

Recommended Elements of a Laboratory Quality Assurance Plan
from the EPA *Manual for the Certification of Laboratories Analyzing Drinking Water*, 4th Ed. – Modified
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At a minimum, the following items should be included in a lab QA plan. If a particular item is not relevant, the QA plan should state this and provide a brief explanation. A laboratory QA plan should be responsive to the following items while remaining brief and easy to follow. Minimizing paperwork and improving dependability and quality of data are the intended goals.

1. Laboratory organization and responsibility

- a. Include a chart or table showing the laboratory organization and lines of responsibility, including QA managers;
- b. List the key individuals who are responsible for ensuring the production of valid measurements and the routine assessment of measurement systems for precision and accuracy (e.g., the persons responsible for internal audits and reviews of the implementation of the plan and its requirements);
- c. Reference (but do not include) the job descriptions of the personnel and describe training to keep personnel updated on regulations and methodology, and document that laboratory personnel have demonstrated proficiency for the methods they perform.

2. A list of SOPs with the dates of the most recent revisions

(An SOP can reference an EPA method but the EPA method itself is not an SOP. An SOP details actual in-house laboratory operating procedures with respect to laboratory analyses, instrument operations, QC procedures, etc.)

The lab's QA manager should:

- a. Ensure that current copies of SOPs are in the laboratory and in the QA Manager's files;
- b. Ensure that SOPs are reviewed annually and revised as changes are made;
- c. Ensure that SOPs have signature pages and dated revisions.

3. Field sampling procedures

- a. Describe required preservation, proper containers, correct sample container cleaning procedures, sample holding times from collection to analysis, and sample shipping and storage conditions;
- b. Provide copies of appropriate custody forms.
- c. Describe how samples are checked when they arrive at the lab for proper containers, temperature and proper preservation (e.g., pH, chlorine residual).

4. Laboratory sample handling procedures

- a. Use bound laboratory note books, filled out in ink, with entries dated and signed. (A secure, password protected, electronic data base is acceptable).
- b. Describe how unprocessed and processed samples are stored at the proper temperature, isolated from laboratory contaminants, standards and highly contaminated samples and, sometimes, each other;
- c. Describe practices to ensure that holding times will not be exceeded;
- d. Describe how personnel maintain integrity of all samples, (e.g., by tracking samples from receipt by laboratory through analysis to disposal);
- e. Discuss when Chain-of-Custody procedures are imposed (for samples likely to be the basis for an enforcement action);
- f. Specify criteria for rejection of samples which do not meet shipping, holding time and/or preservation requirements and procedures for notification of sample originators.

5. Calibration procedures for chemistry

- a. Specify type of calibration used for each method and frequency of use;
- b. Describe standards' source, age, storage, labeling;
- c. Describe use of control charts.

6. Data reduction, validation, reporting and verification

- a. Describe data reduction process;
- b. Describe data evaluation process;
- c. Describe reporting procedures, including format;
- d. Describe procedure for data corrections.

7. Quality control

- a. Describe quality control procedures used for all analytical procedures. Parameters for chemistry should include:
 - instrument performance check standards;
 - frequency of determination of method detection limit (MDL) calculations;
 - calibration, internal and surrogate standards;
 - laboratory reagent blanks;
 - laboratory duplicates;
 - quality control and proficiency testing samples;
 - laboratory fortified blanks and laboratory fortified sample matrices;
 - initial demonstrations of method capability;
 - qualitative identification/confirmation of contaminants.
- b. Parameters for microbiology should include:
 - positive and negative culture controls;
 - sterility controls;
 - proficiency testing and other quality control samples.

8. Schedule of internal audits

9. Preventive maintenance procedures and schedules

10. Corrective action contingencies

- a. Describe response to obtaining unacceptable results from analysis of lab QC checks;
- b. Name persons responsible for the various corrective actions;
- c. Describe how the corrective actions taken are documented.

11. Record keeping procedures

- a. Describe procedures and how they are documented;
- b. Describe security policy of electronic databases.