Quality Assurance
Project Plans (QAPP)
What is a QAPP?

A QAPP describes the activities of an environmental data operations project involved with the acquisition of environmental information.
Documents the results of a project’s technical planning process, providing a clear, concise, and complete plan for the environmental data operation and its quality objectives.

Identifying key project personnel.
Why do I have to do a QAPP?

40 CFR 31 Requires grantee/cooperative agreement holder to develop and implement quality assurance practices to produce data of adequate quality to meet project objectives.

40 CFR 35 Requires grantee/cooperative agreement holder to comply with 40 CFR 31.
To communicate, to all parties, the specifications for implementation of the project design and to ensure that the quality objectives are achieved for the project.
When should a QAPP be prepared?

- Should be completed and approved before the project is started.
- All work involving the collection or use of environmental data, by or on behalf of EPA, is to be done with an approved QAPP. This policy applies to work performed by or on behalf of EPA. A QAPP should generally be approved before any environmental data collection operation starts. Examples of exceptions include:
  - circumstances warrant immediate action to protect human health and/or the environment, or
  - operations are conducted under police powers.
- If the plan is not approved before work begins, a stop-work order may be issued.
Environmental data include information

- collected directly from measurements
- produced from models
- compiled from other sources
  - data bases
  - literature
How long is a QAPP?

A QAPP should have enough information to describe project objectives and details. The number of pages needed to address this information will vary with the complexity of the project and intended use of the information.
May I use the same QAPP for standard activities?

Multi-year projects, and projects conducted at multiple sites, having the same project objectives and sampling and analytical processes, may be described in a generic QAPP. You may describe site specific activities in supplements, for example, separate field sampling plans. Review generic plans annually to determine if any changes are necessary.
If this information is documented in other places, do I rewrite that information into this QAPP?

Referring to existing documents can reduce QAPP preparation and review time and length.

- Standard operating procedures (SOPs)
- Sampling and analysis plans (SAPs)
- Work plans
- Environmental site assessments
- Literature files
- Data sets from other projects
When changes affect the scope, implementation, or assessment of the outcome.

The Project Manager, with the assistance of the QA Manager, determines the impact of any changes on the technical and quality objectives of the project.

For long-term projects, such as multi-year monitoring programs, the QAPP is reviewed annually by the Project Manager to determine the need for revision.
Reviewers with expertise in the project specific areas, such as program managers (decision makers), QA staff independent of project management, and project field and laboratory technical staff, should review the plan.

The responsible organization’s Project Manager, or Principal Investigator, and QA Manager may review and approve the QAPP, and then submit it for EPA approval. It is also beneficial if other key staff, such as the laboratory directors and prime contractors and subcontractors, sign the plan to indicate their review and approval.
Four basic element groups:

- Project Management;
- Data Generation and Acquisition;
- Assessment and Oversight;
- Data Validation and Usability. Each group consists of standard elements, 24 in all, that pertain to various aspects of the project.
Basic Elements

- who will use the data;
- what the project’s goals/objectives/questions or issues are;
- what decision(s) will be made from the information obtained;
- how, when, and where project information will be acquired or generated;
- what possible problems may arise and what actions can be taken to mitigate their impact on the project;
- what type, quantity, and quality of data are specified;
- how “good” those data have to be to support the decision to be made; and
- how the data will be analyzed, assessed, and reported.
Group A. Project Management

A1 Title and Approval Sheet
A2 Table of Contents
A3 Distribution List
A4 Project/Task Organization
A5 Problem Definition and Background
A6 Project/Task Description
A7 Quality Objectives and Criteria
A8 Special Training/Certifications
A9 Documentation and Records
Group B. Data Generation and Acquisition

B1 Sampling Process Design (Experimental Design)
B2 Sampling Methods
B3 Sample Handling and Custody
B4 Analytical Methods
B5 Quality Control
B6 Instrument/Equipment Testing, Inspection, and Maintenance
B7 Instrument/Equipment Calibration and Frequency
B8 Inspection/Acceptance of Supplies and Consumables
B9 Non-direct Measurements
B10 Data Management
QAPP Elements

Group C. Assessment and Oversight
C1 Assessments and Response Actions
C2 Reports to Management

Group D. Data Validation and Usability
D1 Data Review, Verification, and Validation
D2 Verification and Validation Methods
D3 Reconciliation with User Requirements
TEMPLATE

Quality Assurance Project Plan
For
GROUNDWATER MONITORING AT LUST PROGRAM SITES
On The
RESERVATION NAME

Leaking Underground Storage Tank Program
EPA Grant Number [Insert Grant Number]

For the Year: FY20xx

Prepared by
Tribe Name

Prepared for
Underground Storage Tank Program
U.S. EPA Region 8
1595 Wynkoop Street
Denver, CO 80202
Approval Signatures (required prior to project start):

_____________________________ Date: ____________________
Name
Tribal Environmental Director
(Project QA Manager)

_____________________________ Date: ____________________
Name
Tribal UST Coordinator

_____________________________ Date: ____________________
Name
EPA Project Officer

_____________________________ Date: ____________________
Linda Himmelbauer, Director
Quality Assurance Program

_____________________________ Date: ____________________
Wayne, Anthofer Director
Grants, Audits and Procurement Program
1.0 PROJECT MANAGEMENT

1.1 A1 - Title and Approval Page

See pages 1 and 2.

1.2 A2 - Table of Contents

See page 3.

1.3 A3 - Distribution List

Name: Name
Title: Tribal Department Manager
Organization: Tribe Name
Contact Information: Mailing address
City, State, ZIP
Phone
Email address

Name: Name
Title: Tribal UST Coordinator
Organization: Tribe Name
Contact Information: Mailing address
City, State, ZIP
Phone
Email address

Name: Name
Title: Project Officer
Organization: US EPA Region 8
Contact Information: 1595 Wynkoop Street, Denver, CO 80202
Phone
Email address

Name: Linda Himmelbauer
Title: Director, Quality Assurance Program
Organization: US EPA Region 8
Contact Information: 1595 Wynkoop Street, Denver, CO 80202
(303) 312-6020
Himmelbauer.linda@epa.gov
1.9 A9 - Documentation and Records

The QAPP is prepared and maintained by the Tribal UST Coordinator. It is his/her responsibility to review and update the QAPP as required (at least annually) and to ensure that individuals on the Distribution List are provided a copy of the latest version of the QAPP and any revisions on timely basis.

The EPA Region 8 Laboratory will send reports to the EPA Project Officer; the evaluation of data is currently not a part of the Tribes LUST Program. This QAPP will be revised if this changes.

Documents and Records for this project include information generated in the field (e.g., field forms, well purging & sampling logs, field log books, and chain-of-custody forms), assessment/oversight reports, interim progress/status reports, and final reports as described in the Work Plan. See the Appendices for examples of these documents and SOPs regarding their preparation. Field data records (including field sheets, logbook, calibration and maintenance records, chain of custody forms) and project reports will be provided to the EPA Project Officer as described in the Work Plan.

2.0 DATA GENERATION AND ACQUISITION

All of procedures and methods to be used for field environmental measurement and sample collection are presented in Appendix A. The procedures are described in detail to ensure that the data are representative of environmental conditions.

2.1 B1 - Sampling Process and Design

Samples and field data will be collected from groundwater monitoring wells at tribal LUST project sites. Appendix B contains the following information for each project to be sampled:

- Description and background of the site
- Summary of the objectives for each site
- Project site maps or photos
- Description and rationale for the sampling design at each project

2.2 B2 - Sampling Methods

Sampling will follow Standard Operating Procedures (SOPs) found at [http://www.epa.gov/region4/SESd/FTPSP](http://www.epa.gov/region4/SESd/FTPSP). Specific procedures to be used include:

<table>
<thead>
<tr>
<th>SOP Number</th>
<th>SOP Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SESDPROC-010-R4</td>
<td>Logbooks</td>
</tr>
<tr>
<td>SESDPROC-005-R1</td>
<td>Sample and Evidence Management</td>
</tr>
<tr>
<td>SESDPROC-110-R2</td>
<td>Global Positioning System</td>
</tr>
<tr>
<td>SESDPROC-105-R1</td>
<td>Groundwater Level and Well Depth Measurement</td>
</tr>
<tr>
<td>SESDPROC-301-R1</td>
<td>Groundwater Sampling</td>
</tr>
<tr>
<td>SESDPROC-209-R1</td>
<td>Packing, Marking, Labeling and Shipping of Environmental and Waste Samples</td>
</tr>
<tr>
<td>SESDPROC-202-R2</td>
<td>Management of Investigation Derived Waste</td>
</tr>
</tbody>
</table>
Figure 1 - Organization Chart

- Tribal Chairperson
- Tribal Environmental Director (Program QA Manager)
- Tribal Department Manager (if applicable)
- UST Program Coordinator
- Tribal Field Staff (if applicable)
Table 1 - Field Parameters and Equipment

<table>
<thead>
<tr>
<th>Field Parameter</th>
<th>Field Equipment</th>
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</thead>
<tbody>
<tr>
<td>pH</td>
<td></td>
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</tbody>
</table>

...
### Table 2 - Laboratory Sample Requirements

**Matrix/Media:** Groundwater

<table>
<thead>
<tr>
<th>Contaminants of Concern</th>
<th>Analytical Method</th>
<th>Maximum Laboratory Holding Time</th>
<th>Preservative</th>
<th>Sample Size and Container Type</th>
<th>QC (Extra bottles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPH - Diesel</td>
<td>EPA SW8015B</td>
<td>7 days to extract, 40 days to analyze</td>
<td>HCL Preserved Cool 2-6°C</td>
<td>2 (40 mL) VOA vials</td>
<td></td>
</tr>
<tr>
<td>TPH - Gas</td>
<td>EPA SW8015B</td>
<td>14 days</td>
<td>HCL Preserved Cool 2-6°C</td>
<td>2 (40 mL) VOA vials</td>
<td></td>
</tr>
<tr>
<td>VOCs (BTEX, MTBE, naphthalene)</td>
<td>EPA SW8260B or SW8021B/8015D</td>
<td>14 days</td>
<td>HCL Preserved Cool 2-6°C</td>
<td>2 (40 mL) VOA vials</td>
<td></td>
</tr>
<tr>
<td>1,2-DCA</td>
<td>EPA SW524.2</td>
<td>14 days</td>
<td>HCL Preserved Cool 2-6°C</td>
<td>2 (40 mL) VOA vials</td>
<td></td>
</tr>
<tr>
<td>EDB</td>
<td>EPA SW8011</td>
<td>14 days</td>
<td>Na₂S₂O₃ Preserved Cool 2-6°C</td>
<td>2 (40 mL) VOA vials</td>
<td></td>
</tr>
<tr>
<td>Alkalinity</td>
<td>EPA SW310.1</td>
<td>14 days</td>
<td>Cool 2-6°C</td>
<td>1 (250 mL) poly bottle</td>
<td></td>
</tr>
<tr>
<td>Sulfate as SO₄</td>
<td>EPA SW 300.0</td>
<td>28 days</td>
<td>Cool 2-6°C</td>
<td>1 (250 mL) poly bottle</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- °C = degrees Celsius
- 1,2-DCA = 1,2-Dichloroethane
- BTEX = benzene, toluene, ethyl benzene, xylene
- SW = EPA SW-848 Method
- TPH = total petroleum hydrocarbons
- VOA = volatile organic analysis
- ml = milliliter
- MTBE = methyl tert-butyl ether
- EDB = 1,2-Dibromoethane
- EPA = U.S. Environmental Protection Agency Method
- HCl = hydrochloric acid
- VOCs = volatile organic compounds
- Na₂S₂O₃ = Sodium thiosulfate

### Table 3 - Sample Identification System

| 1 | Year (Last two Digits) | 10 | e.g., 2010 |
| 2 | Project Identifier    | RS | e.g., Rank’s Service LUST Site |
| 3 | Monitoring Well Sample | MW |              |
| 4 | Sample Number         | 01-99 |            |
### U.S. ENVIRONMENTAL PROTECTION AGENCY

#### Chain of Custody

<table>
<thead>
<tr>
<th>LIR NO/PROJECT NAME</th>
<th>SAMPLE DESCRIPTION</th>
<th>DATE</th>
<th>TIME</th>
<th>PRESERVATIVE</th>
<th>ANALYSIS</th>
<th>NUMBER OF CONTAINERS</th>
<th>EPA TAG NUMBER</th>
<th>COMMENTS</th>
<th>REMARKS</th>
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</tbody>
</table>

**Preservatives**

1. None (N)  
2. Acidic (AC)  
3. Basic (BA)  
4. Organic  
5. Other (O)

**Matrix**

1. Groundwater (GW)  
2. Surface Water (SW)  
3. Drinking Water (DW)  
4. Waste Water (WW)  
5. Sediment (S)

**Remarks**

* Split Samples: Accepted | Declined | Hampshire

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**Region 7 Laboratory**  
1671 W. 48th Drive  
Golden, CO 80401-1790

**Appendix A - Sample Chain of Custody Form**
APPENDIX B - Project Specific Information

LIST OF PROJECTS/SITES

<table>
<thead>
<tr>
<th>Project ID</th>
<th>SITE NAME</th>
<th>SITE LOCATION</th>
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<tbody>
<tr>
<td>I</td>
<td></td>
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<tr>
<td>II</td>
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<td></td>
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<td>III</td>
<td></td>
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<tr>
<td>IV</td>
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</tbody>
</table>

Each project/site section in Appendix B contains the following:
1. Project Narrative
2. Figure B1. Site Map or Photo
3. Table B1. Sample Locations
4. Table B2. Sample Collection Summary
5. Table B3. QC Requirements for Field Sampling
6. Table B4. Field Equipment/Instrument Calibration, Maintenance, Testing, and Inspection
Project ID 1: Site-Specific Information

Project Narrative

1. Project Site Background
   
   >>Insert Project-Specific Narrative<<

2. Project Description
   
   >>Insert Project-Specific Narrative<<

3. Project Quality Objectives
   
   >>Insert Project-Specific Narrative<<

4. Sampling Design
   
   >>Insert Project-Specific Narrative<<
Site I

Figure B1. Site Map with Sampling Locations

<< add map of site >>
## Table B1. Sample Locations

<table>
<thead>
<tr>
<th>Well ID Number</th>
<th>Well Depth (ft)</th>
<th>Well Top of Casing (ft)</th>
<th>QC Sample Location (Extra Volume)</th>
<th>Well Location (GPS Coordinates)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Latitude</td>
<td>Longitude</td>
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</tbody>
</table>
### Table B2. Sample Collection Summary

<table>
<thead>
<tr>
<th>Matrix</th>
<th>Parameter</th>
<th>Test Method</th>
<th>Number of Samples</th>
<th>Duplicate Samples</th>
<th>MS/MSD</th>
<th>Trip Blank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundwater Samples from each well</td>
<td>TPH-Diesel</td>
<td>EPA SW8015B</td>
<td>Insert # of wells to be sampled</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPH-Gas</td>
<td>EPA SW8015B</td>
<td>Insert # of wells to be sampled</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VOCs (BTEX, MTBE, naphthalene)</td>
<td>SW8260B or SW8021B/8015D</td>
<td>Insert # of wells to be sampled</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>EDB</td>
<td>EPA SW524.2</td>
<td>Insert # of wells to be sampled</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,2-DCA</td>
<td>EPA SW8011</td>
<td>Insert # of wells to be sampled</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alkalinity</td>
<td>EPA SW310.1</td>
<td>Insert # of wells to be sampled</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sulfate</td>
<td>EPA SW300.0</td>
<td>Insert # of wells to be sampled</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- BTEX = benzene, toluene, ethylbenzene, xylenes
- 1,2-DCA = 1,2-Dichloroethane
- EDB = 1,2-Dibromoethane
- EPA = U.S. Environmental Protection Agency
- VOCs = volatile organic compounds

**Abbreviations:**
- QC = quality control
- SW = EPA Solid Waste Method
- TPH = total petroleum hydrocarbons
- MTBE = methyl tert-butyl ether
- MS/MSD = matrix spike/matrix spike duplicate
Site I

Table B3. Quality Control Requirements for Field Measurements

<table>
<thead>
<tr>
<th>QC Sample:</th>
<th>Data Quality Indicator (DQI)</th>
<th>Frequency/Number</th>
<th>Method/SOP QC Acceptance Limits</th>
<th>Acceptance Criteria/Measurement Performance Criteria</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;&lt;PARAMETER 1 – Instrument Name (Manufacturer, Model)&gt;&gt;</td>
<td></td>
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<tr>
<td>&lt;&lt;PARAMETER 2 – Instrument Name (Manufacturer, Model)&gt;&gt;</td>
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<td>&lt;&lt;PARAMETER 3 – Instrument Name (Manufacturer, Model)&gt;&gt;</td>
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