Project QA

DQOs and Planning Documentation for Projects and Contracts

Project Data Quality Objectives

For both contracts and internal DEP projects

Consider:

- What is the project design?
  - Objective – condition, problem or hypothesis to investigate
  - Standard activities or experimental (site assessment, monitoring, research, etc.)?
  - Sampling strategy (measurements, locations, frequencies, etc.)
    - Will sampling plan achieve design objectives?
  - Analytical scope (field and lab measurements)
    - Will field and lab methodology achieve objectives?

Project Data Quality Objectives

- Measurement data
  - Intended use
    - Decisions to be made with the data
      - Water quality standards, action levels, endpoints, other
  - Evaluation of data
    - How will hypothesis be tested?
    - How will conclusions be supported?
    - What statistical analyses are relevant (if any) ?

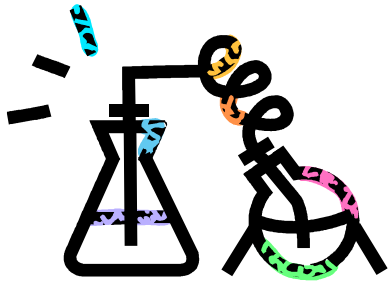
Project Data Quality Objectives

- Evaluation of data quality
  - How to determine if project DQOs have been met?
    - Satisfactory DQI outcomes
    - Proposed frequency of DQI checks
  - How to determine if the data are representative of the analytes, indicators, populations or other parameters investigated?
  - Will the data be compared to historical or similar data sets?

QA for Contractors

Contracts, Grants, Agreements

- Unless not appropriate for the DEP contract and specifically waived by (or omitted from) the contract:
  - All QA rule requirements apply
  - All DEP SOP requirements apply
  - Labs must be certified by DOH ELCP



QA for Contractors

Contracts, Grants, Agreements

- Exceptions to requirements
  - DEP will determine which procedures and methods are exempt
    - Non-standard or “research” sampling procedures
    - Lab methods that are non-standard and not typically certified by DOH-ELCP

Contract QA Language

Contracts, Grants, Agreements

- Templates – See QA Officer Resources Webpage
  - Universal QA Requirements template for contracts & grants
    - Standard document attached to all contracts for sampling and analysis
      - Modified as necessary for the project
    - Addenda included for specific chemistry and microbiology Quality Control requirements

Contract QA Language

Contracts, Grants, Agreements

- Templates – See QA Officer Resources Webpage
  - Purchase Order template
    - Include for all sampling and analysis POs

QA for Contractors

Contracts, Grants, Agreements, Purchase Orders

DEP project manager QA responsibilities

Before execution:

- Inform contractors of QA requirements early in the negotiation process
  - Decided on any exceptions required
- Ensure QA language is included (templates attached)
  - Do not approve purchase orders without QA template

QA for Contractors

Contracts, Grants, Agreements, Purchase Orders

Routing prior to execution:

- Contracts & grants routed through SAS (QA sign-off)
- Purchase Orders approved by SAS (MFMP)

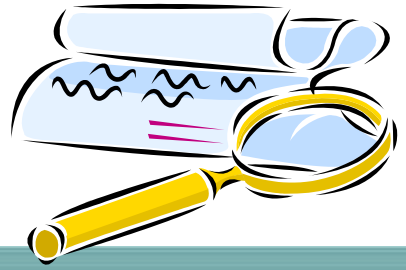
QA for Contractors

Contracts, Grants, Agreements, Purchase Orders

DEP project manager QA responsibilities

After execution:

- Make sure QA deliverables are provided, per contract language
- Monitor contract deliverables for QA problems



QA for Contractors

Contracts, Grants, Agreements, Purchase Orders

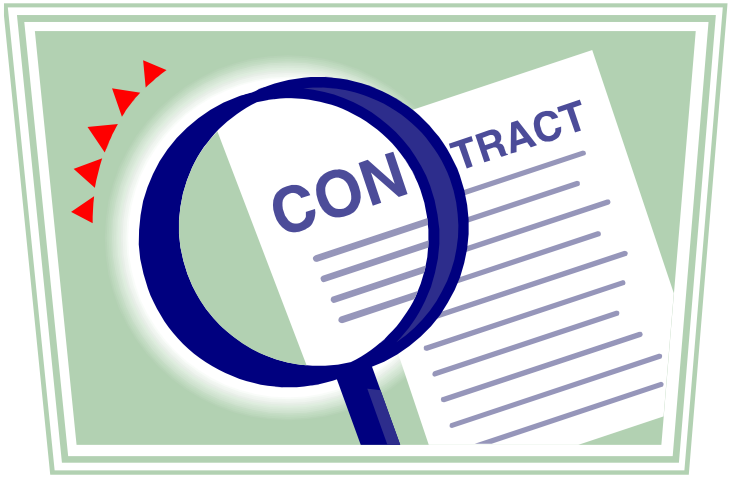
Routing after to execution:

- QA plan or Sampling & Analysis plan routed through SAS for review
  - Delivery schedule in contract
  - Comments for revision provided to DEP project manager

QA for Contractors

Contracts, Grants, Agreements, Purchase Orders

- All sampling and analysis must be described:
  - Work plan
  - QA plan
  - Contract scope
  - Project proposal
  - Other related documents



QA Plans or Sampling & Analysis Plans

- QAP or SAP required for contracts & grants
  - Not required for purchase orders
    - Work proposed must be detailed in PO

- Plan contents
  - See web links for guidance:
    - DEP-QA-002/02 (Contract QA Requirements manual)
    - Federal grants (plans) per EPA's QA/R-5

QA Plans or Sampling & Analysis Plans

QA Plan Contents

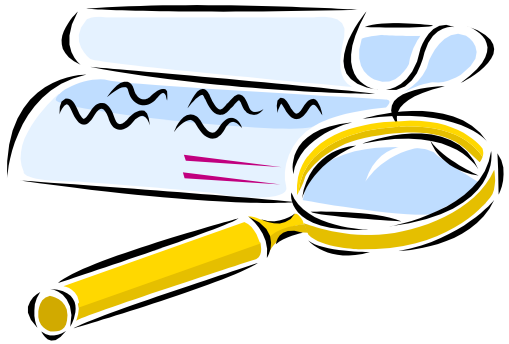
- Description of project design & data quality objectives
  - History or background - if relevant
  - Detailed proposal of field and lab methodology
- Schedule and length of project
- Information about all contractors & other participants
  - Project organization per responsibilities

QA Plans or Sampling & Analysis Plans
QA Plan Contents

- Intended use of data
- Proposed evaluation of project data
  - Databases, spreadsheets, etc. – formats and QC checks
- Proposed evaluation of data quality – Criteria for DQIs

QA for Contractors

Contracts, Grants, Agreements



- Common contract QA problems
  - Required information not in QA plan
    - Subcontractor information not in QA plan or incorrect
  - Sampling starts before approval from DEP contract manager
    - Contract manager may allow field work before final approval of QA plan
      - Additional QA plan information must be completed
  - Examples of QA deliverables not provided
    - Lab certification information
    - Audit reports
    - Interim reports
  - Data deliverables do not meet DQOs or project scope

"Non-Standard" Project DQOs

- Research projects must have procedures and criteria for Quality Assurance
  - Research QA plans per 62-160.600
  - DQO planning is the same as with any project type
    - Similar QA concepts
  - Project data are <u>not</u> for regulatory use

"Non-Standard" Project DQOs

- Proposed methodologies must be fully detailed
  - Published methods, SOPs, literature articles, etc.
    - Field and lab
    - Details provided for any modifications to published techniques
- Proposed Data Quality Indicators
  - Procedures & criteria for measuring and evaluating

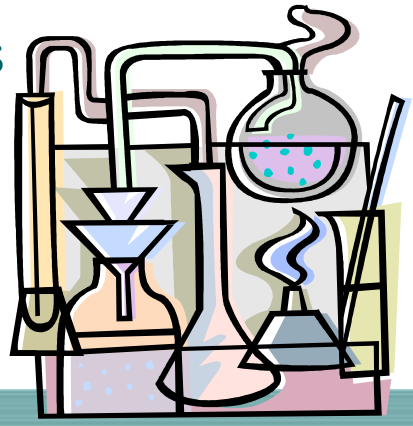
"Non-Standard" Project DQOs

- Field methods
  - Sample collection, preservation, holding times, containers
  - Sampling design and selection of sampling points
  - Original and reduced data to be collected from the field
  - Documentation procedures
    - 62-160.240 as minimum records, where applicable

"Non-Standard" Project DQOs

Lab methods

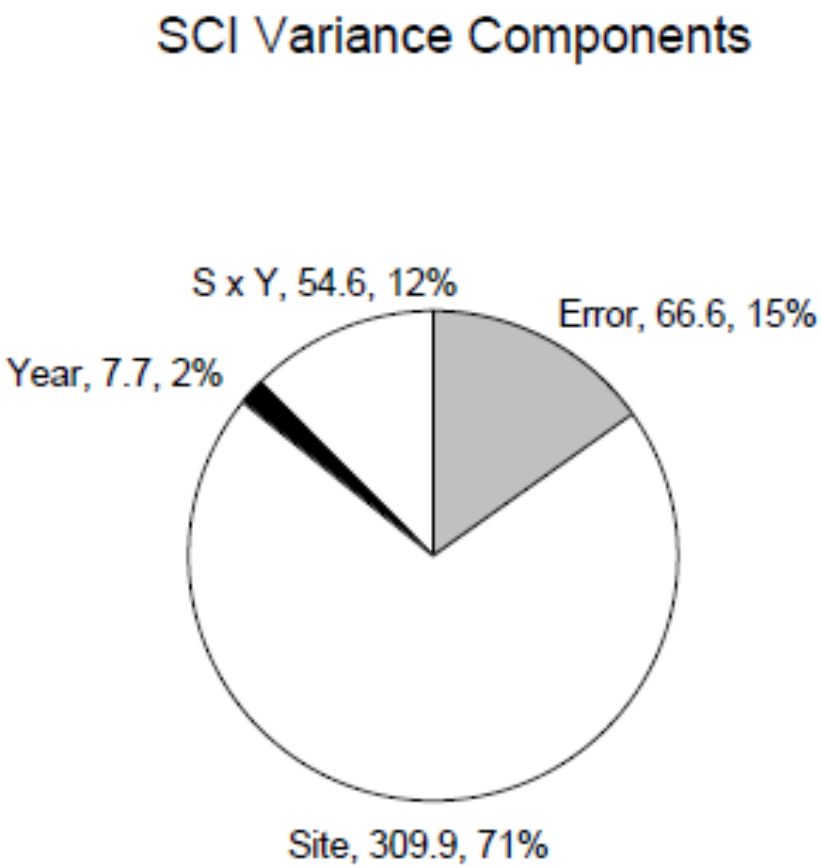
- Sample preparation procedures
- Instrument calibration – procedures & verification criteria
- Original and reduced analytical data to be collected
  - Calculation procedures for final results
- Measurement procedures & performance criteria for evaluation of:
  - Selectivity, precision, accuracy, bias, error, uncertainty, etc.
  - Analytical contamination control (blanks)
  - Estimates of detection & quantitation limits
- Corrective actions for anticipated or typical QC failures
- Documentation procedures
  - 62-160.340 as minimum records, where applicable



"Non-Standard" Project DQOs

- Additional QA concepts for Biology Research
  - Method Error (Minimum detectable difference)
    - Variability within and between analysts
    - Lab and field process error/variability
    - Subsampling error
    - Expected inherent variability in measurement
    - Example – Stream Condition Index error estimates

Example:
Stream Condition Index Error Estimate



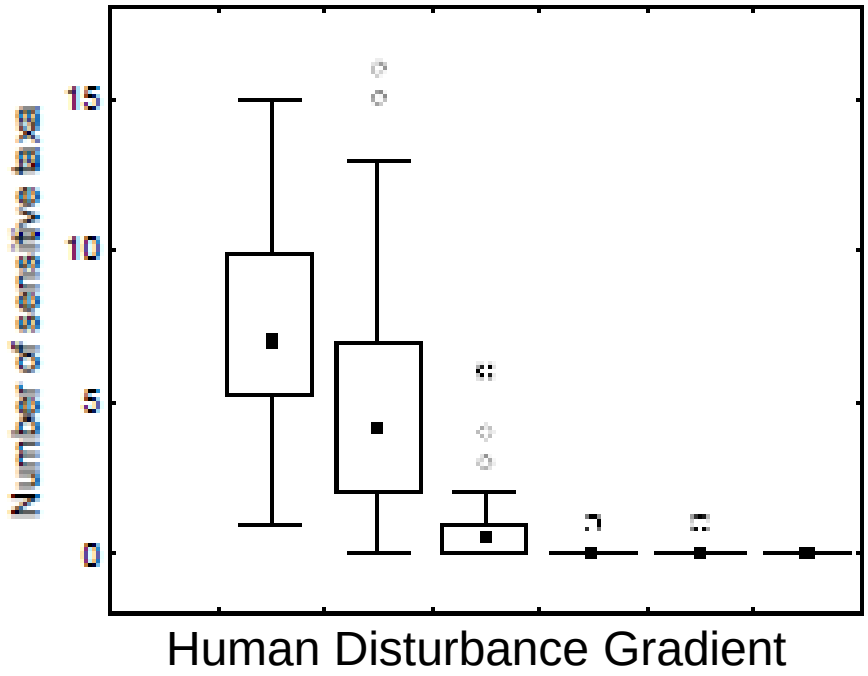
From Fore et al. 2007, Stream Condition Index report

"Non-Standard" Project DQOs

- Additional QA concepts for Biology Research
  - Study design should address the objective *or* **"Will the results answer the question?"**
    - Relevance of measurement to objective
    - Measurement should respond to stressor of interest
    - Elimination of confounding factors?
  - Comparability/Crosswalk to existing studies

Example:
SCI development and Calibration

- Metrics respond to stressor of interest



Example: Confounding Factors

- Can't measure the impact of algae on macroinvertebrates if they are really limited by lack of oxygen