



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

DEP15509

PAGE

1

ADDRESS CORRESPONDENCE TO ATTENTION OF:

CHUCK BOWMAN
304-558-2157

RFQ COPY

TYPE NAME/ADDRESS HERE

Environmental Services and Consulting, LLC

P.O. Box 11437

Blacksburg, VA 24062

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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		
07/21/2011						
BID OPENING DATE: 08/16/2011		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 IDENTIFICATION AND ENUMERATION OF GOLDEN ALGAE (PRYMNESIUM) 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		TELEPHONE		DATE		
<i>Chuck Bowman</i>		590-552-0144		8-15-2011		
TITLE		FIRM		ADDRESS CHANGES TO BE NOTED ABOVE		
Principal Scientist		27-4012987				

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

GENERAL TERMS & CONDITIONS REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)

1. Awards will be made in the best interest of the State of West Virginia.
 2. The State may accept or reject in part, or in whole, any bid.
 3. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125 fee.
 4. All services performed or goods delivered under State Purchase Order/Contracts are to be continued for the term of the Purchase Order/Contracts, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods this Purchase Order/Contract becomes void and of no effect after June 30.
 5. Payment may only be made after the delivery and acceptance of goods or services.
 6. Interest may be paid for late payment in accordance with the *West Virginia Code*.
 7. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
 8. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
 9. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
 10. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern the purchasing process.
 11. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
 12. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, the State may deem this contract null and void, and terminate such contract without further order.
 13. **HIPAA BUSINESS ASSOCIATE ADDENDUM:** The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, is available online at www.state.wv.us/admin/purchase/vrc/hipaa.htm and is hereby made part of the agreement. Provided that the Agency meets the definition of a Cover Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.
 14. **CONFIDENTIALITY:** The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <http://www.state.wv.us/admin/purchase/privacy/noticeConfidentiality.pdf>.
 15. **LICENSING:** Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, and the West Virginia Insurance Commission. The vendor must provide all necessary releases to obtain information to enable the director or spending unit to verify that the vendor is licensed and in good standing with the above entities.
 16. **ANTITRUST:** In submitting a bid to any agency for the State of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the State of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.
- I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, or person or entity submitting a bid for the same material, supplies, equipment or services and is in all respects fair and without collusion or fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division. Complete all sections of the quotation form.
2. Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Unit prices shall prevail in case of discrepancy. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
4. All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications: Department of Administration, Purchasing Division, 2019 Washington Street East, P.O. Box 50130, Charleston, WV 25305-0130
5. Communication during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited (W.Va. C.S.R. §148-1-6.6).



State of West Virginia
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2019 Washington Street East
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Environmental Services and Consulting, LLC
P.O. Box 11437
Blacksburg, VA 24062

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

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07/21/2011						
BID OPENING DATE: 08/16/2011		BID OPENING TIME 01:30PM				
LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
<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>Anatoliy</i>				TELEPHONE 540-552-0144	DATE 8-15-2011	
TITLE <i>Principal Scientist</i>				FEB 27-4612987	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
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Blacksburg, VA 24062

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DEPARTMENT OF
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BID OPENING DATE: 08/16/2011		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.: DEP15509						
BID OPENING DATE: 08/16/2011						
BID OPENING TIME: 1:30 PM						
PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID:						
540-552-1528						
CONTACT PERSON (PLEASE PRINT CLEARLY):						
STUART R. Lynde						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
<i>Stuart R. Lynde</i>	540-552-0444	8-15-2011
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE
Principal Specialist	274612987	

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



PO Box 11437
Blacksburg, Virginia 24062

phone: 540-552-0144
fax: 540-552-1528

August 15, 2011

Chuck Bowman
Department of Environmental Protection
Division of Water and Waste Mgmt.
601 57th Street SE
Charleston, WV 25304

**RE: Field Testing Services
Proposal (DEP15456)
Charleston, West Virginia
Via: UPS**

Mr. Bowman,

This letter and attachments will serve as our response to the recent request for quotations to provide identification and enumeration of Golden Algae (*Prymnesium*) samples collected from West Virginia waters. Environmental Services & Consulting, Inc. (ES&C) is a woman-owned small business with extensive experience dealing with periphyton, phytoplankton, and aquatic macroinvertebrates. We have been in business since 1999, and currently have full time algal taxonomists and laboratory personnel available to work your project.

Attached to this letter, please find the quotation forms provided by the Purchasing Division, ES&C's statement of Qualifications (listing key personnel who will be working on this project), and associated resumes and certifications. Additional information about our company and services can also be found on our website, at www.es-and-c.com.

Qualifications and Related Experience

Our goal is provide exceptional services focusing on aquatic studies and taxonomy for our local, regional, national, and international clients. Our employees have over 30 years combined professional and academic experience in macroinvertebrate and algal studies. We currently have the capacity to handle multiple large-scale processing and identification projects (>200 samples per year). In the past 12 years of processing benthic aquatic organisms, our taxonomists have processed over 6,000 samples and have identified over 1,880,000 individual organisms. Please see the attached SOQ for our qualifications.

Project Management

Upon sample receipt, all sample containers will first be checked to ensure container integrity is intact. Field ID numbers written on sample containers will be verified against chain-of-custody forms provided by WVDEP. If any issues are found at this stage, the WVDEP project coordinator will be notified immediately. If there are no issues, or after questions are resolved, Field ID numbers and associated metadata will be entered into

ES&C's Laboratory Information Management System (LIMS). A unique laboratory tracking number will be generated by the LIMS for each sample, which will be used to track each sample throughout processing.

Samples will then be placed into the lab refrigerator until they can be processed by ES&C taxonomists, and QA/QC measures are performed. ES&C will begin processing samples on the date of arrival, due to various shipment arrival times, processing of these samples continue over the next 48 hours. Results will be reported within 72 hours. Occasionally, ES&C may send samples between labs or to 3rd party labs for verification. In these cases, preliminary results will be provided in 72-hours, but final results may be longer.

Laboratory bench sheet data will be entered into the LIMS by ES&C's database operator, and an excel spreadsheet report will be generated and reported to WVDEP. Results of QA verification analysis will be submitted along with the original results. After data has been reported, any remaining sample material will be disinfected with chlorine bleach. Sample containers, and plastic shipping coolers will be sterilized with chlorine bleach, and any laboratory glass-ware will be autoclaved immediately after use.

Summary of Algal Counting and Culturing Experience

The ES&C algal unit is a separate lab specifically designed to handle Hazardous Algal Bloom (HAB) counts and research. This laboratory is equipped with a Beckman GPR refrigerated centrifuge with 500-ml swinging buckets for algal sample concentration along with both dissecting and compound microscopes. Air into and out of this room is controlled by clean-room hepa filters to minimize the transport of HAB species which may be produced during sample processing. This room has a self contained heating and air conditioning system with no external air exchange. The room has lighted racks for algal culture as well as bench space for analysis. All glassware or plasticware is decontaminated in a chlorine rinse prior to leaving the space. We have successfully been able to culture algae in this lab under various conditions ranging from fresh to salt water including; Chlorophytes and Haptophytes. ES&C's NRV algal unit has been in operation since 2009, while our work in GA has been ongoing since 2004. ES&C is very familiar with the taxonomy of the organism in question.

ES&C works under strict confidentiality for many of our clients. For this reason, we are unable to talk specifically about the WV strain of *p. parvum*. However, we have used a standard hemocytometer counting technique to provide numerous counts on similar flagellated algae for both in house cultures and for projects in Texas.

Internal QA/QC procedures

ES&C currently maintains a stringent Quality Assurance / Quality Control (QA/QC) program for all aspects of processing. Following identification and enumeration of samples by the primary taxonomist, ten percent of each batch of samples will be re-identified and enumerated by a second taxonomist. The results are compared in order to determine numerical differences. Where the percent difference in enumeration (PDE) is above 10%, the sample may be re-examined by the original, or by a third taxonomist.

August 15, 2011

Additionally, after data has been entered into ES&C's LIMS system, all data will be checked against the original bench sheets by someone other than the data entry specialist. If errors are found, they will be noted and corrected before a report is generated and reported.

Records, including copies of Chain-of-Custody forms and laboratory bench sheets, will be maintained by the lab for a period of at least 5 years. Additionally, all paper records will be scanned into a PDF format and digitally backed up indefinitely.

Specific Format

An example of an Excel spreadsheet printout, in which enumeration results will be provided, can be found as an attachment at the end of this document.

Schedule

We have the personnel and capacity to meet the desired goals under a contract within the specified deadlines (data reported within 72 hours of sample receipt).

Pricing

Please find pricing listed on the DEP15509 Request for Quotation / Bid Sheet, attached at the end of this document. Pricing for sample processing includes all in house supplies, processing time, and internal QC of approximately 10% of each batch of samples.

Conclusion

ES&C agrees with all of the Terms and Conditions outlined in the RFQ, and has the capability to perform all of the contract specifications for processing and enumerating golden algae samples.

The information provided in this response reflects the information requested. ES&C is a leading taxonomic laboratory, and we will be happy to provide additional information regarding our qualifications, if requested.

If you have any questions, or would like further information about our company and abilities, please contact me at 540-552-0144 or slynde@es-and-c.com. Thank you for your interest in our company. We hope to hear from you soon.

Sincerely,
ENVIRONMENTAL SERVICES & CONSULTING, INC.



Stuart Lynde
Principal Scientist

Attachments:

1. Quotation Forms
2. Statement of Qualifications
3. Resumes / Certifications of Key Personnel
4. Example Excel Spreadsheet Printout

DEP15509
Golden Algae Enumeration and Validation

AREA OF WORK/BID AWARD

The Department of Environmental Protection, Division of Water and Waste Management (DWWM) is seeking bids for identification and enumeration of Golden Algae (*Prymnesium parvum*). It is anticipated that DWWM will collect and process all samples according to the needs of selected laboratories protocol. Vendor will provide results within 72 hours¹ of receipt of samples at laboratory.

DWWM expects to collect approximately 12 samples on a weekly or bi-weekly basis through mid-October. Assuming these plans, we are estimating a volume of 200 samples. Should golden algae populations reach levels of concern or become widespread, the number of samples could increase to approximately 400 during this same period.

SCOPE

In administering and enforcing most of the pollution control laws of the state, the importance of quality control cannot be overstated. Quality control measures must be strictly adhered to in all phases of sample tracking, preservation, transportation, and analysis.

Samples from WVDEP

WVDEP or WVDNR personnel will collect process and send samples to analytical lab via Fed-Ex.

WVDEP personnel will provide Chain-of-Custody forms when samples are delivered. The vendor shall be responsible for maintaining preservation of the sample and the internal chain of custody from the time the vendor obtains the sample until the analytical results are accepted by the Division. The vendor shall also maintain records of the results for a minimum of five (5) years.

Conduct Specified Analysis on Samples and Quality Assurance / Quality Control measures

Vendor shall process samples, enumerate and report the density of *Prymnesium parvum* as cells/mL. The minimum quantification value should be at or below 100 cells/mL. For quality assurance, verification of the results is required for at least 10% of the samples received in a week. Results of QA verification analysis should be submitted with original results.

Examples of verification methodologies include review by an alternate taxonomist or via use of an alternate identification/counting methodology. Vendor must provide a description of their internal QA/QC procedures with their bid.

¹ The vendor must make every effort to provide results to DWWM within 72 hours of sample arrival, but allowances may be made for mitigating circumstances, such as equipment failure and repair. The vendor will provide advance notice to DWWM of such circumstances.

Results must be delivered in electronic format (Microsoft Excel or compatible) via email.

PRIME VENDOR RESPONSIBILITIES

The vendor who is awarded this contract, when performing work under the terms and conditions of this contract, is solely responsible for the satisfactory completion of the work. The prime vendor shall be responsible for ensuring that any subcontractor has all the necessary permits, certifications, experience and insurance to perform the work. The prime vendor cannot work with a subcontractor without prior written authorization from DWWM. DWWM will consider the prime vendor to be the sole point of contact with regard to authorized work under the contract; however, this provision does not prohibit the DWWM from directly contacting subcontractors.

CONFIDENTIALITY

The vendor agrees that any and all data, analyses, materials, reports or other information, oral or written, prepared by the vendor with respect to this requisition shall, except for information which has been publicly available, be treated as confidential and shall not be utilized, released, published, or disclosed, by the vendor at any time for any purpose whatsoever other than to provide consultation or other service to the DWWM, unless written permission for data use has been requested and received from DWWM.

PROPOSAL PREPARATION AND VENDOR QUALIFICATION

The bidder shall include the following information. The contract award will be made to the qualified vendor with the lowest bid. We expect to collect approximately 200 samples per year, however there is no minimum number of samples that will be sent to the successful bidder.

Omission of any of the information listed below may result in disqualification.

- 1) Description of how the project will be managed by the contractor, including managing the integrity of the samples (chain of custody).
- 2) Summary of experience with analysis for *Prymnesium parvum*. Must have minimum 3 years experience.
- 3) Description of vendor's internal QA/QC procedures, which will insure the highest level of accuracy in both the processing and analysis.
- 4) Specific format (i.e. Excel spreadsheet) in which enumeration results will be provided.

DEP15509
BID SHEET

Quantity	Description	Unit Price	Amount
200	Identification, enumeration and reporting of <i>Prymnesium parvum</i> in cells/mL (including required QA/QC samples)	\$108.90	21,780.00
		\$108.90	\$21,780.00

Contractor: Environmental Services & Consulting, Inc.Signature: Date: 8-15-2011

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.

State of West Virginia

VENDOR PREFERENCE CERTIFICATE

Certification and application* is hereby made for Preference in accordance with *West Virginia Code*, §5A-3-37. (Does not apply to construction contracts). *West Virginia Code*, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the *West Virginia Code*. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Resident Vendor Preference, if applicable.

1. **Application is made for 2.5% resident vendor preference for the reason checked:**
☐ Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
☐ Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
☐ Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; or,
2. **Application is made for 2.5% resident vendor preference for the reason checked:**
☐ Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
3. **Application is made for 2.5% resident vendor preference for the reason checked:**
☐ Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
4. **Application is made for 5% resident vendor preference for the reason checked:**
☐ Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; or,
5. **Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:**
☐ Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; or,
6. **Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:**
☐ Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (*West Virginia Code*, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: Environmental Services & Consulting, Inc. Signed: Mr. Stuart R. Rupp

Date: 8-15-2011 Title: Principal Scientist

*Check any combination of preference consideration(s) indicated above, which you are entitled to receive.

RFQ No: DEP 15509STATE 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 SIGNATUREVendor's Name: Environmental Services & Consulting, IncAuthorized Signature: Spencer Klynde Date: 8-15-2011State of VirginiaCounty of Montgomery, to-wit:Taken, subscribed, and sworn to before me this 15 day of August, 2011.My Commission expires 10/31, 2011.

AFFIX SEAL HERE



NOTARY PUBLIC

Pamela T. Sowers

SOQ

Environmental Services & Consulting, Inc.

Prepared by:
Environmental Services & Consulting, Inc.
Blacksburg, VA

Revised: August 12, 2011



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A Woman-Owned Small Business

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1. INTRODUCTION

Environmental Services & Consulting (ES&C) is a woman-owned small business specializing in aquatic systems. We provide consulting services, laboratory testing, and field sampling to a wide spectrum of clients throughout the nation. From project design and implementation to the final report, ES&C is proud of its expertise and dedication to delivering a scientifically sound and defensible product to each and every client. ES&C has built a reputation for providing the highest quality products at competitive rates.

2. CORPORATE PROFILE

ES&C is a limited liability company, formed in the Commonwealth of Virginia in 1999, providing environmental consulting services to clients in Virginia and across the country. The company is an outgrowth from academia and is conveniently located near the campus of Virginia Tech in Blacksburg, Virginia, offering ES&C's staff opportunities to work in cooperation with the university's faculty and staff and the availability of the university's advanced technologies. ES&C maintains a strong relationship with the university. Once a single-person operation, ES&C now employs 5 full-time and 4 part-time employees.

ES&C started as a laboratory specializing in invertebrate, planktonic, and algal taxonomy. Since its inception, it has grown to become one of the nation's leading taxonomic laboratories, processing thousands of samples for Federal, State, Municipal, Industrial and commercial clients. ES&C employees have worked on benthic samples from Coast to Coast.

ES&C is more than just a taxonomic laboratory. We provide our clients with a wide range of environmental consulting services including environmental permitting, stream and wetland enhancement and restoration, environmental site assessments, and a wide range of natural resources studies.

2.1. Company Information

ES&C is registered through the Central Contractors Registration (CCR) website. Additionally, Representations and Certifications are updated electronically and can be accessed through the ORCA website. The information provided below is provided for convenience only.

DUNS:	039267138
CAGE/NCAGE Code:	3GCW8
Legal Business Name:	ENVIRONMENTAL SERVICES & CONSULTING Inc.
TIN/EIN:	27-4612987
Company URL:	http://www.es-and-c.com
Phone:	540-552-0144
Fax:	540-552-1528
Toll Free Phone:	888-995-2782
Mailing Address::	ENVIRONMENTAL SERVICES & CONSULTING Inc. P.O. Box 11437 BLACKSBURG, VA 24062
Office Location (Shipping Address):	ENVIRONMENTAL SERVICES & CONSULTING Inc. 516 ROANOKE STREET CHRISTIANSBURG, VA 24073
Business Start Date:	11/17/1999
HUBZone Certified:	NO
Woman-Owned:	YES
Accept Credit Cards:	YES
Member/Manager:	Katherine S. Lynde

2.2. SIC/NAICS Codes

ES&C provides services under several codes including those listed below.

NAICS CODES (1997):

541620	Environmental Consulting Services
	Sanitation Consulting Services
	Site Remediation Consulting Services
541690	Biological Consulting Services
	Chemical Consulting Services
	Entomological Consulting Services
541380	Testing Laboratories
563910	Environmental Remedial Services
541710	Environmental Research and Development Laboratories
541370	Topographic Mapping Services
	Geographic Information System (GIS) base mapping
services	
541512	Computer Aided Design (CAD)
541511	Custom Computer Programming Services
541330	Engineering Services

SIC CODES (1987)

8748	Business Consulting Services
8999	Services, Environmental Consulting
8734	Testing Laboratories
4959	Sanitary Services (Remediation Services)
8713	Surveying Services
7389	Business Services
8711	Engineering Services
7371	Computer Programming Services
7373	Computer Integrated system Design

3. SERVICES

3.1. Regulatory Compliance

- Surface Water Permits
- Discharge Monitoring Reports (DMR)
- Pollution Abatement Plans
- VWP (Water Protection) Permits
- Joint Permit Applications (JPA's)
- Water Withdrawal Permits
- VMRC Permits
- Department of Health Permits
- Compliance Issues
- NEPA/SEPA Documentation
- Nutrient Management Plans (NMP)
- Stormwater Pollution Prevention Plans (SWPPP)

3.2. Assessments and Inspections

- Transaction Screening
- Phase I Environmental Site Assessments (ESA's)
- Phase II Environmental Site Assessments (ESA's)
- Stream Assessments
- Erosion and Sediment Control Plans
- Water Quality Studies
- Asbestos Inspection/Sampling
- Asbestos Management Plans
- Project Monitoring
- Toxic Mold Inspection/Sampling
- Mold Project Remediation Plans / Monitoring
- Indoor Air Quality Assessments
- Risk Assessments
- Site Characterization Studies
- Contamination Assessments

3.3. Ecology and the Environment

- Benthic Taxonomy
- Aquatic Invertebrate Studies
- Aquatic Invertebrate Project Design
- Fish Studies
- Algae Studies
- Chlorophyll Analysis
- Mosquito Studies
- Total Maximum Daily Load (TMDL) Studies
- Watershed Surveys
- Wildlife/Protected Species Surveys
- Stream Habitat Assessments

3.4. Compliance Monitoring

- Stormwater Monitoring
- Groundwater Monitoring
- Drinking Water Analysis
- Discharge Monitoring
- Total Maximum Daily Load (TMDL)
- Whole Effluent Toxicity (WET) Testing
- Water Chemistry Testing

3.5. Soil and Groundwater

- Groundwater Management Planning
- Groundwater Monitoring
- Erosion and Sediment Control Planning
- Soil Sampling
- Soil Contamination

3.6. Site Assessment

- Wetland Mitigation
- Wetland Delineation
- Wetland Restoration
- Stream Restoration (Natural Channel Design)
- Stream Enhancement
- Stream Mitigation
- Streambank Bioengineering Stabilization
- Lake/Pond Management
- Shoreline Stabilization

4. KEY PERSONNEL

4.1. Katherine S. Lynde

Katherine Lynde is the sole member and manager of Environmental Services & Consulting Inc. She acquired sole-ownership in the company on January 1, 2005 and serves in a leadership role working with other management to develop the company's vision and direction.

4.2. Stuart R. Lynde, NMP

Stuart R. Lynde is a Senior Project Manager at ES&C. He received his Bachelors degree from Lynchburg College in 1991 and went on to earn a Masters degree from Virginia Tech in 1994. His Masters degree focused on the effects of thermal discharges on leaf breakdown and macroinvertebrate communities as well as the development of a novel flow-through test for juvenile Asian clams (*Corbicula* sp.). He pursued his Doctoral degree until he formed ES&C in 1999. Mr. Lynde's doctoral research focused on the effects of cationic surfactants used as bio-fouling control agents on non-target organisms after the compounds were detoxified. While continuing to work on his degree, Mr. Lynde worked full-time for a Blacksburg consulting firm where he was a senior scientist managing the company's largest project in the coal fields of Virginia. Mr. Lynde is a Certified Virginia Nutrient Management planner and a Virginia Erosion Sediment and Control Combined Administrator. He is also on the faculty of Radford University.

Mr. Lynde has conducted research for clients on a variety of environmental issues. Some of these issues include the development of passive wetland systems for the treatment of leachate, evaluating the effects of wetland systems used for treating acid mine drainage, agricultural best management practices (BMPs), road construction, white phosphorous contamination, acid mine drainage, and a variety of industrial effluents on stream communities. He has extensive background in both sediment and aqueous phase toxicity testing using novel as well as EPA approved protocols. Some non-standard test approaches include various life stages (juvenile and glochidia) of native mussel species. His background in ecotoxicology led to the development of sediment and aqueous phase toxicity tests for juvenile Asian clams. He managed a watershed-scale ecological risk assessment resulting from an accidental discharge of coal-slurry into waters upstream of endangered species critical habitat, incorporating

field biological and chemical monitoring; aqueous and sediment phase toxicity testing; and endangered species surrogate studies and product testing. Mr. Lynde has conducted numerous studies that served as the basis for TMDL development with the Virginia Department of Mines Minerals and Energy.

Mr. Lynde has been an invited presenter at scientific meetings, an invited lecturer in college courses, and has 18 published abstracts and presentations at national and international scientific meetings. He has provided expert testimony in the areas of water quality, stream and habitat assessment in US Federal Court. He was the first student participant at a SETAC/USEPA sponsored Pellston Series Workshop, and received awards from SETAC and the Smith Mountain Lake Association. Mr. Lynde is a Virginia-certified Nutrient Management Planner (NMP) and a Virginia-certified Combined Administrator for erosion and sediment control.

Mr. Lynde's resume can be found in Appendix A.

4.3. Benjamin L. Leatherland, PWS. PWD, CPESC

Mr. Leatherland has over 15 years of experience in environmental science and natural resource management, with an additional two years of experience in urban/regional/municipal planning. He is currently responsible for project management, QA/QC review, technical report preparation, and fieldwork coordination. He has extensive experience in wetland delineation, watershed management and planning, stream restoration enhancement (natural channel design), Section 401/404 water quality permitting, lake/pond management, erosion and sediment control, sustainable development planning, habitat restoration and monitoring, wetland evaluation and restoration, stream surveying, urban/regional planning, NEPA/SEPA Environmental Assessment (EA) documentation, bioengineering stream bank stabilization, construction plan preparation, aquatic bioassessment, wildlife surveying, air pollution monitoring, protected species surveying, cultural/historic resource investigation, plan review, rezoning, and surface water/groundwater monitoring. Mr. Leatherland's M.S. degree research focused on watershed management and growth planning for the Lake Howell/Coddle Creek Reservoir water supply watershed.

Mr. Leatherland's resume can be found in Appendix A.

4.4. Gerald T. Shepard

Mr. Shepard is the lead taxonomist and lab manager heading ES&C's benthic studies team. Jerry brings to ES&C over 12 years of scholastic and professional experience working with aquatic invertebrate taxonomy, bio-monitoring principles, and stream studies. He earned a BS in Ecology and Aquatic Biology from the University of Wisconsin-Superior, and went on to earn a MS in Water Resources Science and Aquatic Ecology from the University of Wisconsin-Stevens Point. Mr. Shepard is NABS-certified for EPT Taxa East, General Arthropods East, and Chironomidae East. His graduate thesis project involved comparing new variations of the Hilsenhoff Biotic Index, utilizing species level taxonomy with samples collected monthly for a full year from riffle and snag habitats. Prior to joining ES&C, Jerry was a key taxonomist with the Great Lakes Environmental Center in Traverse City Michigan, working on the EPA's Wadeable Streams Assessment project. Under this position, he participated in the identification of over 250 macroinvertebrate samples that had been collected throughout the eastern half of the U.S. including Florida, Alabama, Louisiana, Georgia, Virginia, West Virginia, North Carolina, Pennsylvania, New England and New York. Mr. Shepard is also a Virginia-certified erosion and sediment control inspector.

Mr. Shepard's resume can be found in Appendix A.

4.5. Asa J. Spiller

Asa Spiller is a staff scientist and taxonomist for ES&C. Mr. Spiller earned his B.S. in Environmental Science from Virginia Tech in May of 2008. Mr. Spiller is NABS-certified for EPT Taxa East and General Arthropods East. He has experience in GPS mapping, stream assessment, wetland delineation, habitat surveying, and water quality monitoring. While a student, Mr. Spiller took a keen interest in aquatic macroinvertebrate systematics. Since joining ES&C in May 2007, Mr. Spiller has become a proficient taxonomist with a high QC rating. Outside of ES&C, he extends his expertise in macroinvertebrate taxonomy by volunteering as a program assistant with the Save Our Streams organization at Virginia Tech.

Mr. Spiller's resume can be found in Appendix A.

4.6. Nicole L. Martin

Nicole is ES&C's database manager. She received a BS in Wildlife and Biology from Virginia Tech. She has experience in the identification of local plant and animal species, including native birds, reptiles, and mammals. She has worked with the red wolf release program and many endangered species protection programs. She has presented many wildlife related topics to the public through both personal and television appearances.

Ms. Martin is responsible for database maintenance, oversight of QA/QC procedures, and she oversees all sample sorting staff. Nicole has been with ES&C for over six years. During that time, she has improved the company's system for tracking and processing samples, has updated all the company's standard operating procedures, is integral in the on-going process of database management, and has become the company's most proficient sample sorter.

Ms. Martin's resume can be found in Appendix A.

4.7. John R. Lauth, PhD

Dr. Lauth received his BS and MS in biology from Bowling Green State University in 1976 and 1983 respectively. He received his PhD in Aquatic Ecotoxicology from Virginia Tech in 1991. His undergraduate and graduate training emphasized the identification and use of marine and freshwater invertebrates in toxicological assessment. He tenured a two year Post Doctoral at the University of Kentucky, supervising a biomonitoring project for Martin Marietta, Oak Ridge National Laboratories. This project compared the infaunal taxonomic evaluation of streams flowing through a large production facility to standard bioassays of water from corresponding sampling stations. During this period, he was involved in several other projects involving benthic surveys.

Dr. Lauth has over 15 years experience in aquatic ecotoxicology. He has received funding for over 20 freshwater and marine studies, involving taxonomic and bioassay evaluations. Projects have involved both government and the private sector.

Dr. Lauth's innovative Modular Mesocosm design is currently in use at the NOAA, Center for Coastal Environmental Health and Biomolecular Research at Charleston, SC. This mesocosm system simulates all major physical characteristics of a

saltmarsh habitat freshwater intrusion and tidal flux to saltmarsh zonation. Validation of that design involved extensive taxonomic comparisons to field sites in South Carolina and Virginia. These comparisons included both infaunal and benthic macroscopic and microscopic organisms, demonstrating the ability to support the variety of species found in those natural systems. Unique sampling techniques have been developed for replicate sampling of infaunal taxa in mesocosms. All aspects of this project were coordinated under the supervision of Dr. Geoff Scott at the Center for Coastal Environmental Health and Biomolecular Research.

He has presented and published over 20 unique research papers, not including final reports to granting agencies.

Dr. Lauth has taught Zooplankton Ecology at Virginia Tech. This course had strong emphasis on the identification of freshwater and marine zooplankton and infaunal species. This focus was emphasized as a means of determining ecosystem health and diversity.

5. FACILITY DESCRIPTION

The ES&C algal unit is a separate lab specifically designed to handle Hazardous Algal Bloom (HAB) counts and research. This laboratory is equipped with a Beckman GPR refrigerated centrifuge with 500-ml swinging buckets for algal sample concentration along with both dissecting and compound microscopes. Air into and out of this room is controlled by clean-room hepa filters to minimize the transport of HAB species which may be produced during sample processing. This room has a self contained heating and air conditioning system with no external air exchange. The room has lighted racks for algal culture as well as bench space for analysis. All glassware or plasticware is decontaminated in a chlorine rinse prior to leaving the space. We have successfully been able to culture algae in this lab under various conditions ranging from fresh to salt water including; Chlorophytes and Haptophytes. ES&C's NRV algal unit has been in operation since 2009, while our work in GA has been ongoing since 2004. ES&C is very familiar with the taxonomy of the organism in question.

ES&C works under strict confidentiality for many of our clients. For this reason, we are unable to talk specifically about the WV strain of *p. parvum*. However, we have used a standard hemocytometer counting technique to provide numerous counts on similar flagellated algae for both in house cultures and for projects in Texas.

ES&C maintains approximately 1,300 sq ft of laboratory space used primarily for processing taxonomic samples. We maintain five workstations used solely for sorting and preparation of macroinvertebrate samples under a variety of methodologies. Each station has access to at least 10-x magnifications for use in helping to sort macroinvertebrates from debris.

We maintain up to three workstations where macroinvertebrate identification takes place with the latest keys. Scopes include stereo dissecting microscopes with magnification of up to 80-x, stereo compound microscopes with magnification up to 1000-x and phase contrast microscopy with magnification up to 1000-x. Additionally, ES&C has the added capability of a universal camera mount and a digital camera that can be attached to any of our microscopes.

ES&C has five computer workstations connected to our internal LAN, and a Windows server, which maintains all the data. The server runs a RAID Array of multiple drives, which allows for recovery of data should we experience a hard drive failure of one of the drives. Data is backed up from the server to another secure machine. Access to all shared drives and files are password secured with access controlled through Microsoft Active Directory. All these machines are protected from internet traffic via a Unix-based firewall. Mail and Web services are handled on separate Unix based machines maintained external to our LAN. All machines run updated virus protection and all internet traffic is scanned at the server for viruses and spam, before delivery.

5.1. Laboratory Information Management System

ES&C has developed a proprietary Laboratory Information Management System (LIMS) dedicated specifically for taxonomic information. Developed on the access platform, this system tracks all samples and subsamples, from time of receipt to final reporting. For each sample, all taxa are stored with their associated phylogenetic information as well as key descriptors including condition, life stage, uniqueness, and quantity. Additionally, if provided by the client, our system can handle many of the

habitat and site specific collection parameters used to make assessments including the most commonly used EPA's RBP habitat assessment protocols.

The ES&C LIMS also calculates "on-the-fly" over 100 biological metrics and indices associated with commonly monitored biological data. Some of these metrics include the most common diversity, structural and functional used in assessments today. Because the functions are programmed into the system, they are calculated the same way sample after sample, reducing many of the errors associated with spreadsheet calculations many other companies use.

ES&C's LIMS incorporates the best characteristics of both analytical laboratory LIMS with a unique biological laboratory system that is second to none in the industry.

5.2. Environmental Sampling Capacity

5.2.1. Taxonomy

For its clients, ES&C routinely provides taxonomic expertise in support of biological assessments. ES&C processes between 50-250 benthic, plankton, and periphyton samples monthly. We have provided these services to a wide range of public/tribal sector clients, including the U.S. Fish and Wildlife Service (Western Region), the Virginia Department of Mines Minerals and Energy, Virginia Department of Environmental Quality, West Virginia Department of Environmental Protection, the Shawnee Nation, and the County of Amherst, Virginia. Our private sector clients include consulting/engineering firms, industrial facilities, mining operations, citizen monitoring groups, and individuals.

Our taxonomists collectively hold level II certifications (genus level) from the North American Benthological Society for Eastern General Arthropods, Eastern EPT (Ephemeroptera, Plecoptera and Trichoptera) Taxa, Eastern Chironomidae, and Western EPT Taxa. ES&C's head taxonomist was trained in species level taxonomy, for most orders of insecta to comply with Wisconsin Department of Natural Resources standards on his graduate thesis project. Examples of some of the genera taken to species include *Isoperla* (*dicala*, *frisoni*, *signata* and *slossonae*), *Taeniopteryx* (*burksi* and *nivalis*), *Ephemerella* (*dorothea*, *subvaria*, *invaria*, *rotunda*), *Brachycentrus* (*americanus* and *numerosus*), *Ceratopsyche* (*bronta*, *morose bifida*, *slossonae*, *sparna* and *vexa*), *Cryptochironomus digitatus*, *Polypedilum* (*convictum*, *fallax*, *illinoense*), and

Caecidotea racovitzai. On questionable identifications, ES&C has connections with many invertebrate experts who are able to assist with species verifications.

ES&C personnel have collectively processed thousands of benthic samples from a wide array of habitat types. These include both lentic and lotic systems, and from natural, damaged, and constructed systems. ES&C employees are actively pursuing additional certifications through NABS. Most ES&C personnel working in the benthics program have, at a minimum, undergraduate degrees and most taxonomists have either advanced benthic training, or advanced graduate degrees.

5.2.2. Water Chemistry

At present, ES&C's laboratory staff can test for Chlorophyll, Dry weight and Ash Free Dry Weight, Coliform Bacteria, Heterotrophic Bacteria, pH, Hardness, Alkalinity, Conductivity, Dissolved Oxygen, Nitrate and Nitrite in water samples using methodologies provided by either Standard Methods for the Examination of Water and Waste Water, or the US EPA. For Analytes which ES&C is not currently set up to handle in-house by the approved methodologies (metals, gas range organics, etc), ES&C maintains agreements with a number of independent certified laboratories.

For drinking water analysis, all standard operating procedures are based on methodologies approved by the State of Virginia. In 2007, ES&C technicians began assessing drinking water samples for private home owners and real estate transactions. Additionally, ES&C technicians have been analyzing seston and periphyton samples for chlorophyll and ash free dry mass for various projects in Virginia, West Virginia and Texas since the spring of 2008.

5.3. Equipment Availability

Environmental Services & Consulting maintains a full compliment of biomonitoring supplies, allowing the company to conduct biomonitoring operations whenever necessary. In addition to basic biomonitoring field and lab supplies, ES&C's equipment includes, but is not limited to, the following:

- An explosion-proof room for storage of preservative filled samples
- Six dissecting microscopes
- Four compound microscopes
- Global positioning units
- Portable DO, pH, Temperature, and Conductivity meters

- YSI 556 Multimeter (currently set up for DO, pH, Temperature, and Conductivity)
- YSI Pro Plus multimeter (currently set up for DO, pH, Temperature and Conductivity).
- Extensive library of taxonomic identification keys (current list will be provided upon request)
- Gelman filtration funnels and filter pump.
- Drying oven
- Muffle furnace
- VWR 2010 digital incubator
- Boekel digital incubator
- Thermo Scientific Aquamate VIS Water Analysis Spectrophotometer
- Cadmium column (for analysis of nitrate and nitrite in drinking water)
- Auto refilling titration burettes
- VWR Clinical Centrifuge
- VWR Micro Centrifuge
- ISCO Autosampler with raingauge and bubbler attachments
- Various nets and sieves

6. REPRESENTATIVE CLIENT LIST

ES&C has provided environmental consulting services to a wide range of Federal, State, Municipal, Industrial and Commercial Clients. Below is a partial Client listing:

6.1. Federal and Tribal

- United States Fish and Wildlife Service
- United States Federal Emergency Management Agency
- United States Department of Homeland Security
- Eastern Shawnee Tribe of Oklahoma
- The Sac and Fox Nation
- Miami Tribe of Oklahoma
- Environment Canada

6.2. State, Municipal, University and Local Government

- Amherst County, Virginia
- Augusta County, Virginia
- James Madison University
- Montgomery County Maryland Department of Environmental Protection
- New River Community College
- Oklahoma Water Resources Board

- Radford University
- Southwest Virginia Community College
- Town of Appomattox, Virginia
- Town of Round Hill, Virginia
- Town of Scottsburg, Virginia
- Virginia Department of Environmental Quality
- Virginia Department of Forestry
- Virginia Department of Game and Inland Fisheries
- Virginia Department of Mines, Minerals, and Energy
- West Virginia Department of Environmental Protection

6.3. Commercial, Industrial, Engineering, and Developer

6.3.1. Industrial

- Blue Stone Block, Roanoke, VA
- Boxley Aggregates, Inc, Lynchburg, VA
- Tetra, Blacksburg, VA
- Hardy Road Trailer Court, Vinton, VA
- Lakewood Trailer Court, Halifax, VA

6.3.2. Developers

- Boone Homes Inc.
- Fralin & Waldron Developers & Builders Inc.
- Radford Homes Inc.
- Strauss Construction Inc.

6.3.3. Engineering Firms

- Branch Highways, Roanoke Virginia
- Gay & Neel, Christiansburg, Virginia
- Hurt & Proffitt, Lynchburg, Virginia
- KCI Technologies, Hunt Valley, Maryland
- Lumsden Associates, Roanoke, Virginia
- MapTech, Blacksburg, Virginia
- Potesta & Associates, Charleston, West Virginia
- Terradon, Charleston, West Virginia

- Spectrum Designs, Roanoke, Virginia

7. REPRESENTATIVE PROJECTS

ES&C has provided a wide range of environmental consulting services for federal and state agencies, municipalities, and educational institutions since its formation in 1999. A small group of those projects follow.

7.1. Nutrient Management Plans (NMP's) – Multiple Clients

Nutrient Management Plans (NMP) are used to indicate how primary nutrients, are to be controlled on farm fields and other land for crop production in order to protect groundwater and surface water from unnecessary nutrient enrichment. The plan includes operating procedures based on crop yield, existing nutrient levels in the soil, organic residuals, optimum timing and placement of nutrients, environmental resource protection, and agronomic practices such as liming, tilling, and crop rotation.

On or before July 1, 2006, all state agencies, state colleges and universities, and other state governmental entities that own land upon which fertilizer, manure, sewage sludge or other compounds containing nitrogen or phosphorous are applied to support agricultural, turf, plant growth, or other uses were required to develop and implement a nutrient management plan for such land.

ES&C was selected to prepare the Nutrient Management Plan for numerous state agencies including James Madison University, New River Community College and Southwest Virginia Community College.

7.2. Phase I Environmental Site Assessments (ESA's) – Multiple Clients

ES&C has prepared Phase I/Phase II Environmental Site Assessments (ESA's) for a variety of local and regional clients, including National Bank of Blacksburg, Goodwill Industries, Citgo, Fralin and Waldron Development, and the Cascade Industrial Park. A wide variety of sites have been assessed, including greenfield properties, former gas stations, manufacturing facilities, and convenience stores.

7.3. Wetland Delineations - Multiple Clients

ES&C has conducted wetland delineation and mapping projects throughout much of Virginia, on sites ranging from 0.25 acre to over 1,600 acres. We have delineated emergent, scrub-shrub, and forested wetlands in agricultural lands, residential

subdivisions, mountain valleys, riverine floodplains, and on former industrial/commercial sites. We have then mapped these wetland boundaries using sub-meter global position system (GPS) equipment, and prepared GIS maps for subsequent USACE jurisdictional determination/confirmation (which we coordinated with local and regional regulatory agency personnel). Our clients for these projects have included Hunter Construction, the Virginia Tech Corporate Research Park, Boone Homes of Roanoke, English Construction, Fralin and Waldron, Plastics 1, Radford Homes, Echols Farm, and the Edward Rose Company.

7.4. Stream Enhancement/Restoration – Multiple Clients

ES&C has worked extensively with local landowners to stabilize eroding streambanks, design and implement enhancement plans, and restore riparian buffer areas. We currently provide annual monitoring for four local projects with over 5,000 lf of enhanced stream channel and over 9,100 riparian buffer trees we've planted over the past four years alone. Additionally, we are currently working with Roanoke County on a stream enhancement plan for 4,000 lf of trout stream (using WQIF grant funding we assisted the County in securing). ES&C strives to utilize natural channel design and streambank bioengineering practices whenever conditions allow, as an alternative to extensive stream hardening/armoring. Our stream clients include Roanoke County, the City of Salem, Trout Unlimited, Boone Homes of Roanoke, Radford Homes, Auburnlea Farms, and Hunter Construction.

7.5. Section 404/401 Permitting and VPDES Permitting – Multiple Clients

ES&C has worked with multiple clients over the years on a variety of permitting projects. As part of land development efforts with stream and wetland impacts, we have provided Section 404/401 permitting services for residential development, roadway construction, landfills, and commercial business parks. When necessary, we have also planned and implemented compensatory mitigation efforts for these projects, and have provided inter-agency coordination. Additionally, we have provided VPDES permitting services for new and existing industrial, municipal waste, and aviation facilities. We are currently monitoring stormwater runoff from many of these sites for water chemistry analysis and Whole Effluent Toxicity (WET), PCB's, and benthic macroinvertebrates.

7.6. Radford University

ES&C was recently selected to prepare permit applications for the repair of three stormwater outfalls for Radford University. These outfall repairs require three permits, including one from the Corps of Engineers, Virginia Marine Resources Commission, and Virginia Department of Environmental Quality. ES&C is preparing the application and associated drawings, coordinating with appropriate agencies personnel and will complete this work in the next 30 days.

7.7. Virginia Department of Mines Minerals and Energy

ES&C has provided stream assessments and taxonomic support for numerous streams in support of TMDL development for Southwest Virginia streams, including the Black Creek watershed, Middle Creek Watershed, Dumps Creek Watershed and Callahan Creek watershed. These projects included collection of all samples as well as data analysis and interpretation.

7.8. Amherst County Landfill

The Closed Amherst County Landfill was leaking leachate into surrounding streams. The leachate was significantly impairing the aquatic life in the receiving system, and the county was failing to meet permit limits for whole effluent toxicity. ES&C was selected to complete the TIE/TRE where the previous consultant failed. ES&C verified the mode of toxicity, and developed a cost effective, phased passive treatment option to eliminate toxicity. A passive system was required because of the rural location and lack of power to the site. The treatment options designed included the use of wetland cells to polish the final effluent. Since the implementation of ES&C's design, the county has not seen any toxicity in their effluent and the receiving system is recovering.

7.9. US Fish and Wildlife Service (FWS) – Sacramento River

Between 1999 and 2001, the FWS collected 75 1-m² quantitative benthic macroinvertebrate samples from the Sacramento River Watershed, CA. The samples were collected in support of the Central Valley Project Improvement Act (P.L. 102-575) which requires doubling the natural production of anadromous fish stocks. ES&C provided taxonomic support as well as biomass for these samples with abundance values as high as 16 thousand individuals per square meter.

7.10. Mason's Crest

When Radford Homes, one of Southwest Virginia's Leading Developers, needed to delineate streams and wetlands in its 240 acre site in Roanoke County, Virginia, they selected ES&C. The site is connected on boundary to the Blue Ridge Parkway and is hailed as one of the "last chance" view sheds in the area. Initial stream and wetland impacts to the site were over 2000 linear feet of stream and ½ an acre of forested wetland. ES&C delineated six wetland areas and four streams on the site. Working with the developer, its engineers, the Army Corps of Engineers, the National Park Service, and the Department of Environmental Quality, ES&C helped reduce both stream and wetland impacts as well as provided mitigation options, including preservation, buffer enhancements, and stream/wetland restoration.

7.11. Montgomery County, MD

The Montgomery County Maryland Department of Environmental Quality collects benthic macroinvertebrate samples from local streams and rivers annually as part of their water quality assessment program. These samples are preserved in the field, and a minimum of 100 organisms is sub sampled for identification. ES&C has been contracted to identify the 2006-2008 samples to the lowest practical taxon (typically genus level), with chironomidae (midge flies) and oligochaeta (segmented worms) separated and identified to the subfamily or tribe level. Additionally ES&C is handling data entry and the addition of specimens not currently in the Montgomery County reference collection.

7.12. Black Diamond Ranch

The Black Diamond Ranch is the largest residential development project in the history of Craig County, Virginia. The Black Diamond Ranch includes 1,680 acres of land in Maggie, Virginia and 103 individual lots. ES&C was contracted to perform all environmental work associated with this project including stream and wetland delineations, water permitting, and compensatory mitigation. This project was a unique and exciting challenge due to the sheer size of the project, the time constraints involved, and the environmental challenges involved. We mapped over ten miles of stream and more than 20 wetlands over a 10 day span. Environmental challenges included working with site designers, engineers, and regulatory officials in order to navigate through sensitive issues such as the presence of the federally-endangered James Spiny mussel

and state-threatened Atlantic Pigtoe, road crossings of wild trout waters, and time-of-year restrictions concerning construction activities. Environmental Services and Consulting has successfully crossed many hurdles over the course of this project and is currently awaiting final approval from the many state and federal agencies involved.

7.13. Martin County Coal

On October 11, 2000, a release of 250 million gallons of coal slurry into Coldwater and Wolf Creeks in Martin County, Kentucky devastated about 100 miles of streams and rivers. Potesta & Associates is one of the engineering firms conducting risk evaluation and clean-up of the system. ES&C was contracted to provide the taxonomic expertise necessary to make the critical evaluations on recovery. In addition to providing taxonomic expertise, ES&C has produced and maintains the reference collection, and provided insight into multiple other issues associated with this project.

7.14. Federally Ordered Lagoon Closure

In 2006, EPA and the State ordered the closure of a sewage lagoon in Bedford County, VA for discharging without a NPDES permit. This high profile case was put under significant scrutiny as a result of the litigation. ES&C was contracted to prepare the closure plan and oversee the closure of lagoon. Approximately 265,000 gallons of water and sludge were pumped from the lagoon and the remaining solids were stabilized in place. Several times during the closure process local regulators inspected the facility with only positive comment. ES&C provided final closure of the lagoon in October 2006, below estimated agency costs.

7.15. Potesta and Associates

Beginning in spring of 2008 to the present, ES&C has been contracted by Potesta and Associates to analyze seston and periphyton samples for Chlorophyll A, Ash Free Dry Mass, and Selenium content. Four to five replicate samples for each analyte, from up to thirty stations are collected from various mining related projects throughout the state of West Virginia, and delivered to ES&C personnel on a bi-weekly basis. Chlorophyll samples are filtered onto Whatman GFF filters within 24 hours of collection, and later processed using SM 10200-H. Ash Free Dry Mass samples are filtered onto pre-ashed and pre-weighed filters before being analyzed according to SM 10300-C.5. Lastly, Selenium samples are filtered onto Teflon filters which are then

preserved with a nitric acid solution. These are sent to an outside laboratory for analysis via EPA method 6020.

7.16. Accutest Gulf Coast

In 2007, Environmental Services & Consulting, INC. was contracted to identify soft and diatom algae, and run Chlorophyll analysis on phytoplankton samples collected by Accutest Gulf Coast from 3 stations in Southern Texas. The samples were collected from 3 sites within a freshwater stream. Samples were shipped over-night to ES&C in cold storage. Algal samples were preserved with a gluteraldehyde solution immediately upon receipt, and kept in cold storage until they could be identified. Chlorophyll samples were filtered onto GFF filters, frozen, and shipped on ice to an independent laboratory for analysis.

APPENDIX A

ES&C EMPLOYEE RESUMES AND CERTIFICATIONS

STUART R. LYNDE

President



PROJECT ASSIGNMENT

Project Management

EDUCATION

Ph.D. candidate in Biology, Virginia Tech, Blacksburg, Virginia. 1994 to 1999.

M.S. in Zoology (Aquatic Ecotoxicology), Virginia Tech, Blacksburg, Virginia. 1994.

Thesis title: Techniques for Evaluating Power Plant Discharges Using In-situ Leaf Breakdown and Flow-through Sediment Bioassays.

B.S. in Biological Science, Lynchburg College, Lynchburg VA, 1991

CERTIFICATIONS

Virginia Erosion and Sediment Control Combined Administrator, #519, Expires November, 2008

Applied Fluvial Geomorphology, Level I, October, 2004

Virginia Certified Nutrient Management Planner, #486, Expires October, 2006

40-h HAZWOPER training, Expires April, 2005

RELATED EXPERIENCE

Mr. Lynde has conducted research for clients on a variety of environmental issues. Some of these issues include the development of passive wetland systems for the treatment of leachate, evaluating the effects of wetland systems used for treating acid mine drainage, agricultural best management practices (BMPs), road construction, white phosphorous contamination, acid mine drainage, and a variety of industrial effluents on stream communities. He has extensive background in both sediment and aqueous phase toxicity testing using novel as well as EPA approved protocols. Some non-standard test approaches include various life stages (juvenile and glochidia) of native mussel species. His background in ecotoxicology led to the development of sediment and aqueous phase toxicity tests for juvenile Asian clams. He managed a watershed-scale ecological risk assessment resulting from an accidental discharge of coal-slurry into waters upstream of endangered species critical habitat, incorporating field biological and chemical monitoring; aqueous and sediment phase toxicity testing; endangered species surrogate studies and product testing.

Impact Assessments



PROFESSIONAL AFFILIATIONS

American Society for Testing and Materials

North American Benthological Society

Roanoke Regional Homebuilders Association

Virginia Academy of Science

Virginia Association of Wetland Professionals

Virginia Mining Association

Water Environment Federation



NICOLE L. MARTIN

QA/QC, Data Entry Specialist



PROJECT ASSIGNMENT

Laboratory Management

EDUCATION

B.S. in Wildlife Science and Biology, Virginia Tech, Blacksburg, Virginia. 1999.

RELATED EXPERIENCE

Nicole Martin is the database manager for ES&C, and is responsible for database maintenance all QA/QC procedures and overseeing sample sorting staff. She has worked for ES&C for five years, during which she has improved the company's system for tracking and processing samples, has updated all the company's standard operating procedures, is integral in the on-going process of database management, and has become the company's most proficient sample sorter. She received her bachelor's degrees in both wildlife sciences and biology from Virginia Polytechnical Institute in 1999. Nicole has focused her career on both local ecosystems as well as local and exotic species. She has experience in field identification of many local species of flora and fauna. She has also provided species identification services to the public for native birds, reptiles and mammals in all life stages. Nicole Martin is also familiar with modern and traditional wildlife management practices. She has participated in an ongoing study of white-footed mouse distribution through various habitat types and a salamander species distribution study using capture and release methods. She has worked with the red wolf release program and many endangered species protection programs. Nicole Martin has studied many wildlife issues and has presented these issues to the public through both personal presentation and television appearances.

PROFESSIONAL AFFILIATIONS

American Society for Testing and Materials

North American Benthological Society

Roanoke Regional Homebuilders Association

Virginia Academy of Science

Virginia Association of Wetland Professionals

Virginia Mining Association

Water Environment Federation



BENJAMIN L. LEATHERLAND, P.W.S., CPESC

Senior Environmental Scientist



PROJECT ASSIGNMENT

Project management, field assessment, report preparation, QA/QC

EDUCATION

M.S. in Geography (Environmental Planning), University of North Carolina at Charlotte, Charlotte, NC, 2000

B.S. in Earth Science (Biology minor), University of North Carolina at Charlotte, Charlotte, NC, 1994

CERTIFICATIONS

Professional Wetland Scientist (PWS) No. 1360

Certified Professional in Erosion and Sediment Control (CPESC) No. 2535

PROFESSIONAL AFFILIATIONS

Society of Wetland Scientists

Izaak Walton League of America

RELATED EXPERIENCE

Mr. Leatherland has over ten years of experience in environmental science and natural resource management, with an additional two years of experience in urban/regional/municipal planning. He is currently responsible for project management, QA/QC review, technical report preparation, and fieldwork coordination. He is experienced in **wetland delineation**, watershed management and planning, **stream restoration/enhancement (natural channel design)**, **Section 401/404 water quality permitting**, sustainable development planning, habitat restoration and monitoring, wetland evaluation and restoration, lake management, **stream surveying**, urban/regional planning, **NEPA/SEPA Environmental Assessment (EA) documentation**, **bioengineering streambank stabilization**, construction plan preparation, aquatic bioassessment, wildlife surveying, air pollution monitoring, protected species surveying, cultural/historic resource investigation, plan review, rezoning, **surface water/groundwater monitoring**, and public speaking. His Master's degree research focused on watershed management and growth planning for the Lake Howell/Coddle Creek Reservoir water supply watershed.





Society of Wetland Scientists Certification Program, Inc.

grants the designation

Professional Wetland Scientist

to

Benjamin L. Leatherland

In recognition of all the professional requirements approved by the Society of Wetland Scientists Certification Program, Inc. and verified by the Society's Certification Review Panel on the 10th of December, 2002.

Professional Wetland Scientist number 00001360



R. Harold Jones, President

The
Certification Review Committee
certifies that

Benjamin J. Featherland

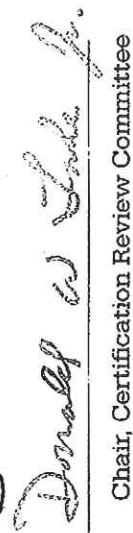
Subscribes to the Code of Ethics and has met the requirements
Established by the CPESC Council as a

Certified Professional in Erosion and Sediment Control

Certification No.: 2535

Certification Date: December 21, 2002


Chair, CPESC Council


Chair, Certification Review Committee



JOHN R. LAUTH, PHD

Taxonomist

PROJECT ASSIGNMENT

Taxonomy/Sample Prep

EDUCATION

Virginia Polytechnic Institute and State University, Ph.D. in Zoology, December, 1990.

Dissertation Title: Incorporation of single species, short term chronic toxicity test methodology into a multi-level community based toxicity test.

Bowling Green State University, MS in Biological Science, 1983

Thesis Title: The effects of chrysotile asbestos on a planktonic alga (*Cryptomonas erosa* var *Reflexa* Marsson).

University of Miami Field Station at Pigeon Key, Summer Session, 1975

Gulf Coast Research Laboratory, Summer Session, 1975

Bowling Green State University, BS in Biological Science, 1976

RELATED EXPERIENCE

Dr. Lauth received his Bachelors and Masters of Science in biology from Bowling Green State University in 1976 and 1983 respectively. He received his PhD in Aquatic Ecotoxicology from Virginia Tech in 1991. His undergraduate and graduate training emphasized the identification and use of marine and freshwater invertebrates, zooplankton, periphyton, and phytoplankton in toxicological assessment. He tenured a two year Post Doctoral at the University of Kentucky, supervising a biomonitoring project for Martin Marietta, Oak Ridge National Laboratories. This project compared the infaunal taxonomic evaluation of streams flowing through a large production facility to standard bioassays of water from corresponding sampling stations. During this period, he was involved in several other projects involving benthic surveys.

Dr. Lauth has over 15 years experience in aquatic ecotoxicology. He received funding for over 20 freshwater and marine studies, involving taxonomic and bioassay evaluations utilizing zooplankton, phytoplankton, periphyton, benthic organisms, etc. Projects have involved both government and the private sector clients.



Dr. Lauth's innovative Modular Mesocosm design is currently in use at the NOAA, Center for Coastal Environmental Health and Biomolecular Research at Charleston, SC. This mesocosm system simulates all major physical characteristics of a saltmarsh habitat freshwater intrusion and tidal flux to saltmarsh zonation. Validation of that design involved extensive taxonomic comparisons to field sites in South Carolina and Virginia. These comparisons included both infaunal and benthic macroscopic and microscopic organisms, demonstrating the ability to support the variety of species found in those natural systems. Unique sampling techniques have been developed for replicate sampling of infaunal taxa in mesocosms. All aspects of this project were coordinated under the supervision of Dr. Geoff Scott at the Center for Coastal Environmental Health and Biomolecular Research.

Dr. Lauth has been working since 2004 with ES&C in the evaluation and Identification of Freshwater, Estuarine and Marine algal samples. Projects have included the isolation, growth and maintenance of benthic and pelagic algal species, including microflagellate organisms (Cryptophytes, Chrysophytes, Prymnesiophytes (haptophytes), Bacillariophytes, etc.). *Isochrysis* and *Rhodomonas* species are in continuous culture as experimental and reference stock.

PUBLICATIONS

DeLorenzo, M.E., J. Lauth, P.L. Pennington, G.I. Scott and P.E. Ross. 1999. Atrazine effects on the microbial food web in tidal creek mesocosms. *Aquat. Toxicol.* 46: 241-251.

Dyer S D, Lauth J R, Morrall S W, Herzog R R, Cherry D S. 1997. Development of a Chronic Toxicity Structure Activity Relationship for Alkyl Sulfates. *Environmental Toxicology and Water Quality*. 295-303

Dyer S D, Stanton D T, Lauth J R, Cherry D S. 1998. Acute and Chronic Structure Activity Relationships for Alcohol Ether Sulfates. *Environmental Toxicology & Chemistry*.

Dyer SD, Stanton DT, Lauth JR & Cherry DS. 2000. Structure-activity relationships for acute and chronic toxicity of alcohol ether sulfates. *Environmental Toxicology and Chemistry* 19: 608-616

Lauth, J.R., S.D. Dyer, S.E. Belanger, and D.S. Cherry. 1996. A novel flow-through method for toxicity assessments using



Ceriodaphnia dubia. Environmental Toxicology and Water Quality 11:335-343

Lauth, J. R., G.I. Scott, D.S. Cherry and A.L. Buikema. 1996. A Modular Estuarine Mesocosm. Environmental Toxicology and Chemistry 15:630-637.

Lauth, J.R., D.S. Cherry and J. Cairns Jr. 1990. A single reconstituted water formulation for the culture and toxicity testing of algae, invertebrates and fish. Environmental Auditor 1:209-219.

PUBLISHED ABSTRACTS

Lauth, J. and K. Schurr. 1984. Entry of chrysotile asbestos fibers from water into the planktonic alga (*Cryptomonas erosa*). Micron and Microscopica Acta 15:113-114.

Lauth, J. and K. Schurr. 1983. Some effects of chrysotile asbestos on a planktonic algae (*Cryptomonas erosa*). Micron 14:93-94.

Lauth, J., S. Shepka and K. Schurr. 1983. Observations on the ultrastructure of *Aurelia aurita*, Scyphistoma. Micron 14:95-96.

Lauth, J. and B. Rosen. 1982. Observations on variations in the lateral antennae apertures of soft bodied and loricate pelagic rotifers. Micron 13:55-56.

PROFESSIONAL AFFILIATIONS

Society of Environmental Toxicology and Chemistry

VITA

John Robert Lauth

Home Address: John R. Lauth, PhD

PO Box 83

High Shoals, GA 30645

Phone: (706) 310-1355

Cell Phone: (540) 239-1528

Education:

Virginia Polytechnic Institute and State University, Ph.D. in Zoology, December, 1990.

Bowling Green State University, MS in Biological Science, 1983

University of Miami Field Station at Pigeon Key, Summer Session, 1975

Gulf Coast Research Laboratory, Summer Session, 1975

Bowling Green State University, BS in Biological Science, 1976

Relevant Curriculum:

Graduate:

Advanced Comparative Animal Physiology Environmental Science-Water

Aquatic Ecology Microbiology of Aquatic Systems

Behavioral Ecology Scanning Electron Microscopy

Biological Documentation Techniques Theoretical Ecology

Biometry Transmission Electron Microscopy

Ecosystem Dynamics

Undergraduate:

Algology Limnology

Bacteriology Marine Biology

Biophotography Marine Ecology

Cytology Marine Invertebrate Ecology

Environmental Biology Marine Palaeoecology

Genetics Organic Chemistry

Invertebrate Zoology Physics (Relativity)

Positions Held:

Consulting Ecologist and Aquaculture Biologist	January, 2004 – Present Evaluation of coastal, intertidal and near shore ecological systems. Incorporation of mesocosm structure into specific ecological systems. Taxonomic evaluation of experimental and field ecological systems and organisms (zooplankton, phytoplankton, periphyton etc). Routinely identify plankton samples for use as a food source in aquaculture..
Scientific equipment sales repair and maintenance	May, 2001 – June, 2004 I currently purchase, repair and resell Scientific instruments. I specialize in optical and sampling equipment for toxicological and aquatic fields.
Shellfish Hatchery Design and Construction	May, 2000 – May, 2001 Design, construction and operation of a shellfish hatchery located in McClellanville, South Carolina. After one year, financial limitations forced the operation to close. Identified problem zooplankton organisms in the grow-out facility (holding tanks).
Substitute School Teacher	October, 1996 – April, 2000 Substitute School Teacher High School and Middle School for Montgomery County Public Schools, Virginia. Extended assignments include Agriculture education, Biology, Mathematics and Computer Science.
Consulting Ecologist and Aquaculture Biologist	October, 1998 – October, 1999 Design and construction of Tidal Estuary Mesocosms at NOAA, National Ocean Service, Southeast Research Center, Fort Johnson, Charleston, South Carolina. Design, construction and implementation of closed circuit shrimp hatchery and clam hatchery. Design and construction of water quality control methods for existing flow-through clam hatchery operations. Design and construction of pilot plant facility for the testing of changes in production methodology prior to implementation. . Identified problem zooplankton organisms in the grow-out facility (holding tanks).
Research Scientist Virginia Polytechnic Institute and State University Blacksburg, Virginia	January, 1992 – October, 1998 Solicit funding from public and private granting sources. Direct the funded research projects pertaining to water quality issues. Report findings of funded projects to the appropriated funding agencies and research publications or societies.

Positions Held (Continued):

Research Associate Virginia Polytechnic Institute and State University Blacksburg, Virginia	August, 1991 – December 1991 Solicit funding from public and private granting sources. Direct the funded research projects pertaining to water quality issues. Report findings of funded projects to the appropriated funding agencies and research publications or societies.
Assistant Research Professor, University of Kentucky, Lexington, Kentucky	May, 1990 - August, 1991 Supervise ongoing ecological and toxicological assessments of wetlands and waterways surrounding the Paducah Gaseous Diffusion Plant, Paducah, KY. Project manager, Martin Marietta, Oak Ridge National Laboratory, Oak Ridge, TN.
Graduate Research Assistant Virginia Polytechnic Institute and State University Blacksburg, Virginia	1986-May, 1990 Supervise grant related research projects. Report project findings to appropriate granting agencies.
Graduate Teaching Assistant Virginia Polytechnic Institute and State University Blacksburg, Virginia	Fall, 1988 Aquatic Microbiology laboratory instructor. All aspects of laboratory management and instruction, including laboratory planning and prep, field trip planning, testing and grading.
Electron Microscope Specialist Virginia-Maryland Regional College of Veterinary Medicine Virginia Polytechnic Institute and State University Blacksburg, Virginia	1984-1985 Maintenance and operation of one scanning electron microscope and one transmission electron microscope. Carried out fixation and preparation of samples for observation in electron microscopes and did processing and printing of negatives from the electron microscopes.
Biological Technician Herzel Canning Company Toledo, Ohio	1983 Assemble and organize a food testing laboratory for quality control in a new tomato canning factory in Ottawa, Ohio. Operated a new quality control laboratory through the first canning season and assist in problem solving.

Positions Held (Continued):

Graduate Teaching Assistant Bowling Green State University Bowling Green, Ohio	1982 Instructional duties included teaching laboratory sections in General Biology, preparing administering and grading lab exams and exercises. Helped to design new lab exercises for the transition to the semester system instituted at BGSU in 1983.
Research and Development, American Lincoln Division Scott and Fetzer Corp. Bowling Green, Ohio	1976-81 Design, layout, prototyping and testing of industrial floor cleaning machinery.

Grants Received:

Virginia Department of Agriculture and Commerce	1998, Fate, Transport, and Toxicity of Copper Based Agricultural Pesticides (Kocide) in Runoff Waters to Simulated Estuaries; a Comparison of Plasticulture and no till Farming Practices, (\$95,000)
EPA, EPSCOR	1997 - 1999, An integrated assessment of reproductive and developmental risks to estuarine communities exposed to hazardous chemicals through trophic transfer, (\$135,000).
US Army Corps of Engineers Waterways Experiment Station	1997 -1999, Evaluation of dredge infill material toxicity using estuarine mesocosms, (\$100,000)
National Oceanographic and Atmospheric Administration	1996, The toxicity of Atrazine to estuarine mesocosms, Principal Investigator, (\$19,019).
The Procter and Gamble Company	1996, Development of the quantitative structure relationship (QSR) for alkyl ethoxy sulfates, using <i>Ceriodaphnia dubia</i> reproduction in continuous flow toxicity tests (continuation for final report), Principal Investigator, (\$1,000).
National Oceanographic and Atmospheric Administration / US Army Corps of Engineers Waterways Experiment Station	1995-1999, The simulation of Suisun Bay California tidal estuary to test efficacy of establishing high marsh communities on dredge infill material, Principal Investigator, (\$20,000 per quarter).
National Oceanographic and Atmospheric Administration	1993, The toxicity of Endosulfan to estuarine mesocosms, Principal Investigator, (\$5,000).

Grants Received (Continued):

National Oceanographic and Atmospheric Administration	1993, Preliminary validation of a tidal estuary simulation using a non-point delivery of pesticides, phase I: sample collection and transportation to Virginia Tech, Principal Investigator, (\$5,000).
National Oceanographic and Atmospheric Administration	1993-1999, Salary for visiting assistant professor to develop and validate a tidal estuary simulation for the evaluation of point and non-point source runoff, Principal Investigator, (\$151,000).
The Procter and Gamble Company	1993, Grant in aid to assist in the development of the quantitative structure relationship (QSR) for alkyl ethoxy sulfates, using <i>Ceriodaphnia dubia</i> reproduction in continuous flow toxicity tests, Principal Investigator, (\$15,000).
The Procter and Gamble Company	1993-1995, Development of the quantitative structure relationship (QSR) for alkyl ethoxy sulfates, using <i>Ceriodaphnia dubia</i> reproduction in continuous flow toxicity tests, Principal Investigator, (\$151,730).
The Procter and Gamble Company	1992-1995, Development of the quantitative structure relationship (QSR) for alkyl sulfates, using <i>Ceriodaphnia dubia</i> reproduction in continuous flow toxicity tests, Principal Investigator, (\$60,036).
The Procter and Gamble Company, Folley Paper Mill	1992-1994, Assessment of effluent toxicity in a black water river, using <i>Ceriodaphnia dubia</i> reproductive impairment and fathead minnow (<i>Pimephales promelas</i>) growth impairment, Co-Investigator, (\$43,000).
Betz Laboratories	1992-1995, The effects of CLAM-TROL (CT-1) on <i>Ceriodaphnia dubia</i> reproduction and fathead minnow (<i>Pimephales promelas</i>) growth in continuous flow toxicity tests, Co-Investigator, (\$78,400).
The Procter and Gamble Company	1991-1992, The effects of C ₁₂ -alkyl sulfate on <i>Ceriodaphnia dubia</i> reproduction and fathead minnow (<i>Pimephales promelas</i>) Growth, Principal Investigator, (\$19,890).

Grants Received (Continued):

The Procter and Gamble Company	1991-1992, Development and validation of flow-thru short-term chronic bioassays using <i>Ceriodaphnia dubia</i> and the fathead minnow (<i>Pimephales promelas</i>), Co-Investigator, (\$9,700).
International Paper Company	1988-1990, Testing for chronic toxicity of effluent and receiving system water to the fathead minnow and <i>Ceriodaphnia dubia</i> (Pine Bluff, Arkansas; Pineville, Louisiana; Camden, Arkansas; Texarkana, Arkansas paper mills), Co-Investigator, (\$31,000).
Borg Warner Corporation	1985-1988, Possible synergistic effects of effluent constituents on fish in the receiving system, Morgantown, WV, Co-Investigator, (\$48,000).
Bowling Green State University Graduate Student Senate	1982, Electron microscope analysis of chrysotile asbestos entry to single cell planktonic alga, Principal Investigator, (\$200).

Professional Activities:

NOAA Fisheries, Charleston, SC	Fall, 1998 Design and Install four estuarine mesocosms into the research facility at Fort Johnson, Charleston, SC
College of Charleston Charleston, SC	March, 1997 Invited lecture titled "Aquatic Mesocosms: The Good, The Bad and The Ugly". Presented to Grice Marine Laboratory Aquatic Ecology Seminar group. Discussed advances in wetland ecology, attitudes of regulatory agencies and the relevance of mesocosms to the evaluation, regulation and remediation of human impact on aquatic ecosystems.
College of William & Mary Williamsburg, VA	March, 1997 Invited lecture titled "Aquatic Mesocosms: The Good, The Bad and The Ugly". Presented to Environmental Ethics Seminar group, Department of Sociology. Discussed advances in wetland ecology, attitudes of regulatory agencies and the relevance of mesocosms to the evaluation, regulation and remediation of human impact on aquatic ecosystems.

Professional Activities (Continued):

USDA Agricultural Research Station Beltsville, MD	Feb., 1996 Invited as wetland ecologist to evaluate USDA approaches for addressing agricultural pesticide runoff into wetland ecosystems.
Greater Washington Marine Aquarium Society Washington, DC	Nov., 1995 Invited lecture to "Reef Aquarium" workshop. Discussion of methods of maintaining water quality in closed ecosystem simulations. Presented foam fractionation and foam floatation methods for the removal of surfactants (cationic and anionic), organic molecules and heavy metals from closed and open ecosystems.
ABC Labs Colombia, Missouri	1993, Transfer of technology from research conducted at Virginia Tech. Coordinate the development of daphnia flow-through bioassay program in a private lab for the Procter and Gamble Company, Cincinnati, OH.
Arthur Buikema, Blacksburg, VA 24060	1992, Zooplankton analysis for Biological Monitoring Inc., Blacksburg, VA.
Coast Watch Incorporated Vancouver, British Colombia Canada	1992, Literature review and analysis of potential asbestos biohazard. Coast Watch concerned about the sinking of a Canadian destroyer in Vancouver Sound to create an artificial reef.
Davis and Floyd, Associates Greenwood, SC	1989, Instruction of personnel on procedures for fathead minnow toxicity testing.
Environmental Systems Service, LTD, Culpeper, VA	1989, Setup of aquatic toxicity testing facility and training of personnel.
Celanese Fibers Corporation Narrows, VA	1986-1989, Monitoring of chlorination and impact upon Asiatic clam (<i>Corbicula</i>) control.
Borg Warner Corporation Morgantown, WV	1985, Management of toxic effluents and possible synergistic effects.

Teaching Experience:

Zooplankton Ecology (Virginia Tech)

Aquatic Microbiology (Virginia Tech)

Invertebrate Zoology (Bowling Green State University)

General Biology (Bowling Green State University)

Professional Societies:

Society of Environmental Toxicology and Chemistry

Editorial Experience:

Reviewed for Hydrobiologia and Environmental Toxicology and Chemistry

Reviewed grant proposals for the South Carolina Sea Grant Consortium, EPSCOR, the USEPA and the National Marine Fisheries Service

Abstracts Published:

Lauth, J. and K. Schurr. 1984. Entry of chrysotile asbestos fibers from water into the planktonic alga (*Cryptomonas erosa*). *Micron and Microscopica Acta* 15:113-114.

Lauth, J. and K. Schurr. 1983. Some effects of chrysotile asbestos on a planktonic algae (*Cryptomonas erosa*). *Micron* 14:93-94.

Lauth, J., S. Shepka and K. Schurr. 1983. Observations on the ultrastructure of *Aurelia aurita*, Scyphistoma. *Micron* 14:95-96.

Lauth, J. and B. Rosen. 1982. Observations on variations in the lateral antennae apertures of soft bodied and loricate pelagic rotifers. *Micron* 13:55-56.

Papers Presented:

Lauth J.R. G.I. Scott, A.L. Buikema, Jr., and D.S. Cherry. 1994. Use of a modular mesocosm to evaluate pesticide effects on estuarine ecosystems. Presented to the Society of Environmental Toxicology and Chemistry, Fifteenth Annual Meeting, Denver, Colorado.

Lauth J.R. A.L. Buikema, Jr., D.S. Cherry, and John Cairns, Jr. 1993. A Modular Approach to Ecosystem Simulations. Presented to the Second International Symposium on Ecosystem Health, Blacksburg, Virginia.

Lauth J.R. and D.S. Cherry. 1988. A single reconstituted water formulation for the culture and toxicity testing of algae, invertebrates and fish. Presented to the Society of Environmental Toxicology and Chemistry, Ninth Annual Meeting, Alexandria, Virginia.

Lauth, J. and K. Schurr. 1984. Entry of chrysotile asbestos fibers from water into the planktonic alga (*Cryptomonas erosa*). Presented to the Northwestern Ohio Electron Microscope Society Meeting, Medical College of Ohio, Toledo, Ohio.

Papers Presented (Continued):

- Schurr, K. and J. Lauth. 1983. Biological effects of chrysotile asbestos at levels commonly found in aquatic environments. Presented to the Michigan Academy of Science, Arts, and Letters meeting, Eastern Michigan University, Ypsilanti, Michigan.
- Lauth, J. and K. Schurr. 1983. Some effects of chrysotile asbestos on the ultrastructure and population dynamics of *Cryptomonas erosa* (a planktonic algae). Presented to the Ohio Academy of Science Meeting, Bowling Green State University, Bowling Green, Ohio.
- Lauth, J. and K. Schurr. 1983. Some effects of chrysotile asbestos on a planktonic algae (*Cryptomonas erosa*). Presented to the Northwestern Ohio Electron Microscope Society Meeting, Bowling Green State University, Bowling Green, Ohio.
- Lauth, J. and B. Rosen. 1982. Observations on variations in the lateral antennae apertures of soft bodied and loricate pelagic rotifers. Presented to the Northwestern Ohio Electron Microscope Society Meeting, Toledo University, Toledo, Ohio.

Poster Sessions Presented:

- DeLorenzo, M.E., P.E. Ross, and J.R. Lauth. 1996. Agricultural pesticide runoff in tidal creeks: effects on microbial loop communities. Presented to the Society of Environmental Toxicology and Chemistry, Seventeenth Annual Meeting, Washington D.C.
- J.R. Lauth, G.E. Scott and D.S. Cherry. 1995. Evaluation of ecosystem level effects of endosulfan and atrazine to modular estuarine mesocosms. Presented to the Society of Environmental Toxicology and Chemistry, Sixteenth Annual Meeting, Vancouver, British Colombia, Canada.
- S.R. Lynde, K.J. Reubush, J.M. Roper, W.J. Van Wart, J.R. Webster, D.S. Cherry and J.R. Lauth. 1994 In-situ and artificial stream studies on the effect of thermal addition on leaf breakdown. Presented to the Society of Environmental Toxicology and Chemistry, Fifteenth Annual Meeting, Denver, Colorado.
- Lauth J.R., J.R. Bidwell, and D.S. Cherry. 1992. The chronic toxicity of surfactants to fathead minnows and daphnids in static and flow-through bioassays. Presented to the Society of Environmental Toxicology and Chemistry, Thirteenth Annual Meeting, Cincinnati, Ohio.
- Lauth J.R., D.S. Cherry, J. Cairns Jr. and T.W. Snell. 1989. Validation of a freshwater replacement for *Artemia salina* as a food source in the seven-day fathead minnow larval growth test. Presented to the Society of Environmental Toxicology and Chemistry, Tenth Annual Meeting, Toronto, Canada.
- Lauth J.R. and D.S. Cherry. 1988. Improvements in the reliability of the US EPA recommended 7-day fathead minnow growth test. Presented to the Society of Environmental Toxicology and Chemistry, Ninth Annual Meeting, Alexandria, Virginia.

Poster Sessions Presented (Continued):

Lauth J.R. and D.S. Cherry. 1987. Comparison of the toxicity of Cd, Cu, Zn and phenol to organisms at different trophic levels using reconstituted water. Presented to the Society of Environmental Toxicology and Chemistry, Eighth Annual Meeting, Pensacola Hilton, Pensacola, Florida.

Belanger, S.E., D.S. Cherry, J.R. Lauth, J. Cairns Jr. and K. Schurr. 1986. Response of aquatic organisms to chrysotile asbestos: an overview. Presented to the Society of Environmental Toxicology and Chemistry, Seventh Annual Meeting, Radison Mark Plaza Hotel, Alexandria, Virginia.

Lauth, J., S. Shepka and K. Schurr. 1983. Observations on the ultrastructure of *Aurelia aurita* Scyphistoma. Presented to the Northwestern Ohio Electron Microscope Society Meeting, Bowling Green State University, Bowling Green, Ohio.

Publications:

DeLorenzo, M.E., J. Lauth, P.L. Pennington, G.I. Scott and P.E. Ross. 1999. Atrazine effects on the microbial food web in tidal creek mesocosms. *Aquat. Toxicol.* 46: 241-251.

Dyer S D, Lauth J R, Morrall S W, Herzog R R, Cherry D S. 1997. Development of a Chronic Toxicity Structure Activity Relationship for Alkyl Sulfates. *Environmental Toxicology and Water Quality*. 295-303

Dyer S D, Stanton D T, Lauth J R, Cherry D S. 1998. Acute and Chronic Structure Activity Relationships for Alcohol Ether Sulfates. *Environmental Toxicology & Chemistry*.

Dyer SD, Stanton DT, Lauth JR & Cherry DS. 2000. Structure-activity relationships for acute and chronic toxicity of alcohol ether sulfates. *Environmental Toxicology and Chemistry* 19: 608-616

Lauth, J.R., S.D. Dyer, S.E. Belanger, and D.S. Cherry. 1996. A novel flow-through method for toxicity assessments using *Ceriodaphnia dubia*. *Environmental Toxicology and Water Quality* 11:335-343

Lauth, J. R., G.I. Scott, D.S. Cherry and A.L. Buikema. 1996. A Modular Estuarine Mesocosm. *Environmental Toxicology and Chemistry* 15:630-637.

Lauth, J.R., D.S. Cherry and J. Cairns Jr. 1990. A single reconstituted water formulation for the culture and toxicity testing of algae, invertebrates and fish. *Environmental Auditor* 1:209-219.

M. S. Thesis:

Lauth, J.R. 1983. The effects of chrysotile asbestos on a planktonic alga (*Cryptomonas erosa* var *Reflexa* Marsson). Department of Biological Sciences, Bowling Green State University, Bowling Green, Ohio.

Ph. D. Dissertation:

Lauth, J.R. 1990. Incorporation of single species, short term chronic toxicity test methodology into a multi-level community based toxicity test. Biology Department, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.

GERALD T. SHEPARD

Senior Scientist



PROJECT ASSIGNMENT

Aquatic Entomologist / Head Taxonomist

Erosion and Sediment Inspector

EDUCATION

M.S. in Water Resources Ecology. University of Wisconsin – Stevens Point, 2002

B.S. in Ecology and Aquatic Biology. University of Wisconsin – Superior. 1997

CERTIFICATIONS

NABS Invertebrate Taxonomy Level II – Eastern Chironomidae – February 2006.

NABS Invertebrate Taxonomy Level II – Eastern EPT Taxa – June 2007

NABS Invertebrate Taxonomy Level II - Eastern General Arthropods - May 2009

NABS Invertebrate Taxonomy Level II - Western EPT Taxa - May 2009

Virginia Dept. of Conservation Erosion and Sediment Control Inspector – March 2006

PUBLICATIONS

G. T. Shepard and S. W. Szczytko. 2001. Comparison between Riffle and Snag Habitats in a Central Wisconsin Trout Stream Using Modified Biotic Indices. Poster Abstract, Bulletin of the North American Benthological Society, 18(1).

G.T. Shepard. 2002. Establishment of a True Biotic Index and Comparison between Riffle and Snag Habitats in Bearskin Creek, Oneida County Wisconsin, Using a Modified Biotic Index. M.S. Thesis. University of Wisconsin, Stevens Point.

G.T. Shepard, S.R. Lynde, and N.L. Martin. 2007. Does Failure in Sorting Really Affect the Data? Poster Abstract. Bulletin of the North American Benthological Society. 24 (1)

RELATED EXPERIENCE

Jerry brings to ES&C over 9 years of scholastic and professional experience working with aquatic invertebrate taxonomy, biomonitoring principles, and stream studies. He earned a BS in Ecology and Aquatic Biology from the University of Wisconsin-Superior, and went on to earn a

MS in Water Resources Ecology from the University of Wisconsin-Stevens Point. His graduate project involved comparing new variations of the Hilsenhoff Biotic Index, utilizing species level taxonomy with samples from riffle and snag habitats, collected monthly over the course of a year. He presented some of his preliminary results at the NABS 2001 meeting in Lacrosse, WI. During his studies Jerry also assisted undergraduate students by leading field trips and holding study sessions for the aquatic entomology course. He also worked in the Wisconsin Aquatic Entomology Laboratory sorting and identifying invertebrate samples for the Wisconsin Department of Natural Resources. Prior to joining ES&C Jerry was a key taxonomist with the Great Lakes Environmental Center in Traverse City Michigan, working on the EPA's Wadeable Streams Assessment project. Under this position, he helped to train sorting personnel and participated in the genus level identification of over 250 macroinvertebrate samples collected from throughout the eastern half of the U.S. including Florida, Alabama, Louisiana, Georgia, Virginia, West Virginia, North Carolina, Pennsylvania, New Jersey, and New York. Currently Jerry serves as ES&C's top invertebrate taxonomist and lab manager, with duties that include identification of samples, management of the company reference library, oversight of laboratory operations including sorting personnel and other taxonomists, oversight of benthic field operations, and researching threatened or endangered species habitat and locality info for development permitting applications. Jerry also serves as an erosion and sediment inspector, monitoring construction sites to ensure compliance with state sediment control minimum standards.

PROFESSIONAL AFFILIATIONS

American Society for Testing and Materials

North American Benthological Society

Roanoke Regional Homebuilders Association

Virginia Academy of Science

Virginia Association of Wetland Professionals

Virginia Mining Association

Water Environment Federation

Wisconsin Cooperative Fisheries Research Unit

TAXONOMIC Certification

This certificate is awarded to

GERALD T. SHEPARD

*in recognition of the successful completion for
Level 2 Group 3 Eastern Chironomidae*

NORTH AMERICAN BENTHOLOGICAL SOCIETY

Feb 1st 2006
Date


Dr. Trevor Reynoldson

TAXONOMIC CERTIFICATION

This certificate is awarded to

GERALD SHEPARD

in recognition of the successful completion for

LEVEL 2 GROUP 2 EASTERN EPHEMEROPTER, PLECOPTERA and TRICHOPTERA

NORTH AMERICAN BENTHOLOGICAL SOCIETY



Dr. Trefor Reynoldson

June 1, 2007

Date

TAXONOMIC CERTIFICATION

This certificate is awarded to

GERALD SHEPARD

In recognition of excellence for specimen identification to Genus

Eastern Arthropods

NORTH AMERICAN BENTHOLOGICAL SOCIETY

June, 2009

Date

Dr. Murray Colbo

TAXONOMIC CERTIFICATION

This certificate is awarded to

GERALD SHEPARD

In recognition of excellence for specimen identification to Genus

Western Ephemeroptera, Plecoptera & Trichoptera

NORTH AMERICAN BENTHOLOGICAL SOCIETY



M. H. Colbo




Dr. Murray Colbo



Date

June, 2009

ON-LINE ESC INSPECTOR RE-CERTIFICATION PROGRAM

STEP 5: PRINT YOUR NEW CERTIFICATE

	<p>COMMONWEALTH OF VIRGINIA</p> <p>Soil and Water Conservation Board 203 Governor Street, Suite 206, Richmond, Virginia 23219 Telephone (804) 786-2064</p>	
<p>EROSION AND SEDIMENT CONTROL INSPECTOR</p>		
<p>Expires 05/31/2012</p>	<p>Gerald Shepard</p>	<p>Certificate Number 3492</p>
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: left;">  <p><small>Department of Conservation & Recreation 1000 North 2nd Street, Suite 100, Richmond, VA 23219</small></p> </div> <div style="text-align: right;"> <p><i>Jack E. Frye</i> Director Division of Soil & Water Conservation</p> </div> </div>		

	<p>COMMONWEALTH OF VIRGINIA</p> <p>Soil and Water Conservation Board 203 Governor Street, Suite 206 Richmond, Virginia 23219 Telephone (804) 786-2064</p>	
<p>EROSION AND SEDIMENT CONTROL INSPECTOR</p>		
<p>Expires 05/31/2012</p>	<p>Gerald Shepard</p>	<p>Certificate 3492</p>
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: left;"> <p><i>Joseph H. Maroon</i> Secretary of the Board</p> </div> <div style="text-align: right;"> <p><i>David L. Moyer</i> Chairman of the Board</p> </div> </div>		

ASA SPILLER

Staff Scientist/Taxonomist

PROJECT ASSIGNMENT

Aquatic Invertebrate Taxonomist

EDUCATION

B.S. in Environmental Science from Virginia Tech, Blacksburg, Virginia. 2008.

CERTIFICATIONS

Save our Streams Volunteer Biomonitoring

NABS Level II Group 1 Eastern General Arthropods Certification

NABS Level II Group 2 Eastern EPT Certification

RELATED EXPERIENCE

Asa Spiller is a staff scientist at Environmental Services & Consulting. Asa brings 5 years of scholastic experience with work in aquatic and terrestrial biology with a focus on freshwater ecology and aquatic entomology. Asa's primary duties include taxonomic classification (to genus level), secondary quality control identification of aquatic invertebrates as well as field coordination and project management. His fieldwork experience includes aquatic macroinvertebrate sampling, stream surveying, stream rating using Virginia's Unified Stream Methodology, GPS surveys using a Trimble unit, as well as testing and monitoring of chemical and physical characteristics of both lakes and streams.

PROFESSIONAL AFFILIATIONS

Soil and Water Conservation Society

American Society for Testing and Materials

North American Benthological Society

Roanoke Regional Homebuilders Association

Virginia Academy of Science

Virginia Association of Wetland Professionals

Virginia Mining Association

Water Environment Federation



TAXONOMIC CERTIFICATION

This certificate is awarded to

ASA SPILLER

in recognition of excellence in specimen identifications to Genus for

Eastern Ephemeroptera, Plecoptera and Trichoptera

NORTH AMERICAN BENTHOLOGICAL SOCIETY



Dr. Trefor Reynoldson

October, 2008

Date

TAXONOMIC CERTIFICATION

This certificate is awarded to

ASA SPIELER

*In recognition of excellence for specimen identification to Genus
Eastern Other Arthropods*

NORTH AMERICAN BENTHOLOGICAL SOCIETY

September 2009

Date

Dr. Murray Colbo

M. Colbo.



Environmental Services and Consulting, Inc.
P.O. Box 11437
Blacksburg, VA 24060
540-552-0144

Certificate of Analysis

Report Date: 8/15/2011

Prepared for:

DWWM Contact
WV DEP - DWWM
601 - 57th Street

Charleston, WV 25304

ES&C Project ID: 11-WVDEP03-001

Date Received: 8/16/2011

Client Provided Information

Project ID: DEP15509

Comments:

DEMO REPORT - Algal Cell Counts using hemocytometer (SM10200) for presence of Pymnesium sp.

Certification

Analytical Data are presented on the following pages of this report. Results are provided based on the methods noted. If you have any questions or need further assistance, please contact our office at 540-552-0144.

Submitted By:

Reviewed and Approved by:



Final Report

Project: 11-WVDEP03-001
Report Date: 8/15/2011

Analytical Results

ES&C Sample ID	Description	Date/Time Collected	Matrix	Sample Type	Conc.	Present / Absent	Reporting Limit	MDL	Units	Date/Time Analyzed	Analyst	Method
10559-A	WWT of Glade Fork	8/15/11 11:50	Surface Water	Grab	<449	A	449	5	Cells/mL	8/16/11 9:00	MO, SRL	SM10200
10560-A	Simpson Creek	8/15/11 11:35	Surface Water	Grab	<449	A	449	5	Cells/mL	8/16/11 9:00	MO, SRL	SM10200
10561-A	Indian Creek	8/15/11 11:25	Surface Water	Grab	<449	P	449	5	Cells/mL	8/16/11 9:00	MO, SRL	SM10200
10562-A	Cabin Creek	8/15/11 11:05	Surface Water	Grab	<449	P	449	5	Cells/mL	8/16/11 9:00	MO, SRL	SM10200
10563-A	Stony Creek	8/15/11 10:35	Surface Water	Grab	<449	A	449	5	Cells/mL	8/16/11 9:00	MO, SRL	SM10200
10564-A	Robison Run	8/15/11 8:30	Surface Water	Grab	557	P	449	5	Cells/mL	8/16/11 9:00	MO, SRL	SM10200
10565-A	Elk Creek	8/15/11 8:50	Surface Water	Grab	<449	P	449	5	Cells/mL	8/16/11 9:00	MO, SRL	SM10200
10566-A	Baker Run	8/15/11 9:00	Surface Water	Grab	<449	P	449	5	Cells/mL	8/16/11 9:00	MO, SRL	SM10200
10567-A	UNT/South Fork /WV FK/Dunkard Ck.	8/15/11 9:15	Surface Water	Grab	<449	P	449	5	Cells/mL	8/16/11 9:00	MO, SRL	SM10200
10568-A	WV Fork/Dunkard Creek	8/15/11 9:25	Surface Water	Grab	<449	P	449	5	Cells/mL	8/16/11 9:00	MO, SRL	SM10200
10569-A	South Fork/WV Fork/Dunkard Ck.	8/15/11 9:40	Surface Water	Grab	502	P	449	5	Cells/mL	8/16/11 9:00	MO, SRL	SM10200
10570-A	Flaggy Meadow Run	8/15/11 9:50	Surface Water	Grab	<449	P	449	5	Cells/mL	8/16/11 9:00	MO, SRL	SM10200
10571-A	Dunkard Creek	8/15/11 10:15	Surface Water	Grab	<449	P	449	5	Cells/mL	8/16/11 9:00	MO, SRL	SM10200