GET THE LEAD OUT

EPA Region III
Guidance for Preparing
Lead-Monitoring Project Plans

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BACKGROUND AND INTRODUCTION

The U.S. Environmental Protection Agency (EPA) requires that all Regional offices, Program offices, Laboratories, and States conducting environmental monitoring that is supported through EPA or performed as part of a delegated environmental program participate in a centrally managed Quality Assurance Program.[1] The EPA policy, set forth in the Administrator's Memorandum, applies to all monitoring and measurement activities conducted under the National Lead Program.

EPA defines quality assurance (QA) as "the total program for assuring reliability of monitoring and measurement data." QA includes items that most scientists take for granted. These items include well-defined objectives and strict quality control procedures in analytical work. A key requirement for implementation of EPA's QA requirements is the preparation of Quality Assurance Project Plans. QA Project Plans serve two purposes: (1) they assure EPA's managers that they will receive exactly what information they expect to receive; and (2) they ensure that everyone associated with a project has a common and thorough understanding of the objectives, sampling and analytical methods, and products associated with the work.

Although the *Guidance Document for the Preparation of Quality Assurance Project Plans (*EPA, May 1993) from the Office of Pollution Prevention and Toxics (OPPT) has been used successfully, sampling projects for the National Lead Program differ from one another in the media they involve. Samples for lead may include a host of different media such as water, blood, paint, soil, dust, etc., and therefore, may require different media monitoring techniques. Field sampling analysis is very common for several of these media; the relatively sophisticated field instruments used in these applications have different accuracy, precision and detection limit capabilities which must be considered in lead sampling applications.

In EPA Region III, all lead data collected for or by the EPA must be obtained in accordance with procedures documented in a Quality Assurance Project Plan (QAPP). This includes data collected under programs run by grantees. The following activities typically funded through Region III Lead Grants are examples of projects which must be conducted in accordance with an EPA-approved QAPP:

- environmental assessments of homes as part of a lead poisoning prevention effort,
- citizen monitoring of lead paint or soil for education purposes,
- blood lead testing,
- research projects where samples are collected and analyzed for lead,
- lead inspections under a state Lead Enforcement Program

[1]Administrator's Memorandum, May 30, 1979.

Often individuals find writing QAPPs difficult. This perception is probably because the plans require detailed information. With experience, most project managers find that the Lead Monitoring Project Plans do improve the quality of the data by providing all participants in the project with the same clear guidelines and goals for implementation. EPA Region III QAPP reviewers find the most difficult part of Lead Monitoring Project Plans to review is the Project Description, since many draft Project Plans fail to clearly state the purpose of sampling and analysis. Without a clear purpose to a project, the details cannot be determined.

Additionally, according to the EPA Order 5360.1, *Policy and Program Requirements to Implement the Mandatory Quality Assurance Program* (U.S. EPA, Washington, DC, April, 1984), all environmental programs conducted by or on behalf of EPA must establish and implement effective quality systems to support those programs. This policy requires that all Agency organizational units document their "quality system" (their structured and documented management system describing the policies and procedures for ensuring that work processes, products, or services satisfy stated expectations or specifications) in an approved Quality Management Plan (QMP). The QMP provides the blueprint for how an individual Agency component will plan, implement, and assess its quality system for the environmental work to be performed as part of its mission. Specific Guidance for preparation of a QMP is contained in *EPA Draft Interim Final Requirements for Quality Management Plans* (EPA QA/R-2, August, 1994)

This Guidance herein was prepared to assist investigators prepare QAPPs for projects pertaining to the analysis of lead in paint or other media. It incorporates feedback received from Region III Lead Program grantees since 1995 and the *EPA Requirements for Quality Management Plans.* Thus, state Lead Program Grantees who develop QAPPs in accordance with this Guidance herein not only would meet national requirements for Quality Assurance Project Plans but also would be considered in compliance with EPA's requirements for Quality Managements Plans. For purposes used in this document, the term, "QAPP" and "Lead Monitoring Project Plan" are used interchangeably.

This guidance presented in this document includes a sample QAPP derived from sampling and analysis projects that have been conducted under Section 404(g) of the Toxic Substances Control Act. The example in this document may not be relevant for each project type. Although the example pertains to activities of a screening nature, with some modification it may also apply to sampling for abatement or litigation purposes. The sample QAPP also is designed to meet QMP requirements.

To meet QMP requirements in addition to QAPP requirements, a QAPP must discuss:

- the mission and quality policy of the organization
- the specific roles and responsibilities of management and staff with respect to QA/QC activities
- the means by which effective communications are assured
- the process(es) used to plan, implement, and assess the work performed, and
- the process by which measures of effectiveness for QA/QC will be established and how frequently effectiveness will be measured.

DISTRIBUTION LIST

This document is to be distributed to all Region III Lead Program Grantees. As of May, 1999, Region III Lead Program State Grantees to whom this document has been distributed include:

- Pennsylvania Department of Health
- Pennsylvania Department of Labor and Industry
- Delaware Department of Health and Social Services
- District of Columbia Department of Health
- Maryland Department of the Environment
- Virginia Department of Health
- Virginia Department of Professional and Occupational Regulations
- West Virginia Department of Health and Human Resources.

QAPP FORMAT

A QAPP is made up of a signature page, a table of contents, and 18 Program Elements to meet QAPP and QMP requirements. All of these sections must be included in the QAPP. Additional sections may be added to address QMP requirements if not incorporated into the 18 QAPP Program Elements. If a particular Program Element Section does not apply to the sampling and analysis task, the section should be listed and marked with "Not Applicable."

SIGNATURE PAGE

Each QAPP must include a signature page with spaces for signatures of the:

- principal investigators
- project director
- QA officer
- program administrator
- program/project manager
- EPA project officer as well as a title
- WCMD QA Coordinator
- complete address of the individual or institution preparing the plan
- date that the plan is submitted to EPA.

If the project is to be carried out by people from more than one institution, a principal investigator from each institution should sign. An example of a signature page is shown in Figure 1.

QUALITY ASSURANCE PROJECT PLAN

for

State of _____ Fiscal 2005 TSCA Title IV Cooperative Agreement and Investigation Work under the State of _____ Lead Based Paint Worker Training and Certification Program

prepared by

CLAY COURT, JR
HEALTH AND SOCIAL SERVICES
DEPARTMENT OF THE ENVIRONMENT

Date Submitted to EPA for Approval:
Revision Number:

Dr. Toulouse Strinker, Project Director	_____ Date:
Dr. Annette Cerve Program/Project Manager	_____ Date:
Clay Court Principal Investigator	_____ Date:
John Hicks QA Officer	_____ Date:
David Friedman WCMD QA Coordinator	_____ Date:
Dr. Natally Dresser Region III Project Officer	_____ Date:

FIGURE 1 - Example of a Signature Page

TABLE OF CONTENTS

The table of contents for a QAPP must include the eighteen major elements that are required to meet QAPP requirements, other elements of a QMP that are not included in the 18 elements of the QAPP (if not included in the above 18 elements), and a listing of all appendices. The appendix should not be used to include specific information relative to the 18 elements. The appendix may be used to include a laboratory's SOP or a list of acronyms. If the Laboratory SOP contains specific information that is required in the QAPP, then it must be in the body of the QAPP and not in the appendix.

QAPP PROJECT ELEMENTS

1. PROJECT NAME

2. PROJECT REQUESTED BY

3. DATE OF REQUEST

4. DATES OF PROJECT INITIATION AND COMPLETION

5. PROJECT OFFICER

6. QUALITY ASSURANCE OFFICER

These elements are one-line, fill-in-the-blank sections. "Project name" is a short, descriptive title for the project; "project requested by" is the Regional EPA organization requesting the work, such as U.S. EPA Region III, Waste and Chemicals Management Division. "Date of request" is the date that the grantee submits a Scope of Work for the project; "Project Officer" is the grantee representative responsible for the project; and "Quality Assurance Officer" is the Grantee's QA officer responsible for the project.

7. PROJECT DESCRIPTION

This section describes the project objectives and explains how the project fits into the overall objectives of the National Lead Program. The section includes background information and a description of exactly what will be done during the project. It must address all sampling and analysis activity funded through EPA grants. For authorized states, it must meet quality assurance requirements for authorized state lead programs set forth in 40 CFR part 745.

To meet QMP requirements for Planning, the QAPP must describe, here or elsewhere in the QAPP, how the planning process ensures that all organizations and/or parties who use the results are identified and participate in the planning process.

This section includes three major parts for each project or activity: (a) a statement of the objective(s) of each specific sampling and analysis project, (b) a statement of the intended use of the generated data and describing the decisions anticipated to be made from project data and (c) an overall description of the project design. If relevant to the project, Tables should be included that describe: (d) sample collection which clearly outlines parameters to be studied, and (e) the lab or field analysis which clearly outlines the parameters to be studied.

EPA suggests the use of subheadings reflecting the parts of the QAPP as described below. These specified headings are not required by EPA if another format better suits a project.

A. Objective and Scope Statement

This section should state the project objectives and explain these objectives with sufficient detail to justify decisions based on the results of the sampling project.

Reference should be made to background and historical information when applicable. The following example could be an objective and scope statement for a project assessing private homes for lead-based paint hazards.

> *As many as 1 million American children have unsafe blood lead levels, making lead poisoning the number one environmental health hazard for young children. Most of those children are poisoned by lead in dust and soil that originates from deteriorating lead-based paint in private homes.*
>
> *The overall objective of the National Lead Program is to reduce lead exposure to the fullest extent practicable, with particular interest in reducing risk to children to avoid high blood levels (EPA Office of Toxic Substances, 1991)*
>
> *The objective(s) of this sampling project is to identify risk assessors and abatement contractors who are not complying with state work practice standards when conducting clearance sampling after a lead paint abatement is performed.*

B. Data Usage

This section should clearly describe how the data generated during the project will be used. A precise description of data usage is important because use of the data will dictate the data quality requirements and assessments discussed in Section 11. The data usage for the project used as an example above could read as follows:

> *1. The lead sampling data will be used, as part of a state-compliance monitoring of lead-based paint abatement activity at targeted houses, to determine whether abatements and risk assessments are being performed in accordance with state work practice standards for those lead-based paint activities.*
>
> *2. If the lead levels in the dust are found to be significantly different (i.e., 20 percent RFD) from split sample results provided to the Agency by the risk assessor as part a compliance monitoring inspection performed by the Department, we will notify the abatement contractor of this finding. We also will recommend temporary and/or permanent measures to immediately reduce any exposure of property*

occupants to lead-based paint hazards. Specific follow-up enforcement action that may be taken is set forth in the State's Enforcement Response Policy which is included in (State of____ _____)'s Application for State Authorization.

C. Design and Rationale

This section should be a complete and detailed description of the project. This section is the what, why and how of the project. Often, much of this information can be derived from the original proposal to EPA as long as the above information is included.

A general statement such as "Sampling locations in Community X will be determined by blood screening of children ages . . . . . in Community X" is necessary to show the general location. This section may also be entitled "Technical Approach" or "Monitoring Network and Design" if these headings better reflect a description of the particular project.

The sampling and analysis method must be listed in Section 7. However, Section 12, Sampling and Analytical Procedures, should outline procedures for sampling and laboratory analysis that are not EPA methods.

D. Sampling Table

A table of all sampling matrices must be included. If samples are collected on individual schedules or at individual locations, that information must be included in the table.

Table 1 shows a typical sampling table for a lead sampling study and/or inspection and/or risk assessment. In the chart, specific sampling locations should be listed such as wall, window sash, etc., where applicable. Sometimes a general statement is all that is necessary for the specific location, such as, *The soil samples will be collected six inches from the exterior wall of the house and two inches below the surface".* Sometimes the location is not applicable such as when sampling teeth.

Matrix	Maximum Holding Time	Location	Volume	Preser-vation	Transportation/ Container	QC Samples	Frequency of Collection
soil	6 months	6" from foundation	4 oz or 25g	none	Ship X Express to contracted lab	Field dup. Eqp rinsate Matrix spike Matrix spike dup	1/day 1/day 1/day 1/day
dust	6 months	windowsills floors	1 ft^2	none	Wipe samples driven to state lab	Field dup MS MS dup	1/day 1/batch 1/batch
paint (XRF)	6 months	Private homes	N/A	none	Reading on-site	XRF calib.	1/day
paint chip	6 months	private homes	2 in^2	none	By sampling staff to state lab	same as soil	same as soil

TABLE 1 - Sample Collection Protocols

E. Analysis Table

If the program includes laboratory analyses, a table describing the analyses to be conducted and the methods to be employed must be included.

Analytical methods included in the table should reference EPA-published or other methods. Any appropriate method may be used as long as it is sufficiently sensitive and has acceptable precision and accuracy. Under some circumstances where more than one EPA-published method is applicable, justification must be provided for the particular method selected. If the method includes more than one option, the option to be used must be cited. When modular analytical methods are used (those that separate preparation and analysis), both the preparation (i.e., extraction) and the measurement method must be cited. If methods other than EPA-published methods are to be used, a description of the method and a justification for its use should be included. In addition, any modifications, whether to EPA or non-EPA methods, must be fully described and justified.

If analysis of samples with a designated time period is important to the integrity of the samples, holding times must be specified on the laboratory analysis table.

An example of an analysis table is included in Table 2.

Matrix	Unit	Method[2]	Technical holding time[3] per method specifications	Reference	Detection limits
soil	ug/g	digestion/ AA furnace	six months	SW-846 3050B/7421	
dust (wipe sample)	ug/ft^2	digestion/AA furnace	six months	SW-846 3050B	
paint	mg/cm^2	XRF		QAPP for Comparative Field Study of Methodol-ogies Used to Detect Lead in Paint, Rev2, USEPA 11/93 or SW-846 6200	
paint chips	ug/g	digestion/ AA furnace	six months	239.2[4]	

TABLE 2 - Analysis Protocols

[2] Methods listed here are *examples* of those that may be used; many methods could be used, depending on data quality objectives.
[3] The technical holding time begins at the time of sampling.
[4] *Methods from Chemical Analysis of Water and Wastes*

8. PROJECT FISCAL INFORMATION

Total costs for each sampling project, if funded by EPA, should be listed here.

9. SCHEDULE OF TASKS AND PRODUCTS

This section describes the major project milestones. It must include dates such as submission of reports and commitments that EPA must meet so that the project can continue on schedule. The information listed must show the duration of major project activities. Two methods of listing the information are shown in Figure 2.

10. PROJECT ORGANIZATION AND RESPONSIBILITY

This section must identify all key personnel associated with the project and must explain how they will relate to each other during the project. It must identify the person with direct responsibility to EPA. To meet QMP requirements for Personnel Qualifications and Training, processes must be described here (if not elsewhere in the QAPP) for

- identifying statutory, regulatory or professional certifications that may be required to perform certain operations; and
- identifying, designing, performing, and documenting technical, quality, and project management training.

This section must include a project organization chart. A description of each key person's responsibilities for the program, either in a table or as text, should accompany the project organization chart. Telephone numbers of key personnel should be included in the organizational chart. If several organizations are involved in the program, complete addresses also should be provided.

To meet QMP requirements that pertain to Management Organization, this section must provide a statement of the organization's policy on quality assurance, if not provided elsewhere in the QAPP. This statement must include:

- the importance of QA/QC to the organization and why
- the general objectives/goals of the quality system, and
- the policy for resources allocation for the quality system.

Additionally, a discussion must be included of how management will assure that applicable elements of the quality system are understood and implemented in the environmental program in which the project is housed.

TASKS	*MONTHS AFTER FINAL APPROVAL OF PLAN* 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
PROJECT MANAGEMENT	▲---------- ▲
FIELD SAMPLING	▲---------- ▲
LAB ANALYSIS	▲---------- ▲
DATA ANALYSIS	▲---------- ▲
PROGRESS REPORTS	▲ ▲
FINAL REPORT	▲

OR ANOTHER EXAMPLE MAY LOOK LIKE THIS

TASKS	*APR* *MAY* *JUNE* *JULY* *AUG* *SEPT* *OCT* *NOV* *DEC* *JAN* *FEB*
PROJECT MANAGEMENT	▲---------- ▲
FIELD SAMPLING	▲---------- ▲
LAB ANALYSIS	▲---------- ▲
DATA ANALYSIS	▲---------- ▲
PROGRESS REPORTS	▲ ▲
FINAL REPORT	▲

FIGURE 2 - Project milestones

11. DATA QUALITY REQUIREMENTS AND ASSESSMENTS

Central to EPA's QA program is the requirement that data be of known and acceptable quality. EPA environmental data collection programs are based on the development of data quality objectives (DQOs). The DQO development process defines the quality of the data needed to make decisions and balances this against the time and resources available. The process results in project objectives that are responsive to meeting decision-making needs in a cost-effective manner.

This section defines data quality requirements for each type of measurement made during a project and describes methods for data quality assessment. Data quality parameters to be discussed in this section are (a) precision; (b) accuracy; (c) representativeness; (d) comparability; and (e) completeness.

The procedures described in this section must include the equations used to calculate accuracy and precision and methods used to gather data for the accuracy and precision calculations. This section should list field and laboratory quality control checks, including QC protocols, frequencies, and acceptance criteria. A summary table of the quality control samples might be included.

The key to defining the data quality parameters that are discussed below is to define these requirements in terms of project objectives rather than method capabilities. The QAPP must define the project data quality requirements first, then outline a method that provides the necessary precision, accuracy, completeness, representativeness, and comparability. Also, these parameters must be addressed for each matrix being measured.

A. Precision

Precision is the degree of mutual agreement among independent, similar, or repeated measurements. Typically, precision is monitored through the use of replicate samples or measurements and is reported as a standard deviation, or relative standard deviation. Multiple replicates are normally taken to assess precision in field sampling.

When collecting samples for lead analysis in the lab, the samples should be duplicated at a frequency that is consistent with that to be listed in Table 1 (e.g., 10% of the time or 1/day/matrix type).

The precision obtained by the selected lab using a specific method should be listed in the project plan from past quality control (duplicate) samples.

From the publication *EPA Report on the National Survey of Lead-based Paint in Housing,* April 1995, precision and accuracy of the portable XRF is related to 1) the substrate, 2) the concentration level of lead, and the age of the Cobalt 57 source. Therefore, when using the

portable XRF, these three items must be addressed and the procedures expected to be followed to assure precision must be listed. In addition, EPA and HUD have tested different portable XRF units on different lead concentrations, and substrates and have issued XRF Performance Characteristic Sheets which show the appropriate guidance to follow. A portable XRF instrument for which a performance characteristic sheet has been released is acceptable to EPA as long as the guidance in the sheet is followed. A reference to the performance characteristic sheet must be in the project plan as long as these sheets are applicable. Contact the National Lead Information Center Clearinghouse (1 800-424-LEAD) to obtain the appropriate and updated XRF Performance Characteristics Sheet.

B. Accuracy

Accuracy is the extent of agreement between a measured value and the true value. It may be monitored in a program through the use of blank samples and standard reference materials.

When conducting lead monitoring, accuracy is obtained in the lab by doing reference samples and is generally expressed in terms of percent recovery of a known standard added to the sample matrix. In the field, when using the portable XRF monitoring device, NIST reference samples must be used to check the calibration of the XRF. The calibration must follow the guidance in the Performance Characteristic Sheet. Because many variables in analytical measurement may affect accuracy, field calibration of the XRF must be performed. In the project plan the procedures to be used to assure accuracy must be described.

C. Representativeness

Representativeness is the extent to which the collected samples will represent the true system. For most studies, representativeness is considered during the project design rather than monitored throughout a project. Listed in the guidance are appropriate locations for sampling that are representative. If one is looking for lead-based paint, samples should be collected from the walls, windowsills, window troughs, etc. If one is looking for lead in soils or lead in dust there are appropriate locations which are listed in HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* that could be part of the project design, when the sample collector is actually on the premises, he or she must ascertain the best place to sample. The location on the wall or the soil location must be representative. Representativeness will be determined by the staff collecting the samples. It can not always be determined in the planning stage.

An operator of the portable XRF must place the instrument on a section of the painted surface that he/she believes is the most representative. If the paint to be sampled for lead is almost down to bare wood, this would not be a good representative sample. Therefore the training of the operator is most important in this project.

In addressing representativeness in the lead project plan, reference may be made to Section 12 where the sample collection procedures will be described.

D. Comparability

Comparability is the extent to which data from one study can be compared to other similar studies.

In the example project plan for lead monitoring, comparability of the study with other studies may not be regarded as highly important. However, consideration should be given to any secondary uses of the data. Comparison studies may be needed if statistics on lead are compiled statewide. Statistics may also be compared nationally or regionally. Comparability must be covered in the project plan if only briefly.

E. Completeness

Completeness is the measure of the amount of data obtained during a project compared to the amount of data expected under ideal conditions. A discussion of completeness would include the percentage of the total number of proposed samples that must be taken for the data generated to be meaningful. A statement pertaining to completeness must be included in the project plan.

For the example project listed in this Guidance, completeness would be applicable. Such a study must include every house where a child tested positive for elevated lead levels.

Finally, to meet QMP requirements that pertain to the Quality System, a discussion must be provided here of how the following are used, if not included elsewhere in the QAPP:

- Quality Management Plans
- Management Systems Reviews
- Data Quality Objectives
- QAPPs
- Standard Operating Procedures
- Technical Assessments
- Data Quality Assessments.

12. SAMPLING AND ANALYTICAL PROCEDURES AND METHODS

This section must describe sampling procedures and analytical procedures that have not been approved by EPA or fully described in Section 7. The procedures for collection of samples such as paint chips and soil samples must be described. If the laboratory conducting sampling has written standard operating procedures (SOPs) covering these methods, the SOPs may be referenced in this section and appended to the QA project plan.

13. SAMPLE CUSTODY PROCEDURES

Proper identification and control of samples are important considerations, particularly if the sample results are to be used for enforcement or abatement, if the persons taking samples do not also conduct the analyses, or if samples are stored for any period of time prior to analysis. For small projects with few people collecting and analyzing samples or where the result of monitoring is determined on-site, this section is less important.

The methods used to identify and track samples must be listed as well as examples of sample labels, sample transfer forms and sample tracking forms. Sample logs, if used, must be described.

If samples are to be archived, the archive procedures and location must be described.

14. CALIBRATION PROCEDURES AND PREVENTIVE MAINTENANCE

This section must list each key piece of equipment or instrumentation used for the project, state how frequently the equipment is calibrated, and how frequently routine maintenance is performed on it, if applicable. Calibration and maintenance procedures for the specific model and for the specific project should be referenced. This need not be an extensive explanation. The entire owner's manual should NOT be copied and included. The location where calibration and maintenance records are kept in the laboratory or project files should be indicated. Contingency plans, such as back-ups or alternative equipment, also should be listed for major pieces of equipment.

Standard Operating Procedures for using the XRF must be referenced. For example, most portable XRF's are designed so that they can be calibrated only by the manufacturer. The project plan should state how much the equipment can vary from original baseline readings and what action they will take if the XRF varies more than this specified percent. However, it still necessary for the operator to calibrate and/or standardize the instrumentation and to demonstrate analytical performance.

15. DOCUMENTATION, DATA REDUCTION AND REPORTING

In this section, state how the project data will be analyzed and reported to EPA, including descriptions of calculation and statistical methods.

To meet Computer Hardware and Software QMP requirements, the QAPP must outline the following, as it pertains to the applicable project(s):

- the process for ensuring that computer hardware used in environmental programs meets the requirements of these programs;

- how changes to hardware shall be controlled to assess the impact of the change on performance;
- how purchased software is evaluated to meet user requirements and standards;
- the process for ensuring that data and information produced from or collected by computers meet applicable standards.

16. DATA VALIDATION

Data validation involves all procedures used to accept or reject data after collection and prior to use, including editing, screening, checking, auditing, verification, and review. It should include an assessment of the instrument calibration information required in Section 14. These processes may be carried out by more than one person involved in a project.

An example of a data validation section for a program could be as follows:

All data reported for this project will be subject to a 100 percent check for errors in transcription, calculation, or computer input by the Laboratory Supervisor, Ms. J. Doe. Additionally, the Project Manager, Dr. I. Green, will review all sample logs and data forms to ensure that requirements for sample holding times, sample preservation, sample integrity, data quality assessments, and equipment calibration have been met. At the discretion of the Project Manager, data which do not meet these requirements will either not be reported or will be reported with an explanation of associated problems.

17. SYSTEM AUDIT, IMPLEMENTATION OF WORK PROCESSES, AND ASSESSMENT AND REPONSE

A system audit consists of an on-site review, by an independent party, of an entire project to determine whether work is progressing in accordance with the QAPP. The QAPP should indicate the frequency of conducting audits.

To meet QMP requirements for Implementation of Work Processes, the QAPP should describe here or elsewhere:

- procedures for ensuring that work is performed according to plan

- development and implementation of procedures for appropriate routine, standardized, special, or critical operations, including those that address, but are not limited to:

  - identification of operations needing procedures
  - preparation of procedures, including form, content, and applicability; and
  - review and approval of procedures.

Additionally, to meet QMP requirements for Assessment and Response, the QAPP must describe, here or elsewhere, how management will respond to the findings and recommendations from evaluations intended to provide an increased understanding of the program being examined

to provide a basis for improving such programs. When conditions needing corrective action are identified, the appropriate response must be made promptly. Follow-up action to be taken to confirm the implementation and effectiveness of the response action should be included in the QAPP.

18. DATA ASSESSMENT (As appropriate)

This element defines those parameters that determine if the data are adequate for the intended purpose. The discussion should include a summary of the data assessment procedures, equations (equations from data quality requirements may be referenced), units, and assessment frequency.

19. OTHER ITEMS THAT ADDRESS QMP REQUIREMENTS THAT ARE NOT ADDRESSED ELSEWHERE (Optional)

This section may be used to address other elements of the Lead Monitoring Project Plan that may be needed to meet QMP requirements but that are not addressed elsewhere in the Lead Monitoring Project Plan.