

Q11-1053

**PROVIDE PROCESSING AND
IDENTIFICATION OF
BENTHIC MACROINVERTEBRATE
SAMPLES COLLECTED FROM
WEST VIRGINIA WATERS**

RFQ No. DEP15456

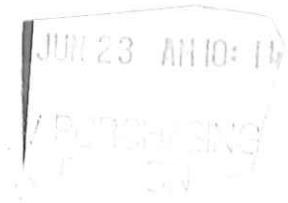
Prepared for

Environmental Protection
Department of Division of Water and Waste Management
601 57th Street SE
Charleston, West Virginia 25304

Prepared by

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June 23, 2011





Versar's team of professional scientists have been supporting implementation of all elements of the Clean Water Act since its initial passage in 1972. Our proposed staff for providing services to the West Virginia Department of Environmental Protection, Division of Water and Waste Management (DWWM) for RFQ # DEP15456 comes with highly recognized qualifications the will provide that highest quality data in support of this contract. Versar's team of professional scientists and laboratory technicians typically process over 1000 samples a year so we are fully staffed and capable of meeting the demands of processing up to 500 samples for DWWM as required for this contract.

Ms. Lisa Scott will be Program Manager for this project. In this capacity, she will be Versar's liaison with DWWM and will be responsible for creating all data files for submittal, will oversee and coordinate all laboratory procedures and will be the final arbiter of any QA/QC issues. She joined Versar as a macroinvertebrate taxonomist in 1983 and has been Versar's Laboratory Manager since 1986. She is a specialist in developing and implementing macroinvertebrate Quality Control/Quality Assurance Plans. Ms. Scott was coauthor, along with other Versar scientists, of the U.S. EPA's EMAP macroinvertebrate processing manual, which included one of the first nationally recognized Quality Control/Quality Assurance Plans for a nationwide macroinvertebrate sampling program. This document became the blueprint for other national, state, and local programs developed since authored in 1994. Ms. Scott was also an invited participant and speaker at a special session held at a North American Benthological Society (NABS) meeting devoted to the development, implementation, and results of QA/QC methods designed for macroinvertebrate sampling programs.

Mr. Istvan Turcsanyi, will be providing taxonomic identifications for this project. Mr. Turcsanyi joined Versar as a Taxonomist in 2010 and since then has provided his taxonomic expertise to numerous projects for federal and local government agencies such as the U.S. National Park Service, Frederick County, MD, Division of Public Works, and Howard County MD. Previous to joining Versar, he was employed by the Maryland Department of Natural Resources as a Taxonomist, responsible for taxonomic identifications of macroinvertebrate samples collected statewide for the Maryland Biological Stream Survey (MBSS) program. Mr. Istvan is a genus level, NAB's certified taxonomist for east coast EPT and Chironomidae organisms.

Mr. Mike Winnell owner of Freshwater Benthic Services, will be the Senior Taxonomist for this contact providing all QA/QC for the project and assisting Mr. Turcsanyi when needed to ensure timely completion of sample processing. He is a nationally recognized freshwater taxonomist providing such services for clients since the early 1980's. He has teamed with Versar since the early 1990's providing taxonomic services for national, state, and local contracts held by Versar. He was one of the first taxonomists to get the east coast NABS certification for all taxonomic categories to the genus level, and as such has been used by U.S. EPA to verify taxonomic identifications from freshwater programs collected across the nation as part of the Wadable Streams Assessment Program.

In addition to Versar's taxonomic experts, employs four full-time staff for the express purpose of processing (i.e, sorting) macroinvertebrate samples such as those required for this RFQ. The staff has, on average, 7 years experience in the sorting and processing of macroinvertebrates with a documented quality control rate of over 95% efficiency. These full-time technicians also have



field experience in the collection of macroinvertebrate samples so they are highly qualified to process these samples for DWWM.

The laboratory and taxonomic methods that will be utilized by Versar staff for the processing of the samples provided by will follow the methods provided in the RFQ announcement. Since these protocols are intensive and complete they will not be repeated in this submission but will be followed to meet all of DWWM's requirements. All laboratory data sheets produced by the sample processing will be provided to DWWM's contract manager at the conclusion of sample processing along with a data file of all taxonomic identifications, counts, and station/habitat information as requested by the RFQ.

Project management will be provided by Ms. Lisa Scott. She will be responsible for all sample processing tracking to be sure project deadlines are met. She will provide all QC for sample sorting procedures. With over 28 years of sample sorting experience and no failed QC's over this timeframe, Ms Scott's impressive record of sorting efficiency makes her highly qualified for this process. Although the RFQ requires 5% of the samples be resorted, Versar routinely provides clients with a 10% QC effort of each laboratory technicians samples. All resorting results will be documented and if sorting efficiency of 10% is not maintained, then all samples sorted by the technician will be resorted and rechecked. Additionally, if the technician passes the QC but misses more than 5% of the specimens, they will be retrained to maintain high quality performance

Ms. Scott will also be final arbiter of any discrepancies found during the taxonomic identification QC. Versar will provide taxonomic QC on 10% of the samples processed. All differences detected by Mr. Winnell will be tracked and recorded on a bench datasheet and discussed with Mr. Turcsanyi. If sample identification errors exceed 10% then all samples will be reprocessed. If the sample passes the QC but identification errors exceed 5%, then retraining will be conducted. As Senior Taxonomist, Mr. Winnell's identification will be considered final if differences are detected between taxonomists. If final resolution in identification is considered in question, Ms. Scott will employ a third highly qualified NAB's certified taxonomist to resolve any differences.

Ms. Scott will ensure that all sample processing and data compilation will be completed following the schedule provided in the RFQ. The final product delivered to DWWM will include an MS Excel or Access file either provided by or approved by DWWM staff. This file will contain all station identification information and taxonomic information and count needed or required by DWWM staff. All laboratory bench sheets including original identification sheets and all sorting and taxonomic QC sheets will be submitted at completion of the project. All specimens sorted and identified will also be returned to DWWM staff at project completion. If required, all unsorted and sorted portions of the samples will be returned to DWWM staff. If not required, Versar will maintain these samples for 2 years (or more if required) in our storage area in Columbia.

The proposed Versar team has the equipment, laboratories, taxonomic literature, and staff required to meet all of DWWM's needs for timely contract completion and for providing a high quality final product. A list of literature to be used for this project is provided in the Appendix. The Versar team, highlighted above, consistently provides clients with the same high quality



product on thousands of biological samples processed in our laboratories on a yearly basis. Because of our reputation and the amount of samples processed in the Versar laboratories on a yearly basis, we are able to maintain and support long-term staff with highly regarded qualifications. As such, DWWM staff can be assured that the product produced by Versar will be unmatched in quality and provided within the timeframe required.

Brief Resume of Key Personnel and Individual Consultants Anticipated for this Project.	
a. Name & Title: Lisa C. Scott, Environmental Scientist	a. Name & Title: Michael H. Winnell, Owner
b. Project Assignment: Benthic Laboratory Manager	b. Project Assignment: Senior Taxonomist
c. Name of Firm with which Associated: Versar, Inc.	c. Name of Firm with which Associated: Freshwater Benthic Services, Inc.
d. Years Experience: With This Firm: 28 With Others: 0	d. Years Experience: With This Firm: 34 With Others: 6
e. Education (Degree / Year / Specialization): B.A./1983/Biology, University of Maryland, Baltimore County, MD	e. Education (Degree / Year / Specialization): M.S./1975/Fisheries, University of Michigan
f. Active Registration: (Year First Registered/Discipline): 1995/ North American Benthological Society	f. Active Registration: (Year First Registered/Discipline): 2006/North American Benthological Society
g. Other experience and qualifications relevant to the proposed project: Ms Scott specializes in macroinvertebrate ecology and their use in environmental and habitat assessments and as ecological indicators. She is an expert in the design and implementation of monitoring programs that involve EPA's Rapid Bioassessment Protocol for freshwater systems, development and implementation of QA/QC protocols, and the taxonomy of freshwater macroinvertebrates. <u>Delaware Department of Natural Resources and Environmental Control</u> – Ms Scott was Laboratory Manager and QA/QC Officer for the processing of 54 samples collected from freshwater streams collected in 2010. Versar, Inc passed a laboratory audit conducted by DNREC personnel with a high quality result. <u>Department of Building and Development, Loudoun County, VA</u> - Ms Scott was Laboratory Manager and QA/QC Officer for 200 macroinvertebrate samples collected from sampling sites throughout the county in 2009 as part of a study designed to assess the quality of the county's natural resources. Ms Scott provided taxonomic identifications and managed sample processing using MBSS laboratory methods. <u>NPDES MS4 Services, Frederick County, MD</u> – Ms Scott is the Laboratory Manager for a contract to support the county with its NPDES requirements. Ms Scott oversees all benthic sample sorting procedures, provides taxonomic identifications, and conducts all laboratory QA/QC procedures to ensure high quality data using MBSS methods. This is currently the third 5-year contract with the County <u>National Park Service</u> – Ms Scott is laboratory manager for a multi-year project to process freshwater samples collected from national parks in the mid-Atlantic region. Versar, Inc., personnel are responsible for sample collection, sorting and taxonomic identifications for all samples collected for this project <u>Countywide Stream Monitoring, Baltimore County, MD</u> – Ms Scott was Senior Taxonomist for a 5-year contract to collect benthic macroinvertebrate samples, water quality data, and information on physical habitat conditions at 100 sites each year. The program used MBSS field and laboratory methods, and Ms Scott supervised all laboratory personnel, provided taxonomic identifications, conducted all QA/QC procedures, and prepared project reports.	g. Other experience and qualifications relevant to the proposed project: Mr. Winnell is the owner of a consulting business that provides benthic invertebrate taxonomy, design of field sampling procedures, statistical analyses of data, ecological interpretation of results, and written reports. He is an expert in the taxonomy of a wide variety of invertebrates including Oligochaeta, Hirudinea, Isopoda, Amphipoda, Gastropoda, Pelecypoda, and a wide variety of Insecta, e.g., Ephemeroptera, Trichoptera, Plecoptera, Odonata, Diptera, etc., with particular expertise in the Chironomidae and Oligochaeta. He has NAB's certification for the taxonomy of all freshwater groups from all regions of the continental U.S. He served as the Quality Control taxonomist for EPA's Wadable Streams Assessment program. Mr. Winnell has functioned as an expert benthic taxonomist for the University of Michigan, the Environmental Protection Agency, National Oceanographic and Atmospheric Administration, United States Army Corps of Engineers, United States National Forest Service, Maine Department of Environmental Protection, Illinois Environmental Protection Agency, Mississippi Department of Environmental Protection, Tennessee Valley Authority, Delaware Department of Natural Resources and Environmental Control, Metropolitan Sanitary District of Greater Chicago, and Michigan Department of Natural Resources. He has identified benthic invertebrates from 46 U.S. states and 2 other countries and maintains an extensive personal taxonomic library and reference collection of benthic invertebrates. <u>Bioassessment Monitoring, Anne Arundel County, MD</u> – Mr. Winnel was Senior Taxonomist for 55 samples collected from the Patapsco Tidal and Bodkin Creek watersheds in spring 2009 for which the data will be incorporated by Anne Arundel County into its Watershed Management Tool as part of a comprehensive watershed assessment to support restoration planning. <u>Department of Building and Development, Loudoun County, VA</u> – Mr. Winnell was Senior Taxonomist for 200 macroinvertebrate samples collected from 200 random freshwater sites throughout the county in spring 2009 as part a program designed to assess the quality of the county's natural resources.

TAXONOMIC CERTIFICATION

This certificate is awarded to

MIKE WINNELL

in recognition of the successful completion for

LEVEL 2 GROUP 3 EASTERN CHIRONOMIDAE

NORTH AMERICAN BENTHOLOGICAL SOCIETY



Dr. Trefor Reynoldson

June, 2006

Date

TAXONOMIC CERTIFICATION

This certificate is awarded to

MIKE WINNELL

in recognition of the successful completion for

LEVEL 2 GROUP 2 EASTERN EPHEMEROPTERA, PLECOPTERA, and TRICHOPTERA

NORTH AMERICAN BENTHOLOGICAL SOCIETY



Dr. Trefor Reynoldson

June, 2006
Date

TAXONOMIC CERTIFICATION

This certificate is awarded to

MIKE WINNELL

in recognition of the successful completion for
LEVEL 2 GROUP 1 EASTERN-OTHER ARTHROPODA

NORTH AMERICAN BENTHOLOGICAL SOCIETY



Dr. Trefor Reynoldson

June, 2006

Date

TAXONOMIC CERTIFICATION

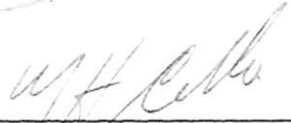
This five year certification is awarded to

ISTVAN TURCSANYI

In recognition of excellence for specimen identification to Genus for

*Eastern
Chironomidae*

NORTH AMERICAN BENTHOLOGICAL SOCIETY



Dr. Murray Colbo

December, 2015

Date of Expiry

TAXONOMIC CERTIFICATION

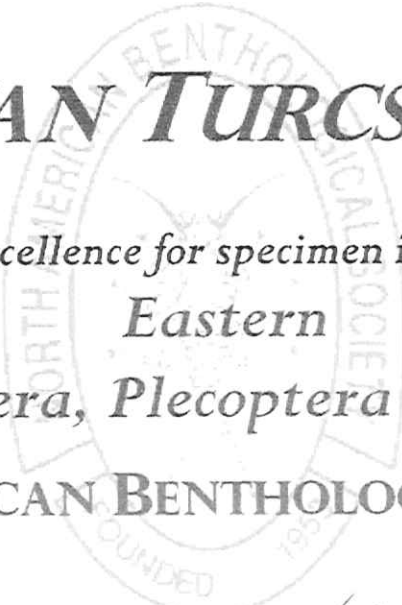
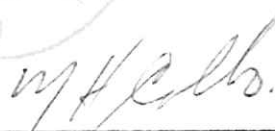
This certificate is awarded to

ISTVAN TURCSANYI

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

Ephemeroptera, Plecoptera & Trichoptera

NORTH AMERICAN BENTHOLOGICAL SOCIETY

Dr. Murray Colbo

Date September, 2009



APPENDIX

LIST OF TAXONOMIC KEYS TO BE USED

General Keys

- Brigham, A.R., W.U. Brigham, and A. Gnilka (eds.). 1982. Aquatic Insects and Oligochaetes North and South Carolina. Midwest Aquatic Enterprises, Mahomet, IL.
- Merritt, R.W., and K.W. Cummins (eds.). 1995. An Introduction to the Aquatic Insects of North America. 3rd edition. Kendall/Hunt Publishing Company, Dubuque, Iowa.
- Merritt, R.W., K.W. Cummins, and M.B. Berg (eds.). 2008. An Introduction to the Aquatic Insects of North America. 4th edition/ revised edition. Kendall/Hunt Publishing Company, Dubuque, Iowa.
- Peckarsky, B.L., P.R. Fraissinet, M.A. Penton, and D.J. Conklin, Jr. 1990. Freshwater Macroinvertebrates of Northeastern North America. Cornell University Press, Ithaca, New York.
- Pennack, R.W. 1978. Fresh-water Invertebrates of the United States. 2nd edition. John Wiley & Sons, New York.
- Pennak, R.W. 1989. Fresh-water Invertebrates of the United States-Protozoa to Mollusca. 3RD Edition. John Wiley and Sons, Inc., New York, New York. 628 pp.
- Pfeiffer, J., Kosnicki, E., Bilger, M., Marshall, B.D. and W. Davis. 2008. Taxonomic Aids for Mid-Atlantic Benthic Macroinvertebrates (Ephemeroptera: Baetidae; Pleoptera: Capniidae/Leuctridae; Diptera: Simuliidae). EPA-260-R-08-014. United States Environmental Protection Agency, Office of Environmental Information, Environmental Analysis Division, Washington, DC. Available on-line at: <http://www.epa.gov/bioindicators/html/publications.html>
- Smith, D.G. 2001. Pennak's Freshwater Invertebrates of the United States: Porifera to Crustacea. 4th edition. John Wiley & Sons, New York.
- Thorp, J.H and A.P. Covich, Eds. 2001. Ecology and Classification of North American Freshwater Invertebrates. Second Edition. Academic Press.

Annelida

- Brinkhurst, R.O. 1986. Guide to the freshwater aquatic microdile oligochaetes of North America. *Canadian Special Publication of Fisheries and Aquatic Sciences* **84**: 259 pp.
- Klemm, D.J. (ed.). 1985. A guide to the freshwater Annelida (Polychaeta, nauid and tibificid Oligochaeta, and Hirudinea) of North America. Kendall/Hunt Publishing Co., Dubuque, Iowa.

Klemm, D.J. 1997. Identification Guide to the Freshwater Leeches (Annelida: Hirudinea) of Florida and Other Southern States. Florida Department of Environmental Protection, Division of Water Facilities, Tallahassee, FL. Available on-line at: <http://publicfiles.dep.state.fl.us/dear/labs/biology/biokeys/leeches.pdf>

Milligan, M.R. 1997. Identification Manual for the Aquatic Oligochaeta of Florida: Volume I- Freshwater Oligochaetes. Florida Department of Environmental Protection, Division of Water Facilities, Tallahassee, FL. Available on-line at: <http://publicfiles.dep.state.fl.us/dear/labs/biology/biokeys/oligofw.pdf>

Crustacea

Hobbs, H.H., Jr. 1972. Biota of Freshwater Ecosystems, Identification Manual no. 9. Crayfishes (Astacidae) of North and Middle America. EPA-WPCRS No. 18050, ELD05/72. Supt. Doc. No. 5501-0399, United States Environmental Protection Agency, Washington, D.C. 173 pp. Available on-line at: <http://www.epa.gov/nscep/index.html>

Holsinger, J.R. 1972. Biota of Freshwater Ecosystems, Identification Manual no. 5. Freshwater amphipod crustaceans (Gammaridae) of North America. WPCRS No. 18050, ELD04/72. Supt. Doc. No. 5501-0369, United States Environmental Protection Agency, Washington, D.C. 89 pp.

Jezerinac, R.F., G.W. Stocker, and D.C. Tarter. 1995. The Crayfishes (Decapoda: Cambaridae) of West Virginia. Ohio Biological Survey Bulletin. New Series. Vol. 10, No.1.

Rogers, D.C. and M. Hill. 2008. Key to the Freshwater Malacostraca (Crustacea) of the Mid-Atlantic Region. EPA-230-R-08-017. United States Environmental Protection Agency, Office of Environmental Information, Environmental Analysis Division, Washington, D.C. Available on-line at: <http://www.epa.gov/bioindicators/pdf/EPA-230-R-08-017KeystotheFreshwaterMalacostracaoftheMid-AtlanticRegion.pdf>

Taylor, C.A., and G.A. Schuster. 2004. The Crayfishes of Kentucky. Illinois Natural History Survey Special Publication No. 28. 219 pp.

Williams, W.D. 1972. Biota of Freshwater Ecosystems, Identification Manual no. 7. Freshwater isopods (Asellidae) of North America. WPCRS No. 18050, ELD05-72. Supt. Doc. No. 5501-0390, United States Environmental Protection Agency, Washington, D.C. 45 pp.

Acarina

Pluchino, E.S. 1984. Guide to the Common Water Mite Genera of Florida. Florida Department of Environmental Regulation, Technical Series Vol. 7 No. 1. Orlando, Florida. Available on-line at: <http://publicfiles.dep.state.fl.us/dear/labs/biology/biokeys/mites.pdf>

Ephemeroptera

- Bednarik, A.F. and W.P. McCafferty. 1979. Biosystematic revision of the genus *Stenonoma* (Ephemeroptera: Heptageniidae). *Canadian Bulletin of Fisheries and Aquatic Sciences* 21:1-73.
- Berner, L. and M.L. Pescador. 1988. 2nd Ed. The mayflies of Florida. Univ. Florida Press, Gainesville, Florida. 352 pp.
- Burks, B.D. 1953. The mayflies, or Ephemeroptera, of Illinois. Illinois Natural History Survey (Urbana) Bulletin 26, Part 1:1-211.
- Edmunds, G.F., Jr., S.L. Jensen, and L. Berner. 1976. Mayflies of North and Central America. University of Minnesota Press.
- Lugo-Ortiz, C.R., and W.P. McCafferty. 1998. A New North American Genus of Baetidae (Ephemeroptera) and Key to *Baetis* Complex Genera. *Entomological News* 109: 345-353.
- Lugo-Ortiz, C.R., W.P. McCafferty, and R.D. Waltz. 1999. Definition and reorganization of the genus *Pseudocloeon* (Ephemeroptera: Baetidae) with new species descriptions and combinations. *Transactions of the American Entomological Society* 125:1-37.
- McCafferty, W.P. 1975. The burrowing mayflies (Ephemeroptera: Ephemeridae) of the United States. *Transactions of the American Entomological Society* 101:447-504.
- McCafferty, W.P. and R. D. Waltz. 1995. *Labiobaetis* (Ephemeroptera: Baetidae): New status, new North American species, and related new genus. *Entomological News* 106(1):19-28.
- McCafferty, W.P., M.L. Wible, and R.D. Waltz. 1994. Systematics and biology of *Acentrella turbida* (McDunnough) (Ephemeroptera: Baetidae). *Pan-Pacific Entomologist* 70(4):301-308.
- Morihara, D.K. and W.P. McCafferty. 1979. The *Baetis* larvae of North America (Ephemeroptera: Baetidae). *Transactions of the American Entomological Society* 105(2):129-221.
- Pescador, M.L. and L. Berner. 1981. The mayfly Baetiscidae (Ephemeroptera). Part 2. Biosystematics of the genus *Baetisca*. *Transactions of the American Entomological Society* 107:163-228.

Pescador, M.L. and B.A. Richard. 2004. Guide to the Mayfly (Ephemeroptera) Nymphs of Florida. Florida Department of Environmental Protection, Division of Water Facilities, Tallahassee, Florida. Available on-line at:
<http://publicfiles.dep.state.fl.us/dear/labs/biology/biokeys/mayflyguide.pdf>

Provonsha, A.V. 1990. A revision of the genus *Caenis* in North America (Ephemeroptera: Caenidae). *Transactions of the American Entomological Society* 116(4):801-884.

Tarter, D.C. and R.F. Kirchner. 1978. A new species of *Baetisca* from West Virginia (Ephemeroptera: Baetiscidae). *Entomological News* \89(9-10):209-213.

Odonata

Needham, J.G. and M.J. Westfall, Jr., and M.L. May. 2000. Dragonflies of North America. Scientific Publishers, Gainesville, FL. 940 pp.

Richardson, J.S. 2003. Identification Manual for the Dragonfly Larvae (Anisoptera) of Florida. Florida Department of Environmental Protection, Division of Water Facilities, Tallahassee, FL. Available on-line at:
<http://publicfiles.dep.state.fl.us/dear/labs/biology/biokeys/dragonflykey.pdf>

Richardson, J. 2010. Identification Manual for the Damselfly Larvae (Zygoptera) of Florida. Florida Department of Environmental Protection, Division of Water Facilities, Tallahassee, FL. Available on-line at:
<http://publicfiles.dep.state.fl.us/dear/labs/biology/biokeys/zygoptera.pdf>

Westfall, M.J. and M.L. May. 1996. Damselflies of North America. Scientific Publishers, Inc., Gainesville, FL. 650 pp.

Plecoptera

Frison, T.H. 1935. The stoneflies, or Plecoptera, of Illinois. *Illinois Natural Survey Bulletin* 20:280-471.

Pescador, M.L., B.A. Richard, and A.K. Rasmussen. 2000. A Guide to the Stoneflies (Plecoptera) of Florida. Florida Department of Environmental Protection, Division of Water Facilities, Tallahassee, FL. Available on-line at:
<http://publicfiles.dep.state.fl.us/dear/labs/biology/biokeys/stonefly.pdf>

Stewart, K.W. and B.P. Stark. 1988. Nymphs of North American Stonefly Genera (Plecoptera). Entomological Society of America.

Stewart, K.W. and B.P. Stark. 2002. Nymphs of North American stonefly genera (Plecoptera). Second Edition. The Caddis Press, Columbus, OH. 510 pp.

Heteroptera

Epler, J.H. 2006. Identification Manual for the Aquatic and Semi-Aquatic Heteroptera of Florida (Belostomatidae, Corixidae, Gelastocoridae, Gerridae, Hebridae, Hydrometridae, Mesoveliidae, Naucoridae, Nepidae, Notonectidae, Ochteridae, Pleidae, Saldidae, Veliidae). Florida Department of Environmental Protection, Division of Water Facilities, Tallahassee, FL. Available on-line at:<http://publicfiles.dep.state.fl.us/dear/labs/biology/biokeys/heteroptera.pdf>

Coleoptera

Brown, H.P. 1972. Aquatic Dryopoid Beetles (Coleoptera) of the United States. U.S. Government Printing Office. Available on-line: <http://www.archive.org/details/aquaticdryopoidbOOobrow>

Epler, J.H. 1996. Identification Manual for the Water Beetles of Florida (Coleoptera: Dryopidae, Dytiscidae, Elmidae, Gyrinidae, Haliplidae, Hydraenidae, Hydrophilidae, Noteridae, Psephenidae, Ptilodactylidae, Scirtidae). Florida Department of Environmental Protection, Division of Water Facilities, Tallahassee, FL. Available on-line at: <http://publicfiles.dep.state.fl.us/dear/labs/biology/biokeys/beetles96.pdf>

Epler, J.H. 2010. Freshwater Beetles of Florida: An identification manual for the families Crysomelidae, Curculionidae, Dryopidae, Dytiscidae, Elmidae, Gyrinidae, Haliplidae, Helophoridae, Hydraenidae, Hydrophilidae, Noteridae, Psephenidae, Ptilodactylidae, Scirtidae). Florida Department of Environmental Protection, Division of Water Facilities, Tallahassee, FL. Available on-line at:<http://publicfiles.dep.state.fl.us/dear/labs/biology/biokeys/beetles10.pdf>

Megaloptera and Neuroptera

Rasmussen, A.K. and M.L. Pescador. 2002. A Guide to the Megaloptera and Aquatic Neuroptera of Florida. Florida Department of Environmental Protection, Division of Water Facilities, Tallahassee, FL. Available on-line at: <http://publicfiles.dep.state.fl.us/dear/labs/biology/biokeys/megaloptera.pdf>

Trichoptera

Chapin, J.W. 1978. Systematic of nearctic *Micrasema* (Trichoptera: Brachycentridae). Ph.D. Dissertation, Clemson University, Clemson, South Carolina, 136 pp.

Flint, O.S. 1962. Larvae of the Genus *Rhyacophila* in eastern North America (Trichoptera: Rhyacophilidae). *Proceedings of the US. National Museum* (Washington, D. C.) 113:465-493.

- Flint, O.S. 1984. The genus *Brachycentrus* in North America, with a proposed phylogeny of the genera of Brachycentridae (Trichoptera). Smithsonian Contributions to Zoology No. 398.
- Floyd, M.A. 1995. Larvae of the caddisfly genus *Oecetis* in North America. Bulletin of the Ohio Biological Survey, New Series, Vol. 10, No.2, 85 pp.
- Glover, J.B. 1996. Larvae of the caddisfly genera *Triaenodes* and *Ylodes* (Trichoptera: Leptoceridae) in North America. Bulletin of the Ohio Biological Survey, New Series, Vol. 11, No. 2, vii+89 pp.
- Pescador, M.L., A.K. Rasmussen, and S.C. Harris 2004. Identification Manual for the Caddisfly (Trichoptera) Larvae of Florida. Revised Edition. Florida Department of Environmental Protection, Division of Water Facilities, Tallahassee, Florida. Available on-line at: <http://publicfiles.dep.state.fl.us/dear/labs/biology/biokeys/caddisfly.pdf>
- Prather, A.L. and J.C. Morse. 2001. Easter Neactic Rhyacophila species, with revision of the *Rhycaophila invaria* group (Trichoptera: Rhyacophilidae). *Transactions of the American Entomological Society* 127:85-166.
- Ross, H.H. 1944. The Caddisflies, or Trichoptera, of Illinois. *Bulletin of the Illinois Natural History Survey* 23: 1-326.
- Scheffer, P.W. and G.B. Wiggins. 1986. A systematic study of the Nearctic larvae of the *Hydropsyche morosa* group (Trichoptera: Hydropsychidae). Royal Ontario Museum, Toronto, Canada. 94 ppp.
- Schuster, G.A. and D.A. Etnier. 1978. A manual for the identification of the larvae of the caddisfly genera *Hydropsyche* Pictet and *Symphitopsyche* Ulmer in eastern and central North America (Trichoptera: Hydropsychidae). EPA-600/4-78-060. United States Environmental Protection Agency, Washington, D.C. 129 pp. Available on-line at: <http://www.epa.gov/nscep/index.html>
- Wiggins, G.B. 1977. Larvae of the North American Caddisfly Genera (Trichoptera). University of Toronto Press, Toronto, Canada.
- Wiggins, G.B. 1996. Larvae of the North American Caddisfly Genera (Trichoptera). 2nd edition. University of Toronto Press, Toronto, Canada.

Diptera

- Adler, P.H. and K.C. Kim. 1986. The Black Flies of Pennsylvania (Simuliidae, Diptera). Bionomics, Taxonomy, and Distribution. The Pennsylvania State University Agricultural Experimental Station Bulletin. 856, 85 pp.

- Bode, R.W. 1983. Larvae of North American *Eukiefferiella* and *Tventenia* (Diptera: Chironomidae). *Bulletin of the New York State Museum* **452:1-40**.
- Epler, J.H. 1995. Identification Manual for the Larval Chironomidae (Diptera) of Florida. Revised Edition. Florida Department of Environmental Protection, Division of Water Facilities, Tallahassee, Florida. Available on-line at:
<http://publicfiles.dep.state.fl.us/dear/labs/biology/biokeys/midges.pdf>
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DEP15456
 BID SHEET

Item No.	Quantity	Description	Unit Price	Amount
A	500	Per sample un-sorted, identified to Genus level: 200-organism subsample	\$228.00	\$114,000
E	4	Per each "sample pick-up/delivery" not "per sample" (Assume 100 samples per pickup)	\$250.00	\$1,000
F	5 hr	Cost/hour for professional staff representation of data in legal/administrative setting	\$40.00	\$200

TOTAL = \$115,200

Contractor: Versar, Inc.

Signature: 

Date: 6/22/11

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

BID PREPARATION

The bidder shall include the information below with their bid. The contract award will be made to the qualified vendor with the lowest bid. We expect to collect approximately 500 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.
- 2) Summary of experience with sorting and identification of benthic macroinvertebrates. Must have minimum of 5 years of experience with sorting / identifying benthic macroinvertebrates.
- 3) Resumes of taxonomists and copies of NABS certifications shall be included in the bid package.
- 4) List of taxonomic references used in the identification of all specimens.
- 5) Description of vendor's internal QA/QC procedures, stating specifically how errors are tracked and resolved, which will insure the highest level of accuracy in both the sorting and identifying processes.
- 6) Specific description of product that will be returned to DEP/DWWM (i.e., reporting format, specimens, etc.)

RFQ No. DEP 15456

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

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

DEFINITIONS:

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

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

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

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

WITNESS THE FOLLOWING SIGNATURE

Vendor's Name: Versar, Inc.

Authorized Signature: [Signature] Date: June 20, 2011

State of Maryland

County of Howard, to-wit:

Taken, subscribed, and sworn to before me this 20 day of June, 2011.

My Commission expires [Signature] 2011

AFFIX SEAL HERE My Comm. Exps. [Signature] NOTARY PUBLIC [Signature]