


**Environmental Management System
for the Deactivation and Remediation Project,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky**

This document is approved for public release per review by:


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**Environmental Management System
for the Deactivation and Remediation Project,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky**

Date Issued—February 2020

U.S. DEPARTMENT OF ENERGY
Office of Environmental Management

Prepared by
FOUR RIVERS NUCLEAR PARTNERSHIP, LLC,
managing the
Deactivation and Remediation Project at the
Paducah Gaseous Diffusion Plant
under Contract DE-EM0004895

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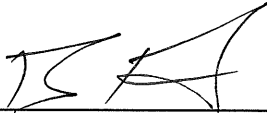
APPROVALS

**Environmental Management System
for the Deactivation and Remediation Project,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky**

CP2-ES-0101/FR4

February 2020

Approved by:



Bruce Ford
Environmental Services Director

2-20-2020

Date



Myrna Espinosa Redfield
Program Manager

2/24/2020

Date

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REVISION LOG

REVISION NUMBER	DATE	DESCRIPTION OF CHANGES	PAGES AFFECTED
FRev. 0	10/20/2017	Bluesheet for Four Rivers Nuclear Partnership, LLC (FRNP)	All
FRev. 1	1/17/2018	Revised to issue under FRNP	All
FRev. 2	3/27/2018	Removed referenced procedure CP3-OP-0303 from Table 7.	25
FRev. 2A	05/03/2018	Update titles for FRNP Organizational Changes; updated FRNP Environmental Policy Statement; updated references in Section 4.3.2.1	vii, 4, 6, 8-10, 13, 14, 19, 20, 21
FRev. 3	12/13/2018	General revision; updated for ISO14001:2015	All
FRev. 4	02/24/2020	General revision for additional information in areas identified in Gap Analysis for ISO 14001:2004 and ISO 14001:2015. Deleted Appendix B and added it to CP3-ES-1035.	XI, 1, 6,7,11-13, 17, 18, 20-25, 30, 34, Appendix B

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ACRONYMS

CAA	Clean Air Act
CAB	Citizens Advisory Board
CAT	Consolidated Annual Training
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
<i>CFR</i>	<i>Code of Federal Regulations</i>
CWA	Clean Water Act
D&R	deactivation and remediation
DOE	U.S. Department of Energy
EAP	Emergency Action Plan
EM	Office of Environmental Management
EMS	Environmental Management System
EPA	U.S. Environmental Protection Agency
FRNP	Four Rivers Nuclear Partnership, LLC
FY	fiscal year
GET	General Employee Training
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
JHA	job hazard analysis
KPDES	Kentucky Pollutant Discharge Elimination System
LCB	life cycle baseline
NEPA	National Environmental Policy Act
O	Order
PGDP	Paducah Gaseous Diffusion Plant
PPPO	Portsmouth/Paducah Project Office
QAPD	Quality Assurance Program Description
RCRA	Resource Conservation and Recovery Act

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DEFINITIONS

Compliance Obligations—The legal requirements that an organization has to comply with and other requirements that an organization has to or chooses to comply with.

Continual Improvement—The process of using the Environmental Management System (EMS) to enhance the environmental performance consistent with the environmental policy.

Effluent Monitoring—The collection and analysis of samples or measurements of liquid and gaseous effluents for the purpose of characterizing and quantifying contaminants, assessing radiation exposure of members of the public, providing means to control effluents at or near the point of discharge, and demonstrating compliance with applicable standards and permit requirements.

Environment—Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, and humans and their interrelationships.

Environmental Aspect—Element of an organization's activities, products, or services that can interact with the environment.

Environmental Hazard—A potential incident or failure associated with an environmental aspect that would result in a negative environmental impact or noncompliance.

Environmental Impact—Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products, or services.

Environmental Management System—The part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing, and maintaining the environmental policy.

Environmental Monitoring—The collection and analysis of samples or direct measurements of environmental media. Environmental monitoring consists of two major activities: (1) effluent monitoring and (2) environmental surveillance.

Environmental Objective—Overall environmental goal arising from the environmental policy that an organization sets itself to achieve and that is quantified where practicable.

Environmental Performance—Measurable results of the EMS related to an organization's control of its environmental aspects, based on its environmental policy, objectives, and goals.

Environmental Policy—Statement of intentions and directions related to environmental performance as formally expressed by senior management.

Environmental Records—Environmental records are defined as follows:

- (1) Records that constitute or document evidence of compliance with environmental laws, regulations, permits, and other environmental requirements, including, but not limited to, consent orders and agreements with state or federal agencies, standards and company requirements.
- (2) Records that constitute or document the basis for decisions regarding (a) resolution of environmental compliance issues, (b) development of technical interpretations, (c) development of company

environmental requirements, (d) permitting and closure decisions, (e) regulatory impact analyses, and (f) risk assessments, including documentation of routine communications with environmental regulatory agencies, DOE, and any external organization.

- (3) Records that constitute supporting environmental data developed during environmental monitoring and measurement, preparation of permits, closure plans, and other environmental compliance plans and/or commitments, including, but not limited to, negotiated settlement agreements and consent decrees.
- (4) Enforcement orders. Supporting data includes, but is not limited to, modeling data, analytical data, calibration data, controlled documents, and reports.
- (5) Records that constitute or document implementation of the EMS that (a) address planning, implementation, or assessment of environmental activities; including, but not limited to, procedures, company requirements documents, company program description documents, audits and assessment reports, and corrective action documents; and (b) document personnel training and qualification.

Environmental Surveillance—The collection and analysis of samples or direct measurements of air, water, soil, foodstuff, biota, and other media from the DOE site and their environs for the purpose of determining compliance with applicable standards and permit requirements, assessing radiation exposures of members of the public, and assessing the effects, if any, on the local environs.

Interested Party—A person or organization that can affect, be affected by, or perceive itself to be affected by a decision or activity.

Line/Project Management—Any management level within the line organization, including contractor management, that is responsible and accountable for directing and conducting work.

Procedures—In the context of the International Organization for Standardization (ISO) 14001 Standard, procedures are the written, unwritten, formal, and/or informal descriptions of how certain activities are conducted. These can include policies, plans, processes, and other types of instructions. Processes described in this document satisfy ISO 14001 requirements to establish EMS-related procedures.

EXECUTIVE SUMMARY

The purpose of this document is to describe how Four Rivers Nuclear Partnership, LLC, (FRNP) implements International Organization for Standardization (ISO) 14001:2015, *Environmental Management System*, requirements while fulfilling the requirements of ISO 14001:2004. The FRNP Environmental Management System (EMS) reflects the values stated in the FRNP Environmental Policy and applies to all FRNP employees and FRNP subcontractors performing work at the Paducah Gaseous Diffusion Plant (PGDP).

The FRNP EMS satisfies the specifications of the Deactivation and Remediation (D&R) Contract, DE-EM0004895, to develop and implement an EMS in accordance with U.S. Department of Energy (DOE) Order (O) 436.1, *Departmental Sustainability*. The D&R Contractor is identified as the PGDP EMS designated site coordinator. The Contractor Requirements Document portion of DOE O 436.1 requires contractors to establish and implement an EMS that is certified to or conforms with the ISO 14001:2004, *Environmental Management Systems—Requirements with guidance for use (ISO 14001)*. FRNP received permission from the DOE Portsmouth/Paducah Project Office to conform to the 2015 edition of the ISO Standard as long as FRNP fulfills the requirements of ISO 14001:2004. Table ES.1 lists the corresponding clauses between the 2004 and 2015 editions of ISO 14001, including the respective sections addressed in the EMS.

The EMS helps ensure environmental compliance and performance per the ISO 14001:2015 standard. This includes a continual cycle of planning, implementing, reviewing, and improving our operations to address and manage environmental resources with a proactive versus reactive mindset. The EMS considers all personnel whose work activities could impact the environment. It enables more effective use of natural resources, provides better protection of the environment, and achieves environmental sustainability. The EMS helps to ensure consistency and rigor in existing environmental activities and drives continual improvement in environmental compliance and performance.

Table ES.1. ISO 14001:2015 and ISO 14001:2004 Corresponding Clauses and EMS Implementing Sections

ISO 14001:2015		ISO 14001:2004		CP2-ES-0101
Clause Title	Clause Number	Clause Number	Clause Title	Section Number
Context of the organization (title only)	4			2
		4	Environmental Management System requirements (title only)	2.4
Understanding the organization and its context	4.1			2.1
Understanding the needs and expectations of interested parties	4.2			2.2
Determining the scope of the Environmental Management System	4.3	4.1	General requirements	2.3
Environmental management system	4.4	4.1	General requirements	2.4
Leadership (title only)	5			3
Leadership and commitment	5.1			3.1
Environmental policy	5.2	4.2	Environmental policy	3.2
Organizational roles, responsibilities and authorities	5.3	4.4.1	Resources, roles, responsibility and authority	3.3
Planning (title only)	6	4.3	Planning (title only)	4.
Actions to address risks and opportunities (title only)	6.1			4.1
General	6.1.1			4.1.1
Environmental aspects	6.1.2	4.3.1	Environmental aspects	4.1.2
Compliance obligations	6.1.3	4.3.2	Legal and other requirements	4.1.3
Planning action	6.1.4			4.1.4
Environmental objectives and planning to achieve them (title only)	6.2			4.2
Environmental objectives	6.2.1	4.3.3	Objectives, targets and program(s)	4.2.1
Planning actions to achieve environmental objectives	6.2.2			4.2.2
Support (title only)	7	4.4	Implementation and operation (title only)	5
Resources	7.1	4.4.1	Resources, roles, responsibility and authority	5.1
Competence	7.2			5.2
Awareness	7.3	4.4.2	Competence, training and awareness	5.3
Communication (title only)	7.4			5.4
General	7.4.1	4.4.3	Communication	5.4.1
Internal communication	7.4.2			5.4.2
External communication	7.4.3			5.4.3
Documented information (title only)	7.5			5.5
General	7.5.1	4.4.4	Documentation	5.5.1
Creating and updating	7.5.2	4.4.5	Control of documents	5.5.2
		4.5.4	Control of records	5.5.2
Control of documented information	7.5.3	4.4.5	Control of documents	5.5.3
		4.5.4	Control of records	5.5.3

Table ES.1. ISO 14001:2015 and ISO 14001:2004 Corresponding Clauses and EMS Implementing Sections (Continued)

ISO 14001:2015		ISO 14001:2004		CP2-ES-0101
Clause Title	Clause Number	Clause Number	Clause Title	Section Number
Operation (title only)	8	4.4	Implementation and operation (title only)	6
Operational planning and control	8.1	4.4.6	Operational control	6.1
Emergency preparedness and response	8.2	4.4.7	Emergency preparedness and response	6.2
Performance evaluation (title only)	9	4.5	Checking (title only)	7.
Monitoring, measurement, analysis and evaluation (title only)	9.1	4.5.1	Monitoring and measurement	7.1
General	9.1.1			7.1.1
Evaluation of compliance	9.1.2	4.5.2	Evaluation of compliance	7.1.2
Internal audit (title only)	9.2	4.5.5	Internal audit	7.2
General	9.2.1			7.2
Internal audit program	9.2.2			7.2
Management review	9.3	4.6	Management review	7.3
Improvement (title only)	10			8
General	10.1			8.1
Nonconformity and corrective action	10.2	4.5.3	Nonconformity, corrective action and preventive action	8.1
Continual improvement	10.3			8.2

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1. INTRODUCTION

The Four Rivers Nuclear Partnership, LLC, (FRNP) Environmental Management System (EMS) is designed to describe the environmental policy and document the integration of environmental protection and compliance, waste minimization and pollution prevention, and site sustainability into the company's Integrated Safety Management System (ISMS) and culture. The FRNP EMS ensures proper integration of environmental considerations into work planning and performance consistent with U.S. Department of Energy (DOE) Acquisition Regulation 970.5223-1, *Integration of Environmental, Safety, and Health into Work Planning and Execution*, and DOE Order (O) 450.2, *Integrated Safety Management*. The functions, processes, and responsibilities described in this EMS provide the details of the environmental protection functional area of the FRNP ISMS.

The EMS strives for continuous improvement through a Plan, Do, Check, Act cycle and is implemented through ISMS. Integrated Safety Management requires that facility managers and employees define their work scope; identify environmental, safety, and health hazards associated with their work activities; and develop and implement appropriate controls to mitigate those hazards. The guiding principles and core functions in ISMS are as applicable to the protection of the environment as they are to the protection of employee health and safety. Under FRNP's programs, the term "safety" embodies protection of worker and public health and the natural environment. FRNP work activities are analyzed and reviewed for potential health and safety risks and environmental impacts prior to their performance. This "continuous improvement cycle" is a core tenet of the EMS and allows the system to adapt, as needed, to changing operations within the organization. A detailed description of the ISMS Guiding Principles and Core Functions can be found in CP2-HS-1000, *Integrated Safety Management System Description for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*. Table 1 provides a crosswalk between core EMS elements and core ISMS Functions.

Table 1. EMS/ISMS Crosswalk

EMS Core Elements (CE)	ISMS Core Functions (CF)
CE1—Context of the Organization <ul style="list-style-type: none"> • Interested Parties Needs and Expectations • Scope of EMS 	CF1—Define the Scope of Work
CE2—Leadership <ul style="list-style-type: none"> • Commitment • Environmental Policy • Roles, Responsibilities, and Authorities 	
CE3—Planning <ul style="list-style-type: none"> • Environmental Aspects • Compliance Obligations • Objectives and Planning to Achieve Them 	CF2—Identify and Analyze Hazards
CE4—Support <ul style="list-style-type: none"> • Resources • Competence • Awareness • Communication • Documented Information 	CF3—Develop and Implement Hazard and Environmental Controls
CE5—Operation <ul style="list-style-type: none"> • Operational Planning and Control • Emergency Preparedness 	CF4—Perform Work Within Controls
CE6—Performance Evaluation <ul style="list-style-type: none"> • Monitoring, Measurement, Analysis, and Evaluation • Internal Audit • Management Review 	CF5—Provide Feedback and Continuous Improvement
CE7—Improvement <ul style="list-style-type: none"> • Nonconformity and Corrective Action • Opportunities for Improvement 	

2. CONTEXT OF THE ORGANIZATION (4¹)

2.1 UNDERSTANDING THE ORGANIZATION AND ITS CONTEXT (4.1)

The Paducah Gaseous Diffusion Plant (PGDP) is a DOE-owned and managed facility operated by three prime contractors. The three prime PGDP contractors are the Deactivation and Remediation (D&R) Contractor, Infrastructure Contractor, and depleted uranium hexafluoride processing contractor. FRNP serves as the D&R contractor and is responsible for ongoing deactivation, surveillance, maintenance, waste management, and sitewide utilities. The scope of the D&R contract focuses on the continued deactivation of the PGDP facilities, preparing the facilities for future demolition, and performing environmental remediation activities required by the Federal Facilities Agreement and the Site Management Plan.

The purpose of this document is to describe the FRNP EMS and document the processes and systems developed to implement and deliver the FRNP Environmental Policy. The intended outcomes of the FRNP EMS are reflected in the FRNP Environmental Policy statement. These outcomes include the following:

- Identify and comply with all applicable environmental laws and regulations;
- Use practicable means to minimize or eliminate the generation of new wastes without a path for disposition;
- Protect the natural, biological and cultural resources associated with PGDP and surrounding DOE-owned property;
- Conserve natural resources by reusing and recycling materials, purchasing recycled materials, and using recyclable materials;
- Establish documented environmental objectives and targets and update them as necessary to reflect FRNP's needs, missions, and goals;
- Involve stakeholders when weighing an environmental course of action;
- Monitor the impact on the environment and measure performance and communicate the results to employees, subcontractors, and stakeholders; and
- Improve the EMS continuously through self-assessment and corrective action process; and communicate the policy to all employees and subcontractors and make it available to the public and stakeholders.

The following internal and external issues can affect FRNP's ability to achieve the intended EMS outcomes:

- Ecological and cultural issues;
- Contractual limitations to operational flexibility and integration;
- Public and political pressure on clean-up schedule;
- Aging workforce and contractor turnover;
- Environmental regulatory oversight;

¹ References following headings refer to clauses and subclauses of the International Organization for Standardization (ISO) 14001:2015 standard.

- Coordination with other PGDP contractors;
- Aging assets/infrastructure;
- Existing contamination; and
- Inclement weather (e.g., ice storms, tornadoes, severe weather).

2.2 UNDERSTANDING THE NEEDS AND EXPECTATIONS OF INTERESTED PARTIES (4.2)

The external interested parties in FRNP activities are the public, news media, regulatory agencies, and other government agencies. The internal interested parties include DOE, other site contractors, and members of the FRNP workforce. To meet the needs and expectations of the interested parties, FRNP operates in a safe and compliant manner.

The PGDP Citizens Advisory Board (CAB) is a Federal Advisory Committee Act board, chartered to provide advice to the DOE Office of Environmental Management (EM) located at the Paducah Site. The scope of the CAB is to provide advice and recommendations concerning the following EM site-specific issues: clean-up standards and environmental restoration; waste management and disposition; stabilization and disposition of non-stockpile nuclear materials; excess facilities; future land use and long term stewardship; risk assessment and management; and clean-up science and technology activities.

The CAB is comprised of individuals from the Western Kentucky and Southern Illinois areas. Members can serve up to three consecutive two-year terms. Members represent businesses, academia, labor, local government, environmentalists, special interest groups, and the general public. In addition to DOE, the U.S. Environmental Protection Agency (EPA) Region 4, the Kentucky Department of Waste Management, the Kentucky Cabinet for Health Services, and the West Kentucky Wildlife Management Area are represented on the board in an advisory capacity.

The compliance obligations for the needs and expectations of internal and external interested parties are implemented to ensure protection of human health and the environment during execution of the FRNP contract scope. These compliance obligations, therefore, are derived from the applicable environmental regulations, the DOE orders and standards, and the FRNP contract requirements. The compliance obligations for FRNP are discussed in CP2-RA-0014, *Environmental Compliance and Protection Program Description at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*.

2.3 DETERMINING THE SCOPE OF THE EMS (4.3)

The EMS scope includes, and is limited to, those activities at the PGDP that are managed by FRNP under contract DE-EM0004895. FRNP is identified as the PGDP EMS designated site coordinator. FRNP applies the elements of ISO 14001:2015 in a manner that provides real and tangible business value, rather than an approach that applies all requirements of an ISO 1400-type EMS, regardless of value. FRNP is responsible for ensuring compliance with all applicable laws, regulations, and other requirements as defined in the contract. FRNP is also responsible for assisting in the transfer/assignment of structures, properties, or buildings from current tenants to FRNP or other site contractors; completing stabilization and deactivation activities; performing surveillance and maintenance of these facilities; performing deactivation, decontamination, and demolition; and specified environmental remediation activities at PGDP.

The EMS is applicable to all activities performed by FRNP and its subcontractor organizations that have activities, products, or services with the potential to impact the air, water, land, natural resources, historic or cultural resources, vegetation, wildlife, or surrounding population. The EMS takes a life cycle approach by taking into account purchasing, subcontracting, recycling, excess material, and waste management.

2.4 ENVIRONMENTAL MANAGEMENT SYSTEM (4.4)

This EMS describes how FRNP implements, maintains, and continually improves the EMS in accordance with the requirements of the ISO 14001:2015 standard. The organizational context, needs, and expectations of interested parties are considered in establishing and maintaining the EMS, which can be observed in the commitments documented in the FRNP Environmental Policy Statement.

Implementing procedures, plans, and applicable documents are tabulated in the appendix, including the corresponding applicable subsections of this document.

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3. LEADERSHIP (5)

3.1 LEADERSHIP AND COMMITMENT (5.1)

FRNP leadership recognizes the benefits of implementing and complying with an EMS. FRNP leadership is committed to achieving the highest standards of environmental quality in the performance of FRNP work with zero tolerance for noncompliance providing a safe and healthy workplace for employees and contractors. Daily operations and activities must be performed in compliance with applicable federal and state laws, regulations, permits, contractually applicable DOE Orders, and other requirements.

FRNP leadership is committed to providing environmental information to employees to ensure compliance with environmental requirements and to protect human health and the environment. Important issues such as environmental hazards and mitigation, environmental regulatory compliance, and enforcement for noncompliance are addressed as part of the communications. Leadership has integrated environmental protection, environmental compliance, pollution prevention, sustainable goals, and continual improvement into work planning and execution throughout all work areas as a function of the ISMS to achieve a successful EMS.

FRNP management ensures resources are available to maintain an EMS and associated requirements as described in Section 5.3. Line/project management and their personnel effectively contribute to the EMS through environmental planning, hazard mitigation, and acting on lessons learned. FRNP leadership promotes continual improvement through work planning and applying EMS requirements to their organization's areas of responsibility.

3.2 ENVIRONMENTAL POLICY (5.2)

FRNP is committed to achieving the highest standards of environmental quality in the performance of FRNP work and providing a safe and healthy workplace for employees and contractors. Daily operations and activities must be performed in compliance with applicable federal and state laws, regulations, permits, contractually applicable DOE Orders, and other requirements.

The FRNP Environmental Policy (Figure 1) is implemented in the programs described in this document through environmental remediation and pollution prevention programs and by applying the principles of ISMS to integrate environmental protection, environmental regulatory compliance, pollution prevention, sustainability, investment recovery, and continual improvement in the daily planning and performance of FRNP work.

The FRNP Environmental Policy is communicated to employees through various methods including company-wide communications, EMS awareness training, publications, and company bulletin boards; it also is available internally via links on the FRNP intranet sites. The environmental policy is available electronically to the public at <https://fourriversnuclearpartnership.com/>.

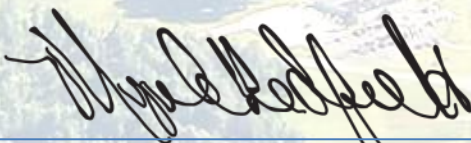
The procedures and processes for implementing the commitments in the Environmental Policy are described in this document and in the referenced documents in the appendix. Conformance with the EMS is evaluated through compliance monitoring and assessment programs described in this document.

Environmental Policy

It is the policy of Four Rivers Nuclear Partnership, LLC (FRNP) to conduct the Deactivation and Remediation of the Paducah Gaseous Diffusion Plant (PGDP) in a safe, compliant and cost-effective manner that protects human health and the environment. We achieve this by integrating environmental requirements and pollution prevention into our work planning and execution, and taking actions to minimize the environmental impacts of our operations. We establish and communicate environmental responsibilities, provide environmental training to our workforce, and implement controls to mitigate environmental hazards. These activities are conducted in accordance with our Environmental Management System (CP2-ES-0101). Through employee involvement and our management's commitment to environmental excellence, we will:

- Identify and comply with all applicable environmental laws and regulations.
- Use practicable means to minimize or eliminate the generation of new wastes without a path for disposition.
- Protect the natural, biological and cultural resources associated with the PGDP and surrounding DOE-owned property.
- Conserve natural resources by reusing and recycling materials, purchasing recycled materials, and using recyclable materials.
- Establish documented environmental objectives and targets and update them as necessary to reflect FRNP's needs, missions, and goals.
- Involve our stakeholders when weighing an environmental course of action.
- Monitor our impact on the environment and measure our performance, and communicate the results to our employees, subcontractors, and stakeholders.
- Continuously improve our environmental management system through self-assessment and corrective action process.
- Communicate this policy to all employees and subcontractors and make it available to the public and our stakeholders.

This policy applies to all persons working on behalf of FRNP at the PGDP. Every employee and subcontractor has ownership of this policy and is responsible to report environmental concerns to management. Managers shall promote environmental stewardship, take prompt action to address concerns and issues and have zero tolerance for noncompliance.



Myrna Redfield, Program Manager

3.3 ORGANIZATIONAL ROLES, RESPONSIBILITIES, AND AUTHORITIES (5.3)

Responsibilities for environmental performance begin at the highest level of the company, the Program Manager, and progress down the management chain to the individual employee. Key elements in defining responsibilities are the identification of management roles, responsibilities, and authorities. These elements are communicated to managers as part of their work performance expectations. They are used as tools to support deployment of programs, evaluate employee performance, and help align positions to the organizational alignment and strategic direction of the site.

FRNP's organizational structure is shown in the company organizational chart located on the FRNP intranet website. The FRNP Program Manager is assigned responsibility for preparing, implementing, and maintaining an EMS to the Environmental Services Director. The Environmental Services Director has authority over all funding within the Environmental Services organization, including work authorization for specific staff for implementation and maintenance of the EMS. The Environmental Services Director designates the leadership and overall responsibility for establishing and maintaining the EMS to the Environmental Stewardship Manager. The Environmental Stewardship manager designates the EMS management representative. The EMS management representative has project responsibility for implementation of the EMS and reports regularly to FRNP leadership on the performance of the EMS. Fiscal responsibility for implementation of the EMS resides with the Environmental Stewardship Manager.

The following list outlines environmental functions of key functional organizations and positions that are responsible for elements of the EMS.

Senior management is responsible for the following:

- Establishing and maintaining the FRNP Environmental Policy;
- Performing periodic management reviews of the EMS;
- Ensuring the establishment of environmental objectives and targets;
- Championing environmental excellence;
- Promoting the continuous improvement of the EMS and environmental performance;
- Promoting the concept of protection to the environmental, not merely compliance; and
- Ensuring accountability for environmental performance and implementation of the FRNP Environmental Policy.

Environmental Services is the primary environmental organization responsible for identifying and disseminating environmental requirements to line/project management for implementation, based on a defined scope of work. Environmental Services is responsible for the following:

- Establishing and maintaining the EMS;
- Tracking, evaluating, and commenting on proposed environmental regulations; interpreting existing and new regulations; determining applicability of environmental requirements; and developing and maintaining the company environmental program requirements documents;
- Developing FRNP environmental policy, guidance, procedures, and other implementing documents;

- Providing qualified technical resources to support implementation of environmental requirements by programs and facilities and ensure their consistent application;
- Coordinating activities to maintain the EMS;
- Preparing, reviewing, obtaining, and modifying environmental permits and reports;
- Identifying and interpreting facility-specific requirements from regulations and permits;
- Identifying environmental training requirements for personnel;
- Providing subject matter expertise to develop training to ensure environmental protection training meets facility and employee needs, conducting training as appropriate;
- Developing and making processes available to line/project management to help identify environmental hazards and mitigation requirements, necessary permits, and instructions during work planning;
- Reviewing and ensuring National Environmental Policy Act (NEPA) and National Historic Preservation Act documentation is prepared (or is covered) by an appropriate existing document;
- Overseeing environmental monitoring at PGDP;
- Serving as the company contact for (and negotiator with) DOE and regulatory agencies concerning environmental permits and compliance issues;
- Ensuring Sustainability goals are integrated into the EMS;
- Collecting Sustainability emissions data that are integrated into EMS;
- Facilitating management involvement with the EMS; and
- Coordinating the management review process.

EMS team members are responsible for helping the Environmental Services representative in the following:

- Identifying and evaluating significant environmental aspects; and
- Establishing and overseeing EMS Objectives and Targets.

Line/project management is responsible for the following:

- Implementing the environmental policy and EMS as they apply to the facility and work activities by complying with work packages, procedures, job hazards analysis, design documents, etc. and ensuring all employees under their supervision are trained adequately and qualified;
- Promoting the concept of protection to the environment, not merely compliance;
- Identifying environmental hazards during work planning and assisting in developing solutions that avoid or mitigate those hazards;
- Implementing approved controls;

- Conducting work in an environmentally responsible and compliant manner;
- Identifying noncompliant conditions, reporting them to Regulatory Compliance, and taking prompt actions to resolve them;
- Taking immediate action to mitigate impacts of any noncompliant conditions and stopping work in accordance with company policy if a threat to human health or the environment exists; and
- Ensuring that employees under their direction are adequately trained and qualified.

All FRNP employees and subcontractors are responsible for the following:

- Understanding and implementing the FRNP Environmental Policy as it applies to his/her work;
- Reporting environmental concerns and observations to management;
- Participating in the prevention of pollution;
- Participating actively in work planning efforts, as appropriate; and
- Performing work in accordance with established work procedures and processes.

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4. PLANNING (6)

4.1 ACTIONS TO ADDRESS RISKS AND OPPORTUNITIES (6.1)

4.1.1 General (6.1.1)

The FRNP EMS has been planned with consideration of the issues identified in Section 2.1 of this document, the needs and expectations of interested parties described in Section 2.2, and the EMS scope described in Section 2.3. The environmental cleanup actions are defined in regulatory documents, such as records of decision, under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Consent Orders with the regulatory agencies. Cleanup actions are driven based on risk to human health and the environment and are documented in decision documents. The actions driven by risk are then implemented through FRNP baseline documents.

The FRNP contract is based on a focused DOE business strategy to simplify facility transfer while maintaining safety, compliance, operability, and cost effectiveness. Life Cycle Baseline (LCB) and Annual Baseline plans define the scope of work to be performed consistent with budgetary, regulatory, risk prioritization, and other considerations. Budgets for each scope of work in the work breakdown structure include the necessary safety and environmental protection resources required to execute the work within a safe envelope. Contract milestones and baselines are developed and agreed to by FRNP and DOE, with input from regulators and stakeholders.

The FRNP budget and financial management system, which manages the life cycle and annual baseline plans, includes the following business management functions.

- Project work breakdown structure
- Scope definition
- Performance milestones
- Organizational breakdown structure
- Planning assumptions
- Cost estimate
- Budget
- Risk-based prioritization
- Critical path schedule logic
- Project schedule
- Charge code structure
- Cost accounting
- Funds management
- Baseline change control

These functions are integrated in the project LCB and are maintained under configuration management via a joint FRNP/DOE baseline change control process. The LCB provides the basis for establishing performance objectives.

After the project baseline is developed, the directors divide the work into activity teams that plan, schedule, and execute the work. Activity scopes of work are defined to ensure that activity interactions will not result in conditions that violate the safety envelope. Directors establish priorities, allocate resources, and schedule the work to be completed based on the agreed upon project baseline.

The work control system described in CP2-SM-1000, *Activity Level Work Planning and Control Program*, provides processes to convert the activity-level scope of work into a working-level document that is easy for the workforce to understand and use. For specific scopes, and when the project tasks for performing the work have been defined clearly, the activity team identifies the environmental, safety, and health-related hazards associated with the performance of tasks in accordance with CP3-HS-2004, *Job Hazard Analysis*. The Work Planning and Control Group is responsible for developing and maintaining the work control processes, which support all five ISMS core functions.

The following are examples of work control process elements.

- Operating procedures
- Training
- Work packages
- Work group coordination
- Review of lessons learned
- Pre-job and post-job briefings
- Work monitoring and oversight
- Daily oversight and management of subcontractors
- Employee involvement
- Readiness reviews

Workers are encouraged to provide feedback and suggestions for improvement to enhance safety, efficiency, and environmental protection. Worker involvement, feedback, and suggestions will be sought through participation in the following ways.

- Job planning walkdowns
- Pre/post-job briefings
- Development and review of Job Hazard Analyses (JHAs)
- Safety and toolbox meetings
- Accident/incident investigations

The effectiveness of the safety and compliance program is objectively measured, using metrics that provide data on the effectiveness of the critical elements of the programs. These metrics are trended and evaluated to identify areas that need improvement and to maximize the use of available resources in the prevention of environmental incidents.

FRNP subcontractors comply with the FRNP safety and compliance programs, which meet 10 *CFR* Part 851, *Worker Safety and Health Program*, while performing work on DOE owned or leased facilities; this is assured by contractually communicating requirements to subcontractors within FRNP procurement documents. Requirements are communicated to subcontractors in Procurement Attachment J-1, *Environmental, Health, and Safety Requirements for On-Site Work*. Subcontractors not working under FRNP's plans and procedures are required to submit their environmental plan to FRNP for review and approval. Subcontractors function within the FRNP ISMS structure and all other applicable federal and state standards per their scope of work.

As work activities are planned, opportunities for positive environmental impacts are included in the baseline documents. Regulatory Compliance evaluates these baseline documents and identifies applicable environmental requirements stemming from regulatory permits, regulations, and environmental planning documents to line/project management. These baseline documents are then used for implementation of requirements for the planning and execution of projects and programs that have environmental aspects. This

process also addresses the risks and opportunities associated with the defined work scope and environmental aspects.

4.1.2 Environmental Aspects (6.1.2)

Environmental aspects are elements of an organization's activities, products, or services that can interact with the environment. These interactions can be beneficial (e.g., energy reduction) or harmful (e.g., environmental contamination) and can be significant or incidental.

Based on DOE O 436.1, *Executive Orders*, and the D&R Contract, FRNP has evaluated its activities, products, and services (hereafter referred to as activities) to identify the environmental aspects of its work activities that have the potential to impact the environment and/or public, or result in a noncompliance with regulatory requirements. Significant environmental aspects are determined by EMS team personnel by evaluating the regulatory relevance, likelihood of occurrence, mission consequence, and environmental consequence of environmental aspects. The appendix identifies the primary documents related to environmental hazard identification and mitigation and the evaluation of FRNP work activities and environmental aspects.

The aspects consider the life cycle perspective for FRNP activities. For example, off-site laboratories and off-site treatment, storage and disposal facilities are assessed as part of the DOE consolidated auditing programs to ensure these off-site entities meet the substantive regulatory requirements. In addition, applicable NEPA documents evaluate potential environmental impacts from off-site waste transportation. The specific aspects are considered in the work planning process so that appropriate mitigation can be identified by using procedure CP3-ES-1035, *Environmental Management System Environmental Checklist*. As part of the work planning process, CP3-ES-1035-F01, *Environmental Management System Environmental Checklist*, is completed by the Environmental Services representative who considers the project against the environmental and significant environmental aspects that allow for adequate measures to be taken to mitigate environmental impacts.

FRNP activities are reviewed annually or when significant D&R work scope changes occur (whichever is more frequent) and environmental aspects are updated, as required. The updates include reviews by personnel familiar with each specific activity. New work activities are characteristically identified through evaluation during work planning and work requests. During evaluation of work activities, the environmental aspects of the work, whether they are for regulatory compliance or to protect the environment or cultural resources, are identified and controls are developed. Significant work activities are considered when establishing objectives and targets to address performance measures and program execution guidance.

FRNP environmental aspects are kept up to date and managed by the Environmental Stewardship Manager. The Environmental Stewardship Manager maintains the listing of FRNP work activities and their environmental aspects listed in CP3-ES-1035, *Environmental Management System Environmental Checklist*, Appendix B. The significant environmental aspects are communicated across FRNP through the internal EMS website and external FRNP website, as required.

4.1.3 Compliance Obligations (6.1.3)

A systematic approach has been developed to integrate compliance obligations into FRNP plans, procedures, and practices, as well as screen and assess impacts of new and/or changing requirements. FRNP has established, implemented, and maintains CP3-QA-3003, *Standards and Requirements Management*, which describes the FRNP process for the following:

- Identifying applicable laws and regulations;

- Identifying applicable DOE Directives;
- Identifying standards and requirements not included in contract List A or List B;
- Identifying and evaluating changes to regulations and laws (List A);
- Evaluating proposed changes to DOE Directives (List B);
- Evaluating other document (not List A or B) changes;
- Evaluating change to permits and regulatory agreements;
- Evaluating Lessons Learned and Operating Experience; and
- Evaluating project feedback.

FRNP activities are subject to contract requirements, laws, regulations, and other requirements. The Regulatory Compliance Manager is responsible for identifying the applicable sections of environmental requirements from legal requirements, DOE Directives, and other requirements that are summarized in the D&R contract DE-EM0004895. The contract also specifies program requirements and expectations, and consensus standards. The DOE directives that apply to D&R activities are summarized in List B (contract Section J). Proposed and newly promulgated regulations are also identified by the Regulatory Compliance Manager organization, distributed for review to the affected department(s), and tracked until applicability is determined. Applicable requirements are evaluated with line/project management for operational impact and training needs and subsequently are identified in program descriptions.

CP2-RA-0014, *Environmental Compliance and Protection Program Description at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, describes programmatic information for compliance with environmental regulations, permits, approvals, agreements, and CERCLA decision documents. It is a resource for line/project management to use in the identification of appropriate requirements for management and control of work activities in compliance with state and federal regulations/permits and formal agreements with regulatory authorities. Compliance flowdown matrices for key regulatory documents are compiled for tracking of compliance requirements across the EMS program and are on the FRNP electronic share drive. These flowdown matrices are controlled and updated at least triennially to ensure that compliance requirements for key regulatory documents are being met. The Deliverables Tracking Report is used to ensure triennial update based on findings from assessment PADU-18-IA-101371.

Program description documents and other requirement basis documents (e.g., permits, agreements) are accessible on the FRNP electronic share drive.

Requirement documents and instructions to implement the requirements are developed at one of the following three levels: program, project, or activity-specific. FRNP interprets applicable requirements and prepares company-wide program description documents that identify environmental requirements and provide instructions for activities that have broad applicability and require consistent application across the site.

Regulatory Compliance identifies applicable EMS requirements and environmental aspects during the course of reviewing applicable work packages, which are documented in CP3-ES-1035-F01, *Environmental Management System Environmental Checklist*. Regulatory Compliance also assists projects in the identification and interpretation of specific requirements from environmental permits and regulatory agreements, or other specific requirement-basis documents. Table 2 provides examples of legal and other requirements. These specific requirements are considered when establishing, implementing, maintaining, and continually improving the EMS program.

4.1.4 Planning Actions (6.1.4)

FRNP identifies, plans, and manages operations associated with its significant environmental aspects, compliance obligations, and risks and opportunities in order to ensure they are carried out under specified conditions. Written procedures stipulating operating criteria are developed, implemented, and maintained to ensure achievement of the intended outcomes of the EMS.

Table 2. Legal and Other Requirements Summary

References
<ul style="list-style-type: none"> • PGDP Deactivation, Section J, Attachment J-4, Requirement Sources and Implementing Documents • (List A) and List of Applicable DOE Directives (List B) • Kentucky Pollutant Discharge Elimination System (KPDES) Permits (KY0004049) • Hazardous Waste Facility Permit, Kentucky Division of Waste Management (KY8-890-008-982) • Solid Waste Landfill Permit, Kentucky Division of Waste Management (SW07300014, SW07300015, SW07300045) • PGDP Federal Facility Agreement, Kentucky Department for Environmental Protection, EPA, and DOE • Site Treatment Plan Agreed Order, Natural Resources and Environmental Protection Cabinet (now the Kentucky Energy and Environment Cabinet) and DOE • Clean Air Act (CAA) Title V Permit, Kentucky Division for Air Quality (V-14-012) • TSCA Compliance Agreement, May 30, 2017, Toxic Substances Control Act, as modified • Ohio River Water Withdrawal Permit • Waste Treatment Registration • Toxic Release Inventories

FRNP activities are subject to the NEPA, which requires environmental impacts of certain new activities to be evaluated and impacts and alternatives to be considered prior to conducting the activities. The FRNP NEPA implementation is described in CP3-EC-0002, *National Environmental Policy Act Implementation Procedure*. Project work scope is reviewed to determine whether sensitive resources or potential impacts to environmentally sensitive resources are present at the site, identifying potential impacts to those resources using the NEPA Checklist provided in CP3-EC-0002.

FRNP operations are completed in accordance with the conduct of operations process. Conduct of operations is implemented using thorough and clear procedures based on identified requirements. The process requires that procedures be followed, that adequate training be provided, and that roles and responsibilities be clearly defined. Operational controls include controls during planning to incorporate safety and compliance concerns and procedural controls used during implementation. The conduct of operations process provides for employee involvement and communication of environmental information in work planning and operational control. This process also includes conduct of maintenance to ensure that facility systems remain functional and perform as intended. This process also includes deactivation,

decontamination, and decommissioning activities. The principles of conduct of operations, conduct of maintenance, and ISMS provide the foundation for the company's safety culture and integrate environmental protection and compliance, pollution prevention, site sustainability, and continual improvement into work control processes. The FRNP operational control program (including inspection, acceptance testing, and configuration control) meets the requirements of CP2-QA-1000, *Quality Assurance Program Description* (QAPD).

Regulatory Compliance reviews work planning documents and identifies environmental aspects and appropriate environmental controls for FRNP line/project management. FRNP line/project management is responsible for evaluating environmental hazards during daily work planning and using established resources that identify environmental aspects (e.g., environmental permits, waste management areas, emission sources, etc.) that allow for significant aspects to be communicated to employees completing the work.

The work control system described in CP2-SM-1000, *Activity Level Work Planning and Control Program*, provides processes to convert the activity-level scope of work into a working-level document that is easy for the workforce to understand and use. For specific scopes of work, the project team identifies the environmental, safety, and health-related hazards associated with the performance of tasks in accordance with CP3-HS-2004, *Job Hazard Analysis*. The Work Planning and Control Group is responsible for developing and maintaining the work control processes, which support all five ISMS core functions.

4.2 ENVIRONMENTAL OBJECTIVES AND PLANNING TO ACHIEVE THEM (6.2)

4.2.1 Environmental Objectives (6.2.1)

Objectives and targets describe the goals for improvement of environmental performance. FRNP establishes environmental objectives and targets consistent with commitments of the FRNP Environmental Policy and takes into account FRNPs significant environmental aspects and compliance requirements; DOE's Sustainability Goals; the PGDP Site Sustainability Goals identified in the Site Sustainability Plan; DOE's goals for FRNP operations; risks/opportunities; and the views of stakeholders. Specific objectives and targets within applicable Executive Orders and through DOE O 436.1, including those documented in each fiscal year (FY) PGDP Site Sustainability Plan; CP2-ES-0100, *Four Rivers Nuclear Partnership, LLC, Sustainability Plan at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*; and CP2-ES-0104, the *Energy Efficiency Plan for the Deactivation and Remediation Project, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, are considered when developing FRNP environmental objectives and targets. Financial, operational, and business requirements; technological options; and views of interested parties are also considered when establishing environmental objectives.

The Environmental Services organization reviews the list of environmental objectives and targets to ensure coverage for significant environmental aspects and recommends potential additional objectives and targets, as appropriate, to senior management for approval. As such, this process provides consideration of site planning processes, including the establishment of the relevant company plans and visions, such as detailed work plans and through FRNP improvement initiatives. By considering these key planning processes in their entirety and including FRNP senior management in the process, relevant environmental objectives and targets are established and approved by senior management.

FRNP specific environmental objectives and targets align with the sitewide PGDP objectives and targets but include FRNP objectives and targets beyond sitewide sustainability goals. The FRNP specific environmental objectives and targets are generally developed and documented in the first quarter of the FY

and are published on the FRNP intranet. Environmental objectives are tracked by metrics, where practicable, and updated monthly, quarterly, or annually, as appropriate. At a minimum, objectives are reviewed annually by FRNP senior management as part of the Executive Review Board and are revised, as appropriate. Changes to objectives, including modification, adjustments, postponements, cancellation, or attainment are reviewed and approved by FRNP senior management and updated by the EMS management representative.

EMS metrics allow DOE to plan for reporting FY progress, performance, and successes on the EMS. These EMS performance metrics are rolled up by DOE and used in the EMS Scorecard, which is developed and published annually by the Federal Environmental Executive. The metrics include environmental aspects, sustainable practices, objectives and targets, environmental training, operational controls, contract and agreements, evaluation of compliance with regulatory requirements, and management review. An important part of the EMS metrics is the EMS relationship to sustainable practices, as required by DOE O 436.1.

4.2.2 Planning Actions to Achieve Environmental Objectives (6.2.2)

Senior management and the EMS team develop objectives and targets based on their areas of responsibility and goals. Senior management implements actions to achieve compliance through work planning and scheduling. Due dates, responsibilities, and resources are identified as part of the development of FRNP environmental objectives and targets. The target is defined by what is measured and monitored in support of the objective.

The EMS team meets quarterly to discuss targets, objectives, and performance of objectives that are tracked and reported to senior management through internal communications. Minutes of the meetings are kept on the internal FRNP servers. Achievement of objectives is tracked with appropriate metrics or performance indicators that are tracked monthly, quarterly, or annually, based on data availability or the nature of the metric.

In addition, through FRNP work control processes, FRNP maintains a process for ensuring that environmental considerations are given to new and modified work activities. Environmental Compliance reviews occur as part of this process. Specific programs and procedures that relate to work activities with the potential to impact the environment significantly are identified in environmental aspects. Examples of documents used for achieving the EMS and sustainability objectives and targets are listed in the appendix.

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5. SUPPORT (7)

The following sections identify elements of the EMS that describe its implementation and proper operation. These elements include the company organization, structure of the EMS, key responsibilities as they apply to the EMS, training of personnel commensurate with their responsibilities in implementing the EMS, development and implementation of controls, FRNP communication of relevant information to the workforce and the public, document control system, and emergency response processes. Additional details of the FRNP structure and responsibility, training, processes to develop and implement controls, and processes to perform work at activity levels are described in the documents referenced in each of the following sections.

5.1 RESOURCES (7.1)

The FRNP organization structure is detailed in the FRNP organizational charts, which are available on the FRNP intranet. To implement and complete the contract, FRNP has established an organizational structure around major program groups. ISMS and EMS are woven throughout the FRNP management structure.

The Environmental Services Directorate is responsible for coordinating the actions required to develop, maintain, and continuously improve the EMS. Line/project management and support organizations are responsible for implementing environmental requirements and environmental protection practices during the course of conducting business.

The resources determined to be needed for establishment, implementation, maintenance, and continual improvement of the FRNP EMS are described in Section 3.3.

5.2 COMPETENCE (7.2)

The FRNP Training Program implements the applicable DOE O 426.2 requirements, as described in CP2-TR-0102, *Four Rivers Nuclear Partnership, LLC Paducah Deactivation and Remediation Project Training Implementation Matrix*, and meets the requirements of the FRNP QAPD.

The FRNP Training Program uses a graded approach to ensure employees and subcontractors are trained and qualified commensurate with their responsibilities. Training is provided to ensure FRNP employees and subcontractors performing FRNP work possess the knowledge and skills necessary to perform their jobs in a safe, effective, and environmentally responsible manner; comply with federal, state, and local environmental laws, regulations, permits, company policies and requirements; increase their awareness of environmental protection practices and pollution prevention/waste minimization opportunities; and to take appropriate actions in the event of an emergency. The FRNP procedure CP3-TR-0102, *Conduct of Training*, describes the administrative training procedures used to ensure personnel working for FRNP have the requisite knowledge and skills required to perform their assigned duties.

Employees who perform activities that have the potential to significantly impact the environment receive job-specific training to ensure they are competent to perform their assigned duties. CP2-TR-0100, *Training Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, ensures personnel maintain appropriate education, training or experience, and associated records are retained. Training and qualification requirements for individual positions are developed on the basis of hazards involved, complexity of the operation, and the risk associated with activities being performed. Job titles(s) of personnel are identified on the Position Assignment Form, which details the training and qualification

requirements for each position. This required training is tracked and documented in the FRNP Local Education Administration Requirements Network.

Training programs consist of a combination of settings and methods based on the learning objectives for the needed skills and knowledge. Training methods include instructor-led training, computer-based training, structured self-study activities, on-the-job training, and required reading. Training settings include classroom instruction, on-the-job training, and/or computer based training. Use of different training programs, methods, and settings are further examples of the graded approach.

5.3 AWARENESS (7.3)

All FRNP new-hire personnel receive initial EMS Awareness Training. The EMS awareness training makes employees aware of the importance of the environmental policy and the EMS in performing work. This training addresses the following topics.

- Why we need an EMS for FRNP
- The EMS for FRNP
- The Environmental Policy and how it applies to each FRNP employee
- FRNP Significant Environmental Aspects
- EMS Targets and Objectives

As part of continuing training, EMS is included in the General Employee Training (GET), Consolidated Annual Training (CAT), and EMS Annual Refresher F29553 computer-based training modules. GET, CAT, and F29553 provide refreshers at least annually to remind personnel of the importance of the EMS in performing work relative to the impacts the work creates to the environment.

5.4 COMMUNICATION (7.4 AND 7.4.1)

FRNP is committed to communicating environmental information to its employees and the public, recognizing input from them, providing clear and concise information for daily communications at the working level, and fully disclosing environmental issues to the applicable regulatory agencies. The EMS Policy Statement is communicated to all employees through this EMS, official company bulletin boards, and FRNP intranet. The Paducah Environmental Information Center provides residents of Western Kentucky (and the surrounding area) a convenient way to participate in environmental restoration program decisions and to learn more about the environmental work at the PGDP.

Public Affairs is responsible for developing and distributing external communications, which educate citizens and serve to enhance community engagement between DOE Paducah Site and general public. Public Affairs develops and deploys internal communication plans, campaigns, strategies, and tactics that promote the health and safety of employees and the environment while also furthering the mission of the organization. In addition, Public Affairs also develops and implements FRNP's Community Commitment Plan, which provides support to the region through regional purchasing, educational outreach and charitable giving.

5.4.1 Internal Communication (7.4.2)

FRNP uses a number of tools to internally communicate environmental information that spans all levels and functions. Internal communication examples include the following:

- Plan-of-the-day meetings, employee safety team meetings, staff meetings, and similar routine interfaces;
- E-mail messages to all employees issued by FRNP management;
- Interoffice memorandums, policies, and guidance from FRNP senior management;
- Posters, brochures, booklets, presentations, displays, and other visual communications issued through Public Affairs;
- Security awareness bulletins;
- FRNP intranet; and
- FRNP site newsletter.

At the site-area, program, and activity levels, environmental information is communicated routinely during the following forums:

- Pre-job walkdowns and work control documents;
- Plan-of-the-day meetings, employee safety team/council meetings, staff meetings, and similar routine interfaces;
- Communications from safety and compliance personnel with the site area, program, or activity; and
- Interactions of the Environmental Services personnel with the site-area management and workforce.

Employees may report environmental issues, concerns, and suggestions for improvement in environmental areas through their management chain, Employee Concerns Program, or by entering concerns and issues into the issues management system. These programs are described in CP1-HR-0131, *Employee Concerns*, and CP3-QA-3001, *Issues Management*. Employees also may provide suggestions for improvement in environmental areas or other process and program improvements.

5.4.2 External Communication (7.4.3)

The company implements comprehensive communication programs to reach key stakeholder groups (e.g., the public, news media, regulatory agencies, and other government agencies). Each of these programs may include communications concerning the EMS and the significant environmental aspects of FRNP work activities.

FRNP manages external communications with stakeholders, the public, and the media, including conducting public meetings, press conferences, and issuing news releases in conjunction with DOE. Communications are prepared and approved based on established guidance in management directives and company procedures. Environmental Services personnel have primary responsibility for communications with environmental regulatory agencies using established protocols developed with DOE Portsmouth/Paducah Project Office (PPPO).

Records of written communications are maintained according to the FRNP records management process. FRNP also provides information to interested parties through the Freedom of Information Act process. Requests for information are received from DOE/PPPO and are processed according to written procedures

included in CP3-RD-0010, *Records Management Process*. Each request is documented, including who the requestor is and what action was taken.

Environmental Services maintains a process of self-disclosure to enhance open communication of environmental issues with environmental regulatory agencies regarding FRNP activities. This reporting process facilitates timely identification of environmentally noncompliant conditions and encourages open discussion. As required, environmental regulatory issued self-disclosure reports are transmitted to applicable environmental regulatory agencies.

An Annual Site Environmental Report is prepared in accordance with DOE O 231.1B, *Environment, Safety, and Health Reporting*, and DOE O 458.1, *Radiation Protection of the Public and the Environment*. This report provides a quantitative assessment of the impact on the environment from activities at PGDP.

In addition to external communication processes used to respond to and document inquiries, FRNP maintains programs that openly provide information to interested parties and consider input concerning its work activities and their environmental aspects.

The public is notified and involved in NEPA, CERCLA, Clean Water Act (CWA), CAA, Resource Conservation and Recovery Act (RCRA), environmental permitting and clean-up decisions, and certain NEPA analyses through public comment processes. The processes involve preparing and distributing newsletters and fact sheets, scheduling and holding meetings and public hearings, and documenting meeting results. Notices of upcoming meetings and events are distributed to target audiences via an extensive mailing list of federal, state, and local government officials and members of the general public. Documents such as decision documents, public administrative record files, area news clippings, and public meeting summaries are available for review in the DOE Paducah Environmental Information Center. The Environmental Information Center is provided to allow public access to all documents used to make decisions on remedial actions being taken at PGDP.

5.5 DOCUMENTED INFORMATION (7.5)

5.5.1 General (7.5.1)

This document describes the core elements of the FRNP EMS and their interaction and relationship to each other. Each section has been prepared to address the corresponding element of ISO 14001 as shown in Table 1. Related documents that implement the EMS core elements are identified in the appendix. FRNP implements a comprehensive Document Management Control System to provide consistent control over the creation, revision, management, and disposition of its documents. Most company-wide documents are accessed through the FRNP electronic shared network drive. All related EMS documentation is available on the FRNP intranet, internet, or shared electronic network drives.

5.5.2 Creating and Updating (7.5.2)

The FRNP process for developing, revising, changing, approving, deleting, and controlling performance documents is detailed in CP3-OP-0002, *Developing and Maintaining Performance Documents*. The process for documents developed for the purpose of gaining regulatory approval of planned work activities (even if they define a plan of implementation) is detailed in CP3-EM-1015, *Correspondence and Document Preparation, Review, Approval, Reproduction, and Distribution*.

FRNP ensures the most current versions of documents are available and are legible, dated, and readily identifiable. All environmental documents are prepared, reviewed, revised, and issued in accordance

with company standards and procedures. The current revision of a controlled document must be used when work is performed per the document. Company-wide documents are maintained by the Records and Document Administration.

5.5.3 Control of Documented Information (7.5.3)

FRNP prevents the unintended use of obsolete documents and applies suitable identification to the documents if they are retained for any purpose. The FRNP administration controls for the receipt, identification, control, distribution, use, and maintenance of controlled documents, which is described in CP3-OP-0025, *Document Control Process*.

FRNP controls and distributes all controlled documents with the exception of those documents that are controlled and distributed by the originating organization (e.g., engineering documents, engineering drawings, and work control task inspections and exceptions).

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6. OPERATION (8)

6.1 OPERATIONAL PLANNING AND CONTROL (8.1)

FRNP operations are completed in accordance with the conduct of operations process. The FRNP conduct of operations program is described in CP2-OP-1100, *Conduct of Operations Program at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*. Conduct of operations is implemented using thorough and clear procedures based on identified requirements. The process requires that procedures be followed, adequate training is provided, and roles and responsibilities are clearly defined. Operational controls include controls during planning to incorporate safety and compliance concerns and procedural controls to be used during implementation. The conduct of operations process provides for employee involvement and communication of environmental information in work planning and operational control. This process also includes conduct of maintenance to ensure that facility systems remain functional and perform as intended and when needed. This process also includes deactivation, decontamination, and decommissioning activities. The principles of conduct of operations, conduct of maintenance, and ISMS provide the foundation for the company safety culture and integrate environmental protection and compliance, pollution prevention, site sustainability, and continual improvement into work control processes. The FRNP operational control program (including inspection, acceptance testing, and configuration control) meets the requirements of the QAPD.

The operational control of subcontracted activities, products, or services is provided through procurement documents. Subcontractors develop their work planning documents, which are approved by FRNP.

The company has evaluated its current work activities, using the company's environmental policy, to identify activities that could result in significant environmental impacts (hereafter referred to as significant work activities). Significant work activities are identified in CP3-ES-1035, *Environmental Management System Environmental Checklist*, Appendix B. Operational controls for these work activities are institutionalized through training and the work control process. New work activities are evaluated against the same criteria to determine if they have the potential to impact the environment significantly.

Each work activity with the potential to impact the environment significantly is planned to control the specific hazards if controls are not already in place. These can include procedures or other controlled documents, control equipment, engineering design documents used during planning, and other controls. Performance documents to address specific hazards generally are integrated into operating procedures.

Significant work activities may be specific to a location (e.g., a specific building), may occur at more than one location, or may be considered sitewide activities.

6.2 EMERGENCY PREPAREDNESS AND RESPONSE (8.2)

FRNP provides emergency management operations to protect DOE facilities and assets. This includes emergency preparedness; development of emergency management programs; and all related planning, exercises, training, qualification, drills, evaluation, reporting, file maintenance, and linkage with other programs in the complex and industry.

FRNP implements emergency preparedness and demonstrates a responsible Emergency Management program for the protection of DOE facilities at the PGDP site. The graded approach is used across the range of all facilities and emergencies that can occur. The Emergency Preparedness Program is based on hazards surveys and planning, which are periodically updated. Emergency Action Plans (EAPs) have been

developed for facilities based upon current and projected activities in the facility. EAPs provide personnel with specific directions to follow in the event of an emergency.

Primary implementing procedures and other documents related to the emergency preparedness plan are referenced in the appendix.

CP2-EP-1000, *Paducah Site Emergency Management Plan for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, describes the processes FRNP uses to identify and assess potential emergency situations, including those that can impact the environment.

7. PERFORMANCE EVALUATION (9)

7.1 MONITORING, MEASUREMENT, ANALYSIS AND EVALUATION (9.1)

Company monitoring and measurement activities include programs and processes to do the following:

- Monitor conformance with operational controls;
- Evaluate performance of operations through environmental monitoring;
- Evaluate program performance and compliance;
- Track conformance with environmental objectives and targets;
- Assess compliance with environmental laws, regulations, and other requirements (such as permits and company requirements); and
- Ensure the integrity of data through quality and calibration programs.

Programs and processes monitor and measure performance of FRNP work activities and include processes that address FRNP work activities that have the potential to significantly impact the environment. General information concerning these programs and processes is discussed below.

7.1.1 General (9.1.1)

Monitoring and measurement of conformance with operational controls involve inspections, monitoring of process operations, effluent monitoring, and similar activities that measure potential impact to the environment.

FRNP implements a comprehensive monitoring program to measure emissions and effluents, including those to ambient air, surface and groundwater, soils, and biota. The Environmental Monitoring Plan (CP2-ES-0006) is updated annually and documents the rationale, sampling frequency, parameters, and analytical methods for environmental monitoring activities and provides information on site characteristics, environmental pathways, dose assessment methodologies, and quality assurance management. The environmental monitoring programs include environmental data collection for routine compliance monitoring and environmental surveillance of FRNP activities. General categories of environmental monitoring performed include the following:

- Compliance monitoring programs—liquid effluent, air, surface runoff, and groundwater to comply with the CERCLA, RCRA, CWA, CAA, permits, negotiated agreements with the Commonwealth of Kentucky, and DOE O 436.1;
- Environmental surveillance programs—air, surface water runoff, soil, and direct radiation to comply with DOE O 458.1; and
- Operational monitoring—process air emissions monitoring and process liquid effluent monitoring.

Monitoring results are summarized in the Paducah Annual Site Environmental Report, Federal Facility Agreement Semiannual Report, KPDES monitoring reports, solid waste landfill compliance reports; Kentucky Division of Waste Management permitted hazardous waste management facility groundwater

reports, and Kentucky Division of Air Quality Title V air permit reports. Air emissions for FRNP are reported in the Annual Radionuclide National Emission Standards for Hazardous Air Pollutants Report and the Paducah Annual Site Environmental Report.

FRNP calibrates and maintains physical monitoring and measurement systems. Company environmental monitoring and measurement equipment is maintained and calibrated in accordance with manufacturer or regulatory specifications.

The results of monitoring and measurement of significant work activities are assessed to identify areas for improvement and to identify conditions that could impact conformance with environmental objectives and targets. Although the assessment will be performed by others, the organization responsible for the activity is responsible to have each significant work activity assessed. The results of these assessments are documented, and corrective action is taken as described in Section 7.1.2. The FRNP performance measurement program meets the requirements of the QAPD.

General implementing procedures and other documents related to monitoring operational controls, calibration, monitoring results, and assessments are referenced in the appendix.

7.1.2 Evaluation of Compliance (9.1.2)

FRNP implements a comprehensive compliance monitoring program that includes independent assessments and self-assessments to evaluate compliance with laws, regulations, and other requirements. Monitoring compliance with environmental laws and regulations is accomplished through a combination of formal independent assessments, management assessments, self-assessments, inspections, and performance observations (CP3-OP-0500, *Performance Observations*). The organizations identified in Section 4.1.3 are responsible for effective implementation of legal or other requirements and perform periodic assessments to evaluate compliance with the listed requirements. These assessments are documented and corrective action is taken, as described in Section 7.2. The primary procedures used to evaluate compliance are listed in the appendix.

7.2 INTERNAL AUDIT (9.2.1 AND 9.2.2)

FRNP process/program owners are responsible for assessing implementation of their processes and programs through the assessment program. The assessment program establishes the processes and responsibilities for planning, conducting, and reporting the results of internal assessments. The program also requires that independent assessments be performed by assessors who are independent but knowledgeable of the activity being evaluated. Established qualification requirements are documented in CP3-QA-1008, *Assessor Qualification, Training, and Certification*. The FRNP assessment program is an element of the QAPD (CP2-QA-3000).

The evaluation of compliance with the EMS elements is integrated into many of these assessments to provide EMS management with frequent and diverse feedback. The EMS management supports these ongoing assessment efforts and provides technical input regarding EMS criteria and assessment objectives, as appropriate.

The primary implementing procedures related to internal assessments are referenced in the appendix.

7.3 MANAGEMENT REVIEW (9.3)

The FRNP Program Manager annually reviews the adequacy and effectiveness of the FRNP EMS. Input for the review includes items such as the following:

- Results of internal assessment and evaluations of compliance with legal requirements;
- Results of recent EMS assessments;
- Communication from external stakeholders including environmental regulators;
- Environmental performance of the organization, including but not limited to, individual incidents (e.g., spill reports) and statistics for the prior year, when appropriate;
- Extent to which objectives and targets have been met;
- Status of corrective and preventive actions;
- Follow-up actions from previous management reviews;
- Changing circumstances, including developments in legal and other requirements related to its environmental aspects, including but not limited to, review and update of the Environmental Policy in the event of a major mission change, contractor change, or other significant event;
- New activities with the potential to significantly impact the environment, significant compliance concerns, and significant stakeholder interests;
- Adequacy of resources;
- Recommendations for improvement; and
- Other relevant EMS topics, such as integration of the EMS within the ISMS and issues and concerns, as applicable.

The results of the review are documented and provided to the FRNP Executive Review Board. Any issues to correct identified deficiencies or improve the effectiveness of the program are managed in accordance with Section 8.2.

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8. IMPROVEMENT (10)

8.1 GENERAL (10.1)

FRNP has established a process that is designed to identify issues and opportunities for improvement, report issues to the responsible managers and authorities, and ensure that corrective and preventive actions are established and effectively implemented.

8.2 NONCONFORMITY AND CORRECTIVE ACTION (10.2)

The FRNP issues management program is an integrated company process that enables management to understand and prioritize the correction of issues based on risk significance. These issues may be area specific, sitewide, or programmatic in nature and may be identified by external assessments or by internal independent, management, or self-assessments, or other means. The program's purpose is to ensure that problems (issues) adverse to the environment, safety, health, operations, or quality are documented and resolved in an effective and timely manner. Items, services, and processes that do not meet established requirements are controlled and corrected according to the importance of the problem and the work affected. The program also ensures adequate corrective actions are implemented to prevent recurrence of undesirable events or conditions through appropriate causal analysis, corrective action, verification, and follow-up. The FRNP issues management program (CP2-QA-3000, *Contractor Performance Assurance Program Description at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*) is an element of the QAPD.

Trending and operating experiences/lessons learned are two methods used by FRNP that focus on preventing recurrence of safety or reliability events. Issues are binned based on the type of problem and its cause. Periodically, the number of problems in each bin is reviewed and action is initiated if a particular type of problem is identified as recurring. During the development of a work control document, the DOE lessons learned database is checked to determine if previous problems that have occurred at Paducah or other DOE facilities need to be considered to prevent the problem from occurring. New information placed into the DOE lessons learned and OPEXShare databases are evaluated and action(s) taken, when appropriate, to minimize the potential of the issue occurring at Paducah.

The primary implementing procedures and other documents related to the issues management program are listed in the appendix.

8.3 CONTINUAL IMPROVEMENT (10.3)

Workers are encouraged to provide feedback and suggestions for improvement to enhance safety, efficiency, and environmental protection. Worker involvement, feedback, and suggestions will be sought through participation in the following ways.

- Job planning walkdowns
- Pre/post-job briefings
- Development and review of JHAs
- Safety and toolbox meetings
- Accident/incident investigations

The effectiveness of the safety and compliance programs is objectively measured, using metrics that provide data on the effectiveness of critical elements of the programs. These metrics are trended and the

trends evaluated to identify areas that need improvement and to maximize the use of available resources in the prevention of environmental incidents.

APPENDIX

**TABLE OF IMPLEMENTING PROCEDURES AND
APPLICABLE DOCUMENTS**

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Table A.1. Table of Implementing Plans and Procedures

Table of Implementing Plans/Procedures and Applicable Sections Reference Number	Reference Title	CP2-ES-0101 Applicable Section(s)
CP1-HR-0131	<i>Employee Concerns</i>	5.4.1
CP2-EC-0002	<i>NESHAP Management Plan</i>	4.1.2
CP2-EP-1000	<i>Paducah Site Emergency Management Program</i>	4.1.1, 6.2
CP2-ES-0005	<i>Pollution Prevention/Waste Minimization Plan for the U.S. Department of Energy Paducah Site</i>	4.2.1, 4.2.2, 6.2.1
CP2-ES-0006	<i>Environmental Monitoring Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky</i>	7.1, 7.1.1
CP2-ES-0061	<i>Site-Specific Health and Safety Plan for the Environmental Monitoring Project</i>	4.2.1, 4.2.2
CP2-ES-0063	<i>Environmental Monitoring Data Management Implementation Plan at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky</i>	7.1
CP2-ES-0100	<i>Four Rivers Nuclear Partnership, LLC, Sustainability Plan at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky</i>	4.2.1
CP2-ES-0101	<i>Environmental Management System for the Deactivation and Remediation Project, Paducah Gaseous Diffusion Plant, Paducah, Kentucky</i>	1, 4.2.1
CP2-ES-0103	<i>Environmental Radiation Protection Program</i>	4.2.1, 4.2.2
CP2-ES-0104	<i>Energy Efficiency Plan for the Deactivation and Remediation Project, Paducah Gaseous Diffusion Plant, Paducah, Kentucky</i>	4.2.1, 4.2.2
CP2-HS-1000	<i>Integrated Safety Management System Description for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky</i>	1., 4.2.1, 4.2.2
CP2-OP-1100	<i>Conduct of Operations Program</i>	4.2, 6.1, 7.1
CP2-QA-1000	<i>Quality Assurance Program Description for the Paducah Gaseous Diffusion Plant</i>	2.2, 4.1.4, 5.5.2, 7.1.1, 8.2
CP2-QA-3000	<i>Contractor Assurance Program Description for the Paducah Gaseous Diffusion Plant</i>	7.1.2, 7.2, 8.2, 8.3
CP2-RA-0014	<i>Environmental Compliance and Protection Program Description</i>	2.2, 4.1.2, 4.1.3, 4.2
CP2-SM-1000	<i>Activity Level Work Planning and Control Program</i>	4.1.1, 4.2.2, 4.1.4, 6.1
CP2-TR-0100	<i>Training Program</i>	5.2
CP2-TR-0102	<i>Training Implementation Matrix</i>	5.2, 5.3
CP2-WM-0001	<i>Four Rivers Nuclear Partnership, LLC, Paducah Deactivation and Remediation Project Waste Management Plan</i>	4.2.1, 4.2.2, 7.1
CP3-CP-0001	<i>Requisition for Purchase</i>	6.1
CP3-ES-0003	<i>Environmental Incident Reporting</i>	4.1.2, 6.2
CP3-ES-0007	<i>Approval to Discharge Air or Water</i>	4.1.2

Table A.1. Table of Implementing Plans and Procedure (Continued)

Table of Implementing Plans/Procedures and Applicable Sections Reference Number	Reference Title	CP2-ES-0101 Applicable Section(s)
CP3-EC-0002	<i>National Environmental Policy Act Implementing Procedure</i>	4.1.4
CP3-ES-1035	<i>Environmental Management System Environmental Checklist</i>	6.2.1
CP3-RA-3002	<i>SWMU AOC Reporting under the RCRA Hazardous Waste Management Facility Permit Conditions</i>	4.1.2
CP3-EM-1015	<i>Correspondence and Document Preparation, Review, Approval, Reproduction, and Distribution</i>	5.5.2
CP3-EN-0203	<i>Design Change Process</i>	4.1.2
CP3-EN-0207	<i>Facility Change Process</i>	4.1.2
CP3-EP-1000	<i>Personnel Accountability</i>	6.2
CP3-EP-1002	<i>Bomb Threat Emergency</i>	6.2
CP3-EP-1004	<i>Maintenance of Emergency Facilities and Equipment</i>	6.2
CP3-EP-1007	<i>Oil and Hazardous Material Spills and Releases</i>	6.2
CP3-EP-1009	<i>Severe Weather Emergencies</i>	6.2
CP3-EP-1012	<i>Off-Site Emergency Response Assistance</i>	6.2
CP3-EP-1017	<i>Emergency Response Drills and Exercises</i>	6.2
CP3-EP-1018	<i>Off-Site Shipping Incident Technical Assistance</i>	6.2
CP3-EP-1026	<i>Computer Generation of NARAC Plume Models for Emergency Response</i>	6.2
CP3-ES-0009	<i>Use of NetDMR for Electronic Submittal under Kentucky Pollutant Discharge Elimination Permit</i>	4.2.1, 4.2.2
CP3-HS-2004	<i>Job Hazard Analysis</i>	4.1.1, 4.1.4, 4.2, 6.1
CP3-OP-0002	<i>Developing and Maintaining Performance Documents</i>	4.2.1, 4.2.2, 5.5.2, 5.5.3
CP3-OP-0025	<i>Document Control Process</i>	5.5.2, 5.5.3
CP3-OP-0303	<i>Shift Routines and Operating Practices</i>	7.1
CP3-OP-0500	<i>Performance Observations</i>	9.1.2
CP3-OP-1118	<i>Facility Management Program</i>	7.1
CP3-OP-3003	<i>Standards and Requirements Management</i>	4.1.2, 4.1.3
CP3-QA-1003	<i>Management and Self-Assessments</i>	7.1.1, 7.1.2, 7.1.3, 7.2, 7.3
CP3-QA-1004	<i>Independent Assessment Program</i>	7.1.1, 7.1.2, 7.2, 7.3
CP3-QA-1008	<i>Assessor Qualification, Training, and Certification</i>	7.2
CP3-QA-2002	<i>Surveillance</i>	7.1.1, 7.1.2, 7.2
CP3-QA-2003	<i>Quality Inspection</i>	7.1.2, 7.2
CP3-QA-2005	<i>Nonconformance Control</i>	8.1
CP3-QA-3001	<i>Issues Management</i>	5.4.1, 8.1
CP3-QA-3002	<i>Operating Experience/Lessons Learned</i>	8.1
CP3-QA-3003	<i>Standards and Requirement Management</i>	6.1.3

Table A.1. Table of Implementing Plans and Procedure (Continued)

Table of Implementing Plans/Procedures and Applicable Sections Reference Number	Reference Title	CP2-ES-0101 Applicable Section(s)
CP3-QA-3004	<i>Evaluation and Reporting of Potential PAAA/WSH Noncompliances</i>	8.1
CP3-QA-3005	<i>Occurrence Reporting</i>	8.1
CP3-QA-3007	<i>Issue Investigation and Causal Analysis</i>	8.1
CP3-RD-0010	<i>Records Management Process</i>	5.4.2, 5.5.2, 5.5.3
CP3-SM-0017	<i>Measurement and Test Equipment</i>	7.1.1
CP3-TR-0102	<i>Conduct of Training</i>	5.2
CP4-FP-2036	<i>Emergency Response Practice</i>	6.2
FRNP-RPT-0022	<i>Paducah Site Annual Site Environmental Report for Calendar Year 2017</i>	7.1
PAD-PROJ-0018	<i>Groundwater Protection Plan for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky</i>	4.2.1, 4.2.2
PAD-REG-1005	<i>Spill Prevention, Control, and Countermeasure Plan for the U.S. Department of Energy Paducah Site, McCracken County, Kentucky</i>	4.2.1, 4.2.2
PAD-REG-1006	<i>Best Management Practices Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky</i>	4.2.1, 4.2.2
F29553CBT	FRNP Environmental Management System	5.2, 5.3
021221	General Employee Training	5.2, 5.3
028307	Consolidated Annual Training	5.2, 5.3

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