MEMORANDUM

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OFFICE OF SPILL RESPONSE AND REMEDIATION

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SUBJECT: GUIDANCE DOCUMENT LPR-SRR-2015-01C,
Storage Tank Program Quality Management Plan, Amendment 3

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Summary:

The Quality Management System developed for the DEQ Storage Tank Program is intended to ensure that environmental data collected by staff and contractors hired by the Storage Tank Program meet data quality requirements established by the Program. The primary goal of the Quality Management System is to provide data of a documented and known quality that are capable of supporting specific decisions made by staff and managers within the Storage Tank Program. The Storage Tank Program Quality Management Plan provides a framework or system within which the DEQ Storage Tank Program will monitor data collected by staff and contractors performing work for DEQ and will ensure that the data collected are of sufficient quality to support the required decisions.

Electronic Copy:

An electronic copy of this guidance in PDF format is available for staff internally on DEQNET, and for the general public on DEQ's website at:
http://www.deq.virginia.gov/Programs/LandProtectionRevitalization/PetroleumProgram/GuidanceRegulations.aspx

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VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Storage Tank Program

Quality Management Plan, Amendment 3

March 24, 2016

DEQ Guidance Document LPR-SRR-2015-01C

Quality Management Plan - DEQ Storage Tank Program

1.0 Quality Management Plan -DEQ Storage Tank Program 1
1.1 Objectives & Goals of the Quality System 1
1.2 Scope of the Quality Management Plan 2
1.3 Definitions 2

2.0 Management and Organization 4
2.1 Organizational Structure 4
2.2 Storage Tank Program Functions 4
2.3 Activities and Programs Supported by the Quality Management System 5
2.3.1 Environmental Data Collected by DEQ Staff 5
2.3.2 Environmental Data Collected by Contractors 6
2.4 QA/QC Responsibilities 6
2.5 Internal Communication and Coordination 8
2.6 Personnel Qualification and Training 9
2.7 Documents and Records 12
2.7.1 Document Development 12
2.7.2 Removal of Superseded Guidance Documents 12
2.7.3 Records Retention 13
2.7.4 Chain-of-Custody 13
2.8 Computer Hardware and Software 13
2.9 Evaluation and Use of Secondary Data 13
2.9.1 Analytical Data 14
2.9.2 Historical Data (non-analytical) 15
2.9.3 Data from Computer Models and Publications 15
2.9.4 Data from Maps, Photographs, and Geographic Information Systems 16

3.0 Quality Management Planning Process 17
3.1 Program Level Planning 17
3.2 Project Level Planning 17

4.0 Implementation of the Quality Management System 19
4.1 Implementation of the Management Plan 19
4.2 Project Plan Implementation 20
4.3 Schedule of Implementation 21

5.0 Quality Improvement 22
5.1 Review of the Storage Tank Program Quality Management Plan 22
5.2 Management System Reviews 22
5.3 Technical Assessments 23
5.4 Data Quality Assessments 23
5.5 Corrective Action Procedure 24

5.6 Quality Improvement Schedule 25

Figures:

Figure 1. Formal Communications 10
Figure 2. Storage Tank Program Functional Communications 11

Appendices:

Appendix A: DEQ Executive Management Structure
Appendix B: Quality Improvement Schedule

Quality Management Plan Approval

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1.0 QUALITY MANAGEMENT PLAN - DEQ STORAGE TANK PROGRAM

The Storage Tank Program within the Department of Environmental Quality (DEQ) is responsible for overseeing compliance with the Commonwealth's underground and aboveground storage tank (UST and AST) regulations, the cleanup of oil spills from unregulated USTs and ASTs, and the investigation and clean up of regulated substances released from regulated USTs. Managers and staff within the Storage Tank program make daily decisions about risks posed to humans and the environment by releases of petroleum or other regulated substances. Decisions made by staff must be based on data that is accurate and representative of actual site conditions.

Data quality is of critical importance for staff and management within the DEQ Storage Tank Program. Environmental data is used by DEQ to determine if a release has occurred and further investigation and characterization of a site is needed. Data collected during site characterization is used to evaluate risks posed by the release and determine remedial endpoints. DEQ staff also rely on analytical data from water supply wells to determine if alternate water supplies or a water treatment system must be provided to impacted parties.

1.1 Objectives and Goals of the Quality Management System

The Quality Management System used by the DEQ Storage Tank Program is designed to ensure that environmental data collected for this program meet the quality requirements established by the Program. The primary goal of the Quality Management System is to provide data of documented and known quality that are capable of supporting specific decisions made by staff and managers within the Storage Tank Program. The Quality Management System addresses actions or decisions based upon data collected by DEQ staff, contractors performing work for DEQ, or as a result of monitoring or measurement activities supported through Federal Grants. The goal of providing data of known quality will be achieved by providing appropriate resources to all persons within the Storage Tank Program and ensuring that proper procedures are followed throughout the process of planning, collecting, analyzing, and interpreting environmental data.

The Quality Management System will include all activities or projects where environmental data is collected by DEQ staff or by contractors performing work directly for DEQ. Management and staff within the Storage Tank Program will determine the objective(s) for generating new environmental data prior to data collection. Appropriate resources and quality assurance and control methods can then be applied to ensure that the data collected are of sufficient quality to support the intended uses of the data. The DEQ Storage Tank Program will develop and implement a Quality Assurance Project Plan or Quality Assurance Narrative Statements for each environmental data collection activity performed by Storage Tank Program staff. These Quality Assurance Project Plans and Narrative Statements will describe the procedures that will be followed to assure that the data collected are of sufficient quality to support the intended use(s) of that data. Quality Assurance Project Plans and Narrative Statements will, at a

minimum, be reviewed and approved by appropriate technical staff, management, and the Storage Tank Program Quality Assurance Manager prior to the start of any data collection effort.

Environmental data used by Storage Tank Program staff and management may be generated by contractors hired by DEQ or through interagency agreements. The Storage Tank Program will ensure that Quality Assurance requirements are included in the appropriate agreement documents and that these external entities follow acceptable Quality Assurance and Quality Control practices.

1.2 Scope of the Quality Management Plan

This Quality Management Plan applies to all activities performed by Storage Tank Program staff, management, or contractors that generate environmental data that is subsequently used to make decisions or support actions. At the present time, the only statewide projects that involve environmental data collection are the Alternate Water Supply (AWS) Project and the State Lead Project. Other projects involving the collection of environmental data by Storage Tank Program staff and contractors performing work for this Program may be incorporated into the Quality Management System as those projects are undertaken.

1.3 Definitions

Environmental Data - information or measurements resulting from any field data collection activity, laboratory analyses, or models used to evaluate chemical, physical, or biological conditions at a site.

Quality Management System - a structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products, and services. The quality system provides the framework for planning, implementing, and assessing work performed by the organization.

Quality Assurance - an integrated system of management activities to ensure that a process, item, or service is of the type and quality needed and expected by the user.

Quality Assurance Narrative Statement - A quality assurance document that describes the quality assurance and quality control procedures that will be applied to a small project.

Quality Control - the overall system or technical activities that compares performance against defined standards or criteria to verify that stated requirements are met.

Quality Management - the process by which a quality system is planned, implemented, and assessed.

Quality Management Plan - a formal document that describes the quality system in terms of the organizational structure, functional responsibilities of management and staff, lines of authority, and required interfaces for those planning, implementing, and assessing all activities conducted.

Quality Assurance Project Plans - planning documents that explain how environmental data collection activities are planned, implemented, documented, and assessed during the life cycle of a specific program, project, or task.

Management Systems Reviews - a management tool to identify strengths and areas needing improvement in quality assessments.

Special Projects - (1) projects within the Storage Tank Program that are regional or site specific rather than statewide in scope or (2) those projects that will take place over a limited period of time as opposed to being ongoing projects or programs.

2.0 MANAGEMENT AND ORGANIZATION

2.1 Organizational Structure

The Storage Tank Program includes staff and management within each of the six DEQ regional offices as well as staff and management within the Office of Spill Response and Remediation (OSRR) in the DEQ Central Office. The Storage Tank Program Manager in each regional office may report to either the Deputy Regional Director or the Regional Director depending upon the organizational structure within that Regional Office. The Regional Director reports to the DEQ Director for Operations.

Although the Federal UST Regulation is covered under RCRA, a waste regulation, laws related to storage tanks and oils spills within the Commonwealth are found within State Water Control Law. The Office of Spill Response and Remediation is a component of the DEQ Division of Land Protection and Revitalization. The Director of OSRR reports to the Director of Land Protection and Revitalization. The Director of Land Protection and Revitalization reports to the DEQ Director for Central Operations.

An organizational chart showing the DEQ Executive Management structure is included as Appendix A.

2.2 Storage Tank Program Functions

The Storage Tank Program is responsible for overseeing compliance with Virginia's UST and AST Regulations. Staff members within the Storage Tank Program oversee the investigation and cleanup of releases of regulated substances from regulated USTs and the cleanup of oil from all storage tanks. The management of individual leaking storage tank cases is provided by staff in the Regional Offices. Regional staff members also perform inspections to determine if ASTs and/or USTs have been upgraded to meet the regulatory requirements.

The Office of Spill Response and Remediation in the DEQ Central Office is responsible for managing contracts for the Program, establishing Program policies and procedures, overseeing reimbursements from the Virginia Petroleum Storage Tank Fund, and providing guidance to the regional staff as needed.

One of the functions of the Storage Tank Program is to provide persons with potable water when water supply wells have been impacted by petroleum. Storage Tank Program staff in both the Regional Offices and in OSRR investigate reports of petroleum contaminated water supplies. This program also provides carbon filtration units or alternate water supplies (AWS) to persons whose water supply wells have been impacted by petroleum constituents. Management of the carbon filtration contract and the AWS program is provided by the State Lead Program Manager in OSRR.

The Commonwealth of Virginia maintains a Petroleum Storage Tank Fund for assisting responsible persons with the costs of cleaning up petroleum releases. Staff in both the Regional Offices and OSRR have roles in the reimbursement program. Regional staff functioning as Case Managers are responsible for working with tank owners/operators and determining the work that needs to be performed in order to investigate and remediate a release. OSRR staff ensure that reimbursement claims are reviewed and that eligible responsible persons are reimbursed for corrective actions performed.

DEQ must periodically deal with petroleum releases where the tank owner/operator is unknown or that entity is unable or unwilling to proceed with site characterization and remediation. In these instances, DEQ will take over and the release will be investigated and cleaned up under the State Lead Program. Investigations and remedial work performed under the State Lead Program are performed by State Lead Contractors that are hired by the Storage Tank Program. Both regional and OSRR staff have roles in the State Lead Process. Individual cases are managed at the regional level. The State Lead Contract is managed by the State Lead Program Manager.

2.3 Activities and Programs Supported by the Quality Management System

The Quality Management System will be used to support all data collection activities performed by DEQ Storage Tank Program staff or contractors performing work for the Program. The Quality Management System will also encompass laboratory analyses and physical, chemical, and/or biological modeling performed on this environmental data. Quality Assurance Project Plans will be developed for the State Lead and Alternate Water Supply Programs. These Quality Assurance Project Plans will specify the quality requirements for these programs and outline the procedures that need to be used to ensure that data collected for these programs meets the DEQ's needs.

2.3.1 Environmental Data Collected by DEQ Staff

Decisions made by staff and management within the DEQ Storage Tank Program often are based upon considerable amounts of data. Relatively little of this data, however, is derived or collected by DEQ. The situation in which Storage Tank Program sometimes collect environmental data is when DEQ receives a report of petroleum or other regulated substance in a water supply well. Reports of petroleum in water supply wells are investigated by staff from the Storage Tank Program. As part of the investigation, staff may collect samples from the water supply system and submit these samples to the Virginia Department of General Services, Division of Consolidated Laboratory Services for analysis. In most instances, staff request that the carbon filtration unit contractor hired by DEQ collect samples from the potentially impacted water supply. Quality assurance needs and procedures for the AWS Program are addressed in a Quality Assurance Project Plan for the AWS Program.

With the exception of investigating reports of contaminated water supplies, DEQ Storage Tank Program staff rarely collect environmental data. When special projects require data collection (i.e. situations other

than water supply investigations), DEQ Storage Tank Program staff and management will develop a Quality Assurance Project Plan or a Quality Assurance Narrative Statement for that special project.

2.3.2 Environmental Data Collected by Contractors

Contractors providing services to DEQ collect environmental data that is used by the Storage Tank Program staff and management in the decision making process. The primary contractors providing services to the Storage Tank Program are the Carbon Filtration Unit (CFU) contractor and the State Lead Contractors.

The CFU contractor is an entity that has been hired by DEQ to provide water treatment systems for petroleum contaminated water supplies. This contractor routinely collects water samples from the water supplies that it services and has those samples analyzed by a private laboratory. Information generated from these samples is used by the CFU contractor to design and maintain individual water treatment units. DEQ Storage Tank Program staff use this information to determine: (1) if a water treatment system is needed at a site; (2) what type(s) of sources may be responsible for the contamination; (3) if the water treatment system installed at a site is protecting human health by removing the constituents of concern; and (4) if a treatment system may be removed from a water supply.

The State Lead Contractors are entities that have been hired by DEQ to investigate, characterize, and clean up releases of petroleum where the responsible person is: (1) unwilling or unable to characterize and/or clean up the release; or (2) unknown.

Quality Assurance is a condition of the CFU and State Lead Contracts. The CFU contractor and the State Lead contractors are required to submit company-specific quality assurance procedures to the DEQ for inclusion in the Quality Assurance Project Plan for the Alternate Water Supply Program and the Quality Assurance Project Plan for the State Lead Program, respectively. These Quality Assurance Project Plans specify the data quality requirements for work performed under these contracts and outline the steps that will be used to ensure that the data collected by these contractors meets the needs of the DEQ.

2.4 QA/QC Responsibilities

All persons in the Storage Tank Program who are directly or indirectly involved with the collection of environmental data are responsible for ensuring the quality of that data. This may include Case Managers, line managers or supervisors, and other staff specifically assigned to perform Quality Assurance functions.

The OSRR Director and Storage Tank Program Managers for each of the six regions have the overall responsibility for the Quality Management System used within the Storage Tank Program. These persons must ensure that:

1. The Quality Management Plan for the Storage Tank Program is developed, reviewed, effectively implemented, and updated as necessary.
2. Adequate resources are provided to support the Quality Assurance program responsibilities.
3. All environmental data collection activities performed by DEQ staff or contractors working directly for DEQ are covered by appropriate quality assurance documentation.
4. Quality Assurance Project Plans or Narrative Statements are developed, reviewed, and implemented for all special projects where environmental data is generated by Storage Tank Program staff or contractors performing work for the Program.
5. Deficiencies in the quality assurance process are identified and corrected.
6. Program or project specific quality assurance related training needs are identified and provided.

The OSRR Director is also responsible for:

1. Designating a Quality Assurance coordinator or manager for the Storage Tank Program; and
2. Ensuring that compliance with the quality assurance requirements for the program is evaluated.

The Storage Tank Program Quality Assurance Manager is responsible for developing, maintaining, and updating all program wide quality assurance documents. The Quality Assurance Manager must also:

1. distribute quality assurance documents, policies, and procedures;
2. evaluate compliance with Storage Tank Program quality assurance requirements;
3. identify deficiencies in quality assurance processes and identify actions needed to correct those deficiencies; and
4. identify training needs and report these needs to the Director of OSRR and the Regional Storage Tank Program Managers.

Regional and Central Office staff who generate environmental data are integral components in the Quality Management System. Storage Tank Program staff who generate data are responsible for:

1. reviewing the pertinent quality assurance documents and standard operating procedures prior to collecting environmental data;
2. identifying data collection activities for which the Storage Tank Program has not developed quality assurance or standard operating procedures and informing the Regional Storage Tank Program Manager or OSRR Director of same;
3. following quality assurance procedures developed for their specific data collection activity. When data collection procedures used deviate from standard procedures, staff must document the change in procedure and explain the reason(s) for the change in procedure.
4. informing the Regional Storage Tank Program Manager or the OSRR Director of training needs.
5. working with the Storage Tank Program Quality Assurance Manager to develop a Quality Assurance Narrative Statement for special projects that involve the collection of environmental data.

The Land Protection and Revitalization Quality Assurance Workgroup (QA Workgroup) will have a major role in the corrective action part of the Quality Management System. The QA Workgroup is

outside of the Storage Tank Program chain of command and is expected to add a level of objectivity to QA reviews and audits within the Program. The QA Workgroup should, at a minimum:

1. review major revisions to the Quality Management Plan and Quality Assurance Project Plans and provide input and suggestions on the draft revisions;
2. audit or review audits of Quality Assurance procedures used by the Storage Tank Program.

2.5 Internal Communication and Coordination

To be effectively implemented, all staff and managers within the Storage Tank Program must understand and participate in implementing the Quality Management System. The Storage Tank Program Quality Assurance Manager is responsible for drafting or reviewing quality assurance documents that will be used by the Program on a statewide level. Statewide quality assurance documents include the Quality Management Plan for the Storage Tank Program, the Quality Assurance Project Plan for the AWS Program, and the Quality Assurance Project Plan for the State Lead. After drafting quality assurance documents, the Storage Tank Program Quality Assurance Manager will send copies of the document to agency personnel responsible for ensuring that the quality assurance process is followed. The Quality Management Plan is a management tool and will be reviewed by senior and line managers in both OSRR and the Regional Offices. Quality Assurance Project Plans involve management and line staff in both OSRR and the Regional Offices and these documents will be reviewed by managers within both OSRR and the Regional Offices as well as technical staff who can provide expertise and input on the proposed technical components of the project. Staff and managers reviewing quality assurance documents will provide comments to the Storage Tank Program Quality Assurance Manager who will consider these comments and suggestions when completing the quality assurance document. Revisions and updates to existing quality assurance procedures and policies will be provided to the same persons who reviewed the original document for review prior to completion of those policies and/or procedures.

Storage Tank Program functions are performed by DEQ staff and management in both the Regional Offices and in the Office of Spill Response and Remediation. Regional Offices within the DEQ have much autonomy and programs within the regions report to the Deputy or Regional Director and then to the DEQ Director for Operations. OSRR staff members, with input from Regional Office staff, develop policies and procedures for the Storage Tank Program. OSRR staff members also manage statewide contracts for the program such as the CFU contract and the State Lead Contract and ensure consistency within the Storage Tank Program. OSRR is located within the Division of Land Protection and Revitalization and reports to the Director of Land Protection and Revitalization. The Director of Land Protection and Revitalization reports to the DEQ Director for Central Operations. Figure 1 illustrates the lines of formal communication that exist within the DEQ Storage Tank Program.

The lines of formal communication illustrated on Figure 1 and in the executive management organizational chart (Appendix A) fail to show many of the day to day interactions that occur within the program. As a matter of course, Storage Tank Program managers within the Regional Offices and OSRR Management communicate directly and work together to establish policies and procedures for the

Program. Figure 2 represents the quality assurance related lines of functional communication that exist within the Storage Tank Program.

2.6 Personnel Qualification and Training

In order to effectively implement any Quality Management system, managers and staff must have the appropriate qualifications and training to complete the necessary tasks. Personnel qualification is an issue that is dealt with primarily through the hiring process. Managers hiring staff list the knowledge, skills, and abilities (KSAs) that a person must possess in order to perform the required work. The KSAs used to hire staff meet minimum requirements to develop and implement project plans.

Training needs are assessed on the project level through the Quality Assurance Project Plan. The Storage Tank Program Quality Assurance Manager, Storage Tank Program managers, and selected technical staff who will be working on the project will determine what type(s) of training is/are needed in order for the Storage Tank Program to meet its quality objectives for the project. Staff training requirements are organized by the DEQ Office of Training Services. After staff receive training in the areas identified as needs, records of staff training are retained by both the Office of Training Services and the Regional Storage Tank Program Manager or the OSRR Director. Personnel within the DEQ Office of Training Services also track training requirements and inform staff when they need to take refresher courses.

Contractors performing work for the DEQ are required to demonstrate specific knowledge, skills, and abilities in areas related to the contract. The contract documents specify the qualifications that contractors are required to meet. The Quality Assurance Project Plans for the State Lead Program and the Alternate Water Supply Program also specify the documentation that contractors must maintain to demonstrate that staff have received pertinent training.

After a Project Plan is implemented, the Storage Tank Program Quality Assurance Manager, Storage Tank Program managers, and staff serving as project managers for that project will, as part of the quality improvement program, continue to evaluate the quality system as it relates to that project. Each of these persons is encouraged to seek ways to improve the program and this includes suggesting training that may help the DEQ Storage Tank Program to more efficiently meet its objectives.

Figure 1. Formal Communications

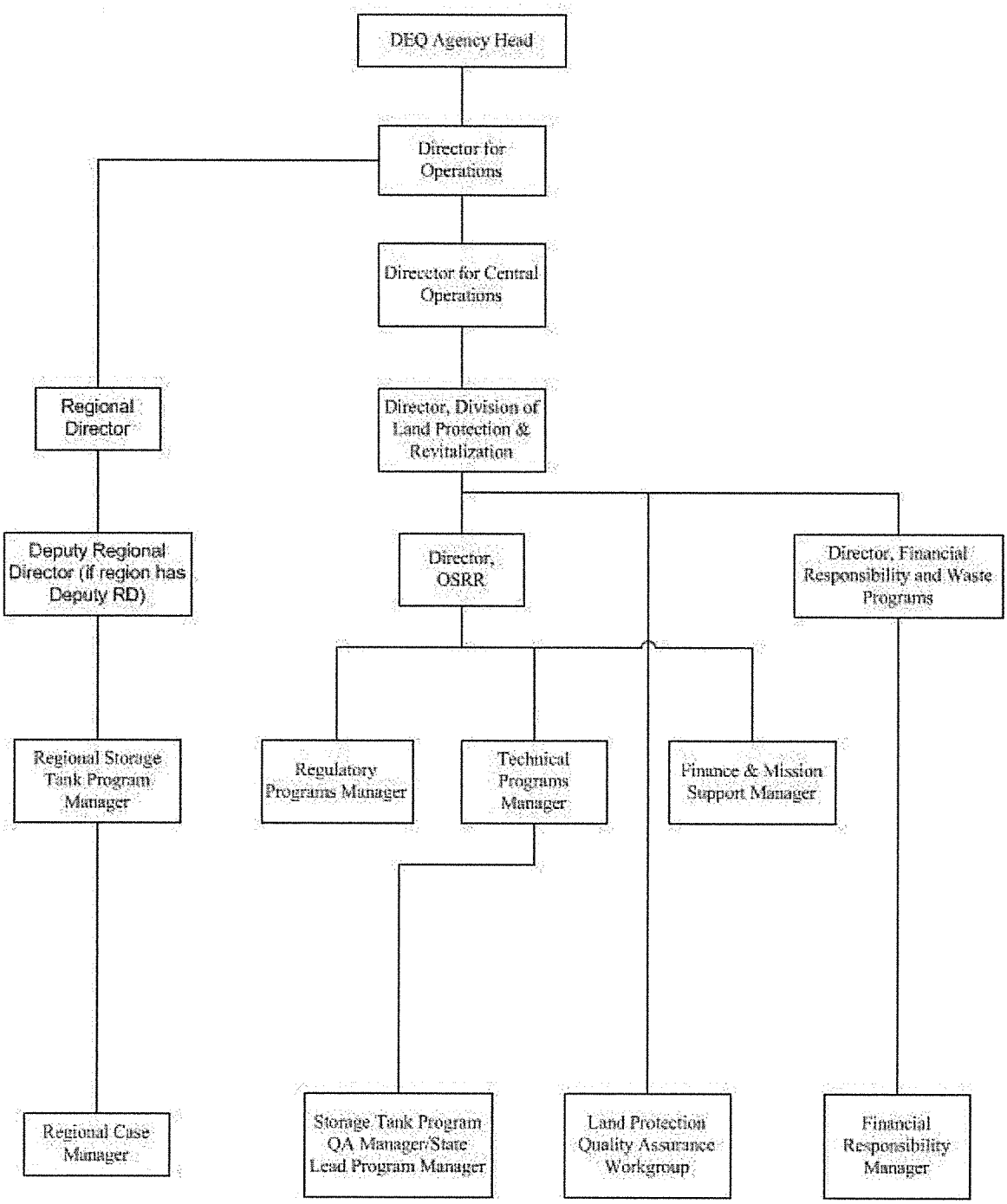
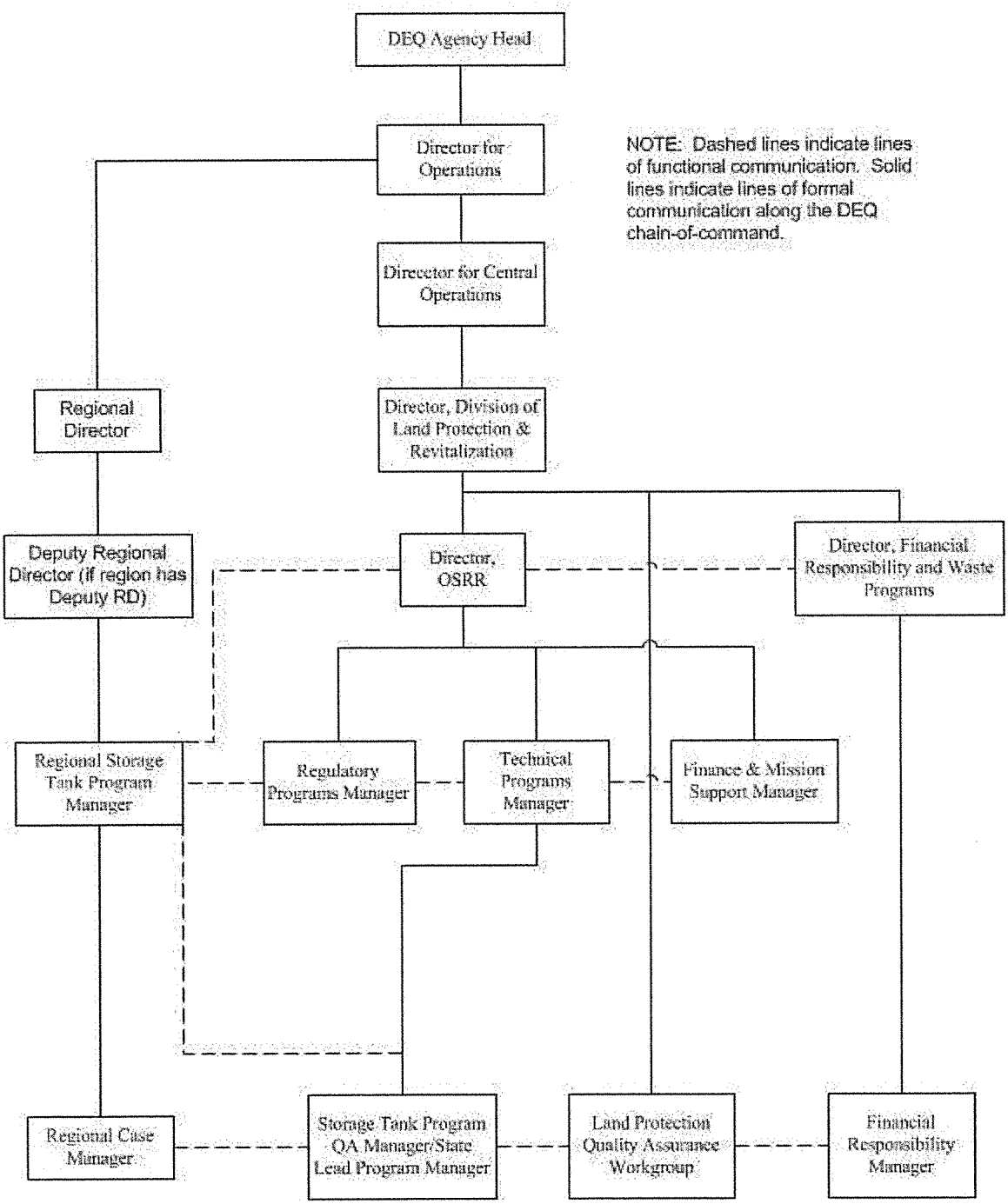


Figure 2. Storage Tank Program Functional Communications



2.7 Documents and Records

2.7.1 Document Development

Developing and updating quality assurance documents is a continuous process within the DEQ Storage Tank Program. The Storage Tank Program Quality Assurance Manager is responsible for ensuring that the Quality Management Plan and the Quality Assurance Project Plans for the DEQ Storage Tank Program are current. When one of the Quality Assurance documents becomes outdated, the Quality Assurance Manager is responsible for overseeing the process of updating the pertinent document. Originals of each program wide quality assurance document generated by or for the DEQ Storage Tank Program will be housed in the administrative files at OSRR. Each Regional Office will be provided with at least one copy of the Quality Management Plan for the Storage Tank Program. Quality Assurance Project Plans for statewide projects will also be provided to each Regional Office. Copies of Quality Assurance documents in the regional offices will be placed in a location, designated by the Regional Storage Tank Program Manager, where that manager and all Storage Tank Program staff may have access to the documents.

Given the nature of present responsibilities of the Storage Tank Program, the development of site specific quality assurance documents is an activity that will occur on an infrequent basis. Site specific quality assurance documents such as Quality Assurance Narrative Statements developed for special projects that will occur within only one region will be housed in that Regional Office with a copy in OSRR. If a Quality Assurance Narrative Statement will be used by more than one Regional Office, the original will be placed in the administrative files at OSRR and each Region involved with the project will be provided with at least one copy of the document. If the Narrative Statement involves only one pollution complaint case, the document will be placed in the pollution complaint file for that case. If the Narrative Statement involves more than one case or applies to more than one region, the Ground Water Manager will place the Narrative Statement in the same location as the other Quality Assurance documents for the Storage Tank Program.

Hard copies of site specific data or other information including field sampling notes, chain of custody records, and laboratory analytical sheets will be maintained in the file of record for that specific site or project. The exact location of the file of record is project specific and, therefore, will be noted in the pertinent Quality Assurance Project Plan or Quality Assurance Narrative Statement. Retention of these records will be performed in accordance with the DEQ Storage Tank Program's Records Retention Schedule for the Pollution Complaint files.

2.7.2 Removal of Superseded Guidance Documents

The Department of Environmental Quality also generates many guidance documents other than Quality Assurance Project Plans. Within the Storage Tank Program, all staff are notified that a new guidance document has been issued and, if applicable, what guidance document(s) have been superseded. If a

guidance document has been superseded, staff are directed to discard that document and the document is purged from the computer drive, accessible to all staff, that contains agency guidance documents.

Once per year, DEQ management and staff evaluate all agency guidance documents and determine which ones are current and which have been superseded. All superseded guidance documents not previously identified are taken out of circulation and are purged from the computer drive containing electronic copies of agency guidance documents.

2.7.3 Records Retention

Storage Tank Pollution Complaint files are housed in the DEQ regional offices. The document retention policy (Schedule No. 440-011), specifies the retention period for various types of documents related to pollution complaint cases. During the specified retention period, files may be stored at the Library of Virginia. After the retention period has elapsed, the contents of the pollution complaint file will be destroyed.

2.7.4 Chain of Custody

Chain-of-custody procedures will be used for all samples collected by DEQ staff and/or contractors working on the State Lead and Alternate Water Supply programs. Documentation requirements and procedures to be followed will be outlined in the pertinent Quality Assurance Project Plans.

2.8 Computer Hardware and Software

Environmental data collected by the Storage Tank Program is site specific in nature and maintained in individual case files rather than placed in statewide or regional databases. At the present time, the Storage Tank Program has no specific needs for monitoring or assessing computer hardware and software as part of the Quality System.

2.9 Evaluation and Use of Secondary Data

Data generated by persons other than DEQ, the AWS/CFU contractor, the State Lead contractors, and/or generated as part of other investigations to answer other questions is considered secondary data. Most of the secondary data relevant to the AWS and State Lead Programs is related to the presence of petroleum constituents at or near a site and the persons (entities) who may be responsible for that contamination. This data is then used to determine if additional information about the site is needed and if the site may be eligible for the State Lead or AWS Programs. Types of secondary data and the Storage Tank Program's use of this data within the AWS and State Lead Programs are discussed in sections 2.9.1 through 2.9.4.

When the DEQ Storage Tank Program receives or considers secondary data, the first step in the evaluation process is to determine if that data is relevant to the State Lead and/or AWS Programs. If the data is not relevant to either of these programs, further evaluation is not needed. If the data is believed relevant to the State Lead or AWS Programs, staff will consider information about the data and the source of that data including the:

a. entity that generated the data;
b. date(s)/timeframe(s) when data was generated;
c. data type(s);
d. format of data (report, lab analytical sheets, affidavit, statement from local official, etc.); and
e. apparent purpose of original report and data quality objectives (if known).

These elements will be used to compare the data with the data quality requirements for the AWS and State Lead Programs and determine if the data may be used by one or both of those programs. Specific data quality requirements are outlined in the Quality Assurance Project Plans for the State Lead and the AWS Programs.

Much of the data used by the State Lead and AWS Programs is generated by tank owners/operators and their consultants to meet regulatory requirements pertinent to ASTs and USTs. This data, although generated by the tank owner/operator and their consultant, is not considered "secondary data" since it was generated to meet the Storage Tank Program's regulatory requirements.

2.9.1 Analytical Data

The major type of secondary data that the DEQ encounters in administering the AWS and State Lead Programs is environmental site assessment data collected for tank owners, property owners, or prospective property purchasers by environmental consultants. Occasionally, analytical data from other sources such as government studies or the sampling of municipal water supplies may be presented to DEQ.

Data quality objectives and quality controls for analytical data from these sources frequently are unknown. Virginia has no requirements for environmental site assessments related to real estate transfers and the DEQ has no input into these investigations before they are undertaken. The DEQ Storage Tank Program generally uses the analytical data from these sources to consider the presence or absence of petroleum constituents at a site and persons seldom provide this data to DEQ unless they find petroleum constituents or regulated substances in one or more of the samples they collected. Tank owners/operators are required to report any detectable amounts of petroleum constituents or regulated substances to the Storage Tank Program. If petroleum constituents or regulated substances are present at a site, additional investigation at the site is warranted. The presence of petroleum compounds at a site where a responsible person is unknown, financially incapable, or unwilling to conduct corrective action may be accepted into the State Lead Program for additional evaluation. If petroleum constituents are present in a private drinking water supply, the DEQ will offer to have our Carbon Filtration Unit (CFU) contractor collect a

sample from the water supply and, if necessary, provide a carbon filtration system to the impacted party. More information regarding the uses of analytical data from secondary sources and the limitations on the use of this data is provided in the Quality Assurance Project Plans for the AWS and State Lead Programs.

2.9.2 Historical Data (non-analytical data)

Historical data is another type of secondary data that may be used by the State Lead and AWS Programs. This data may include, but is not limited to, tank owner's/operator's records, government records, and information provided by persons residing at or near a site of interest. Much of this data is related to site history and use and tank ownership. Information about tank and land ownership is used in the process of determining the person responsible for a release from an UST or AST. The Storage Tank Program Technical Manual contains procedures for determining the person responsible for releases from USTs and ASTs including the documentation that is needed in order to make this responsible person determination. This responsible person determination ultimately determines a site's eligibility for the State Lead Program. Additional information regarding eligibility requirements for the State Lead Program is provided in the Quality Assurance Project Plan for the State Lead Program.

Historical data about land use and site history may be used qualitatively to consider the types of materials that may have been used or handled at a site and the locations of activities or storage areas involving or containing these materials. This information may be used to further refine sampling and analytical work to be performed under the State Lead and/or AWS Programs. If historical data presented to or obtained by DEQ staff indicate that a gasoline service station was present at a location prior to 1990 and water supplies are believed to be at risk of being impacted by petroleum from this site, staff will direct the CFU contractor to analyze samples for 1,2 dibromoethane (a.k.a. ethylene dibromide) and 1,2-dibromo-3-chloropropane (DBCP) in addition to VOCs and SVOCs to determine if constituents from leaded gasoline are present in local water supplies.

2.9.3 Data from Computer Models and Publications

Computer modeling is rarely performed as part of Environmental Site Assessments for real estate transactions and is seldom provided to DEQ. Most of the secondary data relevant to the AWS and State Lead Programs is related to the presence of petroleum constituents at or near a site and the persons (entities) who may be responsible for that contamination. This data is then used to determine if additional information about the site is needed and if the site may be eligible for the State Lead or AWS Programs. Secondary data derived from computer models and publications is rarely, if ever, used to determine if a site is eligible for the State Lead or AWS Programs.

Once a site is accepted into the State Lead Program, various types of secondary data from publications may be used. DEQ staff and the State Lead contractors may, for instance, use secondary data from the EPA ECOTOX database to evaluate risks from discharges of petroleum to surface waters. Many fate and transport models are dependent upon types of data not readily derived in the field such as constituent half-lives or degradation rates. The State Lead Contractors may use secondary data for modeling purposes

with the concurrence of DEQ staff. Decisions are not based upon models unless the model is validated against and found to be comparable to actual field conditions.

The evaluation of secondary data is not an issue for the AWS Program after a site is accepted into that program. From the time a site is accepted into the AWS Program until a long-term petroleum-free water supply is provided to the impacted party or parties, all data used in the decision making process are generated by the AWS/CFU contractor and DEQ staff.

2.9.4 Data from Maps, Photographs, and Geographic Information Systems

Data from maps, photographs, and geographic information systems (GIS) generally is used once a case is already in either the State Lead and/or AWS Programs. This data primarily is used to initially evaluate the receptors that may be present near a release and may warrant further investigation to determine if they have been impacted. This initial information provided by maps, photographs, county GIS, and similar sources is then investigated further by DEQ staff or the State Lead Contractor to determine the actual presence of potential receptors, collect names and addresses of persons and businesses, and obtain permission from these persons or businesses to gather additional information related to the release.

3.0 QUALITY MANAGEMENT PLANNING PROCESS

The major goal of the Quality Management System used by the DEQ Storage Tank Program is to ensure that environmental data collected for this program are of appropriate quality to support the intended use(s) of that data. In order to meet this goal, quality planning must occur at both the program level and the project level.

3.1 Program Level Planning

Ultimately, program level goals and objectives provide the foundation for all planning efforts. Goals and objectives for the Storage Tank Program are established by the Land Protection and Revitalization Division Director and the OSRR Director with input from the Regional Storage Tank Program Managers.

The Quality Management Plan for the Storage Tank Program Program and any revision to this plan are developed and approved by the Storage Tank Program Quality Assurance Manager, senior managers, and line managers within the Program. Managers within the Storage Tank Program are ultimately responsible for ensuring that this Program meets its established objectives. In order to meet Storage Tank Program wide objectives, all managers within the Program must have input into program policies and procedures and then implement those policies and procedures.

3.2 Project Level Planning

A project may be defined as an organized set of activities within a program. Quality Assurance Project Plans and Quality Assurance Narrative Statements are the mechanisms for ensuring adequate data quality at the project level. Quality Assurance Project Plans will be developed for each statewide project within the Storage Tank Program that involves the collection of environmental data. Each Project Plan will specify the procedures that the Storage Tank Program will use to ensure the quality of environmental data collected as part of that project. Quality Assurance Project Plans developed by the Storage Tank Program will:

1. identify the goals and objectives that DEQ must attain with that program or project;
2. identify the participants within the program or project. These participants are the individuals who have responsibilities for ensuring the quality of the data collected as part of the program or project;
3. specify the data quality objective(s) that must be attained for that project;
4. describe the procedures that will be used to evaluate data and ensure that it meets data quality objectives;
5. reference standard operating procedures;
6. describe plan for providing necessary training;

7. describe procedure for evaluating effectiveness of Quality Assurance Plan; and
8. describe procedure for correcting deficiencies in Quality Assurance Project Plan.

For new statewide projects, the first step in developing a Quality Assurance Project Plan is to identify the need for a plan for that particular project. Once this need is identified, the Quality Assurance Manager will develop a draft Quality Assurance Project Plan. This draft plan will then be sent to OSRR management, Regional Storage Tank Program managers, and selected technical staff in both the Regional Offices and OSRR. If data will be collected entirely or in part by OSRR staff, these persons will be included in the review process.

Environmental data collection operations vary widely in their scope and complexity. Quality Assurance Project Plans, therefore, need to reflect the scope of individual projects. The DEQ Storage Tank Program does not often undertake special projects that involve the collection of environmental data. Quality assurance and quality control procedures for small projects will be described within a Quality Assurance Narrative Statement for that project.

Primary responsibility for writing Quality Assurance Narrative Statements will rest with the Regional Case Manager. The Regional Case Manager will work with the Storage Tank Program Quality Assurance Manager to ensure that the necessary elements are incorporated into the Narrative Statement. Narrative Statements are project specific, however, most will contain at least the following:

1. a project description including the purpose of the work;
2. a statement of the project objectives;
3. a description of the data quality objectives;
4. sampling and analytical design of project. This includes sampling and analytical methods to be used, calibration requirements for any instruments used, and performance criteria that must be met.
5. the process to be used for sample handling, custody, identification, preservation, transportation, and storage;
6. a project schedule including starting and ending dates, key project milestones, etc.;
7. a listing of key project staff and their roles and responsibilities; and
8. procedures used for data validation and verification.

Quality Assurance Narrative Statements for special projects must, at a minimum, be approved by the Regional Case Manager, Storage Tank Program Quality Assurance Manager, and the Storage Tank Program Manager of the Region within which the project will be implemented. If the project will be managed by OSRR staff, the Regional Case Manager, Quality Assurance Manager, and the Director of OSRR must approve the Narrative Statement.

4.0 IMPLEMENTATION OF THE QUALITY MANAGEMENT SYSTEM

The Quality Management System within the DEQ Storage Tank Program will be implemented at the management level and the project level. At the management level, the Quality Management System will be implemented through the procedures and schedules developed as part of the Quality Management Plan. The Quality Management Plan establishes the policies and procedures by which DEQ managers within the Storage Tank Program will meet the quality objectives of the Storage Tank Program as a whole.

The DEQ Storage Tank Program is responsible for administering or overseeing multiple projects or subprograms. At the most basic level, the Quality Management System will be implemented through the procedures developed as part of individual Quality Assurance Project Plans. Quality Assurance Project Plans establish the procedures for implementing individual projects or subprograms within the Storage Tank Program. All persons involved in implementing a project will be provided with an opportunity to comment on the Quality Assurance Project Plan for that project before the project plan is implemented. Once implemented, all DEQ personnel working on the project and contractors hired by DEQ are responsible for following the procedures outlined in the project plan.

Procedures for issuing other DEQ guidance documents involve obtaining input and comments from a subset of the staff and managers who will be using the guidance. Once staff and management are in agreement that the procedures and guidance are appropriate, the guidance document is issued by the DEQ Division Director of Land Protection and Revitalization.

There is no definitive schedule for updating DEQ guidance documents. All guidance documents are evaluated annually to determine if they are no longer needed or have been superseded. Those documents that are no longer needed or out of date are purged and staff members are directed to discard them.

Staff members within the DEQ Office of Spill Response and Remediation write and update guidance documents related to Storage Tank Program operations and procedures. Generally, guidance documents are updated every several years to reflect changes in the program, however, there is no set schedule. Specific guidance memos are issued as needed between editions of the Storage Tank Program Technical Manual and the Reimbursement Guidance Manual. The information in these guidance memos then are incorporated into the next edition of the pertinent guidance manual. As with all guidance, comments are obtained from a subset of the staff and managers who will be using the guidance and their comments are incorporated into the final document. The final guidance document then is issued by the DEQ Division Director of Land Protection and Revitalization.

4.1 Implementation of the Management Plan

Functions within the Storage Tank Program are carried out by management and staff within both OSRR and the DEQ Regional Offices. Senior and line managers within the Regional Offices and OSRR share

responsibility for ensuring that the goals and objectives of the Storage Tank Program are attained. In order to meet program objectives, management must provide appropriate resources in terms of personnel, equipment, and training. Senior and line managers within the Storage Tank Program are also responsible for prioritizing work and ensuring effective communication and coordination between subunits within the program.

4.2 Project Plan Implementation

Projects involving the collection of environmental data may involve staff and management from both OSRR and the Regional Offices. Environmental data collected by Storage Tank Program staff and contractors performing work for this program will be collected in accordance with an approved Quality Assurance Project Plan. The Storage Tank Program Quality Assurance Manager and the CFU Program Manager are jointly responsible for developing the Quality Assurance Project Plan for the AWS Program. The CFU contractor performing work at most AWS sites also is required to submit Quality Assurance Procedures to DEQ. These procedures are reviewed by the Storage Tank Program Quality Assurance Manager and the CFU Program Manager and, once approved, are incorporated into the Quality Assurance Project Plan for the AWS Program.

The Storage Tank Program requires the State Lead Contractors to develop and provide company-specific Quality Assurance Procedures to the DEQ. These procedures are reviewed by the State Lead Program Manager/Quality Assurance Manager. Once these procedures are approved by DEQ staff, they are incorporated into the Quality Assurance Project Plan for the State Lead Program.

Procedures for tasks that are routinely performed as part of one or more projects may be standardized and documented as Standard Operating Procedures. Standard Operating Procedures, once established, may be cited in the appropriate Quality Assurance documents and contract proposals. This practice will promote consistent quality for these tasks and save staff time and resources by avoiding the need to write out the same procedure in each quality assurance document. Tasks for which Standard Operating Procedures may be written include:

1. Sampling and analytical procedures;
2. Sample collection methods and devices, containers, holding times, handling and transportation;
3. Documentation and chain-of-custody;
4. Calibration and maintenance of equipment; and
5. Safety procedures.

Standard Operating Procedures are project and task specific. Individual Standard Operating Procedures are discussed further and the locations of these documents are specified in the pertinent Quality Assurance Project Plan.

4.3 Schedule of Implementation

The development of or revisions to the Quality Management Plan and all Quality Assurance Project Plans will be initially reviewed by DEQ Storage Tank Program Managers and staff as appropriate. The plan will be forwarded to EPA following review by DEQ. The new or revised Quality Management and/or Quality Assurance Project Plan will be implemented upon approval from both DEQ management and EPA Region III.

5.0 QUALITY IMPROVEMENT

The quality improvement component of the Quality Management System includes procedures for assessing existing QA/QC procedures, addressing deficiencies in current QA/QC practices, and improving the existing system to more effectively and efficiently meet the objectives of the Storage Tank Program. The DEQ will use internal management and technical reviews, performance evaluations, and audits to ensure that QA procedures are implemented. Independent reviews by the QA Workgroup also will be used to evaluate QA procedures within the Storage Tank Program.

5.1 Review of the Storage Tank Program Quality Management Plan

Quality Assurance procedures and practices described in this Quality Management Plan will be assessed annually and revised or updated as needed. The Storage Tank Program Quality Assurance Manager is responsible for coordinating the assessment of the management plan. This includes arranging for appropriate personnel to assist with the review and ensuring that the appropriate changes are incorporated into the Quality Management Plan. Minor changes to the Quality Management Plan will be reported to EPA through an annual QA report. Major changes to the Quality Management Plan will be submitted to EPA Region III for comment.

5.2 Management System Reviews

A management system review is an independent evaluation of an organization's management practices as they relate to quality assurance. Management system reviews evaluate the effectiveness of management controls in achieving and assuring data quality, the adequacy of resources and personnel devoted to quality assurance functions, the effectiveness of training and assessments, and the applicability of data quality requirements. Management system reviews identify areas where quality assurance improvement is needed and also identify noteworthy accomplishments.

Management system reviews for the DEQ Storage Tank Program are conducted by the QA Workgroup. Management system reviews will examine the following elements, as applicable:

1. The overall effectiveness of the QA management system
2. Procedures for developing Data Quality Objectives
3. Procedures for developing and approving Quality Assurance Project Plans
4. The effectiveness of existing Quality Assurance Project Plans
5. Procedures, criteria, and schedules for conducting audits
6. Responsibilities and authorities of managers and quality assurance personnel for implementing the quality assurance program
7. The level of financial and other resources committed to implementing the quality assurance program

8. Monitoring corrective actions taken to address deficiencies or other problems in the quality assurance program.

5.3 Technical Assessments

Technical assessments are conducted to assess the sampling and analytical quality control procedures used to generate environmental data. The DEQ Storage Tank Program will use technical assessments to evaluate procedures used by staff and contractors. Technical assessments may include the evaluation of equipment used by staff and contractors, calibration of equipment, personnel qualifications and training, record keeping and documentation, and data management. The Quality Assurance Manager for the Storage Tank Program is responsible for overseeing Technical Assessments. Regional Case Managers and technical staff will also be involved in the technical assessment process and these persons and their roles will be identified and outlined in the pertinent Quality Assurance Project Plan. The Storage Tank Program Quality Assurance Manager also may also request that staff within the QA Workgroup be involved in the assessment process.

After the audit is physically performed, the Storage Tank Program Quality Assurance Manager will draft the Audit report for a specific component of the program (e.g. Data Quality), provide recommendations to address and correct any deficiencies or non-conformances noted, and present this to the review team outlined in the Quality Assurance Project Plan. Persons on the review team will evaluate the Technical Systems Audit and the recommendations made and provide their comments. The Storage Tank Program Quality Assurance Manager then will modify the pertinent Quality Assurance Project Plan to incorporate recommendations made to address noted deficiencies and this Project Plan will be sent to staff and management for review and approval. Technical assessment schedules will be outlined in the pertinent Quality Assurance Project Plans. These project plans will state the types of information that will be evaluated during the assessment processes and provide a recommended schedule for the assessments.

5.4 Data Quality Assessments

A Data Quality Assessment refers to the process used to determine if the quality of a given data set is adequate for its intended use. Data Quality assessments can be performed on all or selected projects involving data collection. The purpose of this type of evaluation is to determine whether the decision maker(s) may use the data for making the necessary decision.

Data Quality Assessments involve the comparison of the collected data with the Data Quality Objectives for the project. The intended use of the data is specified in the Quality Assurance Project Plan for each specific project. The Quality Assurance Project Plans will describe how the results of Data Quality Assessments will be documented, how corrective measures will be implemented (and documented), and the follow up steps that will be taken to demonstrate that the corrective measures have been implemented.

Data quality audits will be performed to evaluate the documentation of the quality of data generated for individual projects. The audit will primarily evaluate the completeness of field documentation and analytical procedures and quality control results. This audit process essentially involves tracing the paper trail that accompanies data from the time of sample collection to the time that the data is used to make decisions.

The Storage Tank Program Quality Assurance Manager is responsible for coordinating Data Quality Assessments. Selected Technical Staff and managers throughout the Storage Tank Program will be responsible for assisting the Storage Tank Program Quality Assurance Manager with these assessments and their roles and responsibilities will be discussed and outlined in the pertinent Quality Assurance Project Plan. Once a data quality audit is performed, the general procedure for presenting the findings and modifying the Project Plan is the same as outlined above for Technical Assessments.

5.5 Corrective Action Procedure

The Quality Management Plan for the Storage Tank Program will be reviewed annually to determine if changes to the Quality Management System are needed. The OSRR Director will provide goals for the Storage Tank Program to the Storage Tank Program Quality Assurance Manager. The Storage Tank Program Quality Assurance Manager will compare these new goals with the former goals and determine if changes at the program level will necessitate changes in the Quality Management System. The Storage Tank Program Quality Assurance Manager also will evaluate organizational structure or responsibility changes to determine if individual responsibilities within the Quality Management Plan need to be modified. Finally, the Quality Assurance Manager will consider and evaluate any evidence of non-conformance with the Storage Tank Program's Quality Management Plan.

The Storage Tank Program Quality Assurance Manager will draft a preliminary Management System Review to ensure that management functions are supporting the Quality Assurance process for the Program. This preliminary Management System Review will provide a summary of changes in program goals and personnel responsibilities and note any confirmed non-conformances with the existing plan that have been found. If program goals or personnel responsibilities have changed in ways that may change the Quality Management System, the Storage Tank Program Quality Assurance Manager will recommend in the Management System Review that the OSRR Director, Technical Services Manager, and Quality Assurance Manager conduct a Quality Management System review. This Quality Management System review will examine the effects of all personnel and goal changes on the existing Quality Management Plan, determine if the Quality Management Plan needs to be updated, and, if the plan needs to be updated, provide a list of changes to make to the Quality Management Plan. If the Quality Management System review includes a recommendation that the Quality Management Plan needs to be updated or modified, the OSRR Director will instruct the Quality Assurance Manager to initiate the process of updating the Storage Tank Program's Quality Assurance Project Plan.

The modification of the Storage Tank Program's Quality Management Plan will be overseen by Storage Tank Program Quality Assurance Manager. The Storage Tank Program Quality Assurance Manager will use the list of changes provided in the Quality Management System review as a starting point for

modifying the Quality Management Plan. The Storage Tank Program Quality Assurance Manager is responsible for drafting the recommended corrective actions, receiving comments on these recommended actions from OSRR staff and management, the Regional Storage Tank Program Managers, and the DEQ QA Workgroup. Concurrently with the review performed by various DEQ staff members, the Storage Tank Program Quality Assurance Manager will send a copy of this draft revised Quality Management Plan to the EPA Region III Subtitle I Program Manager for Virginia and the EPA Region III Quality Assurance Manager for their comments. The Storage Tank Program Quality Assurance Manager subsequently will address comments received, incorporate them into the Quality Management Plan as appropriate, and route the final document to the OSRR Director, the DEQ Director for Land Protection and Revitalization, and the EPA Region III Subtitle I Program Manager for Virginia. These persons, upon approval of the document will sign the approval page and route it to the next person on the page for their signature. Persons who must sign the approval page for the Quality Management Plan are:

1. EPA Region III Subtitle I Program Manager for Virginia
2. DEQ OSRR Director
3. Technical Programs Manager, DEQ OSRR
4. DEQ Storage Tank Program Quality Assurance Manager
5. DEQ Director, Land Protection and Revitalization Division

After all signatures have been obtained, the document is issued as DEQ Guidance.

Quality Assurance Project Plans also will be reviewed on an annual basis. Procedures used to update Quality Assurance procedures at the project level will be outlined in the pertinent Quality Assurance Project Plan.

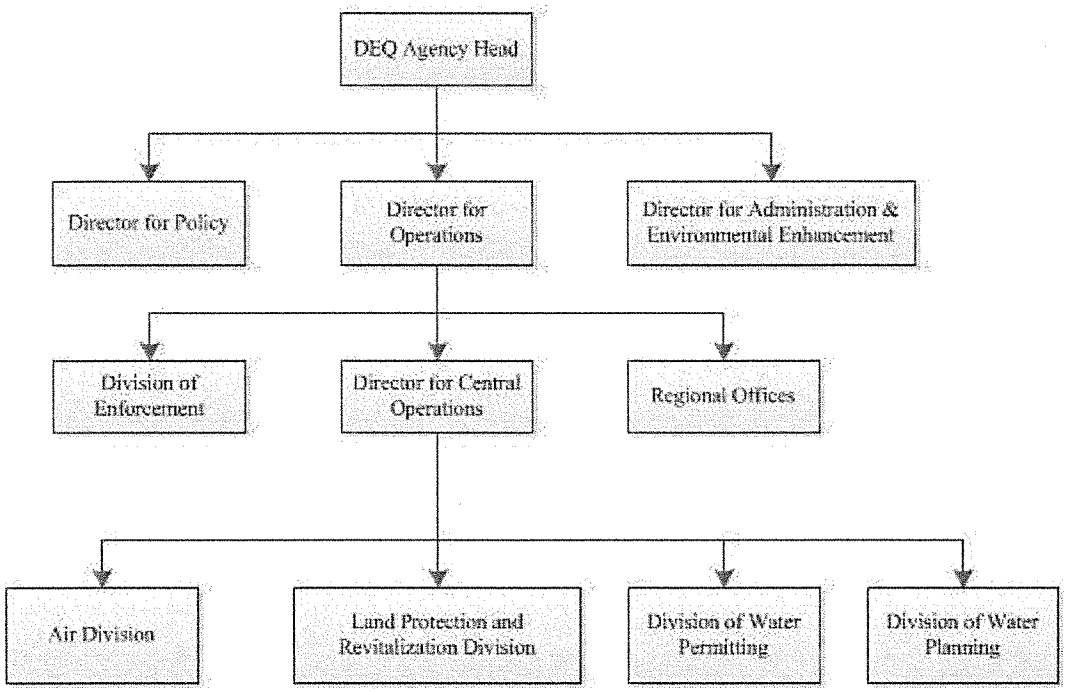
5.6 Quality Improvement Schedule

The Storage Tank Program initiated a new State Lead contract on September 1, 2015, and is scheduled to initiate a new CFU contract on January 1, 2016. DEQ will conduct Data Quality Audits and Technical Assessments for these programs between a year and a year and a half after the initiation of these contracts. A proposed schedule for providing drafts of updated Quality Assurance Project Plans to EPA Region III for review and issuing these documents as official DEQ guidance is included as Appendix B.

Appendix A

DEQ Executive Management Structure

DEQ Executive Management



Appendix B

Quality Improvement Schedule

QUALITY IMPROVEMENT SCHEDULE

1. October 2015 – Management System Review, State Lead QAPP
2. December 2015 – Management System Review, AWS QAPP
3. October 2016 – Data Quality and Technical Assessment for the State Lead QAPP
4. July 2017 - Data Quality and Technical Assessment for the AWS QAPP
5. December 2017 – QMP biennial review.