Putting together a good quality assurance project plan (QAPP) just may be the most important thing you do to ensure that your project achieves the desired goals. It is prepared prior to conducting a monitoring project such as a site investigation or remedial action. Since the work described in a QAPP encompasses numerous activities that are time consuming and expensive, it is critical that the QAPP contain all details necessary to ensure that the data generated during the project will meet the stated data quality objectives (DQOs). Ending up with data that don't meet project needs is a waste of significant time and money.

A good QAPP documents who will be involved, the focus and goals of the investigation, the planned schedule for the investigation, and how the monitoring project will be performed, including the level of quality assurance and quality control (QC) necessary to meet the DQOs. Representatives of all groups involved in the investigation should be included in the preparation, review, and approval of the QAPP. These groups will include the organizations performing the site work, on-site monitoring and/or analyses, and sample collection, handling, and transport; the laboratory or laboratories performing the analyses; those who will be reviewing, validating, and/or interpreting the data; quality assurance officers in both the field and the laboratory; and anyone else who will contribute to the study (e.g., risk assessor, modeler, data processor).

EPA specifies four element groups that are typically included in a QAPP:

1. The project management elements include the problem definition and site background information, the organization chart showing chain of command, points of contact for all parties involved, project/task organization and descriptions, and DQOs and criteria developed for the project.
2. The data generation and data acquisition elements describe how to achieve DQOs. These elements include sampling methods and field procedures, sample handling and custody, analytical methods, quality control and limits (i.e., a description of samples that will be used to assess the data quality indicators: precision, accuracy, bias, representativeness, completeness, comparability, and sensitivity), field and laboratory equipment and calibration, maintenance, testing, and inspection, corrective action, and data management. Quality manuals from entities such as the laboratory and the sampling firm and standard operating procedures for field and laboratory procedures are included as attachments to the QAPP.
3. The assessment and oversight elements include field and/or laboratory audits that may be planned, anticipated proficiency testing, response actions to planned assessments, and the nature and frequency of reports to be provided to management and/or participating agencies.
4. The data validation and usability elements include data review, verification and validation, the guidelines to be used for verification and validation, and the data usability assessment.

What could happen if the QAPP isn't complete and thorough?

1. If the QAPP doesn't have clear sample handling and custody procedures, there may be custody gaps that jeopardize the integrity of the samples. What if the investigation is later challenged in court, and the results used to delineate contamination at the site are not defensible because the chain of custody for the samples was broken? All of the associated data are discredited, and the decisions made are now suspect and can also be challenged. Re-sampling and analysis are costly, as are legal expenses and potential fines.
2. What if the lab inserted very wide and low recovery limits into the QAPP, and they went unnoticed or unchallenged? Based on the validation guidance, also included in the QAPP and different than the laboratory control limits, non-detect results for contaminants of concern were rejected by the validator due to recoveries less than 10%, even though they were within the lab limits. The rejected values cannot be used, which can impact accurate site characterization and completeness of the investigation (data gaps). This can be particularly devastating to your project if the rejected results represent contaminants of concern for the site.
3. What if those samples that EPA wanted you to collect in the ditch area weren't included in the QAPP, and no one remembered them until after all of the other samples had been collected? You must now incur additional costs for a second mobilization and demobilization at the site, wait for the analyses to be completed, and perhaps incur additional expenses due to the delays for analysis and review of these data.
4. What if the wrong method is specified in the QAPP for one of the analysis parameters, and the reporting limits listed for the specified method are above the cleanup standards for several of the contaminants of concern? If this is not noticed until after samples have been collected and analyzed, you may incur additional costs for a second mobilization/demobilization and other delays.

An accurate and complete QAPP is imperative, in order to avoid issues like these. All groups contributing to QAPP preparation must be familiar with their roles in the planned activities described in the QAPP. Ideally, all elements of the QAPP will be thoroughly reviewed by all parties prior to approval and implementation. At a minimum, though, the parties must review all elements applicable to their work on the project. For example, the laboratory should review the QAPP holding time specifications to ensure that they are consistent with laboratory SOPs and validation guidelines. The project manager should ensure that QAPP-specified laboratory reporting limits aren't greater than action levels for the contaminants of concern. The project chemist and/or validator should review the specified methods and laboratory SOPs to ensure that they are capable of accurately measuring the contaminants of concern and will provide the data needed to defend decisions to be made. With this level of effort and commitment from all groups involved, it will be possible to obtain data for the project that are of sufficient quality to meet the DQOs.