Tribal Water Quality Monitoring And Assessment Workshop

Quality Assurance

Quality Assurance & Water Monitoring

- Quality System
- Quality Management Plan (QMP)
- Quality Assurance Project Plan (QAPP)
- Sampling & Analysis Plan (SAP)
- Standard Operating Procedures (SOP)
- Monitoring Program Strategy
- Monitoring Design

Why is Quality Assurance Required?

Federal Regulation

- Grants - 40 CFR Parts 30, 31 and 35
- Contracts - 48 CFR Part 46

EPA Policy

- CIO Policy 2106.0, October, 2008

Quality System

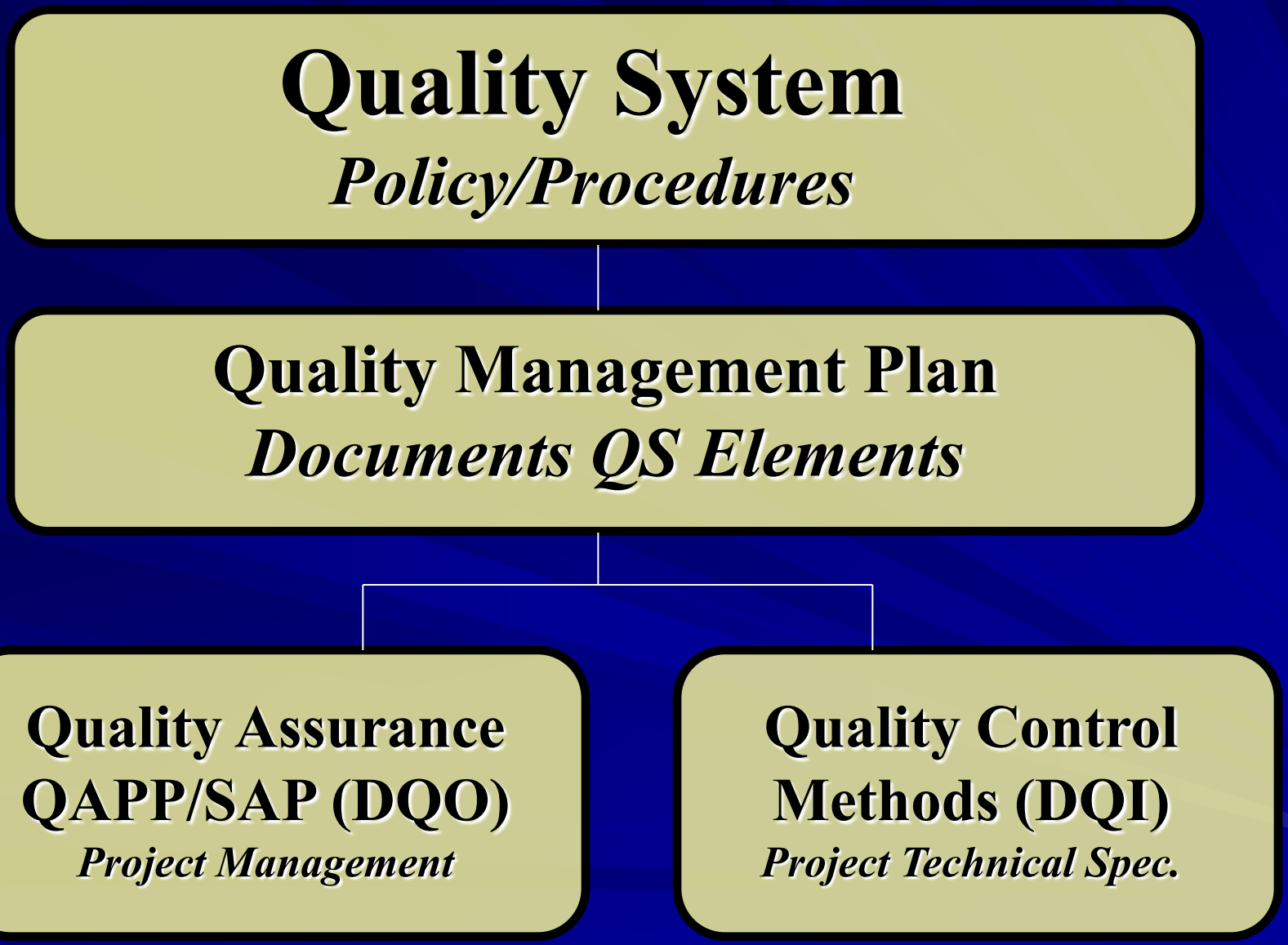
"A structured system that describes the policies & procedures for ensuring that work processes, products, or services satisfy stated expectations or specifications"

EPA Requirements for Quality Management Plans, EPA QA/R2

What a Quality System Requires

- "*Planning"* involves all stakeholders & focuses on data use
- *"Implementation"* processes, resources, timeframes are known
- "*Evaluation"* of activities and collected data
- Decisions/outcomes are reliable, defensible and documented

A well documented quality system reduces an organization's vulnerabilities and increases their ability to make reliable, cost-effective, and defensible decisions.


Quality System
Policy/Procedures
Quality Management Plan
Documents QS Elements
Quality Assurance
QAPP/SAP (DQO)
Project Management
Quality Control
Methods (DQI)
Project Technical Spec.

Quality Management Plan (QMP)

The QMP describes the organization's structure, policies and procedures for activities that support the collection, use, and communication of environmental data and information.

QMP - Elements

- Organizations Management & Structure
  - Lines of authority, roles & responsibilities for QA / QC
- Policies & Procedures (including QA Policy)
- Information flow processes with Mgt./Staff
  - Formal lines of communication for the organization
- Processes to Plan, Implement & Evaluate work

QA Project Plans (QAPPs)

- The QAPP is the vehicle with which data quality is planned, implemented and assessed
- Documents the intended use of the data
- Documents the acceptable data uncertainty
- Describes the sampling, analytical and assessment procedures used in the project

Graded Approach to QA Planning

QA and QC are tailored to program/project needs:

- Importance of work
- Availability of resources
- Unique needs of organization, project goals
- Consequences of potential decision errors

  (all environmental data has sampling and measurement uncertainty)

QAPP Elements

- Project Management
  - Problem definition, background, project/task organization & description, Quality Objectives, Training, Documentation
- Data Generation & Acquisition
  - Sampling design, sample handling, methods, QC (DQI), instrumentation requirements, data management
- Project Assessment & Oversight
  - Corrective actions, reports to management
- Data Validation & Usability
  - Data review (QC checks), verification, reconciliation of data against data quality objectives

When do we need a QAPP?

If an EPA funded grant requires the collection and/or use of *Environmental Data*, then a QAPP is required that establishes the quality of data necessary to satisfy project objectives.

Environmental Data

Primary Data

- Collected directly from measurements

Existing or Secondary Data

- Produced from models, or
- Existing data generated for other monitoring activities

Project Planning

Project Plan Development – Key Participants

- Program Managers (primary data users)
- Technical Staff (QA, Field, Lab, etc.)
- Stakeholders (EPA, Tribal, etc.)

Project Scoping

- Data Quality Objectives (criteria, decisions,..)
- Develop Project Elements

Project Planning

Project Scoping – Data Quality Objectives

- State the Problem
- Identify the Goal of the Project
- Identify Information needs
- Define the boundaries of the Study Area
- Develop the Analytical Approach
- Specify Performance or Acceptance Criteria for data
- Develop a Plan for Collecting the Data (QAPP/SAP)

Project Planning

Project Scoping – Develop Project Elements

- Monitoring / Sampling Design
  - (locations, frequency, etc.)
- Logistics for Field Sampling / Measurements
- Field Measurement Types (continuous, periodic)
- Laboratory Measurements
- Schedule

Project Planning

Plan Development

- QAPP information is carefully documented during scoping
- QAPP is written to address all elements in EPA guidance
- Include all Applicable References
  - Analytical methods, Lab QMPs, SOPs, Guidance, etc..

Project Planning

Plan Approvals

- QAPP is submitted to Regional Grant Project Officer
- Grant P.O. reviews and routes QAPP to QA Officer
- Combined EPA review comments sent back to Tribe
- Revised QAPP submitted for final EPA approval
  - EPA Grant PO and QA Officer both sign

Documenting Data Quality

The *Quality and Usability* of Environmental Data is only as good as the documentation that supports it

Water Monitoring Program Strategy

"A Monitoring Strategy is a *long-term* plan for meeting identified water resource objectives"

Developing a Tribal Water Monitoring Strategy
Supplement to the Clean Water Act Section 106 Tribal Guidance (EPA)

Monitoring Program Strategy

Monitoring Program Basics

- Monitoring Objectives
- Monitoring Design
- Water Quality Indicators Used
- Quality Assurance
- Data Management
- Data Analysis & Assessment
- Reporting
- Programmatic Evaluation
- General Support & Infrastructure Planning

Monitoring Design

Monitoring Design Basics

- Design Type
  - Fixed station, intensive, screening level, rotating basin, judgmental & probability sampling
- Addresses Objectives of Monitoring Strategy
  - – Overall water quality, changes over time, identifying problem areas, determining levels of protection, measuring effectiveness of clean water project/programs (improvements)

Take Home Message

Environmental data can be unusable if data quality are not established, known & documented

Tribes need to establish, early on, the quality & quantity of data necessary to make their monitoring programs successful

EPA QA Site: *http://www.epa.gov/quality/*
(guidance, training, QA contacts,..)