EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 0-4

☐ Other ☐ Amendment Number:

Contract Number: EP-C-09-027

Contract Period: 4/1/09 through 3/31/10
Base Option Period Number

Title of Work Assignment/SF Site Name: Parametric Bleach Testing

Contractor: ARCADIS

Specify Section and Paragraph of Contract SOW: 3.0

Purpose:
- [x] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 04/01/09 To 03/31/10

Comments:

☐ Superfund — **Accounting and Appropriations Data** — ☐ Non-Superfund

Note: To report additional accounting and appropriations data use EPA Form 1900-69A.

SFO (Max 2): 22

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE: 0
This Action:		1170
Total:		1170

Work Plan / Cost Estimate Approvals

Contractor WP Dated:	Cost/Fee:	LOE:
Cumulative Approved:	Cost/Fee:	LOE:

Work Assignment Manager Name: Joseph Wood	2/5/09	Branch/Mail Code: DCMD E343-08
(Signature)	(Date)	Phone Number: (919) 541-5029
		FAX Number: (919) 541-0496
Project Officer Name: Diane Pierce		Branch/Mail Code:
		Phone Number: (919) 541-2708
(Signature)	(Date)	FAX Number:
Other Agency Official Name	3/23/09	Branch/Mail Code:
		Phone Number:
(Signature)	(Date)	FAX Number:
Contracting Official Name: Renita Tyus	3/31/09	Branch/Mail Code: CPOD
		Phone Number: 513-487-2094
(Signature)	(Date)	FAX Number: 513-487-2109

Work Assignment Form (WebForms v1.0)

Work shall not begin until 4/1/09

STATEMENT OF WORK

Parametric Bio-Efficacy Testing of Acidified Bleach Solutions

OMIS DCMD 3.43
(APPCD ON-SITE CONTRACT____)

I. PERIOD OF PERFORMANCE

The period of performance for the work under this work assignment (WA) shall be from April 1, 2009 to March 31, 2010.

II. SUMMARY OF OBJECTIVES

This work will involve determining the formulations needed to obtain a number of acidified bleach solutions with various amounts of free available chlorine (FAC) at different pH levels. Once these formulae have been developed, tests will be performed to determine their efficacy in decontaminating wood coupons that have been inoculated with bacterial spores.

III. BACKGROUND

Acidified (pH-amended) bleach is typically the On-Scene Coordinator's first choice for decontamination, although there are many "recipes" available. And in the field, the bleach solution may be made with whatever is available and done so haphazardly. In previous testing by NHSRC, acidified bleach has been shown to be an effective sporicide on non-porous surfaces, but has had limited effectiveness in decontaminating porous surfaces such as wood. This project would determine the impact that FAC and pH have on decontamination efficacy, with the goal of optimizing this technology for the decontamination of porous surfaces such as wood.

IV. TECHNICAL APPROACH

This work will build upon the research already conducted under the previous APPCD On-Site Contract EP-C-04-23 related to decontamination testing using bleach. The work will be conducted in the Decontamination Technologies Research Lab (DTRL)of the EPA's Research Triangle Park (RTP) campus facilities at 109 T.W. Alexander Dr. A Quality Assurance Test Plan (QATP) for this work will be developed, but it is expected that the QATP developed under previous work assignments will serve as a starting point and should reduce the effort needed to prepare the QATP.

V. AFFORDABILITY

This effort is labor intensive, which is where the bulk of the funding is required. Normal expendable laboratory items are also required for this project.

VI. FACILITIES AND MATERIALS

All tasks described in this SOW shall be performed in-house, at the EPA's Research Triangle Park (RTP) facilities at 109 T.W. Alexander Dr.

VII. TASKS

No work conducted under this WA shall duplicate work conducted under previous work assignments, unless directed by the WA manager (WAM), and in order to troubleshoot problems from previous work and to assess repeatability (precision) of the data gathered previously.

The Contractor shall perform the following tasks:

1. Prepare a quality assurance/test plan (QATP), which shall cover the experiments as described in tasks 2-5 of this SOW. The QATP shall be in agreement with the requirements set forth in the Quality Assurance Requirement Form (QARF) and as delineated in "Attachment #1". To the extent feasible, the QATP shall be consistent with and based upon existing QATPs, developed under other similar work assignments from previous APPCD contracts.

2. Conduct experiments to determine the relative amounts of deionized water, 5 percent acetic acid, and bleach needed for developing 36 bleach solutions with pH ranging from 5-8 and FAC ranging from approximately 5,000 to 10,000 ppm. The actual test matrix with the specific pH and FAC levels shall be determined in consultation with the WAM and during the writing of the QATP. An example test matrix is listed as follows:

FAC (ppm)	pH=8	pH=7.0	pH=6.5	pH=6.0	pH=5.5	pH=5.0
10,000						
9,000						
8,000						
7,000						
6,000						
5,000						

3. The techniques used for measurement of FAC and pH shall be sufficiently accurate (within 1-2 %) and precise. The accuracy of these measurements shall be verified periodically, the frequency of which shall be determined in consultation with the WAM and during the writing of the QATP.

4. Once the formulations have been determined in Task 2, the contractor shall conduct experiments to determine the efficacy of each formulation in decontaminating wood coupons. Each formulation shall be tested in triplicate using the immersion technique developed under WA 3 from the previous contract. The microbiological procedures used for the liquid inoculation of bacterial spores (*e.g.*, ~ 10^7 *Bacillus subtilis* spores per coupon) onto the coupons, extraction, neutralization, assay, and calculation procedures shall be consistent with procedures used in work assignments (e.g., WA 3) from the previous in-house support contract. All of these procedures and additional details shall be determined in consultation with the WAM and discussed in the QATP as developed under Task 1 of the WA.

5. Using the formulation exhibiting the highest log reduction based on the results from Task 4, conduct additional decontamination tests using the spray technique procedures

developed in WA 3 from the previous contract. The contractor shall conduct a total of 10 tests, using varying contact times and application amounts to optimize the decontamination of the wood coupons. Each test shall include three wood coupons.

6. Provide general support for maintaining the lab equipment. This support shall include assembly, maintenance, troubleshooting, and configuration support for the any equipment used for testing. Support shall also include the purchase of any expendable materials, with prior approval from the WAM, for use in this project.

7. Report the results of the tests conducted in Tasks 2-5 to the WAM as soon as possible (but no longer than a week) via email and through the use of the DTRL share drive. The WAM shall be notified immediately of any problems encountered in the laboratory or with the results obtained. These data shall include any generated data files (i.e., logged data) properly annotated, reports of the experimental conditions, calibration checks, measured variables, and a listing of the samples awaiting further analysis.

8. Analyze the data per the requirements in the QATP and in consultation with the WAM, and report the results of these analyses as soon as possible via email and through the use of the DTRL share drive. The expected data analyses would be in the form of Excel spreadsheets or other appropriate software.

9. Meet with the WAM at least every two weeks to provide a project status update. The update shall include a synopsis of activities taking place the past 2 weeks, problems encountered, and work planned for the next 2 weeks.

10. Update the health and safety research protocols, as needed, as required by the EPA Facility and APPCD safety personnel. Updates to these protocols shall be approved by the EPA WAM and safety personnel prior to the commencement of any testing.

11. Prepare monthly reports to EPA that summarize work activities (accomplished and planned) in this work assignment, including the status of applicable test, QA, and safety plans. The monthly report shall also detail labor costs and ODC charges. The ODC charges shall be documented in the report in a way that the items purchased, vendor, and cost are clearly indicated.

VIII. DELIVERABLE SCHEDULE

The following table outlines the expected schedule that the contractor shall meet for the period covered by this SOW. The schedule assumes a start date of April 1, 2009. Dates dependent upon completion of specific tasks shall be updated based on discussions between the contractor WAL and EPA WAM during the development of the test plans to cover the work specified herein.

Suggested Deliverable Schedule

Deliverable	Completion Date
Submit work assignment plan	4/15/09
Submit first draft of test/QA Plan	5/25/09
Revise test/QA Plan per WAM comments	2-3 weeks after comments received
Complete Tasks 2 - 4	12/31/09
Complete Task 5	2/28/10

IX. REPORTING REQUIREMENTS

- The Contractor shall prepare a brief memorandum to the WAM which discusses how well various measurements described in the QA plan were met.

- The monthly invoice reports for this work assignment shall provide a detailed description of any equipment or expendables that have been purchased by the contractor for use on the projects discussed herein.

- All data and analyses worksheets generated as discussed in Section VII. shall be provided in electronic format in Excel and/or other appropriate software, in consultation with the WAM.

X. QUALITY ASSURANCE

The awardee shall comply with all requirements as delineated on the "Quality Assurance Planning Requirements Form (QARF)" included with this extramural action, see attachment #1 and #2. The contractor shall prepare a QAPP in accordance with http://www.epa.gov/quality/qs-docs/r5-final.pdf or based on the type of research that is being conducted. For guidance on preparing a research-specific QAPP, the preparer should refer to the project specific requirements provided in NHSRC's QMP. The QAPP must be approved prior to the start of any laboratory work. Additional information related to QA requirements can be found at www.epa.gov/quality

Title:	Parametric Bio-Efficacy Testing of Acidified Bleach Solutions
Description:	Tech support to conduct studies in in-house labs
Project ID:	3.43
Project Status:	Open
Status:	Original
QA Category:	IV
Action Type:	Extramural
Peer Review Category:	IV
Security Classification:	Unclassified
Project Type:	Basic Research
QAPP Status 1:	Not Delivered
QAPP Status 2:	Not Applicable
QAPP Status 3:	Not Applicable
Vehicle Status:	Existing Vehicle
Vehicle Type:	Vehicle Number: TBD Work Assignment Number: TBD Delivery/Task Order Number: NA Modification Number: NA Other: NA

*If you are processing an **IAG** or **CRADA**, the responsibility for QA must be negotiated within the agreement. The TLPs in cons with the QAMs in the various organizations must agree on, and document, which organization will take the lead for QA, the nan the QAM and TLP from each organization, and the QA requirements that will be adhered to during the agreement. Include this the IAG/CRADA package.*

Attachments:

Yes	Does the Statement of Work contain the appropriate QA language? The awardee shall comply with all requirements as delineated on the "Quality Assurance Plar Requirements Form (QARF)" included with this extramural action. The contractor shall prepa QAPP in accordance with the R-2 and R-5 and/or the attachments provided with the SOW. T QAPP must be approved prior to the start of any work. Additional information related to QA requirements can be found at http://www.epa.gov/quality/qs-docs/r5-final.pdf
Yes	Does this extramural action involve the collection, generation, use, and/or reporting of environmental data; the design, construction, and operation of environmental technologies; development of software, models, or methods? *(If "No" then skip to Section IV, and sign the form.)*
No	Will the SOW or any subsequent work assignments or task orders involve any cross-organiz efforts within EPA?

No	Has a QAPP already been approved for the activities specified in the SOW?
No	Is an applicable QAPP in the process of being prepared, revised, or approved by EPA personr future use by the contractor? (QA approval must be obtained before the contractor can start work.)

*** The term "contractor" applies loosely here, such that as applicable, this term can also mean "awardee", "cooperator" an "grantee". Likewise, the term "contract" includes "agreements" and other vehicles. ?*

All documentation specified under "Other" must be defined in the NHSRC Quality Management Plan and be consistent with requirements defined in EPA Manual 5360 A1. For all items checked below, there must be adequate information in the SOW appendices) for the offeror to develop this documentation. Where applicable, reference a specific section of the SOW. *(R-2 refers to EPA Requirements for Quality Management Plans (QA/R-2) (EPA/240/B-01/002, 03/20/01) and R-5 refers to EPA Requirements for Quality Assurance Project Plans (QA/R-5) (EPA/240/B-01/003, 03/20/01). Copies of these documents are available at http://www.epa.gov/quality/qa_docs.html .)*

Is this a solicitation? No

Before Award Documentation

	Documentation of an organization's Quality System. QMP developed in accordance with:
Not Applicable	Combined documentation of an organization's Quality System and application of QA and QC single project covered by contract. Developed in accordance with:
	Programmatic QA Project Plan developed in accordance with:
Not Applicable	Application of QA and QC activities to the single project covered by contract. QA Project Plan developed in accordance with:

After Award Documentation

R2	Documentation of an organization's Quality System. QMP developed in accordance with:
R2 and R5	Combined documentation of an organization's Quality System and application of QA and QC single project covered by the contract: Developed in accordance with:
R5	Documentation of the application of QA and QC activities to applicable project(s). Developed accordance with:
not applicable	Programmatic QA Project Plan with supplements for each specific project, developed in accor with:
Not Applicable	Existing documentation of the application of QA and QC activities will be used:

The signatures below verify that the Statement of Work (SOW) has been reviewed to ascertain the necessary QA and QC activitie to comply with EPA Order 5360.1 A2, that the COR understands these requirements, and that the COR will ensure that the quality requirements indicated on the previous pages of this form are incorporated into all associated SOWs. *(Sign/date below, obtain a concurrence signature from the QA Staff, and submit the form along with the other extramural action documentation.)*

Joe Wood	02/05/2009	Eletha Roberts	02/05/
NHSRC-DCMD Technical Lead Person	Date	NHSRC-DCMD QA Staff Member	Dat

QAPP REQUIREMENTS FOR BASIC RESEARCH PROJECTS
(from Appendix B of the NHSRC QMP)

A basic research project is a study performed to generate data used to evaluate unproven theories, processes, or technologies.

SECTION 1.0, PROJECT OBJECTIVES AND ORGANIZATION

1.1 State the project objectives.

1.2 Identify the responsibilities of all project participants (*e.g.* QAPP preparation, sample collection and analyses, data reduction/validation/analysis, report preparation, QA).

SECTION 2.0, EXPERIMENTAL APPROACH

2.1 Describe the process, site, facility, apparatus, and/or environmental system to be tested.

2.2 Describe all known or pre-established test conditions and variables, including replicate experimental runs.

2.3 Describe the planned approach (statistical and/or non-statistical) for evaluating project objectives (*i.e.*, data analysis).

SECTION 3.0, SAMPLING AND MEASUREMENT APPROACH AND PROCEDURES

3.1 Complete the following table to summarize the sampling strategy to be used.

Sample/Measurement Location	Matrix	Measurement	Frequency	Experimental QC1	Total No. Samples

1QC samples generated during experiment, as applicable (*e.g.*, blanks, replicate samples, spikes)

3.2 Complete the following table to summarize the sampling and analytical procedures to be used.

Matrix	Measurement	Sampling/ Measurement Method1	Analysis Method1	Sample Container/ Quantity of Sample	Preservation/ Storage	Holding Time(s)2

1Provide details in text, as necessary, if standard method or SOP cannot be referenced
2Both to extraction and analysis, if applicable

SECTION 4.0, QA/QC CHECKS

Complete the following table to summarize QA/QC checks.

Matrix	Measurement	QA/QC Check1	Frequency	Acceptance Criteria	Corrective Action

[1]Include all QA/QC checks (experimental and analytical, as applicable) for accuracy, precision, detection limits, mass balance, *etc.* (*e.g.*, matrix spikes, lab control samples, blanks, replicates, surrogates)

SECTION 5.0, DATA REPORTING

Describe data reduction procedures specific to the project.

SECTION 6.0, REFERENCES

Provide references to methods and germane prior publications.

IN ADDITION, WHEN APPLICABLE ...

- list all project-specific target analytes (*i.e.*, when a class of compounds is specified in the table)
- indicate if reporting is on a wet or dry weight basis (solid matrices only)
- describe the method used to establish steady-state conditions
- describe how sampling equipment is calibrated
- describe how cross-contamination between samples is avoided
- describe the procedures used to collect representative samples
- describe sample packing and shipping procedures
- describe instrument calibration procedures and acceptance criteria if not included in a referenced method or SOP

NHSRC QA
To the Statement of Work
Requirements/Definitions List

Attachment # 2

EPA's Quality System Website: http://www.epa.gov/quality
EPA's Requirements and Guidance Documents: http://www.epa.gov/quality/qs_docs.html
EPA's Quality System Website: http://www.epa.gov/quality/qs-docs/r5-final.pdf

In accordance with EPA Order 5260.1 A2, conformance to ANSI/ASQC E4 must be demonstrated by submitting the quality documentation described herein. All Quality documentation shall be submitted to the Government for review. The Government will review and return the quality documentation, with comments, and indicate approval or disapproval. If the quality documentation is not approved, it must be revised to address all comments and shall be resubmitted to the Government for approval. Work involving environmental data collection, generation, use, or reporting shall not commence until the Government has approve the quality documentation. The Quality Assurance Project Plan (QAPP) shall be submitted to the Government at least thirty (30) days prior to the beginning of any environmental data gathering or generation activity in order to allow sufficient time for review and revisions to be completed. After the Government has approved the quality documentation, the Contractor shall also implement it as written and approved by the Government.

NHSRC's Quality System Specifications for Extramural Actions –

These requirements typically pertain to single project efforts. The five specifications are:

(1) a description of the organization's Quality System (QS) and information regarding how this QS is documented, communicated and implemented;

(2) an organizational chart showing the position of the QA function;

(3) delineation of the authority and responsibilities of the QA function;

(4) the background and experience of the QA personnel who will be assigned to the project; and

(5) the organization's general approach for accomplishing the QA specifications in the SOW.

NHSRC QA Requirements/Definitions List

Category Level Designations (determines the level of QA required):

☐ **Category I Project** - applicable to studies performed to generate data used for enforcement activities, litigation, or research project involving human subjects. The QAPP shall address all elements listed in "EPA Requirements for QA Project Plans, EPA QA/R-5.

☐ **Category II Project** - applicable to studies performed to generate data used in support of the development of environmental regulations or standards. The QAPP shall address all elements listed in "EPA Requirements for QA Project Plans, EPA QA/R-5.

☐ **Category III Project** - applicable to projects involving applied research or technology evaluations. The QAPP shall address the applicable sections of "EPA Requirements for QA Project Plans, EPA QA/R-5 as outlined in the **NHSRC's QMP: QAPP** requirements for the specific project type (see below).

☒ **Category IV Project** - applicable to projects involving basic research or preliminary data gathering activities. The QAPP shall address the applicable sections of "EPA Requirements for QA Project Plans, EPA QA/R-5 as outlined in the **NHSRC's QMP QAPP** requirements for the specific project type (see below).

Project Types:

These outlines of NHSRC's QAPP Requirements for various project types, from Appendix B of the NHSRC QMP (except where otherwise noted), are condensed from typically applicable sections of R-5 (EPA Requirements for QA Project Plans) and are intended to serve as a starting point when preparing a QAPP. These lists and their format may not fit every research scenario and QAPP's must conform to applicable sections of R-5 in a way that fully describes the research plan and appropriate QA and QC measures to ensure that the data are of adequate quality and quantity to fit their intended purpose.

☐ **Applied Research Project** - pertains to a study performed to generate data to demonstrate the performance of accepted processes or technologies under defined conditions. These studies are often pilot- or field-scale. The QAPP shall address all requirements listed in "QAPP Requirements for Applied Research Projects" from Appendix B of the NHSRC QMP.

☒ **Basic Research Project** - pertains to a study performed to generate data used to evaluate unproven theories, processes, or technologies. These studies are often bench-scale. The QAPP shall address all requirements listed in "QAPP Requirements for Basic Research Projects" from Appendix B of the NHSRC QMP.

☐ **Design, Construction, and/or Operation of Environmental Technology Project** - pertains to environmental technology designed, constructed and/or operated by and/or for EPA. The QAPP shall address requirements in the EPA Quality System document "Guidance on Quality Assurance for Environmental Technology Design, Construction, and Operation" G-11, at http://www.epa.gov/quality/QS-docs/g11-final-05.pdf. For additional information, you may refer to Part C of "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology," ANSI/ASQC E4-1994, American Society for Quality Control, Milwaukee, WI, January 1995.

☐ **Geospatial Data Quality Assurance Project** - pertains to data collection; data processing and analysis; and data validation of geospatial applications. The QAPP shall address requirements in the EPA Quality System document "Guidance for Geospatial Data Quality Assurance Project Plans" G-5S at http://www.epa.gov/quality/QS-docs/g5g-final-05.pdf.

☐ **Method Development Project** - pertains to situations where there is no existing standard method, or a standard method needs to be significantly modified for a specific application. The QAPP shall address all requirements listed in "QAPP Requirements for Method Development Projects" from Appendix B of the NHSRC QMP.

☐ **Model Development Project** - includes all types of mathematical models including static, dynamic, deterministic, stochastic, mechanistic, empirical, etc. The QAPP shall address requirements in the EPA Quality System document "Guidance for Quality Assurance Project Plans for Modeling" G-5M at http://www.epa.gov/quality/QS-docs/g5m-final.pdf.

☐ **Sampling and Analysis Project** - pertains to the collection and analysis of samples with no objectives other than to provide characterization or monitoring information. The QAPP shall address all requirements listed in "QAPP Requirements for Sampling and Analysis Projects" from Appendix B of the NHSRC QMP.

☐ **Secondary Data Project** - pertains to environmental data collected from other sources, by or for EPA, that are used for purposes other than those originally intended. Sources may include: literature, industry surveys, compilations from computerized databases and information systems, and computerized or mathematical models of environmental processes. The QAPP shall address all requirements listed in "QAPP Requirements for Secondary Data Projects" from Appendix B of the NHSRC QMP.

☐ **Software Development and Data Management Project** - pertains to software development, software/hardware systems development, database design and maintenance, data validation and verification systems. The QAPP shall address all requirements listed in "QAPP Requirements for Software Development Projects" from Appendix B of the NHSRC QMP.

Definitions:

Environmental Data - These are any measurement or information that describe environmental processes, location, or conditions; ecological or health effects directly from measurements, produced from software and models, and compiled from other sources such as data bases or the literature. For EPA, environmental data include information collected

directly from measurements, produced from software and models, and compiled from other sources such as data bases or literature.

Incremental Funding - Incremental funding is partial funding, no new work.

Quality Assurance (QA) - Quality assurance is a system of management activities to ensure that a process, item, or service is of the type and quality needed by the customer. It deals with setting policy and running an administrative system of management controls that cover planning, implementation, and review of data collection activities and the use of data in decision making. Quality assurance is just one part of a quality system.

Quality Assurance Project Plan (QAPP) - A QAPP is a document that describes the necessary quality assurance, quality control, and other technical activities that must be implemented to ensure that the results of the work performed will satisfy the stated performance criteria. A QAPP documents project-specific information.

Quality Control (QC) - Quality control is a technical function that includes all the scientific precautions, such as calibrations and duplications, which are needed to acquire data of known and adequate quality.

Quality Management Plan (QMP) - A QMP is a document that describes an organization's/program's quality system in terms of the organizational structure, policy and procedures, functional responsibilities of management and staff, lines of authority, and required interfaces for those planning, implementing, documenting, and assessing all activities conducted. A QMP documents the overall organization/program, and is primarily applicable to multi-year, multi-project efforts. An organization's/program's QMP shall address all elements listed in the "Requirements for Quality Management Plans" in Appendix B of the NHSRC QMP.

Quality System - A quality system is the means by which an organization manages its quality aspects in a systematic, organized manner and provides a framework for planning, implementing, and assessing work performed by an organization and for carrying out required quality assurance and quality control activities.

R-2. EPA Requirements for Quality Management Plans (EPA/240/B-01/002) March, 2001
http://www.epa.gov/quality/QS-docs/r2-final.pdf.

R-5. EPA Requirements for Quality Management Plans (EPA/240/B-01/002) March, 2001
http://www.epa.gov/quality/QS-docs/r5-final.pdf.

Substantive Change - Substantive change is any change in an activity that may alter the quality of data being used, generated, or gathered.

Technical Lead Person (TLP) - This person is technically responsible for the project. For extramural contract work, the TLP is typically the contracting officer's representative (COR). For intramural work, the TLP is typically the Principal Investigator.

Abbreviations:

COR	Contracting Officer's Representative	IAG	Interagency Agreement
NHSRC	National Homeland Security Research Center	QA	Quality Assurance
NRMRL	National Risk Management Research Laboratory	QAM	Quality Assurance Manager
QA ID	Quality Assurance Identification	QMP	Quality Management Plan
QAPP	Quality Assurance Project Plan	SOW	Statement of Work
QS	Quality System	CRADA	Cooperative Research & Development Agreement
TLP	Technical Lead Person		