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THE SEVEN MAIN STEPS OF THE DQO PLANNING PROCESS

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Handout

Prepared for
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The Seven Main Steps of the DQO Planning Process^(a)

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The Data Quality Objectives (DQO) Planning Process (DQOPP) involves seven steps. Each step requires that all persons who might be able to influence that step's program before it is completed become involved. Those with such influence include representatives from

- program managers, who define the overall remediation project
- regulators, who set standards for the remediation
- line managers, who use data to design and guide the remediation
- data suppliers, who collect and analyze the samples
- DQO specialists, who help to guide the technical planning in the DQOPP.

At the end of each step, a document is prepared that describes the elements needed in that step. Each participant must sign the document to show concurrence. A brief description of the seven steps follows:

1. Understanding the Context

The DQO specialists meet with program managers, line managers, and regulators to learn the following:

- What is the scope and what are the constraints of the project?
- What are all the data requests associated with the project?
- How does the characterization relate to the bigger problem?
- How will the data be used?
- Why are the data being requested?

2. Converging on a Statement of the Question

The DQO specialists review the context of the information with program managers, line managers, and regulators to define the following:

- the priorities and sequencing in the project
- the areas where the various data users need to participate in the project sequence
- the priority problem identified by the analysis and restated by the participants as "The Question"
- the many problems involved in the overall remediation project.

(a) Information for this document was obtained from a handout provided at the "Data Quality Objectives Planning Process Training Workshop" that was presented by Stan Blacker and Dan Goodman at the Richland Federal Building Auditorium on December 9 and 10, 1992. The following information summarizes the "data quality objectives planning process" described in the handout.

(b) Pacific Northwest Laboratory is operated for the U.S. Department of Energy by Battelle Memorial Institute under Contract DE-AC06-76RLO 1830.

Step 2 focuses on the problem to be addressed now with this characterization effort. Other problems with a lower priority or late sequence will be taken up later in the project. At that time, the other problems may be pursued with another characterization planning effort, with its own DQO.

3. Defining the Array of Possible Useful Answers

The DQO specialists meet with regulators and line managers to identify

- possible answers to the question
- decisions that will be made on the basis of the answer
- useful data that need to be envisioned.

4. Selecting the Measures that will Estimate the Answers

The DQO specialists meet with line managers and data suppliers to select

- directly measurable quantities that estimate the answer
- the variables that will be measured
- the sampling and analytical issues in the estimate.

5. Setting Error Tolerances for the Estimates

The DQO specialists meet with program managers, regulators, and line managers to define

- the level of discomfort with specific error scenarios
- the tolerance for mistaken decisions owing to estimation errors
 - Indicators only give estimates.
 - What are complicating factors?
 - How close do the numbers need to be?
 - What are both upper and lower limits?

6. Arriving at a Decision Rule

The DQO specialists meet with regulators and line managers to

- obtain a stakeholder decision rule that defines how the answer will trigger a decision
- develop a technical decision rule as a formula for how data will trigger a decision
- put the pieces together to create a precise decision rule.

The rule states exactly how the data will be used. An efficient decision rule will set the trigger points to just meet error tolerances.

7. Optimizing the Design

The DQO specialists meet with data suppliers to

- explore design details, including the number of samples, time and place of sampling, sample treatment, analytical technique, etc.
- find the least costly design that just meets error tolerances

- create a sampling and analysis design that meets the needs.

The design should minimize costs and should comply with items 1 through 6 above.

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