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**Quality Assurance Plan
for the Upper East Fork Poplar
Creek Characterization Area, Oak Ridge
Y-12 Plant, Oak Ridge, Tennessee**

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Energy Systems Environmental Restoration Program

**Quality Assurance Plan
for the Upper East Fork Poplar
Creek Characterization Area, Oak Ridge
Y-12 Plant, Oak Ridge, Tennessee**

Date Issued—December 1996

Prepared for the
U.S. Department of Energy
Office of Environmental Management
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Environmental Management Activities at the
OAK RIDGE Y-12 PLANT
Oak Ridge, Tennessee 37831
managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
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for the Upper East Fork Poplar
Creek Characterization Area, Oak Ridge
Y-12 Plant, Oak Ridge, Tennessee
(Y/ER-280)

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PREFACE

This *Quality Assurance Plan for the Upper East Fork Poplar Creek Characterization Area, Oak Ridge Y-12 Plant, Oak Ridge, Tennessee*, was prepared in accordance with requirements under the *Environmental Restoration Quality Program Plan, ES/ER/TM-4/R4*. This work was performed under Work Breakdown Structure 1.4.12.1.1.03.41. This document provides the Environmental Restoration Program with information about site remediation of Upper East Fork Poplar Creek. Information provided in this document provides the quality assurance requirements for the project.

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ABBREVIATIONS

ASO	Analytical Services Office
CA	Characterization Area
CDM	CDM Federal Programs Corp.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CES	Central Engineering Services
DOE	U.S. Department of Energy
ER	Environmental Restoration (Program)
ESD	Environmental Sciences Division
ESD-ERG	Environmental Sciences Division-Ecological Risk Group
FS	feasibility study
HSEA	Health, Safety, Environmental and Accountability Division
HSP	Health and Safety Plan
HSRD	Health Sciences Research Division
JE	Jacobs Environmental Restoration Team
LMES	Lockheed Martin Energy Systems, Inc.
PM	Upper East Fork Poplar Creek Project Manager
QE	Y-12 Environmental Restoration Quality Engineer
RI	remedial investigation
SAP	Sampling and Analysis Plan
SOW	Statement of Work
UEFPC	Upper East Fork Poplar Creek
UWIT	UEFPC Working Issues Group
WMO	Waste Management Organization

1. INTRODUCTION

This quality assurance plan summarizes requirements for conducting work on the Upper East Fork Poplar Creek (UEFPC) Characterization Area (CA). The reader is referred to the *Expanded Task Work Agreement for Upper East Fork Poplar Creek Characterization Area, Remedial Investigation/Feasibility Study (RI/FS)* (February 1996) for details regarding the activities, roles, and responsibilities summarized here. UEFPC is designated a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site and thus requires a remedial investigation (RI) and a feasibility study (FS).

1.1 PROJECT OBJECTIVES

This project has two phases, the RI phase and the FS phase.

The RI objectives are to evaluate the nature and extent of known and suspected contaminants, to provide data to perform baseline ecological and human health risk assessments, and to support development and evaluation of remedial alternatives for the FS. Existing data will be used as much as possible. Additional sampling may be required to fill data gaps. The goal of the RI is to prioritize the major sources of contaminants to exit pathways and to understand their characteristics for risk characterization and development of remedial alternatives.

The FS objectives are to investigate technologies and develop and evaluate alternatives based on CERCLA guidance.

1.2 PROJECT ORGANIZATION

Lockheed Martin Energy Systems, Inc. (LMES) is the integrating manager for the UEFPC CA work and is supported by LMES organizations and divisions. The contractor responsible for the RI is CDM Federal (CDM), and the contractor responsible for the FS is Jacobs Environmental Restoration Team. The LMES Environmental Restoration (ER) Program will provide technical direction to both contractors. An organization chart is presented in Appendix A. Roles and responsibilities are listed in Table 1 and given in greater details in the *Expanded Task Work Agreement for Upper East Fork Poplar Creek Characterization Area* (February 1996).

1.3 WORK PROCESSES

All project activities shall be conducted using a graded approach in accordance with approved procedures and plans of the organization conducting the tasks. Work performed by LMES organizations shall be conducted in accordance with their approved plans and procedures. Contractors and subcontractors shall have approved quality assurance plans and approved procedures. Generally, work conducted by contractors and/or subcontractors shall be in accordance with LMES-approved plans and procedures. However if the procedures and plans used by contractors or subcontractors are at variance with requirements of LMES or the ER Program, variances shall be documented either

Table 1. Roles and responsibilities

Activity	Roles and Responsibilities			
	Primary	Support	Review	Approve or concur
Management of Remedial Investigation	LMES ^a ER ^b	ESD-ERG ^c , HSRD ^c , CES ^c , QE ^d , WMO ^b , HSEA ^a , ASO ^a , ER Information Services, CDM ^e	NA ^f	NA
Remedial Site Evaluation	CDM	ESD, HSRD	PM ^m , ESD, HSEA	NA
Remedial Investigation Report	CDM	ER, WMO, QE, HSEA, ESD	ER, WMO, JE ⁿ , QE, HSEA, ESD	DOE ^o , EPA ^p , TDEC ^q
Preliminary Data Analysis	CDM	ER, HSRD, ASO, HSEA	NA	NA
Streamlined Approach for Environmental Restoration Workshop	CDM	ESD, HSRD	NA	NA
Baseline Human Health Risk Assessment	HSRD	CDM	ER	PM, HSRD
Baseline Ecological Risk Assessment	ESD	CDM	CDM, ER	PM
Program Quality Assurance Plan	PM	QE	ERG, ER, HSEA, WMO, QE, UWIT ^r	PM, ER QE
Health and Safety Plan	PM	Health & Safety Officer	PM, Health & Safety Officer, QE	PM, Health & Safety Officer
Sampling and Analysis Plan for Remedial Investigation Field Activities	CDM	ESD-ERG, HSRD, ASO, UWIT, HSEA, OQE	ER, ESD, ER, HSEA WMO, QE, UWIT	PM, QE, DOE
Quality Assurance Project Plan	CDM	ESD-ERG, HSRD, ASO, UWIT, HSEA, QE	ER ERG, ER, HSEA WMO, QE, UWIT	PM, QE, DOE
Data Management Plan	Project Data Coordinator	PM, QE, Technical Leads	PM, QE, Technical Leads	PM
Records Management Plan	Project Data Coordinator	PM, QE, Technical Leads	PM, QE, Technical Leads	PM, QE
Remedial Investigation Work Plan	CDM	ESD, ER, HSRD, HSEA	ESD, ER, HSRD, HSEA, PM	DOE, EPA, TDEC
Preliminary Data Analysis	CDM	HSRD, Y-12 ASO, HSEA, ER	NA	NA

Table 1 (cont.)

Activity	Roles and Responsibilities			
	Primary	Support	Review	Approve or concur
Rad Planning, Field Work Data Validation	CDM	HSRD, ESD, ER, HSEA, ASO	HSRD, ESD, ER, HSEA, ASO, PM	PM
Remedial Investigation Report Applicable or Relevant and Appropriate Requirements Data	CDM	ER, ComAps, WMO QE, HSEA CDM	PM, DOE, EPA, TDEC	DOE, EPA, TDEC
Baseline Human Health Risk Assessment	HSRD	CDM		
Baseline Ecological Risk Assessment	ESD	CDM		
Feasibility Study	JE	LMES	ER, HSRD, CES, QE, CDM	NA
Technology Demonstration Quality Assurance Plan	JE	LMES	LMES, CDM	PM, QE, DOE
Technology Demonstration HSP	JE	ER, HSRD	CDM, LMES, DOE	PM, Health & Safety Officer, DOE
Technology Demonstration Data & Records Management Plans	ER Information Services	ER Information Services, QE	CDM, LMES, DOE	PM, QE
Technology Demonstration Sampling and Analysis Plan	JE	ER, CES, WMO, ESD, QE, HSEA, HSRD	CDM, LMES, DOE	PM, QE, DOE
Feasibility Study Report Preparation	JE	LMES, CDM	CDM, LMES, DOE, EPA, TDEC	DOE, EPA, TDEC

^aLockheed Martin Energy Systems, Inc.^bEnvironmental Restoration (Program)^cEnvironmental Sciences Division^dEcological Risk Group^eHealth Sciences Research Division^fCentral Engineering Services^gY-12 Environmental Restoration Quality Engineer^hWaste Management OrganizationⁱHealth, Safety, Environmental, and Accountability Division^jAnalytical Services Office^kCDM Federal Programs Corp.^lNot applicable^mProject manager for Upper East Fork Poplar CreekⁿJacobs Engineering Group^oU.S. Department of Energy^pU.S. Environmental Protection Agency^qTennessee Department of Environment and Conservation^rUpper East Fork Poplar Creek Working Issues Group

by memo or Field Change Orders and reviewed with the UEFPC project manager who shall, upon concurrence to the variances, issue written concurrence prior to implementation of such procedures or plans.

Table 2, "Matrix of activities, responsibilities, and implementing plans and/or procedures," is a listing of the LMES procedures that will be implemented, as applicable, by all participants in the UEFPC CA project unless otherwise specified. Implementing procedures used by contractors and subcontractors shall be identified in their quality assurance, health and safety, waste management, sampling and analysis, and other applicable plans.

Table 2. Matrix of activities, responsibilities, and implementing plans and/or procedures

Activity	Responsibility	Implementing plans and/or procedure(s)	Comments
Quality Assurance Plan	Y-12 Environmental Restoration project manager and quality engineer	ES/ER-TM4/R4, <i>Environmental Restoration Quality Program Plan</i>	
Sampling and Analysis Plan	CDM ^b will prepare the plan	DOE/OR/01-1077, <i>Annotated Outlines for Documents Required by FFA and CERCLA for the Oak Ridge Reservation Sites</i> ES/ER-TM4/R4, <i>Environmental Restoration Quality Program Plan, Quality Assurance Project Plan</i> , ES/ESH/INT-14, <i>Environmental Surveillance Quality Control Program</i> ER/Y-1130, <i>Distribution and Control of Procedures in the Field</i> , ER/C-P1719, <i>Controlling and Documenting Field Changes to Approved Field Sampling Plans</i>	SAP shall specify appropriate sampling, handling, shipping and analytical procedures
Field Sampling	CDM will implement the field SAP in accordance with the implementing plans and procedures	See SAP ^a	Sampling will be conducted in accordance with Lockheed Martin Energy Systems, Inc., plans and procedures or approved plans and procedures of the sampling organization
Laboratory (Sample) Analysis	CDM will enter Statement of Work in TRACKER	See SAP	Reference Tracker User's Manual K/DSDR-3020/D
Quality Assurance Project Plan (for sampling and analysis)	To be prepared by CDM	See SAP	The Field Sampling and Laboratory Analysis Plan may be combined into a single SAP

Table 2 (cont.)

Activity	Responsibility	Implementing plans and/or procedure(s)	Comments
Data Management Plan	Prepared by the project data coordinator	<p>ES/ER/TM-88, Environmental Measurements Data Management Plan for the Environmental Restoration Program and where applicable the following procedures:</p> <p>ERWM/ER-S2203, <i>Data Quality Management Roles and Responsibilities</i></p> <p>ERWM/ER-P2212, <i>Inorganic Data Verification and Validation</i></p> <p>ERWM/ER-P2701, <i>Transmitting ER Data in Ready-To-Load (RTL) Form to the Oak Ridge Environmental Information System (OREIS)</i></p> <p>ERWM/ER-S2704, <i>Data Product Documentation for the Oak Ridge Environmental Information System</i></p> <p>ER/C-S2710, <i>Format Requirements for Environmental Restoration Map Products</i></p> <p>ER/Y-I 1902, <i>Handling and Control of Sampling Documentation</i></p> <p>ER/Y-I 1903, <i>Tracking Analytical Data</i></p> <p>ER/Y-I 1905, <i>Analytical Data Validation</i></p> <p>ER/Y-I 1906, <i>Analytical Data Validation</i></p> <p>ER/Y-I 1907, <i>Field Data Validation</i></p> <p>ER/Y-I 1908, <i>Completion of Data Forms and Logbooks</i></p>	Plan shall specify appropriate implementing procedures
Records Management Plan	Project manager and project data coordinator will prepare plan	<p>ER/C-P1104, <i>Technical Review of Environmental Restoration Program Documents</i></p> <p>ERWM/ER-P1110, <i>Identification, Distribution and Maintenance of Environmental Restoration Records</i></p> <p>ERWM/ER-P1113, <i>Environmental Restoration Controlled Document Management</i></p> <p>ER/Y-I 1601, <i>Identifying Quality Assurance Records</i></p>	Plan shall specify appropriate implementing procedures

Table 2 (cont.)

Activity	Responsibility	Implementing plans and/or procedure(s)	Comments
Health and Safety Plans	Task-specific plans shall be prepared by organizations responsible for the work Field task leaders and all field personnel are responsible for ensuring all elements of the health and safety plan(s) are implemented	Y/TS-638/R2, <i>Y-12 Plant Hazardous Waste Operations and Emergency Response Program</i> and/or <i>Y-12 Plant Health and Safety Procedures (70 Series)</i>	Health and Safety Plan will specify applicable procedures The Health and Safety officer shall conduct a safety and hazard analysis to ensure that no unexpected hazards exist at work sites
Waste Management Plan	To be prepared by the Waste Management Organization or by the organization responsible for the activity	ER/C-P2101, <i>Preparation of Environmental Restoration Task/Project Specific Waste Management Plans (IAD)</i> ER/C-P2103, <i>Management of Waste Generated by Field Investigations and Sampling Activities at Y-12 (IAD)</i>	Contractors and/or subcontractors, if appropriate, may be required to develop waste management plans for specific activities
Stop Work	All project participants have the authority and responsibility to stop work when safety and/or quality are jeopardized	SPP-5402, <i>Stop Work Authority</i>	If activities have been stopped due to unsatisfactory work or the invocation of SPP-5402, a readiness assessment <i>graded</i> to the needs of the project may be conducted prior to restarting work activities. A determination of the need for a readiness assessment is the responsibility of the project manager or his designee
Readiness Reviews or Assessments	Project manager convenes readiness assessments	ER/C-P1610, <i>Conducting Project Readiness Reviews</i> , or OP-551, <i>Operational Readiness Review and Assessment Process</i>	Readiness assessments will be conducted by the Upper East Fork Poplar Creek project manager with the assistance of the project quality engineer using a <i>graded</i> approach to the implementation of the procedures
Training	Managers of all participating organizations ensure that all of their personnel are properly trained and that training is appropriately documented	ER/C-P1613, <i>Implementation of Training Program Requirements for Environmental Restoration Personnel</i>	Organizations participating in this project shall ensure and verify that all personnel are adequately and appropriately trained and/or qualified to perform the task(s) to which they are assigned in accordance with the requirements of the organization for which they work. All training shall be documented, and training records shall be available for review by the project manager

Table 2 (cont.)

Activity	Responsibility	Implementing plans and/or procedure(s)	Comments
Nonconformances	All project participants must report nonconformances to management	ESS-QA-15.0, <i>Control of Nonconforming Items (and Services)</i> QA-15.1, <i>Preparation of a Nonconformance Report</i>	Nonconformances that affect data quality or meeting project objectives, including those of contractors and subcontractors, shall be submitted to the Project Manager for review. Minor nonconformances shall be documented in logbooks
Corrective Actions	Managers and quality engineer manage and track corrective actions	QA-312, <i>Issues Management Program</i> ESS-QA-16.4, <i>Energy Systems Action Management System (ESAMS)</i> ER/C-P1606, <i>Review and Transmittal of Audit and/or Surveillance Findings and Observations for Potential Applicability</i>	All organization, contractor, and subcontractor corrective actions affecting the quality of project services or items shall be submitted to the project manager and/or quality engineer. Actions (e.g., corrective actions) shall be developed for all action items (e.g., findings, concerns, negative observations) arising from all assessments (e.g., internal and external audits, internal and external surveillance, management assessments, reviews) and at the discretion of the project manager tracked in the Energy Systems Action Management System
Root Cause	Managers and quality engineer with assistance of project staff conduct root cause analyses	ESS-QA16.2, <i>Root Cause Analysis.</i>	
Lessons Learned	Managers and quality engineer with assistance of project staff develop and report lessons learned	QA-16.3, <i>Lessons Learned and Alert System</i>	
Documents and Records	All project participants are responsible for understanding requirements of the Records Management Plan. Plan will be prepared by project data coordinator	<i>Records Management Plan</i>	Plan shall specify implementing procedures
Instructions and Procedures	Project managers of team members initiate development of procedures if required	Implementing procedures found in ES/ER/TM-4/R4, <i>Environmental Restoration Quality Program Plan</i>	Applicable only if new procedures are to be developed

Table 2 (cont.)

Activity	Responsibility	Implementing plans and/or procedure(s)	Comments
Occurrence Reporting	All project participants are responsible for reporting occurrences to management	<i>ESS-OP-301, Occurrence Reporting System</i> <i>Y60-161, Occurrence Reporting</i>	
Audits and Surveillance	Quality engineer, with assistance of personnel not associated with the work conduct audits and surveillance with concurrence from the project manager	<i>ER/Y-1600, Conducting Project or Activity Assessments.</i>	
Self Assessments	Conducted by the project manager and/or designees.	<i>Y/EX-43, Description of Self-Assessment Program</i>	The project management and designated personnel shall plan and conduct self-assessments throughout the life of the project to detect quality problems and to implement improvements
Ecological Monitoring	To be prepared by Environmental Sciences Division	<i>Ecological Monitoring Plan</i> (to be determined) Task Work Agreement (Work Breakdown Structure 1.1.03.41.10.10.11.5 and 1.1.03.41.10.10.12.04)	This plan will include or reference the appropriate sampling, analysis, and health and safety procedures and/or plans to be implemented
Radiological Planning Statement of Work	To be prepared by CDM	Task Work Agreement (Work Breakdown Structure 1.1.03.41.10.10.12.06 through .09)	
Instrument Calibration	Users of identified instrumentation	Calibration procedures are those identified by the organization conducting the work as appropriate for the instruments in use	For instruments requiring calibration, the frequency of calibration shall be identified in appropriate plans, e.g. health and safety, sampling and analysis plan, analytical chemistry procedures
Design	Design organization	Appropriate procedures of the design organization	A Quality Assurance Plan(s) may be developed to specify design and/or construction requirements
Acceptance and Testing	Design/construction organization will, if appropriate, prepare a test plan to include all acceptance criteria and conditions of acceptance	Design/construction organizations approved procedures identified in the QA plan for design/construction	
Procurement	Design/construction and/or procurement organizations	Approved procurement procedures from organizations/contractors/subcontractors performing work	

Appendix A

UEFPC CA ORGANIZATION CHART

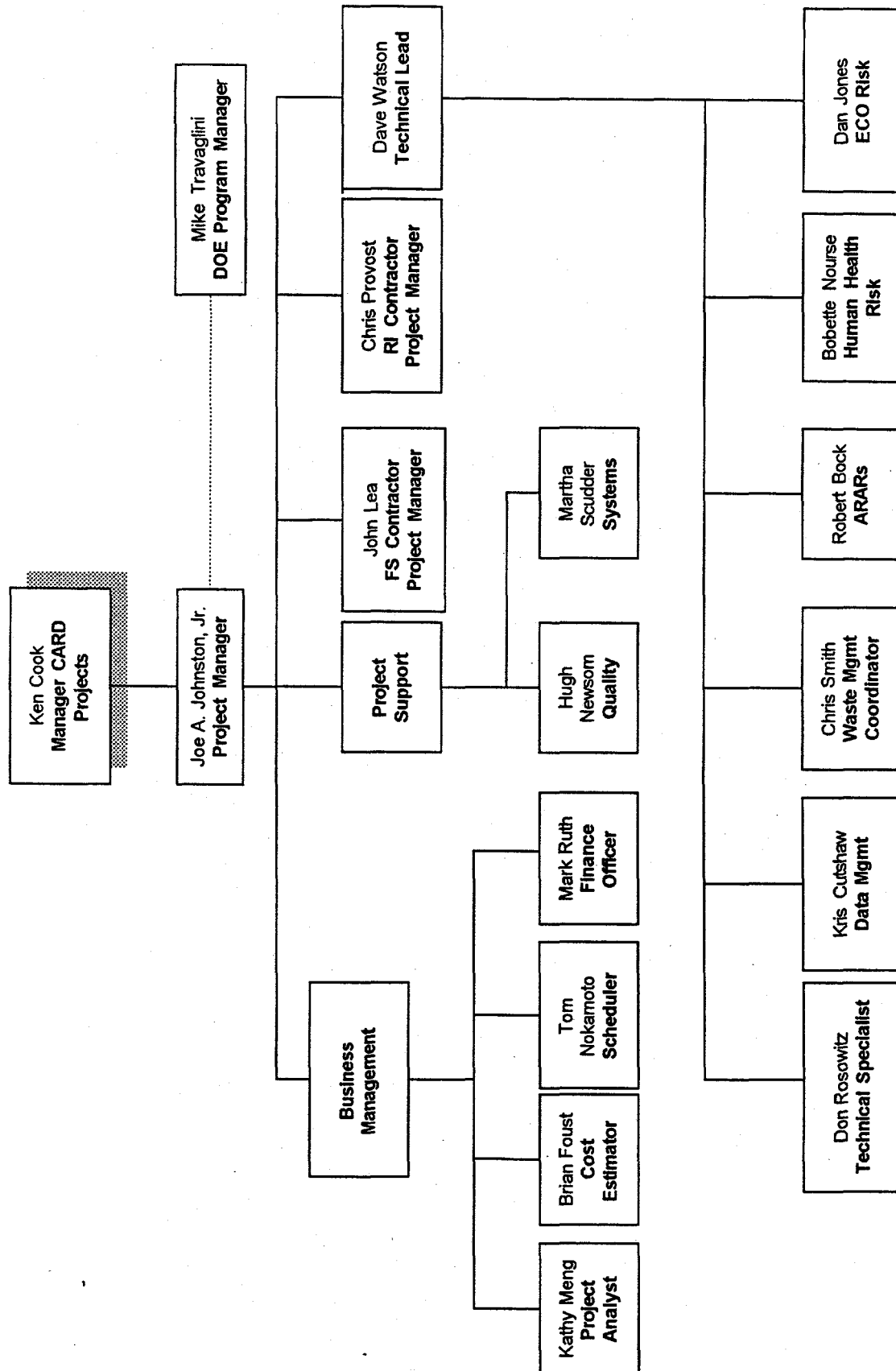


Fig. A.1. Organization chart for the Upper East Fork Poplar Creek Characterization Area.

Appendix B

RECORDS AND CONTROLLED DOCUMENT LIST

Table B.1. Records and controlled document list

Record or document title	RP ^a L/Yrs	QA record Yes/No	Controlled Yes/No
Project Management Plan	L	Yes	Yes
Quality Assurance Plans	L	Yes	Yes
Confirmatory Sampling Plan	L	Yes	Yes
Confirmatory Sampling Report	L	Yes	No
Biological Monitoring Plan	L	Yes	Yes
Storm Water Control Plan	L	Yes	No
Sample Verification Data/Reports	L	Yes	No
Quality Assurance Procedures	L	Yes	Yes
Project Instructions, Procedures, Drawings	L	Yes	Yes
Design Changes ^b	L	Yes	Yes
As-Built Drawings ^b	L	Yes	Yes
Transportation Records	5	Yes	No
Test/Inspection Results and Reports ^b	L	Yes	No
Equipment Specifications/Data Sheets/Certifications	L	Yes	No
Construction Project/Test Summary	L	Yes	No
Log Books and Sample Documentation	L	Yes	No
Chain-of-Custody	L	Yes	No
Readiness Review Reports	L	Yes	No
Audit, Surveillance, and Self-Assessment Reports	L	Yes	No
Nonconformance Reports	5	Yes	No
Occurrence Reports	5	Yes	No
Corrective Action Reports and Documentation ^b	5	Yes	No
Health and Safety Plans	L	Yes	Yes
Waste Management Plans	L	Yes	No
Training Records	L	Yes	No
Purchase Orders/Changes	5	Yes	No
Technical/Peer Reviews	L	Yes	No
Other Plans that specify requirements for conducting activities	L	Yes	No

^a Retention period: L = Lifetime^b Maintained after completion into drawings or other documents

Appendix C

PROPOSED SURVEILLANCE PLAN

Surveillance activities will be scheduled by the project manager.

The following activities are subject to surveillance:

1. source area surface water and soil sampling (activity conducted by CDM Federal);
2. sediment collection from UEFPC (activity conducted by Health, Safety, Environmental, and Accountability Division); and
3. surveillance of classified area assessment and sampling.

Other activities, as determined by the UEFPC project manager and the quality engineer, may be added to this surveillance plan.

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