

**Casey David Swecker**

### **EDUCATION**

B.S., Environmental Science, Marshall University, 2005

M.S., Biology/Watershed Resource Science, Marshall University, 2008. Thesis: The Status and Trends of Invasive Crayfishes in West Virginia.

### **CERTIFICATIONS AND TRAINING**

YMCA Open Water Scuba Certification –1997

PADI Equipment Specialist Certification

PADI Advanced Open Water Diver Certification

PADI Rescue Diver Certification

PADI Dry Suit Specialist Certification

PADI Dive Master Certification – 2004

Divers Alert Network (DAN) Oxygen Provider Certification – updated 2009

First Responder Primary and Secondary Care – updated 2009

First Responder CPR and AED Certification – updated 2009

Introduction to Biocriteria – 2008

Ohio Credible Data Law Level 2 QHEI Training – 2008

DeTect Inc, Merlin Wind Energy and Environmental Merlin Avian Radar System Training – 2009

Ecological Training, Ohio Department of Transportation, 2011

Maryland Biological Stream Survey Spring Sampling Training, 2011

### **QUALIFICATIONS AND EXPERIENCE**

Mr. Swecker is involved in a variety of aquatic projects, working with fish, mussels, and aquatic invertebrates. He completes surveys in the eastern United States, predominantly in West Virginia, Pennsylvania, New Jersey, Kentucky, Indiana, Maryland, and Ohio. He regularly uses a variety of ecological field techniques, including: habitat assessment, seining, electrofishing (boat and backpack), trawling, water quality sampling, benthic macroinvertebrate sampling, pebble counts and other substrate classification methods, Rapid Bioassessment Protocol, Rosgen Classifications, GPS (including Trimble units) depth sounding, and underwater photography and video. Mr. Swecker is a skilled taxonomist, he is federally permitted and holds multiple state permits to identify and collect crayfish, mussels, fish, and macroinvertebrates. He is SCUBA certified as a Dive Master and coordinates ESI's dive team for freshwater mussel survey projects.

In addition to field work, Mr. Swecker is a skilled GIS technician, producing maps for a variety of projects. He is familiar with ESRI GIS, Arcmap, Arcscene, spatial analyst tools, database management (Excel & Access), and has developed bathymetric mapping using GIS and depth sounders.

Mr. Swecker is an experienced public speaker, having presented a significant number of papers to professional societies such as American Fisheries Society, Freshwater Mollusk Conservation Society, American Benthological Society, Maryland Department of Natural Resources, and the West Virginia Endangered Species Workgroup.

He is primary author of "Key to the crayfish of Maryland" published by the Maryland Department of Natural Resources in 2010. He is familiar with data analysis and authors technical reports.

## **SELECT PROJECT EXPERIENCE**

**Biologist** – West Virginia Department of Environmental Protection. Stream Restoration Project in the Little Coal River, West Virginia. Four miles of stream were being restored with structures (cross vanes, J-hooks, and boulder clusters). Assisted with biological assessment of stream before and after construction (YSI deployment for water chemistry, mussel and snail survey, IDEXX bacteria samples, electrofishing study to determine fish density and composition, protocol for benthic macro-invertebrate collections and identification)

**Biologist** – Ohio River Run. Conducted sampling in 981 miles of the Ohio River from Pittsburgh, Pennsylvania to Cairo, Illinois. Sites were chosen at random and sampled over 14 days. Benthic fish populations were assessed using a trawl net; mussels, macroinvertebrates, snails, and substrate were sampled using SCUBA. Bacteria samples were collected and analyzed to assess antibiotic resistant bacteria, fecal contamination, and e-coli. Algae were sampled at the rivers surface and bottom. Crayfish were sampled by hand, net, or in samples by SCUBA. A live specimen of orange-footed pimpleback mussel (*Plethobasus cooperianus*), not collected in this area since the early 1900s, was discovered. Recently dead shells of the federal endangered (*Potamilius capax*) the fat pocketbook were collected from the lower Ohio.

**Project Manager** – Pendleton Lake Backwater Bioassessment. Participated in bioassessment for upland freshwater lake system in Falls State Park, West Virginia. Responsible for benthos and fish sampling, habitat assessment, water chemistry, fecal/ E coli, and herpetological diversity. Supervised three undergraduate students.

**Biologist** – West Virginia Department of Natural Resources Non-game Grant. Participated in bioassessment of macroinvertebrate and Odonata species at four sites along the Ohio and Kanawha Rivers. Set light traps and collected adult macroinvertebrates. Supervised three undergraduate students.

**Biologist** – Research Laboratory. Identification of fish to species level, including minnows, darters and chubs. Responsible for mounting midges/chironomids on slides for identification. Also sorted benthic macroinvertebrates from river samples, tallied individuals and identified to order.

**Biologist** – Acculab LLC. Benthic insect identification. Separated benthic invertebrates from debris, enumerated and performed basic identification to order.

**Biologist** – West Virginia non-game grant. Prepared dragon fly access data base.



**Biologist** – EPA Region III, WV DNR, PA FBC, Rotenone Survey. Assisted with fish survey using rotenone in lock chamber on the Monongahela River in Morgantown, West Virginia. Responsibilities included fish collection and identification.

**Project Supervisor** – Equitrans, LP, Sunrise Pipeline. Conducted complete coverage and buffer transect assessments, streambank investigation, and habitat assessment for endangered mussels at a proposed pipeline stream crossing in Wetzel County, West Virginia. Responsibilities included SCUBA dry suit diving, species identification, processing, analysis, and reporting.

**Project Manager** – Dominion Transmission, Inc, Lightburn Extraction Plant. Conducted complete coverage and buffer transect assessments, streambank investigation, and habitat assessment for endangered mussels at three proposed pipeline stream crossings in Lewis County, West Virginia. Responsibilities included SCUBA dry suit diving, species identification, processing, analysis, and reporting.

**Project Manager** – U.S. Army Corps of Engineers, Kanawha River Habitat Structure Assessment. Assisted with project through Marshall University to evaluate habitat in the Kanawha River in West Virginia. Assessed adult fish, juvenile fish, and larval fish utilization of instream structures. Collected data on substrates and sedimentation rates. Duties included diving to retrieve sediment monitoring equipment.

**Biologist** – Ohio River Valley Water Sanitation Commission (ORSANCO). Conducted an investigation to determine the benefits of benthic trawling as a means of further characterizing the status and distribution of Ohio River fish communities. Duties include water quality sampling, fish identification, Sontec River-Cat surveyor deployment and analysis of 7 pools of the Ohio River.

**Biologist** – Wastewater Treatment Plant. Participated in survey for crayfish in Pocahontas County, West Virginia to determine and evaluate potential impacts on species from sewage treatment plant. Duties included GIS mapping along with CAD overlays. Developed report tables and figures.

**Project Manager** – West Virginia Division of Natural Resources Non-game Grant. Participated in project to determine impact and distribution of invasive crayfish on native crayfish communities in West Virginia “With emphasis on the Eastern Panhandle, and The Kanawha River”. Responsibilities included proposal writing, obtaining collection permits, species collection and identification. Contributing author for technical report.

**Dive Supervisor** – West Virginia Department of Natural Resources Non-game Grant. Responsible for diving transects in main stem Kanawha River to survey for freshwater mussels, assess habitat, and pebble counts.

**Biologist** – U.S. National Parks Service. Responsible for scuba diving transects in selected locations in the New River, West Virginia from Thurmond to Hinton to determine freshwater mussel distribution in the New River Gorge National Scenic River.

**Project Manager** – West Virginia National Parks Service Grant. Responsibilities included overseeing crayfish distribution survey throughout the New River Gorge Park. Tasks included species collection and identification, report writing and database development in GIS Arc-map.

**Dive Supervisor** – Proposed Pipeline Crossing. Responsible for diving transects to sample substrate for juvenile mussels in the Kanawha River near Boomer, West Virginia.

**Project Supervisor** – Tennessee Gas Pipeline, Northeast Upgrade. Conducted habitat assessments for the federally endangered dwarf wedgemussel in New Jersey. Conducted surveys for federal and state listed mussels in the Susquehanna and Delaware rivers and Wyalusing Creek in Pennsylvania, and Big Flat Brook and Ringwood Creek in New Jersey. Surveys were completed following Smith, et al. 2001 Allegheny River Mussel Survey protocol. Responsibilities included protocol implementation, project and agency coordination, SCUBA and surface supply air, dry suit diving, species identification, processing, analysis, and reporting.

**Project Supervisor**– Tennessee Gas Pipeline Company, 300 Line. Conducted mussel habitat assessment at proposed pipeline crossing on the Wallkill River, Wallkill River National Wildlife Refuge, Sussex County, New Jersey. Evaluated abiotic (stream morphology, substrate, condition) and biotic (vegetation, riparian zone, presence/absence of live or dead mussels) factors along 200-foot reach of stream to determine suitability for native unionid mussels potentially impacted by general construction activities. Conducted mussel survey at the proposed pipeline crossing and collected, tagged, and relocated over 750 live individuals, including state threatened eastern lampmussel, triangle floater, and creeper (a NJ species of special concern creeper). Developed and implemented a monthly monitoring plan to assess the relocated population. Responsibilities include, monitoring plan development, project and agency coordination, SCUBA, dry suit diving, species identification, processing, analysis, and reporting.

**Project Supervisor** – Williams Gas Pipeline, Transco Mid-South Upgrade. Conducted habitat assessments for endangered fish, mussels, and snails along four proposed pipeline loops in Davidson, Gaston, and Rowan counties in North Carolina; and Rockford and Randolph counties in Alabama. Responsibilities included species identification, processing, analysis, and reporting.

**Project Supervisor** – Williams Gas Pipeline Midstream-Springville Gathering. Conducted habitat assessments for freshwater mussels on streams crossed by project in Susquehanna, Luzerne, and Wyoming counties, Pennsylvania.

**Project Manager** – Huntington Marine Service, Inc. Conducted endangered mussel survey for a proposed barge fleet facility on the Ohio River. Employed methods adopted from the Draft Protocol for Mussel Surveys in the Ohio River, (Ohio River Valley Ecosystem Mollusk Subgroup -clarified April 2004) and SCUBA to survey for mussels along approximately 3000 square meters of stream bottom. Responsibilities include directing field efforts, client/agency coordination, identification, data analysis and technical report writing.

**Project Manager** – U.S. Army Corps of Engineers, Memphis District. Conducted survey for endangered mussels along approximately 60 miles of the White River in Arkansas for a proposed maintenance dredging project. Managed all aspects of project

including direction of field efforts, reporting, and client/agency coordination. Responsibilities also include SCUBA, species identification, and processing.

**Biologist** – Pennsylvania Boat and Fish Commission. Participated in an assessment of mussel populations in the Allegheny River in Pennsylvania. Responsibilities included diving for unionids mussels, identifications, replacement, and substrate estimates. Collected nine specimens of the rare salamander mussel.

## **PUBLICATIONS**

Swecker, C. D., T. D. Jones, J. V. Kilian, and L. F. Roberson. 2010. Key to the crayfish of Maryland. Maryland Department of Natural Resources, Anapolis, Maryland. 35 pp.

Swecker, C. D., T.G. Jones, K. Donahue II, .D. Mckinney, and G.D. Smith. 2009. The extirpation of *Orconectes limosus* (Spinycheek Crayfish) populations in West Virginia. Conservation, Biology, and Natural History of North American Crayfishes, Southeastern Naturalist 8 (Special Issue 3):149–158.

## **GRANTS**

Mr. Swecker has received numerous grants from institutions such as Maryland Department of Natural Resources, West Virginia Department of Resources, and the National Park Service for the study of crayfish in the Kanawha, Slaty Fork, and New Rivers.

## **PROFESSIONAL AFFILIATIONS**

Freshwater Mollusk Conservation Society (FMCS)  
Professional Association of Diving Instructors (PADI), Divemaster  
Association of South Eastern Biologists Student Member (ASB)  
Ohio River Basin Consortium for Research and Education (ORBCRE) Student Member  
Marshall University Scuba Club, (2006 – 2007) President  
Gamma Beta Phi Honors Fraternity  
American Fisheries Society (AFS)  
North American Benthological Society (NABS)



## ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

Résumé

Thomas G. Jones, Ph.D.

### EDUCATION

Ph.D., Environmental Science, University of Louisville, 1997

M.S., Biology, Marshall University, 1992

B.S., Biology, Marshall University, 1990

### CERTIFICATIONS AND TRAINING

North American Benthological Society Taxonomic Certification, 2011 (5-year certificate)

PADI SCUBA Instructor #191450

First Responder Instructor- CPR/AED/First Aid- Adult/child/infant

Divers Alert Network (DAN) Instructor o2/O2 ADV/REMO o2/O2 provider  
aquatics/Hazardous Marine Life/AEDs/Neuro

Marshall University Dive Safety officer

Captain of Inland waterways and western rivers 100 ton vessel (commercial license  
applied for to U.S. Coast Guard)

### QUALIFICATIONS AND EXPERIENCE

Dr. Jones is an aquatic ecologist, a professor at Marshall University and a well-recognized and well-respected authority in the scientific community. His specialties include aquatic ecology and crayfish, aquatic insects, and mussel surveys. He has participated in various projects involving pipeline and transportation corridor investigations. Dr. Jones' extensive experience includes biomonitoring, aquatic surveys, fish community assessments, and life history studies for both private industry and federal and state agencies.

Dr. Jones is fully versed in the study design, sampling, identification, and analysis of **benthic invertebrates** from large rivers to small streams with **over 20 years** experience identifying most orders of benthics to genus or lower, including chironmids. He is also fully versed in the study design, sampling, identification, and analysis of fish data from large rivers to small streams and has used all types of collecting gear including boat electro-fishing, gill nets, hoopnets, trawling, backpack shocking, and siening. Dr. Jones has collected and analyzed mussel data from large rivers to small streams using sampling techniques including SCUBA, surface supply, snorkeling, brail, view bucket, and trawling/dredging. He has utilized both Hydrolab and YSI datasondes for remote water quality data collection and hydro-acoustic equipment (Sontek River Surveyor) for velocity and bathymetric surveys. Dr. Jones' computer skills include use of GIS, video editing, SPSS, and PC-ORD.

Dr. Jones serves as co-chair of the outreach committee of the Freshwater Mollusk Conservation Society and sits on the Board of Trustees for the Ohio River Basin Consortium for Research and Education. He is a member of the steering council and science committee member for Ohio River Basin Fish Habitat Partnership and serves as an advisor to Marshall University subchapter of the American Fisheries Society.

Dr. Jones has authored numerous peer-reviewed papers. He is an accomplished public speaker and has conducted presentations at professional scientific association meetings and symposiums.

#### **SELECT PROJECT EXPERIENCE:**

**Principal Scientist** – West Virginia Department of Environmental Protection. Assessed in-stream stream structures in the Little Coal River using fish, benthic invertebrate, and habitat alteration data collected from a five mile stretch of the river.

**Principal Scientist** – Various Consultants. Identified Chironomidae for stream biomonitoring standards.

**Principal Scientist** – Acculab. Identified benthic insects and calculated West Virginia Stream Condition Index.

**Principal Scientist** – West Virginia Department of Natural Resources non-game. Aquatic insects of the Kanawha and Ohio River, emphasis on adult dragonfly's and EPT species.

**Principal Scientist** – Ohio River Valley Water and Sanitation Commission. GIS mapping and database linking for the ORSANCO benthic insect data.

**Principal Scientist** – Acculab Corporation. Subsampled and identified benthic samples from West Virginia Department of Environmental Protection's long-term study sites.

**Principal Scientist** – West Virginia Department of Environmental Protection. Determined if West Virginia stream condition index (WVSCI) exhibited seasonal trends in raw data and calculated metrics.

**Aquatic Ecologist** – Benthic insect identification at multiple locations (including the Ohio River)

**Principal Scientist** – U.S. Army Corps. of Engineers. Ecological Assessment for the Lower Mud River Watershed Project, involving surveys of aquatic vertebrates and macroinvertebrates.

**Principal Scientist** – West Virginia EPSCORE and NASA Collaboration. Used optical imaging techniques to develop chironomid identification, a new technology for Insect Identification.

**Principal Scientist** – Surveys. Subsampled and identified benthic insects.

**Principal Scientist** – National Park Service, Mammoth Cave National Park. Completed faunal inventory of subterranean streams and development of a cave aquatic biological monitoring program using a modified index of biotic integrity.

**Principal Scientist** – U.S. Army Corps of Engineers. Conducted assessment of in-stream structures on the Kanawha River. Assessed adult fish, juvenile fish, and larval fish utilization of instream structures. Collected data on substrates and sedimentation rates.

**Principal Scientist** – West Virginia Department of Natural Resources: 2006. Assessed impact and distribution of invasive crayfish on native crayfish communities in West Virginia with emphasis on the Eastern Panhandle, and the Kanawha River.

**Principal Scientist** – Confidential client. Determined distribution of the crayfish *Cambarus elkensis* in Slatyfork, Elk River drainage in West Virginia.

**Principal Scientist** – West Virginia Department of Natural Resources. Ongoing fish community surveys on the Ohio River in/near Huntington, West Virginia.

**Principal Scientist** – West Virginia Department of Transportation. Mussel surveys at highway bridges over numerous large rivers (Gyandotte, Ohio, Little Kanawha, and Elk Rivers) in West Virginia

**Aquatic Biologist** – West Virginia Department of Natural Resources and Rahall Transportation Institute. Pre-construction Assessment of Wetlands to be built along the Tolsia Highway.

**Principal Scientist** – West Virginia Department of Transportation and Rahall Transportation Institute. Study of road culverts as barriers to fish migration in West Virginia headwater streams.

**Principal Scientist** – Ohio River Valley Water and Sanitation Commission. Cooperative fish community assessment using boat electro-fishing techniques along the Ohio River and Kanawha River – ORSANCO.

**Principal Scientist** – West Virginia Department of Natural Resources. *Cambarus veteranus* 11 years later: A resurvey of the known *C. veteranus* localities in West Virginia .

**Aquatic Biologist** – West Virginia Department of Transportation. Wetland Assessment for sixteen DOT created wetlands along transportation routes.

**Aquatic Biologist** – West Virginia Department of Transportation. The Corridor H Stream Monitoring Program .

**Aquatic Biologist** – U.S. Department of Agriculture. Aquaculture using acid mine drainage (AMD) waters in West Virginia.

## REPORTS AND PUBLICATIONS

Swecker, C. D., T. G. Jones, K. D. Donahue, D. McKinney, and G. Smith 2009. The Extirpation of *Orconectes limosus* (Spinycheek Crayfish) Populations in West Virginia. Conservation, Biology, and Natural History of North American Crayfishes Southeastern Naturalist 8(Special Issue 3): 149-158.

Jones, T. G., K. B. Channel, S.E. Collins, J. Enz, and M. Stinson. 2009. Possible extirpation of the Big Sandy crayfish, *Cambarus veteranus*, from West Virginia. American Fisheries Society special publication (accepted).

Swecker, C., T. G. Jones, J. Kilian, and L. Roberson. 2009. The Crayfishes of Maryland. Maryland Department of Natural Resources special publication. 33 pages color photographs.

Simmons, J. A., E. R. Lawrence, and T. G. Jones. 2005. "Treated and Untreated AMD Effects on Stream Periphyton Biomass, Leaf Decomposition, and Macroinvertebrate Diversity" Journal of Freshwater Ecology 20:413-424.

Pearson, William D., Thomas G. Jones, and Charles H. Boston. 1996. How many cavefishes are there in Mammoth Cave National Park?, pp.49-64. In:

Proceedings of Mammoth Cave National Park=s Fifth Science Conference.  
Mammoth Cave National Park, Mammoth Cave City, Kentucky.

Jones, Thomas G., William D. Pearson, and Charles G. Boston. 1995. Community structure of selected subterranean aquatic habitats in and around Mammoth Cave National Park, pp. 39-59. In: Proceedings of Mammoth Cave National Park=s Fourth Science Conference. Mammoth Cave National Park, Mammoth Cave City, Kentucky.

Yeager, Mindy, Tom Jones, and Donald Tarter. 1991. Reproductive biology of a disjunct population of the central mudminnow, *Umbra limi* (Kirtland), in the Greenbottom Wildlife Management Area, Cabell County, West Virginia. pp. 54-60. Proceedings from the West Virginia Academy of Science.

Cammarata, K., R. Miller, B. Edinger, R. Fortney, and T. G. Jones. 1999. Corridor H stream monitoring study. 1998 Annual Report. State Project # x142-H-38-.9905.

### **PRESENTATIONS**

Dr. Jones has authored and co-authored over 60 presentations whose wide-ranging topics included trawling techniques, monitoring protocols, substrate mapping, fish, crayfish, and macroinvertebrate sampling, habitat prediction, and species characterization, among others. These were presented to numerous professional aquatic biology organizations such as West Virginia Academy of Science, North American Benthological Society, Appalachian Stream Conference, American Fisheries Society, Freshwater Mollusk Conservation Society, Maryland Department of Natural Resources, Ohio River Basin Consortium for Research and Education, American Institute of Biological Sciences, Mammoth Cave National Park Science Conference, Association of Southeastern Biologists, and others.

### **PROFESSIONAL MEMBERSHIPS**

National Science Teachers Association  
Professional Association of Diving Instructors (PADI), Instructor  
Associate member of American Academy of Underwater Sciences  
American Fisheries Society  
North American Benthological Society  
National Speleological Society, Biology Section



## ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

Résumé

John J. Enz, Ph.D.

### EDUCATION

Ph.D., Environmental Biology, University of Louisville, 1998 Dissertation: "Life History, Reproductive Biology, and Pollination Ecology of Virginia Bluebells, *Mertensia virginica*"

M.S., Biology, University of Texas at El Paso, 1989. Thesis: "Metazoan Parasites of the Lesser Yellowlegs, *Tringa flavipes*"

B.S., Biology, Cameron University, 1988

### CERTIFICATION

North American Benthological Society Taxonomic Certification, 2011 (5-year certificate)

### QUALIFICATIONS AND EXPERIENCE

Dr. Enz is an Entomologist and is a well-recognized and well-respected authority in the scientific community and is experienced with all aquatic taxa. His particular specialties include studies of larval and adult aquatic macroinvertebrates and lepidopterans. He has been awarded numerous grants and contracts for species collection and identification.

Dr. Enz's field experience includes many types of field collection methods for biological data gathering regarding mammal, reptile, vegetation, and mussel surveys. He is familiar with various methods for both lotic and lentic collection of stream macroinvertebrates and has participated in observational surveying, light traps, moth sheets, and preservation of lepidopterans. In addition to U.S. fieldwork, Dr. Enz has led several international study trips in Central America, Netherland Antilles, Australia, and South Africa.

Dr. Enz is an Associate Professor and Chair of the Natural Sciences Division at Alderson-Broadus College, serves on several academic committees associated with the university, and is an active member of numerous professional organizations.

### SELECT PROJECT EXPERIENCE

**Ecologist** – Fort Bliss Army Base, Environmental Management Office. Responsible for collecting native plants and maintaining herbarium, filing scheduling and clearance forms with range command for all field work, producing over 300 maps of study sites from aerial photography negatives, photographing all study sites, utilizing remote sensing techniques to map vegetation types, developing SAS computer programs to organize, sort, and catalog project data, performing field studies on wind erosion, vegetation recovery, and animal populations, writing and submitting technical reports, monitoring endangered cacti.

**Biologist** – Nature Conservancy. Completed moth survey of several cypress swamps in southeast Indiana.



**Biologist** – Pine Mountain State Park. Completed lepidoptera survey in Kentucky.

**Volunteer** – North American Butterfly Association: Annually. Participate in annual 4<sup>th</sup> of July Butterfly Count .

**Biologist** – Bernheim Forest Preserve. Assisted with dragonfly surveys in Kentucky.

**Biologist** – West Virginia Department of Natural Resources. Conducted dragonfly surveys in four counties in West Virginia.

**Biologist** – West Virginia Department of Natural Resources. Mapped dragonfly collection sites using ArcView GIS

**Biologist** – West Virginia Department of Natural Resources. Served as West Virginia state verifier for statewide Odonate survey.

### TEACHING EXPERIENCE

**Chairperson** – Alderson-Broaddus College, Division of Natural Sciences: 2002. responsibilities included preparing teaching assignments and reports, resolving faculty/student conflicts, supervising budgets, mentoring faculty.

**Associate Professor** – Alderson-Broaddus College, Division of Natural Sciences: 1998-2011. Responsibilities include teaching 12-20 hours of biology courses each semester including Biology, Plant Biology, Aquatic Entomology, Anatomy and Physiology I, II, Field Biology, Study Abroad courses. Advising students in career paths of Biology. Supervising 25 undergraduate student research projects including topics such as: Making of Anatomy CD ROM study aid, Feeding preferences of Stoneflies, Botanical surveys, Feeding preferences of Dragonfly larvae, County wide dragonfly survey, Stream Bioassessment, Terrestrial insect collections, Pollination Biology, Digital imaging.

### PRESENTATIONS AND LECTURES

Annual meeting of the American Society of Parasitologists, 1989. "Metazoan Parasites of the Lesser Yellowlegs, *Tringa flavipes*."

University of Louisville Graduate Student Symposium, 1995. "Possible Beetle Pollination of the Trout Lily, *Erythronium americanum*."

University of Louisville Graduate Student Symposium, 1996. "Reproductive Biology of Virginia Bluebells, *Mertensia virginica*."

Midwestern Ecology and Evolution Conference. 1997. "Effect of nectar thieves on seed set of Virginia Bluebells, *Mertensia virginica*."

West Virginia Academy of Science Conference. 2001. "Dragonflies of Barbour, Upshur and Taylor Counties, WV."

Annual meeting of the American Botanical Society of America. 2001. " Nectar robbers and non-nectar robbers: Their visitation rates and their effects on seed set in Virginia Bluebells, *Mertensia virginica* (L.) Pers".

West Virginia Department of Natural Resources. " The Dragonflies of West Virginia".

West Virginia Research Day at the Capitol. "A survey of Dragonflies and Damselflies (Odonata) of Webster County, West Virginia.

Several presentations on insects / reptiles to local schools.

Several guest lectures at Marshall University, Huntington, WV on Tropical Ecology, Tropical Insects and International Travel.

### **GRANTS AND AWARDS**

Center for Environmental Studies (C.E.S.), grant for study of Reproductive Biology of Virginia Bluebells, *Mertensia virginica*.

Nature Conservancy, grant for study of Moth Fauna of 3 Southwestern Indiana Cypress Swamps.

Metropolitan Sewer District, Stream Division. Identification of stream macroinvertebrates.

Potesta Environmental Inc. (Dr. Thomas Jones and Dr. John Enz). Stream sample processing and macroinvertebrate identification.

Nongame Wildlife and Natural Heritage Program of the West Virginia Department of Natural Resources. "Survey of the Dragonflies of Barbour, Taylor, and Upshur Counties, West Virginia".

West Virginia Department of Natural Resources. "Evaluation of stream quality and population survey for the Crayfish, Cambarus veteranus at 16 historical sites in Southern West Virginia".

NASA/EPSCOR. "Taxonomic Identification of Aquatic Chironomidae Midge Larvae by means of Digital Imaging". Collaborative grant with Marshall University.

Nongame Wildlife and Natural Heritage Program of the West Virginia Department of Natural Resources. "Survey of the Dragonflies of Webster County, West Virginia".

Department of Environmental Protection. "Identification of Chironomidae from West Virginia Streams."

Acculab Inc., Mt. Gay, WV. Aquatic insect enumeration and statistical analysis.

West Virginia Department of Natural Resources. "Arcview GIS mapping of the Dragonfly collection sites".

West Virginia Department of Natural Resources. "Water Quality analysis and monitoring of Pleasant Creek Wetlands, Barbour County, WV with Seasonal analysis of the Macroinvertebrate Community".

West Virginia Department of Natural Resources. "Identification of Adult Odonata from West Virginia".

### **PROFESSIONAL AFFILIATIONS**

*Active Member:*

Botanical Society of America  
West Virginia Academy of Science  
Ohio Odonate Society  
Dragonfly Society of America,  
The Lepidopterists' Society  
Ohio Lepidopterists  
Anatomy and Physiology Society of America  
Tygart Valley Watershed Association  
PALS Stream protection group  
North American Benthological Society

*Faculty Advisor:*

Zelta Alpha Gamma Honor Society  
Outdoor Club  
Epsilon Tau Eta Sigma Fraternity

# TAXONOMIC CERTIFICATION

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*This five year certification is awarded to*

***JOHN ENZ***

*In recognition of excellence for specimen identification to Genus for*

*Eastern*

*Ephemeroptera, Plecoptera & Trichoptera*

**NORTH AMERICAN BENTHOLOGICAL SOCIETY**



*Murray Colbo*

Dr. Murray Colbo

June, 2016

Date of Expiry

**SUMMARY OF QUALIFICATIONS**

Experienced field biologist, skilled aquatic macroinvertebrate taxonomist, and innovative educator who excels as the Director of Environmental Services at Watershed Assessment Associates. Manages projects from inception to completion, coordinates and supervises field operations, directs laboratory operations, and maintains both field and laboratory quality control. Areas of expertise include watershed assessments, stream biomonitoring, benthic macroinvertebrate taxonomy, development of diverse professional programs related to biomonitoring and taxonomy.

**EDUCATION**

<b>Bachelor of Science, Biology</b>	<b>2005</b>
State University of New York at Albany, Albany, New York	
<b>Associates in Applied Science</b>	<b>1986</b>
SUNY Adirondack Community College, Queensbury, New York	
<b>Bachelor of Arts</b>	<b>1983</b>
Mississippi College, Clinton, Mississippi	

**CERTIFICATIONS**

North American Benthological Society certified Level II, Group II, Eastern and Western EPT  
North American Benthological Society certified Level II, Group III, Eastern and Western Chironomidae

**RELEVANT WORK EXPERIENCE**

Taxonomy: QA/QC for West Virginia and Massachusetts Department of Environmental Protection

- Performed benthic macroinvertebrate taxonomy for the statewide Massachusetts biomonitoring water quality program
- Provided QA/QC for macroinvertebrate taxonomy
- Contact: Robert Nuzzo 508-767-2809

Field biologist/taxonomist for Academy of Natural Sciences (agent of NYS Department of Environmental Conservation) 7/08-2/09

- Project objective was to aid development of biotic nutrient criteria for wadeable streams and rivers
- Involved collection and analysis of data from 100 wadeable streams and rivers throughout the NY state
- Contact: Roger Thomas, The Patrick Center for Environmental Research, Academy of Natural Sciences 215-299-1105

Taxonomist for Pennsylvania Department of Environmental Protection 7/08-4/09

- Project evaluated macroinvertebrate specimens for the EMAP-GRE grant for the PA DEP southwest regional office
- Contact: Rick Spear 412-600-3943

Field Biologist/Taxonomist for National Oceanic and Atmospheric Administration (NOAA) 8/08-present

- Sediment toxicity pilot study for the Hudson River Natural Resource Damage Assessment
- Contact: Ann Jones 617-354-0074

Field Biologist/Taxonomist for Vermont Department of Environmental Conservation 2008

- Project assessed numerous previously unassessed streams in the Battenkill, Walloomsac, and Hoosic Watersheds
- Contact: Steve Fiske 802-241-1378

**CONTINUING EDUCATION**

Aquatic Algae and Diatom Identification Workshop	8/08
Advanced Identification Workshop on Baetidae and Hydropsychidae	3/07
PRIMER-E multivariate statistics for ecologist workshop	3/07
Chironomidae Taxonomy Workshop	5/06
Advanced Midge Taxonomy Workshop	3/05
Macroinvertebrate Laboratory Quality Assurance Workshop	3/05
EPT taxa workshop Humboldt Field Research Institute	5/03
Hach Technical Training Applied Analytical Chemistry workshop	6/00
River Network Clean Water Act workshop	9/99

**MEMBERSHIPS**

- North American Benthological Society
- Association for the Protection of the Adirondacks
- Black Rock Forest
- Leadership Schenectady (1998 graduate)

# TAXONOMIC Certification

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*This certificate is awarded to*

*J. KELLY NOLAN*

*in recognition of the successful completion for  
Level 2 Group 2 Eastern Ephemeroptera, Plecoptera & Trichoptera*

NORTH AMERICAN BENTHOLOGICAL SOCIETY

  
Dr. Trevor Reynoldson

May, 2006

Date

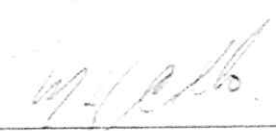
# TAXONOMIC CERTIFICATION

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*This certificate is awarded to*

***KELLY NOLAN***

*In recognition of excellence for specimen identification to Genus*  
**WESTERN**  
**EPHEMEROPTERA, PLECOPTERA and TRICHOPTERA**  
**NORTH AMERICAN BENTHOLOGICAL SOCIETY**

  
\_\_\_\_\_  
Dr. Murray Colbo

Date

February, 2009



# TAXONOMIC CERTIFICATION

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*This certificate is awarded to*

***KELLY NOLAN***

*in recognition of the successful completion for*

*LEVEL 2 GROUP 3 EASTERN CHIRONOMIDAE*

NORTH AMERICAN BENTHOLOGICAL SOCIETY



Dr. Trefor Reynoldson

February 2008

Date

# TAXONOMIC CERTIFICATION

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*This certificate is awarded to*

***JOHN KELLY NOLAN***

*In recognition of excellence for specimen identification to Genus  
Western Chironomidae*

**NORTH AMERICAN BENTHOLOGICAL SOCIETY**

  
\_\_\_\_\_  
Dr. Miriam Colbo

Date

November, 2009



## ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

**Résumé**  
**Erin Basiger**

### **EDUCATION**

M.S., Biology, University of Louisiana, In progress, expected 2011

Thesis: *The Diversity and Distribution of Freshwater Snails in the Mississippi Alluvial Plains and South Central Plains Regions of Arkansas*

B.A., Wildlife and Fish Conservation and Management, University of Rio Grande, 2007

Associate of Applied Science, Recreation Wildlife Resource Management, Hocking College, 2005

### **CERTIFICATIONS AND TRAINING**

Ohio Department of Natural Resources, Division of Watercraft: Ohio Boater's Education Course, 2003.

PADI Open-Water SCUBA Diver, 2008

### **QUALIFICATIONS AND EXPERIENCE**

Ms. Basiger has assisted with numerous wildlife research and management activities and has participated in aquatic and terrestrial surveys. Her field experience includes serving as supervisor responsible for coordinating multiple field crews. She is currently completing masters degree work with freshwater gastropods, a benthic macroinvertebrate. Her research includes the single largest freshwater gastropod survey in Arkansas to date, with 888 sample sites across the two ecoregions, and will be used to create a Freshwater Gastropods of Arkansas publication. Ms. Basiger is experienced with laboratory processing and identification of freshwater invertebrates to the lowest possible taxonomic group using dichotomous keys and by site.

### **SELECT PROJECT EXPERIENCE**

**Biologist** – Arkansas State-Wide Gastropod Survey. Completed surveys at 888 sites. Responsibilities included collection, identification, laboratory processing, data recording, and technical reporting. Results of the survey will be incorporated in a publication entitled Freshwater Gastropods of Arkansas.

**Biologist/Diver** – U.S. Army Corps of Engineers, Memphis District. Conducting survey for endangered mussels at 12 sites for proposed maintenance dredging project in the White River, Arkansas. Responsibilities include mussel survey using SCUBA and assisting with mussel processing.

**Biologist/Diver** – Confidential Client, Liquid Products Pipeline. Assisted with collection and identification of mussels in southeast Michigan.

## **PUBLICATIONS**

Minton, R. L., E. L. Basiger, and C. B. Nolan. 2010. Discovery of Living *Anguispira alternata* (Say, 1816) (Discidae: Gastropoda) in Louisiana, USA. *Zoological Studies*.

## **PRESENTATIONS**

Basiger, E. L. and R. L. Minton. 2011. Diversity and Distribution of Freshwater Gastropods from the Mississippi Alluvial Plain and South Central Plains Region of Arkansas. Arkansas Academy of Sciences, Montecello, Arkansas (platform)  
Third best graduate presentation in Life Sciences.

Basiger, E. L. and R. L. Minton. 2011. Diversity and Distribution of Freshwater Gastropods from the Mississippi Alluvial Plain and South Central Plains Region of Arkansas. Louisiana Academy of Sciences, Monroe, Louisiana (platform).

Basiger, E. L. and R. L. Minton. 2010. Diversity and Distribution of Freshwater Gastropods from the Mississippi Alluvial Plain and South Central Plains Region of Arkansas. Louisiana Academy of Sciences, Lafayette, Louisiana (poster).

## **PROFESSIONAL AFFILIATIONS**

The Wildlife Society (National Chapter)



## ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

**Résumé**  
**Sarah Reeves**

### EDUCATION

B.S., Environmental Science, Morehead State University, 2009

### QUALIFICATIONS AND EXPERIENCE

Ms. Reeves is a wildlife biologist and participates in field surveys for threatened and endangered species. She has experience as an aquatic macroinvertebrate technician, sorting macroinvertebrates from stream samples. She is experienced with stream surveys using hydrological quantifications for surface and ground water. She has worked on various development projects in the eastern U.S. and has experience in mist netting, and processing bats including bat handling and implementation of White Nose Syndrome protocols,

Ms. Reeve's experience includes proficiency with the following equipment and techniques:

- Kentucky Index of Biotic Integrity (KIBI) stream assessment using macroinvertebrates and fishes
- Techniques for insect and fish collection and identification
- YSI equipment for measuring Dissolved Oxygen, conductivity, and pH
- Hydrological quantifications for surface waters and ground water
- Bat processing to determine species, weight, gender, and various measurements, mist netting, and habitat assessment
- Ultrasound detectors
- Spring/autumn cave/mine (hibernacula) entrance surveying

### SELECT PROJECT EXPERIENCE

**Laboratory Assistant** – Morehead University. Assisted with a project subcontracted by Kentucky as a component of their annual federally required stream integrity report. Responsible for sorting 30-50 macroinvertebrate samples per semester that were received in the lab in quart-sized jars. Samples were sorted into 1-ml vials from whole samples netted from predetermined stream sites. The vials were returned to the State's analysts to tally data and develop a KIBI report.

**Field Assistant** – U.S. Army Corps of Engineers, Memphis District: 2009. Participated in survey for endangered mussels at 12 sites for proposed maintenance dredging project in the White River, Arkansas.



## **ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.**

**Résumé**

**Jason A. Duffey**

### **EDUCATION**

B.S., Environmental Science, Ohio State University, 1999

### **CERTIFICATIONS AND TRAINING**

Endangered Species Consultation in Ohio, USFWS, 2005

Interagency Coordination – Section 7 of the Endangered Species Act, USFWS, 2006

Acoustical Monitoring for Indiana Bats, USFWS, 2007

Qualitative Habitat Evaluation Index (QHEI) / Biocriteria Training – Ohio EPA, 2007

Stream Habitat (QHEI) Certified Level 2 Qualified Data Collector – Ohio EPA 2008

Habitat Conservation Planning – Sec 10 of the Endangered Species Act, USFWS, 2008

Ohio Wetlands – CLE International, 2008

38 Hour Army Corps of Engineers Wetland Delineation Training, 2011

Ecological Training, Ohio Department of Transportation, 2011

### **QUALIFICATIONS AND EXPERIENCE**

As a field biologist, Mr. Duffey has over 13 years experience with standard field ecological techniques and field equipment utilized for water quality sampling, biological stream sampling, endangered species surveys, habitat characterization, radiotelemetry, plant inventories, and Global Position Systems (GPS).

Mr. Duffey completed biological and chemical water quality surveys while working for the Ohio EPA Division of Surface Water, the findings and conclusions of which factored into regulatory actions taken by Ohio EPA and were incorporated into Water Quality Permit Support Documents (WQPSDs), State Water Quality Management Plans, the Ohio Nonpoint Source Assessment, and the Ohio Water Resource Inventory (305[b] report). The information from these surveys also provided the basis for the list of impaired and threatened waters required by Section 303(d) of the Clean Water Act (CWA).

Mr. Duffey is proficient in the application of the following equipment and techniques as they relate to biological and chemical water quality surveys:

- Implementation of Bioassessment Protocols
- Macroinvertebrate sampling using Hester-Dendy multiplates and kick nets
- Sorting and preservation of macroinvertebrates
- Collection, preserving, and delivering surface, ground, and wastewater samples
- Use of multiprobes to obtain water quality parameters
- Use of automatic samplers and flow meters
- Biological fish sampling using boat, sportyak, and longline electrofishing equipment

- Assessing fish communities (IBI, MIwb), and stream habitat conditions (QHEI, HHEI)
- Sediment and erosion control inspections

### **SELECT PROJECT EXPERIENCE**

**Quality Assurance / Quality Control Lab Technician** – Ohio EPA, Division of Environmental Services –responsible for receiving, logging (chain of custody), and sorting of water, air, sediment, and fish tissue samples.

**Water Quality Technician** – Ohio EPA, Division of Surface Water – conducted biological and chemical water quality surveys on major Ohio watersheds, including the Kokosing, and Mohican.

**Water Quality Technician** – Ohio EPA, Division of Surface Water – conducted biological and chemical water quality surveys on major Ohio watersheds, including the Olentangy, and Scioto.

**Project Manager** – Indiana Department Of Transportation's proposed SR 641 Bypass (Phases III and IV). Stream delineation, QHEI/HHEI stream habitat evaluation, and endangered bat survey in Vigo County, Indiana.

**Biologist** – Confidential Client. Stream delineation, QHEI/HHEI stream habitat evaluation, and endangered bat netting survey for a proposed 10-mile pipeline in Stark County, Ohio. Responsible for all field data collection for streams and bats, reporting, client and staff coordination.

**APPENDIX B**  
**ESI LAB MANUAL (BENTHIC MACROINVERTEBRATE QA/QC)**



BENTHIC MACROINVERTEBRATE QUALITY CONTROL MANUAL  
LABORATORY  
SORTING AND IDENTIFICATION QA/QC PROCEDURES

*Last updated:*  
18 August 2010

Property of:



Environmental Solutions & Innovations, Inc.

4525 Este Avenue  
Cincinnati, Ohio 45232  
Phone: (513) 451-1777  
Fax: (513) 451-3321

## 1.0 Quality Assurance / Quality Control Procedures

Laboratory quality control (QC) procedures will be followed to ensure proper tracking and handling of samples to meet all quality assurance (QA) standards. All samples undergo three stages of QA/QC processing:

- Sample receiving and inventory
- Sub-sampling (i.e. sorting) QA/QC efficiency
- Identification and enumeration QA/QC efficiency

Quality control (QC) measures will accompany each stage of processing and the QA/QC coordinator will ensure that all processes are completed.

### 1.1 Sample Receiving and Inventory

All groups of samples arriving at ESI will be recorded upon arrival to the laboratory. A chain of custody form will be completed to verify the number of samples at arrival and condition. Missing or damaged samples will be reported to the Project Manager immediately. Samples will be carefully tracked within the lab throughout the project using Client specific sample ID.

A Sample Log-In form for each individual sample will be stored in a project specific binder. Laboratory personnel will keep accurate records of the location and status of all samples at all times by logging each sample into an EXCEL database and by recording sample progress on the Laboratory Project Board.

All samples that arrive to the ESI laboratory will be stored at room temperature in their designated plastic/cardboard boxes on numbered shelving units in the sample storage room until sorted.

### 1.2 Sub-sampling (i.e. sorting) QA/QC Efficiency

The sample log will continually be updated through the sub-sampling process. The log contains the sample identification, sub-sampling date, the name of the sub-sampler, and the amount of time used to perform the sub-sampling procedure, number of grids sub-sampled, and number of individuals picked from each grid. A label with the date and initials of the sub-sampler is then applied to the sample indicating that the sample had been sub-sampled.

Five to ten (*Project Specific*) percent of samples are QA/QC'd to insure that all invertebrates have been picked from the material selected for sub-sampling. After a sample is sub-sampled, another person will check the detritus to pick out any organisms that may have been missed. The number of invertebrates missed should not exceed ten percent of the organisms that were picked by the sub-sampler. If the

number of organisms found during QA/QC exceeds ten percent, the sample must be re-subsampled.

All sorting efficiency is recorded on a Sorting QA/QC form. This includes sample information, original sorter and number sorted per grid, second sorter and number recovered, and recovery errors. Any individual not meeting the required sorting quality will be retested on lab samples until they meet the required efficiency level to work on Project related samples.

At any time the QA/QC coordinator may require a subsample to be resorted to ensure high quality sorting.

### **1.3 Identification and Enumeration QA/QC Efficiency**

Each sample receives a designated bench sheet. The sample label information including the number of sorted individuals is entered on the bench sheet.

Five percent of samples are re-identified for QA/QC purposes. After a sample is initially identified, another taxonomist will re-identify the sample. The QA/QC coordinator will compare the results of both independent identifications and determine the percent error.

The number of invertebrates missed will be tracked and recorded on a QA/QC identification form. Any discrepancies in identification will be brought to the attention of both taxonomists. The sample will be reevaluated by both taxonomists and the QA/QC coordinator. The reason for discrepancies in the two identifications will be recorded on the QA/QC Form. Recovery errors should not exceed 10 percent of the total sample. All errors and corrective action will be recorded on the QA/QC identification form.

Completed samples will be placed in a designated box on the appropriate shelf. The data from the sheet will be entered into the appropriate EXCEL spreadsheet by laboratory employees, the sheet will be scanned into the appropriate laboratory folder, and the completed Benthic Macroinvertebrate Sample ID Sheet will be stored in a project-specific, three-ring binder containing only Benthic Macroinvertebrate Sample ID Sheets.

#### **1.3.1 Data Entry**

Data from the Benthic Macroinvertebrate Sample Identification Form will be entered into an MS EXCEL database. One laboratory employee enters the data from the bench sheets, and a QA/QC officer checks all records for accurate entry. The QA/QC officer will report gross mistakes or consistent errors to both the data entry person and also the database manager who will take corrective action. Each form will then be scanned into the appropriate laboratory folder. The "hard copy" will be filed in a project-specific, three-ring binder containing only Benthic Macroinvertebrate Sample ID Sheets.

**APPENDIX C  
COST AND SIGNED RFQ**



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

# Request for Quotation

RFQ NUMBER  
 DEP15456

PAGE  
 1

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

VENDOR

\*426112643 513-451-1777  
 ENVIRONMENTAL SOLUTIONS & INNO  
 4525 ESTE AVE  
 CINCINNATI OH 45232-1762

SHIP TO

ENVIRONMENTAL PROTECTION,  
 DEPARTMENT OF  
 DIV OF WATER AND WASTE MGT  
 601 57TH STREET SE  
 CHARLESTON, WV  
 25304 304-926-0499

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
05/26/2011				

BID OPENING DATE: 06/23/2011 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	LS		961-48		
FIELD TESTING SERVICES  THE WEST VIRGINIA PURCHASING DIVISION, FOR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, IS SOLICITING BIDS FROM QUALIFIED VENDORS FOR A CONTRACT TO PROVIDE PROCESSING AND IDENTIFICATION OF BENTHIC MACROINVERTEBRATE SAMPLES COLLECTED FROM WEST VIRGINIA WATERS, PER THE FOLLOWING SPECIFICATIONS, BID REQUIREMENTS, TERMS & CONDITIONS, AND THE ATTACHED BID SCHEDULE.  EXHIBIT 3  LIFE OF CONTRACT: THIS CONTRACT BECOMES EFFECTIVE UPON AWARD AND EXTENDS FOR A PERIOD OF ONE (1) YEAR OR UNTIL SUCH "REASONABLE TIME" THEREAFTER AS IS NECESSARY TO OBTAIN A NEW CONTRACT OR RENEW THE ORIGINAL CONTRACT. THE "REASONABLE TIME" PERIOD SHALL NOT EXCEED TWELVE (12) MONTHS. DURING THIS "REASONABLE TIME" THE VENDOR MAY TERMINATE THIS CONTRACT FOR ANY REASON UPON GIVING THE DIRECTOR OF PURCHASING 30 DAYS WRITTEN NOTICE.  UNLESS SPECIFIC PROVISIONS ARE STIPULATED ELSEWHERE IN THIS CONTRACT DOCUMENT, THE TERMS, CONDITIONS AND PRICING SET HEREIN ARE FIRM FOR THE LIFE OF THE CONTRACT.  RENEWAL: THIS CONTRACT MAY BE RENEWED UPON THE MUTUAL WRITTEN CONSENT OF THE SPENDING UNIT AND VENDOR, SUBMITTED TO THE DIRECTOR OF PURCHASING THIRTY (30)						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE <i>Chuck Bowman</i>	TELEPHONE 513-451-1777	DATE 6/22/11
TITLE C.E.O.	FEIN 3171697213	ADDRESS CHANGES TO BE NOTED ABOVE

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



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

**Request for  
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 CHUCK BOWMAN  
 304-558-2157

**VENDOR**  
 \*426112643 513-451-1777  
 ENVIRONMENTAL SOLUTIONS & INNO  
 4525 ESTE AVE  
 CINCINNATI OH 45232-1762

**SHIP TO**  
 ENVIRONMENTAL PROTECTION,  
 DEPARTMENT OF  
 DIV OF WATER AND WASTE MGT  
 601 57TH STREET SE  
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<p>DAYS PRIOR TO THE EXPIRATION DATE. SUCH RENEWAL SHALL BE IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE ORIGINAL CONTRACT AND SHALL BE LIMITED TO TWO (2) ONE (1) YEAR PERIODS.</p> <p>CANCELLATION: THE DIRECTOR OF PURCHASING RESERVES THE RIGHT TO CANCEL THIS CONTRACT IMMEDIATELY UPON WRITTEN NOTICE TO THE VENDOR IF THE COMMODITIES AND/OR SERVICES SUPPLIED ARE OF AN INFERIOR QUALITY OR DO NOT CONFORM TO THE SPECIFICATIONS OF THE BID AND CONTRACT HEREIN.</p> <p>OPEN MARKET CLAUSE: THE DIRECTOR OF PURCHASING MAY AUTHORIZE A SPENDING UNIT TO PURCHASE ON THE OPEN MARKET, WITHOUT THE FILING OF A REQUISITION OR COST ESTIMATE, ITEMS SPECIFIED ON THIS CONTRACT FOR IMMEDIATE DELIVERY IN EMERGENCIES DUE TO UNFORESEEN CAUSES (INCLUDING BUT NOT LIMITED TO DELAYS IN TRANSPORTATION OR AN UNANTICIPATED INCREASE IN THE VOLUME OF WORK.)</p> <p>QUANTITIES: QUANTITIES LISTED IN THE REQUISITION ARE APPROXIMATIONS ONLY, BASED ON ESTIMATES SUPPLIED BY THE STATE SPENDING UNIT. IT IS UNDERSTOOD AND AGREED THAT THE CONTRACT SHALL COVER THE QUANTITIES ACTUALLY ORDERED FOR DELIVERY DURING THE TERM OF THE CONTRACT, WHETHER MORE OR LESS THAN THE QUANTITIES SHOWN.</p> <p>BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THE STATE MAY DEEM THE CONTRACT NULL AND VOID, AND TERMINATE SUCH CONTRACT WITHOUT FURTHER ORDER.</p> <p>THE TERMS AND CONDITIONS CONTAINED IN THIS CONTRACT SHALL SUPERSEDE ANY AND ALL SUBSEQUENT TERMS AND CONDITIONS WHICH MAY APPEAR ON ANY ATTACHED PRINTED DOCUMENTS SUCH AS PRICE LISTS, ORDER FORMS, SALES</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE <i>J. E. O.</i>	TELEPHONE 513-451-1777	DATE 6/22/11
TITLE J.E.O.	FEIN 31-1697213	ADDRESS CHANGES TO BE NOTED ABOVE

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



State of West Virginia  
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 Purchasing Division  
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# Request for Quotation

RFQ NUMBER  
**DEP15456**

PAGE  
**3**

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05/26/2011				
BID OPENING DATE: 06/23/2011		BID OPENING TIME 01:30PM		

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
				AGREEMENTS OR MAINTENANCE AGREEMENTS, INCLUDING ANY ELECTRONIC MEDIUM SUCH AS CD-ROM. REV. 05/26/2009		
				NOTICE A SIGNED BID MUST BE SUBMITTED TO: DEPARTMENT OF ADMINISTRATION PURCHASING DIVISION BUILDING 15 2019 WASHINGTON STREET, EAST CHARLESTON, WV 25305-0130		
				THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED: SEALED BID BUYER: CB-23 RFQ. NO.: DEP15456 BID OPENING DATE: 06/23/2011 BID OPENING TIME: 1:30 PM PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID: ----- fax: 513-451-3321 ----- CONTACT PERSON (PLEASE PRINT CLEARLY): ----- Casey Swecker -----		

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE <i>J. E. O.</i>	TELEPHONE 513-451-1777	DATE 6/22/11
TITLE J.E.O.	FEIN 31-1697213	ADDRESS CHANGES TO BE NOTED ABOVE


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

DEP15456  
 BID SHEET

Item No.	Quantity	Description	Unit Price	Amount
A	500	Per sample un-sorted, identified to Genus level: 200-organism subsample	<del>\$225.00</del>	<del>112,500.00</del>
E	4	Per each "sample pick-up/delivery" not "per sample" (Assume 100 samples per pickup)	<del>\$350.00</del>	<del>\$1,400.00</del>
F	5 hr	Cost/hour for professional staff representation of data in legal/administrative setting	<del>\$120.00</del>	<del>600.00</del>

TOTAL = \$114,500.00

Contractor: Environmental Solutions + Innovations, Inc.

Signature: 

Date: 22 June 11

Quantities listed on the bid schedule are for bid evaluation purposes only and are not a guarantee of quantities to be ordered over the life of the contract. Actual quantities ordered may be more or less than those stated on this schedule.



RFQ No. DEP15456

STATE OF WEST VIRGINIA  
Purchasing Division

**PURCHASING AFFIDAVIT**

West Virginia Code §5A-3-10a states: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owned is an amount greater than one thousand dollars in the aggregate

**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.

"Debtor" means any individual, corporation, partnership, association, Limited Liability Company or any other form or business association owing a debt to the state or any of its political subdivisions. "Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities. "Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

**EXCEPTION:** The prohibition of this section does not apply where a vendor has contested any tax administered pursuant to chapter eleven of this 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.

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

**WITNESS THE FOLLOWING SIGNATURE**

Vendor's Name: Environmental Solutions & Innovations, Inc.

Authorized Signature: [Signature] Date: 22 June 11

State of Ohio

County of Hamilton, to-wit:

Taken, subscribed, and sworn to before me this 22nd day of June, 2011.

My Commission expires March 13, 2016.

AFFIX SEAL HERE

NOTARY PUBLIC [Signature]

