

**STATEMENT OF WORK
ON-SITE TECHNICAL SUPPORT
WESTERN ECOLOGY DIVISION
CORVALLIS & NEWPORT, OREGON**

1.0 Purpose. The Western Ecology Division (WED) of the Environmental Protection Agency (EPA), National Health and Environmental Effects Research Laboratory (NHEERL) is a sophisticated, multi-disciplinary research laboratory that performs state-of-the-art research. The website <http://www.epa.gov/wed/> provides an overview of WED and the types of research conducted on terrestrial, freshwater and estuarine ecosystems. This contract provides technical support for research activities at WED. The contractor shall perform the types of technical support activities in the sections that follow.

This contract is for the primary use of the WED located in Corvallis and Newport, Oregon. The contract may also be used by other organizations in the U.S. Environmental Protection Agency, subject to the work being within the capacity limits of the Statement of Work of the contract. WED retains the ability to limit or deny use of the contract by other organizations, based on the scope, capacity, or other concerns related to contract performance.

2.0 General Requirements. The contractor shall provide non-personal services, materials, supplies and vehicles required to support the types of research outlines on the website <http://www.epa.gov/wed/> and the requirements of the Statement of Work. The contractor shall provide technical support both on-site at WED facilities in Corvallis and Newport and (for short periods) at off-site and remote field sites (within the United States and including minimal international travel to attend international meetings and symposia to present scientific information and papers or to gather information considered useful in completing Task Orders under this contract). The contractor shall provide administrative support for its' on-site activities. The contractor shall coordinate the activities of its employees relative to functions requiring involvement of all occupants of EPA facilities, such as security, waste management, parking and building maintenance and repairs. To perform the technical tasks required in this Statement of Work, the contractor shall use database management, statistical analysis, geographic information system, visualization and other software using WED workstation/network environments.

Prior to use or dissemination of any and all manuals, technical documents, and outreach materials (shall include all training and workshop materials), the contractor shall submit them for review and obtain approval from the EPA Project Officer (PO)/Contracting Officer's Representative (COR).

As required by Task Orders (TO) issued by the Contracting Officer the contractor shall:

2.1 Perform chemical, physical, biological, biochemical, statistical, geographical, and other standardized analyses.

2.2 Collect, acquire, store, categorize, integrate and synthesize data and information.

2.3 Collect, format, process, document and provide quality control of samples and information including both experiments and observational information from the laboratory and field. Field work could require working in a variety of weather conditions, including heat, cold, wind, rain and snow.

2.4 Prepare, maintain, and update technical records, logbooks, QA records and databases for work performed.

2.5 Operate and adapt specialized Government Furnished Equipment (GFE) and/or "shared" sampling, monitoring, analytical and experimental equipment.

2.6 Provide experimental materials and organisms.

2.7 Adapt, operate and maintain in functioning order all GFE/apparatus in accordance with Federal Acquisition Regulations (FAR) Part 45.

2.8 Conduct literature searches and provide factual reports on current scientific knowledge and methods, alternative theoretical, experimental, sampling, modeling, and analysis approaches and published scientific reports.

2.9 Compile, organize and summarize existing environmental data and geographic coverages, and evaluate their utility for addressing WED research objectives.

2.10 Prepare and document alternative scientific methods for obtaining and analyzing information; contribute to development

of Standard Operating Procedures which will be reviewed by USEPA Quality Assurance Management.

2.11 Prepare implementation plans for EPA approval, including Work Plans, Quality Assurance Plans and Standard Operating Procedures (SOPs).

2.12 Prepare high quality, written and oral, scientific and technical reports on research results and work performed. Contractor staff shall be required to conform to WED clearance procedures which require internal and/or external peer reviews of all documents and manuscripts, and written reconciliation of reviewer comments. **See NHEERL SOP for Technical Information Management dated September 2000 at <http://www.nheerl.epa.gov/administration/sop.cfm>.** Clearance forms shall be prepared and routed through the COR to the Division Director for EPA approval.

2.13 Provide technical editing, statistical and graphical support in the form of tables and figures for research publications and oral or written presentations.

2.14 Provide special reports, including (a) descriptions of work performed or in progress, (b) the scientific basis for recommended experimental, analytical, or modeling approaches to assigned work, (c) factual information on new scientific findings/ideas, (d) laboratory and field results, (e) progress reports, and (f) analysis of uncertainties in scientific findings.

2.15 Provide technical support for technology transfer operations to EPA Program Offices, Regions and other appropriate parties.

2.16 Participate in national scientific meetings through presentation of technical papers, organization and facilitation of special symposia or sessions within the scientific meetings; participate in state and federal agency technical workshops; organize and facilitate technical workshops on-site or off-site. Contractor staff shall be required to conform to WED clearance procedures which require all oral presentations be approved by the Division Director. Clearance forms shall be prepared and routed through the COR to the Division Director for EPA approval.

2.17 The contractor shall use Government-provided in-bound and direct dial out-bound long distance services.

2.18 Propose and implement quality assurance and quality control requirements.

2.19 Meet with COR and other appropriate WED personnel to provide information on work status and to discuss technical problems encountered and possible solutions in the conduct of work performed as directed by Task Orders issued by the Contracting Officer.

2.20 Provide a pesticide applicator license from the State of Oregon for all pesticide applications required in the SOW.

2.21 Comply with all Federal, state, municipal, NHEERL and WED policies and regulations pertaining to the protection and safety of employees.

2.22 Comply with all Federal, state, municipal, NHEERL and WED policies and regulations pertaining to the purchase, storage, use and disposal of hazardous substances.

3.0 Analytical Chemistry Support. The contractor shall perform a variety of analytical chemistry support services according to established EPA procedures or procedures approved by the EPA COR. Where no procedures exist, the contractor shall recommend methodologies for use, subject to review and approval by the EPA COR. Analytical chemistry analyses are conducted in laboratories at the main WED facilities in Corvallis and Newport and WED's Willamette Research Station (WRS), as well as in the field.

3.1 Conduct chemical, biochemical and physical analyses including, for example, the use of elemental analyzer, gas chromatography with mass spectrometry, Inductively Coupled Plasma Emission Spectroscopy (ICP), atomic absorption spectrometry, ion chromatography, high pressure liquid chromatography, gamma ray spectrometer, scintillation counter, flow injection analyzer, auto-analyzer, mercury analyzer, particle size analyzer, Carlo-Erba, carbon/nitrogen analyzer, pH meter, and other established analytical techniques.

3.2 Collect and/or prepare water, sediment, soil and biotic samples for analysis; identify and quantify chemical or physical components and present the information in formats described in SOPs or as directed in Task Orders.

3.3 Develop SOPs and performance criteria for precision and accuracy of all methods.

3.4 Conduct audit samples, replicates, calibration and other procedures required for quality assurance and quality control (QA/QC).

3.5 Maintain a laboratory information management system to track samples, document QA/QC performance and prepare reports of analytical results in hardcopy and electronic formats for delivery to EPA.

3.6 Recommend and conduct tests on new or alternative methodologies for sample preparation or analysis, subject to review and approval by the EPA COR.

3.7 Maintain an inventory of chemicals in government-provided laboratory spaces and provide support in conducting the annual inventory of chemical at WED.

3.8 Analyze, summarize, interpret and report on (in oral and written format) results from chemical analyses and sampling.

3.9 Prepare pesticide solutions and apply them to test organism according to approved SOPs. Keep records and report pesticides used according to State of Oregon reporting requirements.

4.0 Biological Research Support. The contractor shall perform a variety of biological research support services according to established EPA procedures or procedures/approaches approved by the EPA COR. Where no procedures exist, the contractor shall recommend methodologies for use, subject to review and approval by the EPA COR. The contractor shall perform the following types of tasks:

4.1 Conduct terrestrial, freshwater, wetland, riparian and estuarine/marine environmental studies. Provide *in situ* non-destructive measurements of organism condition. Collect, identify, process, analyze and archive or dispose of biological samples. Obtain and process associated information on habitat and environmental conditions. Studies are conducted in laboratory, controlled environment, greenhouse, outdoor chamber and field environments. The contractor shall measure responses from the individual-to-community level to applied pollutants, climatic or edaphic stresses, pesticides, genetically modified crops, or to measure current status. Biological groups to be studied include plants, fish, amphibians, reptiles, birds, mammals, marine and freshwater benthic invertebrates, plankton, and microbial and fungal communities and estuarine plant

communities. The contractor shall comply with all applicable animal care and use policies.

4.2 Operate, maintain and evaluate GFE and/or "shared" biological field sampling equipment and instrumentation, such as electro-shocking units, various drift and bottom sampling devices, including corers and grab samplers, trap nets, seine nets, plankton nets, and other sampling nests, water bottle sampling arrays, and radio tracking transmitters and receivers.

4.3 Set-up and conduct field and laboratory studies for evaluating current conditions and the effects of stressors on terrestrial, freshwater, wetland, and marine/estuarine ecosystems. This includes establishment and maintenance of field plots, fabrication and operation of wet laboratory exposure systems, enumeration and identification of organisms and performance of field surveys, field experiments and laboratory tests.

4.4 Set-up and conduct laboratory studies for genomic and proteomic analyses of stressor effects on plants under experimental protocols provided by the EPA COR. This includes DNA and RNA extraction, polymerase chain reaction (PCR) and RT-PCR; microarray analysis; Southern blot techniques; enzyme immunoassays, and ELISA test development.

4.5 Obtain, propagate, culture and maintain various species of fish, amphibians, invertebrates, plants, microbes and other organisms.

4.6 Conduct inventories of environmental samples and prepare the samples for proper disposal.

4.7 Maintain and information management system to track data and samples, document QA/QC and prepare reports of data and results in hardcopy and electronic formats for delivery to EPA.

4.8 Enter data into GFE notebooks and computers. Analyze, summarize, interpret and report (in oral and written format) the results from biological research support studies.

4.9 Provide to EPA an inventory and written documentation of the disposition of all samples and analyses, completed, on-going and pending so that EPA can locate all samples and data and fully understand the status of all analyses either pending or in progress.

4.10 Provide weekend and holiday support for culture and maintenance of test organisms, maintenance of controlled experiments and to receive and process samples at any WED facility as required in individual Task Orders.

5.0 Physical Science Support. The contractor shall perform a variety of physical science support services according to established EPA procedures or procedures approved by the EPA COR. Where no procedures exist, the contractor shall recommend methodologies for use, subject to review and approval by the EPA COR. The contractor shall perform the following types of tasks:

5.1 Collect and report on geological, hydrological, geomorphology, soils and marine sediments, climatic, edaphic, remotely sensed or other physical data from field, outdoor chamber and laboratory studies.

5.2 Calibrate, install, operate and maintain GFE and/or "shared" field-deployed instruments, such as Global Positioning Systems technology, hydrological monitoring equipment, climate monitoring equipment (temperature, wind speed, rainfall), current meters, including Acoustic Doppler Profilers, meters measuring temperature, dissolved oxygen, salinity, light, and other physical parameters in aquatic systems, including Conductivity Temperature Depths (CTDs), soil probes, lysimeters, in situ nitrogen analyzers, data loggers, and automated samplers, and support real-time telemetering of data to the laboratory.

5.3 Maintain an information system to track data and samples, document QA/QC, and prepare reports of data and results in hardcopy and electronic formats for delivery to EPA.

5.4 Enter data into notebooks and/or computers. Conduct data analysis, summarize, interpret, and report on (in oral and written format) the results from physical science studies.

6.0 Field Sampling and Logistics. The contractor shall support and conduct field sampling efforts involving a variety of environments (freshwater, estuarine/marine, wetlands and terrestrial) in support of WED research. Type of research tasks shall include:

6.1 Participate in field data collection, logistics, and data input into information systems, including collection and identification of biological specimens (plants and animals) and documentation of physical/chemical environmental properties. May

include times of strenuous field work; field transportation via boats and/or hovercraft ("shared" property); snorkeling and/or scuba diving at various locations within bay(s) or estuary(ies).

6.2 Work with EPA and other stakeholders to obtain access to private land, and follow existing landowner requests and agreements when working on private land.

6.3 Develop physical, chemical, and biological site-scale protocols for making field measurements on indicators of ecosystem condition, integrity and functions and stressors.

6.4 Develop SOPs, performance criteria for precision accuracy, and QA/QC procedures and plans.

6.5 Test and evaluate field sampling protocols in various parts of the U.S., including GFE and/or "shared" equipment, logistics, and preparation of SOPs and field operations manuals; provide support to EPA training programs for personnel from State and Federal agencies. Following approval by the EPA COR, implement protocols as requested in Task Orders.

6.6 Conduct field studies and experiments to characterize ecosystem processes, habitat condition/function, and biological population structure/dynamics, based upon study designs approved by EPA.

6.7 Collect field data required for calibration and evaluation of simulation and empirical models, based upon sampling designs approved by EPA.

7.0 Operation of Experimental Facilities. The contractor shall make technical recommendations for GFE and/or "shared" equipment and operating procedures, and operate and maintain several experimental facilities. The contractor shall provide support in the conduct of a variety of environmental experiments. The types of technical support tasks shall include:

7.1 Implement field, laboratory, and outdoor chamber experiments dealing with the effects of stressors on biological, physical, and chemical indicators of terrestrial and aquatic ecosystem condition and population, community, and ecosystem dynamics and processes.

7.2 Operate and maintain experiment facilities involving controlled exposures of organisms and plants located in laboratory, growth chambers, greenhouse, outdoor chambers and

salt water exposure chambers to temperature, selected toxics, predators, competitors, physical, biological and other stressors.

7.3 Develop SOPs, performance criteria for precision and accuracy, and QA/QC procedures and plans for laboratory, mesocosm, and field experiments. Plans shall be submitted and approved by the EPA QA Manager and COR.

7.4 Maintain an information system to track data, document QA/QC and experimental conditions, and prepare reports of data and results in hardcopy and electronic formats for delivery to EPA.

8.0 Statistical Design and Analysis and Modeling.

The contractor shall conduct a variety of information management, statistical design and analysis and modeling tasks. The contractor shall design and maintain databases of monitoring and assessment data that is provided by EPA, develop new statistical design and analysis and modeling techniques, apply advanced techniques, and conduct statistical analyses and modeling in support of WED research. The contractor shall conduct the following types of tasks:

8.1 Develop, implement, and maintain relational databases of environmental monitoring data to support indicator development and statistical analysis of ecological monitoring and assessment studies. Prepare and deliver appropriate tables from the relational databases as requested by EPA.

8.2 Develop, test and propose for EPA review and approval, and implement statistical design and analysis options in support of ecological monitoring sampling surveys, field and laboratory studies, and modeling studies.

8.3 Evaluate the efficiency of alternative survey sampling designs.

8.4 Support the development of indicators of ecosystem condition and integrity, including statistical analyses of variance components associated with status, change, and trend in ecological monitoring and field studies.

8.5 Develop, adapt and propose for EPA review and approval, and apply models of biological indicator responses to physical, chemical, riparian, and watershed indicators, and spatio-temporal habitat patterns.

8.6 Report on the sensitivity of mathematical population or ecosystem models developed or approved by EPA.

8.7 Collect and organize field, literature and other available data to calibrate and validate models and to test model predictions.

8.8 Analyze environmental data sets to address WED research objectives.

8.9 Analyze and interpret large, multivariate data sets in support of genomic and proteomic research, using commercially available or EPA-supplied bioinformatics software.

9.0 Geographical and Landscape Analyses. The contractor shall conduct a variety of geographical and landscape analyses. The types of technical support tasks shall include:

9.1 Classify aquatic and terrestrial ecosystems into groups with similar features, functions, responses, and/or sensitivity to stressors.

9.2 Gather ecologically relevant information and recombine it by relative significance into integrated ecoregional and sub-regional maps, using map library, GIS, and WED's computer network to access relevant remote information and incorporate these into WED's systems. Prepare written and graphical outputs summarizing the characteristics of each ecoregion/sub-ecoregion and basis for delineation.

9.3 Identify ecoregional and sub-regional reference sites.

9.4 Perform quantitative analyses of spatial environmental patterns using landscape ecology theoretical and procedural constructs. Conduct empirical landscape analyses for hypothesis testing, indicator and model development, risk assessment, and to test and determine relationships between landscape, habitat, and wildlife population variables.

9.5 Propose designs for the collection and analysis of remotely sensed information to characterize landscape, watershed and riparian condition, spatio-temporal habitat patterns, important landscape, watershed and riparian features, including comparisons to ground-based information and evaluation of levels and sources of uncertainty.

10.0 Synthesis and Integration. The contractor shall conduct a variety of tasks relating to the synthesis, integration and interpretation of environmental data, models, and study results. The types of technical support tasks shall include the following:

10.1 Identify, develop and propose for EPA review and approval potential indicators of ecosystem condition (physical, chemical and biological), integrity and functions.

10.2 Evaluate the concordance in responses among various indicator assemblage types and the appropriate spatial and temporal scales at which the various indicators are best associated with each other.

10.3 Develop, test and propose for EPA review and approval physical, chemical and biological estimates of least disturbed conditions as a benchmark for assessing ecosystem condition.

10.4 Develop, test and propose for EPA review and approval methods for establishing biological criteria.

10.5 Develop, test and propose for EPA review and approval indicators of watershed, landscape and riparian condition as they relate to the condition of surface waters and wetlands or suitability of habitat for biota, including the use of aerial and satellite imagery. Satellite imager will either be provided by EPA or acquired by the contractor.

10.6 Develop, test and propose for EPA review and approval diagnostic and analysis methods to identify probably causes of current ecosystem impairment/degradation.

10.7 Develop procedures for measurement of indicator quality objectives and QA/QC procedures for EPA review and approval.

10.8 Provide training or technology transfer in the process of indicator development and testing, field protocols and data analysis.

10.9 Develop, test and propose for EPA review and approval and apply methods for prioritizing ecosystems and landscape and habitat units for restoration and protection.

11.0 Quality Assurance. With their proposal, the contractor shall submit a Quality Management Plan (QMP) resulting from EPA adopting the ANSI/ASQC E4 quality standard pursuant to 48 CFR

46.20.-4 Higher-level contract requirements. **The QMP must be approved by the WED Quality Assurance Manager (QAM) prior to any work under the contract.** Documents specifying the requirements (qs-docs/r2-final.pdf) and guidance (qs-docs/g1-final.pdf) for developing the QMP can be found at EPA's website for QMPs (www.epa.gov/quality/amps.html).

Research conducted by the contractor is directed by Task Orders (TO) and outlined by approved Quality Assurance Project Plans (QAPPs) (**Note: the contractor will not be required to submit a QAPP with every TO. QAPPs are available from PIs to the contractor as a guide**). A TO may assign work on one or many projects. The Task Order Quality Assurance Review form (initiated by the COR) is used to identify the projects involved and includes the COR's signature indicating that all QA/QC requirements are met for all projects involved. The QAM reviews the status of projects with regards to QAPP approvals, required reports, manuscripts and correction of any findings from audits. His/her signature on the review form certifies that the projects are in compliance with QA requirements.

11.1 QAPPs define the data quality objectives and identify the critical measurements/functions to be performed in implementing the various projects. The contractor shall comply with the QAPPs of the research projects that are supported by Task Orders by familiarization with the QAPPs and implementing the Standard Operating Procedures (SOPs) that support them. If the contractor cannot comply with the EPA QAPPs or SOPs, the contractor shall notify the PO in writing as to the reason(s).

11.2 The contractor may develop/draft QAPPs and SOPs as directed by Task Orders. The form and content of these documents shall follow the guidance found in the Western Ecology Division's QMP (www.epa.gov/wed/pages/QA).

11.3 Where an appropriate recognized accreditation program is available for all or part of the contractor's operation, such as the State of Oregon's accreditation program (ORELAP) through EPA's National Environmental Laboratory Accreditation Conference (NELAC), the contractor shall participate in that program.
<http://www.deq.state.or.us/lab/orelap/orelap.htm>
<http://www.epa.gov/nerlesd1/land.sci/nelac/index.html>

11.4 Recording of Scientific Data. The contractor shall collect and records data as required by EPA protocols and the approved contractor QA/QC program. The contractor shall enter the data

produced into the laboratory's computer system according to the individual Task Order.

11.5 Implement specific technical quality assurance and quality control guidance when supplied by the EPA COR to collect, format, process and provide quality control of samples as well as experimental and observational information from the field and laboratory.

11.6 Calibration and Operation of Instrumentation/Analytical Equipment. All GFE and/or "shared" analytical equipment shall be correctly operated using standards, QA samples, calibration procedures, proper application of quality control measures outlined in SOPs for the instrumentation, and appropriate maintenance procedures.

12.0 Health & Safety/Environmental Compliance Program. The contractor shall maintain and manage an employee occupational safety, health and environmental management (SHEM) program to meet EPA's requirements for on-site work performed at EPA administered facilities and when performing field work. The contractor's SHEM program shall meet all Federal, State and local regulations. The contractor's SHEM program shall include personnel training, environmental compliance emphasizing adherence to operating permits and licenses, and occupational safety and health management for all administrative and research tasks performed under the terms of the contract.

12.1 Laboratory Safety Requirements. The contractor shall conduct a safety program that is at least as protective as the EPA's and complies with the State of Oregon and/or OSHA requirements, whichever are the most protective. The contractor shall support the development of EPA's Safety Plans. The EPA will provide Safety Plans to the contractor as described in WED Policy #1440.5 and/or Field Safety as described in WED #1440.4 for the work required by this contract. **WED Policies #1440.4 and #1440.5 are included as Attachments.** This safety plan will be submitted to the contractor as an integral part of the Task Order, and the contractor shall comply with the EPA Safety Plan. If the contractor cannot comply with the EPA Safety Plan, the contractor shall notify the PO in writing as to the reason(s).

The contractor shall maintain a safety program that complies with the WED's Employee Health and Safety Manual.

12.2 Medical Monitoring. A job hazard analysis (JHA) must be performed for each employee to determine potential or actual

workplace exposures to chemical, radiological or biological agents and/or physical stressors. Some employees may need to be enrolled in occupational medical surveillance programs for monitoring an activity or exposure currently regulated by the Occupational Safety and Health Administration. For example, all personnel wearing respiratory protection are required to have medical clearance to wear the prescribed respirator. The contractor may elect to follow **EPA Order 1460.1 Occupation Medical Surveillance Program** (approval date 04/20/2010) to determine participation in an Occupational Medical Surveillance program or the contractor can administer their own enrollment criteria in accordance with the contractor company's standard operating procedures or policies.

12.3 Hazardous Waste Management. The contractor shall provide technical support to the hazardous waste program. This support will include the collection, placement and maintenance of a current inventory of hazardous waste in government-provided laboratory space. The contractor shall notify EPA's Environmental Compliance Manager to request collections from the laboratory on an as-needed basis. EPA's Environmental Compliance Manager will deposit the waste safely in the on-site hazardous waste storage building, and maintain a current hazardous waste inventory.

12.4 Conformance with Environmental Management Systems. (Reference: Strengthening the Federal Environmental, Energy, and Transportation Management. Executive Order 13423, January 26, 2007.)

The contractor shall perform work under this contract consistent with the relevant policy and objectives identified in the agency, organizational, or facility environmental management system (EMS) applicable for your contract and subcontracts. The contractor shall perform work in a manner that conforms to all appropriate Environmental Management Programs and Operational Controls identified by the agency, organizational, or facility EMS, and provide monitoring and measurement information as necessary for the organization to address environmental performance relative to the environmental, energy, and transportation management goals. In the event an environmental nonconformance or noncompliance associated with the contracted services is identified, the Contracting Officer shall notify the contractor in writing with the appropriate corrective and/or preventative actions. In the case of noncompliance, the contractor, upon written notification from the CO shall respond and take corrective action immediately. In the case of a

nonconformance, the contractor, upon written notification from the CO, shall respond and take corrective action based on the time schedule established by the EMS Site Coordinator. In addition, the contractor shall ensure that their employees are aware of the roles and responsibilities identified by the environmental management system and how these requirements affect their work performed under this contract.

All on-site contractor personnel shall complete yearly EPA-sponsored environmental training specified for the type of work conducted on-site. Upon inclusion in the contract Statement of Work, the Project Officer will verify that all contractor personnel have acquired EMS Awareness Training at their appropriate site or location.

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