DIVISION OF ENVIRONMENT
QUALITY MANAGEMENT PLAN

PART III:

BROWNFIELDS PROGRAM
QUALITY ASSURANCE MANAGEMENT PLAN

Revision 5
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Kansas Department of Health and Environment
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QAMP Revision History		
Date	Revision	Change
	1	Updated Sections and references
	2	Updated Sections and references
1/7/2013	3	Updated Sections and references
2/20/2017	4	Numerous grammatical changes, no technical revisions
3/29/18	5	Updated Sections and references

Section 1

INTRODUCTION

1.1 PURPOSE OF PLAN

This document presents the quality assurance management plan for the Brownfields Program (BFP). The plan describes the mission, developmental history, organizational structure, environmental monitoring protocols, data handling procedures, and quality assurance (QA) and quality control (QC) requirements of these programs. SOPs and equipment used in the programs are presented in Appendix A.

1.2 PLAN REVISIONS

To be effective and useable, this document must be maintained in an up-to-date condition. As required by the Division of Environment Quality Management Plan (Part I, section 7), the contents of the plan are reviewed on at least an annual basis. Minor changes in the report's organizational structure or terminology may be approved by the Section Chief. However, major revisions which substantially change the contents of the document, especially in terms of QA policies or procedures, require the added approval of the Section Chief, Bureau QA Representative and the Bureau Director.

Section 2

DESCRIPTION OF PLAN

2.1 HISTORICAL OVERVIEW

The BFP was initiated through approval of a federal grant from the Environmental Protection Agency (EPA) in 1998. The original grant requested funding to conduct and support brownfields activities in the State of Kansas. The grant provided assistance to KDHE to coordinate cooperative efforts to assess and address brownfields sites to facilitate their sustainable reuse. The Redevelopment Section is responsible for implementation of the Brownfields Program. The program is designed to perform Brownfields Targeted Assessments (Phase I and II investigations as defined by the American Society of Testing and Materials (ASTM)), assist EPA in the review of contractor produced EPA-lead Brownfields Targeted Assessments (BTA), assist EPA in the review and approval of Quality Assurance Project Plans prepared by EPA's other brownfields grantees in the state, and provide technical assistance to municipalities and the public concerning brownfields issues.

2.2 MISSION AND GOALS

The Brownfields Program follows several guidance documents including EPA 540-R-98-038, "Quality Assurance Guidance for Conducting Brownfields Site Assessments," and ASTM's guidance for conducting Phase I and Phase II Site Assessments. The program is available to qualifying municipalities, other local governments, public or private entities applying on behalf of their communities, and non-profit organizations who are in the process of purchasing, have purchased, or own property considered for redevelopment activities. Upon approval of an application to the state and approval by EPA, KDHE or KDHE's contractor will conduct a BTA at the subject property. The mission of the program is to determine whether or not contamination exists at the subject property.

2.3 ORGANIZATION AND RESPONSIBILITIES

ORGANIZATIONAL CHART

(See Exhibit 1 in the BER QA Plan Part II)

The Bureau Director's responsibilities are defined in the BER QA management plan presented in Part II of the QMP.

The Section Chief is responsible for supervising the Unit Manager of the Long Term Stewardship and Brownfields Unit. The operations and implementation of uniform policies and procedures for the BFP is the responsibility of the Section Chief. The Section Chief and the Unit Manager, respectively, are responsible for planning, organizing, supervising and directing the statewide activities of the BFP. Additionally, the Section Chief is responsible

for coordination between the units within the Section.

The Unit Manager is responsible to ensure that the requirements of the program-level QA management plans and SOPs are implemented in a consistent, timely and reliable manner. Working with the Section Chief, the Unit Manager strives to improve the precision, accuracy and reliability of all environmental monitoring data collected as part of the BFP through the effective allocation of staff and resources.

The Unit is composed of an Environmental Specialist Supervisor overseeing three Environmental Specialists and one Research Analyst. One of the Environmental Specialists serves as the Brownfields Coordinator and Project Manager (PM) and is responsible for conducting all aspects of the BFP assessments and cleanup activities under the supervision of the Unit Manager. The other two Environmental Specialists and the Research Analyst work as PMs in the Long-Term Stewardship programs – Environmental Use Control, Risk Management, Environmental Liability Release, & Responsible Party Identification.

For assessment work completed by staff, a Work Plan which meets the objectives and minimum data quality and quantity required of such investigations is developed and submitted to and approved by the Unit Manager. All final site reports must be approved by the Unit Manager before submission to the Section and Bureau Director.

Much of the actual investigative or remedial work conducted pursuant to the BFP is conducted by private environmental consulting firms working under an environmental services contract developed between BER and the environmental consulting firms. The Unit Manager and the PM actively participate in the site-specific request for quotes and contract award process.
EPA has requested KDHE to review and approve QAPPs for other EPA grantees in the state of Kansas in lieu of EPA review and approval. When requested, the KDHE PM will review each QAPP to ensure compliance with KDHE's QMP. Each QAPP must meet the objectives and minimum data quality and quantity required for planned activities. All final QAPP approval must be approved by the Unit Manager prior to providing approval to the EPA grantee.

BFP staff provide direction and oversight of all scientific assessments and cleanup actions performed relative to the program. PMs are responsible for many of the following functions:

(1) Review and evaluate work plans and reports for completeness, accuracy and technical adequacy;

(2) provide technical direction to allow for correction of perceived deficiencies in work plans and reports;

(3) administer project management for sites where ongoing investigations and cleanups are occurring;

(4) evaluate data to ensure that the project is progressing at an acceptable time frame;

(5) review or design ground water quality sampling programs to assure that the proper evaluation of potential sites is performed;

(6) collect split, duplicate, or collocated environmental samples to ensure the representativeness and general quality of the various samples collected at a site throughout the investigation;

(7) prepare scopes of work and review and negotiate cost proposals for investigative work to be conducted to achieve objectives in a cost effective manner. Track costs and review invoices for work performed for accuracy; and

(8) represent the Agency at public meetings and other forums to present information regarding program activities.

Section 3

QUALITY ASSURANCE / CONTROL POLICY STATEMENT

PMs and unit managers possess SOPs for administration of QA/QC for the BFP. PMs can develop site specific Quality Assurance Project Plans (QAPPs), when appropriate, in accordance with KDHE's SOPs and numerous federal regulatory guidance documents for QA/QC. All pertinent EPA guidance consistent with the Brownfield process is adhered to for completion of site assessment activities. The PM's role within the BFP includes development or review of scopes of work for site monitoring, investigations, remedial designs and remedial actions. The PM submits the scopes of work to a contractor then receives and reviews cost proposals and work plans submitted by the environmental contractor. As an element of the review process, the PM ensures that the environmental contractor has prepared a suitable site specific QAPP to ensure established data quality objectives will be achieved. Each PM also ensures site specific QAPPs and SOPs are in compliance with KDHE's SOPs and SOPs provided in numerous federal regulatory guidance documents.

Project managers and environmental technicians are often responsible for all sampling, including any split, duplicate, or collocated environmental samples to ensure the representativeness and general quality of the various samples collected at a site throughout the investigation. All sampling activities conducted by project managers or technicians should follow the following general program guidelines:

(1) The objectives of any environmental monitoring project shall be determined prior to implementation of data collection activities. This determination shall be

will be incorporated into the design of the project and the resulting data will have a reasonable probability of meeting the stated objectives.

(2) Sample collection and analysis activities and data management activities shall be subjected to periodic evaluation by supervisory personnel to identify and correct deficiencies and enhance the overall credibility of the Section's environmental monitoring programs.

(3) All data collection activities will be accomplished and documented in accordance with a Divisional QA plan and applicable SOPs, included in Appendix A.

Federal guidance documents frequently referenced for QA/QC by BFP program staff include, but are not limited to:

- Quality Assurance Guidance for Conducting Brownfields Site Assessments (EPA/540-R-98-038, September 1998);
- Guidance for Data Usability in Risk Assessment (EPA Publication 9285.7-09A/PB92-963356, April 1992);
- Risk Assessment Guidance for Superfund (EPA/540/1-89/002, December 1989);
- Standard Operating Safety Guidelines (EPA Publication 9285.1-03/PB92-963414, June 1992);
- Standard Practices for the Description and Identification of Soils: (American Society for Testing and Material Standard D-2488, 2017);
- Standard Practices for the Design and Installation of Ground Water Monitoring Wells in Aquifers (American Society for Testing Materials Standard D-5092, 2016);
- Standard Practices for Soil Investigation and Sampling by Auger Boring (American Society for Testing and Materials Standard D-1452, 2016).

Section 4

QUALITY ASSURANCE / CONTROL CRITERIA AND PROCEDURES

4.1 FIELD STATION SITE SELECTION

The selection of sampling locations is based on several factors including type and purpose of the sample, representativeness, accessibility (permission to sample), location of existing wells, location of potential source areas of contamination and location of potential target areas. Selection criteria vary depending upon the type of medium being sampled and the purpose of the sampling which are described in site-specific QAPP plans.

4.2 FIELD EQUIPMENT INSTALLATION

Generally field staff will use non-dedicated sampling equipment that is either disposable or reusable. Sampling equipment designated for reuse must be decontaminated as specified in SOP (BER-05). Some sites as designated by the PM may have dedicated sampling equipment in place.

4.3 SAMPLING TYPES

A majority of BTAs are contracted out through a state procured contractor. The contractor follows KDHE's protocol. When KDHE's contractor conducts sampling activities, program staff provides QA/QC management services, including collection of split samples, through the oversight of work conducted by the contractors. BTAs may also be conducted by program staff

Soil is the most frequent environmental media sampled, followed by ground water, surface water, sludge, sediment, and air. Potential source wastes containing hazardous substances may also be sampled. The program staff utilize direct push probes, drill rigs and other equipment when possible for the installation, development and sampling of monitoring wells, subsurface soil sampling, direct push sampling, soil gas and ground water screening sampling. All sampling will utilize the proper and appropriate levels of personal protective equipment (PPE) and follow the appropriate guidance, standards or standard operating procedures. Data validation of sampling is performed by the Data Validation Officer for each site under the supervision of the Unit Manager.

Program staff collecting QA/QC environmental samples adhere to the sample collection procedures specified in the site-specific QAPP. Data validation and review of QA/QC sampling is performed during development of the BTA report.

QA/QC sample collection procedures proposed by KDHE's environmental contractors are reviewed for compliance with their standard QAPP and SOPs as well as KDHE's SOPs.

KDHE's approval of the site-specific Field Sampling Plan is dependent upon the sampling plan's compliance with field methods and sampling procedures provided in the "Compendium of Superfund Field Operations Methods", which is a compilation of demonstrated field techniques that have been used during remedial response activities at hazardous waste sites (U.S. EPA, September 1987). The purpose of the FSP is to ensure that sampling data collection activities will be comparable to and compatible with data previously collected.

Program staff follows various internal standard operating procedures when independently collecting environmental samples. SOPs developed for program staff include: BER-01 for the collection of ground water samples from monitoring, public or private wells; BER-03 for the collection of soil samples; BER-02 for the collection of surface water samples; BER-04 for the collection of sediment samples; and BER-11, BER-12, and BER-19 for sample control, i.e. identification, transport and chain-of-custody; BER-07 for sampling soils, water and soil gas with the Geoprobe soil gas rig; BER-06 for drilling and installation of soil borings and monitoring wells; BER-20 for hazardous waste sampling; and BER-05 for decontamination of sampling equipment.

4.4 SAFETY CONSIDERATIONS

Field and laboratory staff that participate in environmental monitoring programs encounter potentially dangerous situations on a frequent basis. In addition to the routine possibility of automobile or equipment accidents, employees may encounter extremely slippery surfaces, toxic or hazardous substances, infectious microorganisms, fire or electrocution hazards, vicious dogs, belligerent persons, or other threatening situations. Injuries or illnesses resulting from such situations may lead to substantial human suffering and, from a QA/QC perspective, deprive monitoring programs of the services of a valuable employee for an extended period of time.

Although it is not possible to predict every conceivable risk that may arise during the course of work, supervisors must ensure that those risks faced by staff on a recurring basis are addressed in the SOPs and are discussed during employee training. Field and laboratory staff are expected to abide by the safety protocols contained within the QA management plans and SOPs and to integrate safety considerations into all aspects of their work. Field staff should follow SOPs BER-18, BER-21 and BER-22. BER routinely budgets for ongoing safety training expenses and annual medical physicals for field staff associated with monitoring and/or field inspections of hazardous materials (refer to BER-17).

Non-supervisory employees are expected to bring potentially unsafe practices or situations to the attention of their program manager. In turn, the program manager shall evaluate the practice or situation and either take the appropriate corrective action or, in complicated circumstances, seek the advice of the appropriate Section Chief or higher level supervisor.

Major corrective actions those warranting changes in an SOP shall be implemented by staff only upon approval of the Section Chief, Bureau QA Representative and Bureau Director.

4.5 REQUESTING ANALYTICAL SERVICES

Program staff independently collecting samples can employ several approaches for the submission of environmental samples to a laboratory for analyses. Staff can submit environmental samples directly to the Kansas Health and Environmental Laboratory (KHEL) or contract the services of an outside laboratory. Samples submitted for laboratory analysis by an environmental contractor are submitted to a laboratory that has been previously approved by the PM during the work plan review and approval process.

The laboratory selected by the PM or environmental consultant must have a specific QAPP approved by the Division Director prior to utilization by the Section. Generally, KHEL will be used for a majority of the program's analytical service. However, the purpose of the contractual arrangements is to provide additional analytical capacity; QA/QC (inter-laboratory duplicates); and to provide expanded analytical services.

4.6 PROCEDURES FOR ASSESSING DATA PRECISION, ACCURACY, REPRESENTATIVENESS AND COMPARABILITY

4.6.1 ONGOING QUALITY ASSURANCE REVIEW AND SPECIAL AUDITS

All QA/QC aspects of the BFP are subject to ongoing review by the Unit Manager and Section Chief. Nonsupervisory staff are expected to cooperate fully with administrative requests for information on data precision/accuracy and overall QC performance. The Unit Manager is expected to track the QC performance of PMs, assist managers in identifying QC deficiencies within their assigned projects, and facilitate the initiation of necessary corrective actions (see section 4.7, below). The Section Chief is expected to track the overall QA/QC performance of the program, assist the Unit Manager in identifying QC deficiencies, and facilitate the initiation of necessary corrective actions. The Section Chief also is responsible for summarizing the overall QA/QC performance of the program in annual reports required under Part I, section 7, of the QMP.

To enhance the quality and credibility of the environmental data gathered by program staff, the BFP may, at the discretion of the Section Chief, Bureau Director or Division Director, be required to participate in QA/QC audits performed by an independent party. Audit findings, and corrective actions implemented in response to such findings, are reported to the Bureau QA Representative, Bureau Director and Division Director in the annual program QA/QC reports.

4.6.2 EQUIPMENT CALIBRATION AND MAINTENANCE

Environmental contractors are required by the PM to identify all field equipment to be used during field activities. The PM reviews all proposed equipment to ensure the equipment is appropriate for the intended task and desired data quality objectives. The PMs also review proposed calibration procedures and frequencies of field equipment to determine compliance with the environmental contractor's approved SOPs. The environmental contractors are required to provide post documentation of calibration and results conducted during field activities. Environmental contractors are generally required to provide a statement that all equipment is maintained in accordance with manufacturer's direction (usually included with the SOPs provided in the contract procurement process).

For field work conducted independently by program staff, all field equipment must be checked out from the Bureau's Equipment and Supply Technicians. The individual users of field equipment are responsible for the maintenance (in accordance with manufacturer's procedural manuals and/or SOPs) of the equipment while being used in field operations. The user should ensure the equipment is checked for proper operation and is current with calibration requirements (if needed) prior to leaving for field. The user should record any malfunctions encountered while in the field in the logbook associated with the equipment. The user should make sure the malfunctions are communicated to Unit Manager and Bureaus' Equipment and Supply Technicians upon return of the equipment to storage so that appropriate action can be initiated to repair the item of equipment, or initiate actions (e.g., prepare a Purchase Requests or Purchase Acquisitions) to get the equipment repaired upon return from the field.

4.6.3 QUALITY CONTROL BLANKS AND SPIKES

QC procedures must be taken by field staff to ensure the integrity of the samples collected. Without checks on the sampling and analytical procedures, the potential exists for contradictory or incorrect results. Procedures describing QC samples are defined in BER-12 or are included in specific SOPs.

4.7 CORRECTIVE ACTION PROCEDURES

In the context of QA, program corrective actions are procedures that may be implemented on environmental samples that do not meet predetermined QA specifications. In general, the corrective action procedures program addresses the analysis of any cause precipitating a negative audit finding and identifies the appropriate corrective action(s) necessary to address it. Program staff, or the appropriate QA/QC program designee, are responsible for reviewing data validation reports, audit reports and nonconformance reports, to identify significant or repetitious conditions adverse to quality, or deficiencies regarding the implementation or adherence to required QA practices. In addition, the BFP staff, or QA/QC designee, is

required to investigate the source(s) of the problem and is responsible for defining and/or implementing the necessary actions to remedy the problem.

The quality characteristics of data generated by sampling, monitoring, or analyzing, is defined in the following terms:

Accuracy: The degree of agreement of a measurement, or an average of measurements of the same thing, X, with an accepted reference or true value, T, usually expressed as the difference between the two values, X - T, or the differences as a percentage of the reference or true value, 100 (X - T)/T, and sometimes expressed as a ratio, X/T. Accuracy is a measure of the bias inherent in the system.

Precision: A measure of mutual agreement among individual measurements of the same property, usually under prescribed similar conditions. Precision is best expressed in terms of the standard deviation. Various measures of precision exist depending on the prescribed similar conditions.

Completeness: A measure of the amount of the valid data obtained from a measurement system, compared with the amount that was expected to be obtained under correct normal conditions, and that was needed to be obtained in meeting the project data quality objectives.

Representativeness: The degree to which data accurately and precisely represent a characteristic of population, the parameter variations at a sampling point, a process condition, or an environmental condition. It also includes how well the sampling point represents the actual parameter variations that are under study.

Comparability: The confidence with which one data set can be compared with another; a qualitative characteristic that must be assured in terms of sampling, analysis, reporting, etc.

The exact values of the quality characteristics will vary depending upon the analytical processes and procedures employed. Site-specific work plans will detail the recommended field activities and analytical methodologies necessary to establish the appropriate data quality characteristics. Corrective actions may include re-sampling, re-analyzing samples, or auditing laboratory procedures.

4.8 DATA MANAGEMENT

All work plans submitted in association with the BFP require a data management system including field logs, sample management and tracking procedures, and document control and inventory procedures for both laboratory data and field measurements to ensure that the data collected during the investigation are of adequate quality and quantity to support the findings

of the investigation, risk assessment (if performed), and corrective action study.

For each measurement, the data reduction scheme planned for collected data, including all equations used to calculate the concentration or value of the measured parameter, should be described. The principal criteria employed to validate the integrity of the data during collection and reporting should be referenced. All data collected should be validated at the appropriate laboratory QC level to ascertain whether it is appropriate for its intended use. All task management and quality controls implemented shall be documented within the appropriate report appendix.

4.9 QUALITY ASSURANCE/CONTROL REPORTING PROCEDURES

All reports or deliverables submitted through the BFP require a QA/QC status summary of the project and any conditions adverse to the quality. The report should contain an assessment of measurement data accuracy, precision and completeness, results of any performance audits, results of system audits, any reported non-conformance, and any QA problems, together with recommended solutions or corrective actions.

In addition, end-of-year program QA evaluations are conducted by the Section Chief and the results submitted, in writing, to the Bureau Director and the Division Director by February 15 of the following year. The reports must indicate when, how, and by whom the evaluation was conducted, the specific aspects of the program subjected to review, a summary of important findings, and technical recommendations for necessary corrective actions. The Section Chief is expected to discuss the findings of these evaluations with the Unit Managers and all participating field, laboratory and data management staff.