

## FESHM 8010: ENVIRONMENTAL MANAGEMENT SYSTEM

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| E. Mieland               | <ul style="list-style-type: none"><li>Streamlined narratives describing historical process involved in the development of the EMS.</li><li>Applicable standards updated.</li><li>All sections under Program Descriptions have been updated.</li><li>Removed methodology for conducting process assessments.</li><li>Included current ISO 14001 registration certificate.</li></ul> | November 2013 |
| P. Kesich                | Included additional responsibilities for D/S heads and EOs, clarification of Work Smart Review, additional information on document control.  | April 2008    |
| P. Kesich                | Modifications required for the EMS to conform to the ISO14001 revised standard in preparation of certification.  | April 2007    |

## Table of Contents

|      |  |    |
|------|--|----|
| 1.0  | INTRODUCTION .....   | 3  |
| 2.0  | DEFINITIONS .....  | 3  |
| 3.0  | RESPONSIBILITIES .....   | 4  |
| 4.0  | PROGRAM DESCRIPTION .....                                      | 6  |
| 4.1  | Context of the Organization .....                              | 6  |
| 4.2  | Planning and Aspects Identification.....                       | 7  |
| 4.3  | Legal and Other Requirements.....                              | 9  |
| 4.4  | Objectives, Goals and Targets.....                             | 10 |
| 4.5  | Resources, Roles, Responsibility and Authority .....           | 11 |
| 4.6  | Competence, Training and Awareness.....                        | 11 |
| 4.7  | Communication .....  | 12 |
| 4.8  | Documentation and Document Control .....                       | 13 |
| 4.9  | Operational Control.....                                       | 13 |
| 4.10 | Emergency Response and Preparedness.....                       | 13 |
| 4.11 | Monitoring and Measurement .....                               | 14 |
| 4.12 | Evaluation of Compliance .....                                 | 14 |
| 4.13 | Nonconformity, Corrective Action and Preventative Action ..... | 15 |
| 4.14 | Control of Records.....  | 16 |
| 4.15 | Internal Audit.....  | 16 |
| 4.16 | Management Review .....  | 16 |
| 5.0  | RELEVANT STANDARDS.....  | 17 |
|      | Appendix A.....  | 18 |
|      | Appendix B .....   | 20 |

## 1.0 INTRODUCTION

Fermilab's Environmental Management System (EMS) is an integrated system of managing activities, training and communication to achieve environmental objectives. The EMS describes the Laboratory's program for execution and evaluation of programs for protecting the environment, assuring compliance with applicable environmental standards and avoiding adverse environmental impacts through an effort of continual improvement. Fermilab's EMS applies to all Fermilab activities and operations occurring at the Fermilab site and all leased spaces, including the Long-Baseline Neutrino Facility (LBNF) far site located at the Sanford Underground Research Facility (SURF) in Lead, South Dakota. The [FESHM 8000](#) chapters describe certain key program elements under this management system.

Fermilab's policy for environmental protection is described in the ESH- [Environmental Policy](#). The policy identifies the major goals under which the Laboratory's efforts are directed to meet the EMS program objective.

Fermilab's EMS is compliant to ISO 14001. The EMS first became compliant to the standard in 2007. Compliance is assured through conducting internal assessments and audits that are performed by a third-party organization.

## 2.0 DEFINITIONS

**Activities, Products, and Services** – A catchall phrase that captures all the elements at Fermilab that can interact with the environment

**Continual Improvement** –Recurring process of enhancing the environmental management system to achieve improvements in overall environmental performance consistent with the Laboratory environmental policy.

**Environmental Aspect** – Any element of the Laboratory's activities, products, or services that can interact with the environment. This is analogous to the concept of "hazard" in safety, although an aspect under EMS can also be beneficial. The term 'significant' is applied to those aspects that have or can have a significant impact.

**Environmental Impact** – Any change (completely or partially) to the environment, whether adverse or beneficial, resulting from the Laboratory's environmental aspects.

**Environmental Objective** – An overall environmental goal that the Laboratory seeks to achieve, and which is quantified where practicable

**Environmental Performance** – Measurable results of the Laboratory's EMS, related to the control of environmental aspects, based on the environmental policy, objectives, and targets.

**Environmental Policy** – A statement by the Laboratory of its overall intentions and direction related to environmental performance as formally expressed by top management. It provides a framework for action and for the setting of environmental objectives and targets.

**Environmental Target** – A detailed performance requirement, quantified where practicable, and applicable to the Laboratory, which arises from the environmental objectives and needs to be set and met to achieve those objectives.

**Hazard Analysis (HA)** - The process by which hazards associated with a job or project are identified, analyzed, mitigated, and documented. The HA document shall describe each phase of work, identify all hazards associated with each phase, and the work processes to be employed to eliminate or reduce those hazards. “Hazard” in this context shall be deemed to include potential negative environmental impacts. As the project develops, new or unanticipated hazards encountered with each project phase or change in specific operations within that phase are addressed and added to the HA. By project completion, the HA has evolved into a specific and detailed job hazard analysis of the entire project.

**Operational Controls** – Procedures that help implement the environmental policy, objectives and targets.

**Senior Management** – Managers having the authority to make decisions for the facility

**Significant Environmental Aspect** – An environmental aspect that has or can have a significant environmental impact

### 3.0 RESPONSIBILITIES

The ESH Section, Environmental Management System Coordinator will ensure that the EMS is established, implemented and maintained in accordance with the requirements of the applicable standards.

#### **Chief Safety Officer (CSO):**

- Ensures that the Laboratory’s ESH program is effectively implemented.
- Documents the Environmental Policy.
- Reviews the EMS periodically with an eye toward continual improvement and to verify that it is operating as intended.
- Designates the Environmental Management System Coordinator.
- Ensures the effective management of procedures and other system documents.

#### **Environmental Protection Working Group (EPG):**

- Provide consultation for all Division/Section (D/S) activities and projects to identify potential environmental impacts; evaluate compliance with applicable requirements; and when possible, mitigate impacts.
- Coordinate the management of environmental permit conditions under direct D/S control.

- Develop and maintain a list of environmental aspects for Laboratory activities and projects.
- Provide support for management review of the EMS.
- Monitor key activities and track performance.
- Conduct periodic assessments of compliance with legal and other requirements.
- Maintain and manage EMS related documents and records of EMS performance.
- Maintain a process for identifying and providing access to relevant laws and regulations, as well as other requirements to which the Laboratory adheres.
- Prepare and implement environmental monitoring and surveillance programs.
- Prepare and submit to regulatory agencies environmental permit applications.
- Serve as the primary point of contact between the Laboratory and regulatory agencies regarding environmental questions or concerns.

**Divisions/Sections/Projects:**

- Ensure that their organization adheres to the Laboratory's EMS and that the environmental consequences of their operations are recognized, understood and addressed.
- Support the efforts of employees and/or Division Safety Officers (DSOs) in determining significant aspects for projects and activities originating from within the D/S/P.
- Ensure that all subordinate documents developed by their D/S/P are consistent with and in support of the Fermilab's EMS.
- Ensure that environmental aspects are incorporated into the work planning process.
- Coordinate with ESH regarding correspondence with the Fermi Site Office (FSO) and outside agencies pertaining to environmental permitting, reporting, and certifications. (See Appendix B for detailed responsibilities).

**Division Safety Officer (DSOs)**

- Advise and inform their respective organizations on matters related to the Laboratory's EMS.
- Interpret FESHM and assist D/S/P personnel with environmental programs, policies and requirements.
- Assist with the determination of significant environmental aspects as they relate to activities occurring in the D/S/P.
- Maintain and provide information, when necessary, to meet environmental reporting requirements for the laboratory.
- Serve as a liaison, when necessary, for environmental audits and inspections.
- Assist D/S employees with environmental review activities (including NEPA).

**The Sustainability Management Team (SMT):**

- Oversee Laboratory progress toward meeting Fermilab's sustainability goals which also support compliance with DOE Order 436.1, "Departmental Sustainability"
- Advise Laboratory management and inform the Laboratory community regarding sustainability goals and achievements.
- Develop Goal Owners for sustainability goals.

- Seek innovative means to increase sustainability of mission-specific operations.
- Provide input to the annual update to the Fermilab Site Sustainability Plan.

### **The Ecological Land Management Committee (ELM)**

- Contribute to the Fermilab Campus Master Plan 10-year vision for site stewardship.
- Maintain the ELM 3-year action plan and advise the Laboratory on related goals and actions.
- Assist FESS in developing and implementing land stewardship priorities and progress assessments.
- Provide ecological expertise during the review of projects and actions subjected to an environmental review (via the Environmental Review Form) under NEPA.

### **All Employees:**

- Recognize and understand the environmental consequences of their current and planned job duties.
- Identify, plan and manage operations and activities in alignment with Fermilab's policy for environmental protection.
- Communicate with their D/S/P DSO and the EPG regarding any proposed or changing activities that may result in an impact to one or more environmental aspects.
- Ensure that environmental aspects are considered and included in any work planning documentation associated with their work activities.

## **4.0 PROGRAM DESCRIPTION**

### EMS Elements

The core components of Fermilab's EMS are documented in this chapter through descriptions of the principal elements along with their associated sub-elements.

#### 4.1 Context of the Organization

This management system considers both internal and external factors that affect the ability of Fermilab to achieve the intended outcome of the EMS. The internal factors include the following:

- Scientific mission and strategic direction of Fermilab
- Culture and work life balance
- Requirements of FESHM
- Environmental plans and procedures
- Applicable environmental permits

Additionally, external issues have also been evaluated in the development of the EMS including interactions with the supporting communities that surround the site and the relationship with Fermilab Research Alliance and external regulators.

## 4.2 Planning and Aspects Identification

### Identification of facility activities and listing of environmental aspects

An environmental aspects registry has been developed to facilitate an understanding of Laboratory activities that impact the environment. The aspect registry was initially developed in parallel with the genesis of the EMS program. Environmental aspects were identified using as a basis the environmental regulatory drivers governing Laboratory operations and were further expanded to include other areas in which Laboratory processes interact with the environment. Aspects are reviewed annually to ensure relevance. Using these criteria, significant aspects have been identified to include Releases, Materials, Energy and Site Management. Each of these significant aspects is further subdivided at the line level into categories and general activities. Laboratory sustainability goals factor substantially into actionable aspects where change is desired.

### Impact analysis

Standardized programs and processes that identify environmental aspects used to analyze the impacts of projects and experiments can be found in [FESHM](#). These include:

- National Environmental Policy Act (NEPA) Review Policy (Chapter 8060),
- Work Permit and Notification (Chapter 2020),
- Work Planning and Hazard Analysis (Chapter 2060),
- ES&H Program for Construction (Chapter 7010),
- Subcontractor Safety – Other than Construction (Chapter 7020),
- Excavation (Chapter 7030)
- Rules for Demolition (Chapter 7050)
- Operational Readiness Clearance (Chapter 2005)
- Planning and Review of Accelerator Facilities and Their Operations (Chapter 2010)

These programs and processes overlap somewhat depending on the size and scope of the purchase, project or experiment. However, they serve to address the impacts on the environment that may occur as a result of moving forward with a proposed purchase, project or experiment.

The NEPA review process is the primary mechanism that ensures that specific impacts of government proposed projects are reviewed and the environmental information provided is useful to decision-makers and the public. Fermilab uses an Environmental Review Form (ERF) to capture initial information on the potential impacts from proposed actions. Whether the project is reviewed as categorical exclusion or requires a higher level of review such as an environmental assessment, the process is designed to inform broader assessments of environmental significance under the regulations model for DOE.

The Work Permit and Notification process is another communication mechanism for relating potential environmental aspects. This communication is within the Laboratory's internal structure and is meant as a work planning tool to provide timely notification of a proposed activity that will have an impact beyond a particular organizational group and/or the specific system or area affected by the work. It identifies the specific permits, training, and organizations that need to be notified before work can commence. It also acts as a reminder and checklist to identify hazards that are controlled by requirements specific to Fermilab and documents the authorization to commence work by the landlord D/S.

The Work Planning and Hazard Analysis process is an integral part of the work planning process and is a requirement of anyone performing work at Fermilab, including employees (temporary or full-time), visitors and subcontractors. It is a mechanism for identifying and mitigating the hazards in any work activity and assures that the hazards and environmental impacts are defined, understood, and anticipated, whether they are inherent to or resulting from the activity.

The ES&H Program for Construction and related FESHM 7000 chapters are used to identify new environmental aspects of construction projects and other subcontracted work. The goal being continued improvement in design and maintenance through communication and evaluation during all project development phases, including design, procurement, construction and post construction. The requirements outlined in the Excavation Chapter (a.k.a. JULIE) include a Fermilab internal process that must be followed when a phase of work requires an excavation. It provides the guidance regarding the actions that must be followed to obtain an excavation permit prior to any activity that requires penetration of the soil.

The Rules for Demolition guide the employee through the process of managing demolition related activities. These activities can range from dismantling a building, to remodeling an area within a building, to removing an experimental structure. This includes requirements to review hazards and determine ES&H expectations and points to FESHM 8022, Recycling, Waste Minimization, and Pollution Prevention and FESHM 8060, National Environmental Policy Review Policy for additional guidance on addressing environmental aspects that apply to the work.

The Operational Readiness Clearance (ORC) process is a formal ES&H review of equipment or systems that have the potential to cause harm to personnel, property, or the environment. The review is performed by subject matter experts prior to commencement of operation. The ORC process is applicable to experiments, tests, research and development (R&D) and, at the discretion of Division/Section management, other activities. The ORC process is an additional check to ensure compliance with the FESHM.

The Planning and Review of Accelerator Facilities and Their Operations process is a formal review procedure that assures that accelerator facilities and their operations comply with Fermilab ES&H standards. It not only applies to new projects but also to existing projects when significant modifications occur. The process is documented through the Safety Assessment



Documentation process. The level of review and documentation is determined by the Director's Office through the ES&H Section.

The Comment and Compliance Review process (Construction Design Review) is another mechanism used to identify new environmental aspects of construction projects. The goal being continued improvement in design and maintenance through communication and evaluation during all project development phases, including design, procurement, construction and post construction. The process is managed by FESS.

### 4.3 Legal and Other Requirements

#### Regulatory

The Fermi Research Alliance, LLC (FRA) contract identifies the relevant ES&H laws, regulations, and standards to which Fermilab must adhere. FESHM Chapter 1070 describes the procedure for how Fermilab's work activities, the hazards associated with the work and the standards and regulations are reviewed on an annual basis and revised as needed. The procedure also allows for the review and addition of new standards and regulations promulgated by DOE or other agencies/organizations. The standards set is part of the Fermilab/FRA contract with DOE. Relationships in environment, safety and health matters among FRA, the U.S. Department of Energy (DOE) and other regulatory agencies external to DOE are addressed in FESHM 1010.

#### Other Elements

The Laboratory recognizes that there are programmatic elements that are integral to managing environmental impacts. Elements that are covered by specific plans include but are not limited to the following:

- Waste minimization and pollution prevention
- Cultural resource protection
- Groundwater protection
- Surface water protection from oil spills
- Air pollution management and ozone depleting substances management
- Sustainability
- Natural resource and land management
- Strategies for stewardship and monitoring that covers the monitoring of environmental media and biota

Waste minimization/Pollution Prevention (FESHM Chapter 8022) is an integral part of the Laboratory's operating philosophy. Each D/S is encouraged to set their own goals based on the Laboratory's goals. Progress toward meeting waste reduction goals are reported to DOE.

The process for preservation and management of cultural resources is documented in the [Cultural Resource Management Plan](#) pursuant to the National Historic Preservation Act and State of Illinois legislation. This plan was prepared to fulfill the responsibility of DOE under the National Historic Preservation Act. Fermilab maintains a website titled, "[History and Archives](#)

[Project.](#)” This site offers guided access into the laboratory’s historical records for the research user. It contains permanently-valued government records that are preserved and available for reference and research by both Fermilab and the general public.

The [Groundwater Protection Management Plan](#) integrates groundwater protection requirements among site programs and activities to ensure that federal, state, county, local and other requirements are incorporated in a consistent, effective manner. The plan is an effort to eliminate or minimize adverse impacts of the Laboratory’s operations on groundwater, determine the extent and understand the impact of past activities, remediate adversely affected areas, and monitor current operations.

Fermilab ensures that its actions conform to Illinois’ State Implementation Plan to attain and maintain national ambient air quality standards through conformance with Title 35 Subpart B of the Illinois Administrative Code. The procedure for this process is outlined in FESHM chapter 8080, Air Emission Control Program.

The management of ozone depleting substances is defined in FESHM chapter 8081, Refrigeration Management. The Laboratory is committed to ensuring that its operations significantly reduce the use of ozone-depleting substances where practicable through recovery, recycling and conservation programs and minimizing the emissions of these substances to the atmosphere with a goal of ultimately phasing out their use. This will also be accomplished through the maximization of the use of alternatives. The FESS Operations Group has the responsibility for the Laboratory’s overall compliance with the refrigerant regulations associated with the EPA’s Clean Air Act. The refrigeration management strategy includes a site Refrigeration Manager to oversee the program, use of an electronic refrigerant management program database, and communication of responsibilities to building managers.

Fermilab is committed to pursuing sustainable operational practices. To that end the Laboratory annually updates its Site Sustainability Plan. The plan addresses specific goals set by DOE as required by Executive Order 13693, targeting greenhouse gas reduction and improving the environmental footprint of federal facilities. The plan is annually submitted to the DOE Office of Science.

The stewardship of the site’s natural resources is overseen by the Ecological Land Management Committee (ELM). Its purpose is to recommend land management practices based on sound ecological principles that enhance the natural resources of the Laboratory. Plans for managing the available areas of the Laboratory site are documented in the ELM Committee’s [Land Management Plan](#).

#### 4.4 Objectives, Goals and Targets

Fermilab is committed to advancing DOE’s sustainability goals as described in its Strategic Sustainability Performance Plan. In response, the Laboratory has developed a Site Sustainability Plan that documents Fermilab’s contribution towards advancing specific, measurable goals.

These goals further align with Fermilab’s environmental aspects. The primary emphasis of the plan is for the reduction of greenhouse gas emissions related to site operations. The plan also addresses goals that include operating buildings more efficiently, reducing water consumption, reduced fossil fuel consumption for vehicle fleets, sustainable acquisition (buying green), and improving energy consumption from computers and data centers. Additionally, specific objectives and goals related to managing the Laboratory’s diverse ecological resources are formalized in Fermilab’s Ecological Land Management Plan.

#### 4.5 Resources, Roles, Responsibility and Authority

Successful implementation of an EMS requires clear articulation of environmental responsibilities across the various elements of the Laboratory. Specific roles and responsibilities have been described previously (see Responsibilities section). Further descriptions of ES&H roles and responsibilities are outlined in FESHM Chapter 1010. They are also articulated to service subcontractors through the contractual Exhibit A, FESHM Chapter 7020, and time and material and fixed-price contracts in FESHM Chapter 7010.

#### 4.6 Competence, Training and Awareness

Preparing Laboratory workers to perform their activities in a safe manner with regard for the environment is a vital part of the research effort (see FESHM 2070). All employees and contractors working at Fermilab receive general training that includes environmental and emergency response information. Individual Training Needs Assessments (ITNAs) are generated for all employees. The ITNA assists in identifying the compliance-related training required for each employee.

Three training modules are used to provide EMS training that is commensurate with an employee’s responsibilities. The training includes the following modules with their learning objective:

4.5.1. General Awareness/New Employee Training – provide the general worker with an increased awareness of their potential workplace impacts on the environment and the motivation to “re-think” how they work.

4.5.2. Construction Coordinator/Task Manager Training – provide individuals who are the first line of contact with subcontractors that perform work on site with an increased knowledge of compliance and waste minimization/pollution prevention concepts. This module goes more in-depth to include compliance requirements and specific pathways for contamination of the environment.

4.5.3. EMS Team Training – provide individuals with specific training on the development and implementation of an EMS and the special requirements of D/S representatives.

In addition, subcontractors are informed of their requirements under the system through Subcontractor Orientation training. Part of this training involves presentation of information contained on the Subcontractor Information Sheet. Other elements are presented as part of their integration within other ES&H concerns.

Individuals within the ES&H Section, Environmental Protection Group with responsibilities for regulatory oversight are encouraged to engage in ongoing continual education.

#### 4.7 Communication

Mechanisms for communication, both within the Laboratory (horizontally and vertically) and with externally interested parties, are vital for the EMS to work efficiently and effectively. A major goal of communication, both internal and external to the Laboratory is the recognition of environmental issues so that they can be addressed effectively. With regulations, it is vital that accurate information on the requirements contained within a regulation or permit obtained as a result of a regulation be transmitted to all potentially affected or interested parties. Interested parties external to the Laboratory must have avenues by which they can access information that tells them what type of activities exist at the Laboratory, to what extent those activities affect the environment and what programs are in place within the Laboratory to reduce or mitigate those affects.

The Office of Communication is the key organization dealing with matters related to public inquiry. External communications occur via multiple mechanisms that include dedicated websites covering particular topics. An example is the [Tritium at Fermilab](#) web site which provides information on ongoing tritium management. For specific topics where public opinion is of value, the Laboratory may seek input from the Community Advisory Board, with membership reflective of Fermilab's neighbors and surrounding community.

Internal communication of the environmental requirements and programs at the Laboratory occurs via line management with guidance from the ES&H Section. Specific documents outline the components of the EMS. The major documents detailing information directed towards the entire employee population are the Environmental Policy outlined in [Fermilab's Policies](#), and the policies and programs described in FESHM (see especially chapter 1010 – Laboratory Environment, Safety and Health Policy and Its Implementation). Other minor documents include reports and memos that circulate within smaller functional groups. General information intended for the entire Laboratory population is transmitted via [Fermilab at Work – News at Work](#), an electronic publication containing news, announcements, and other articles that is updated as news occurs. Verbal exchanges of ideas are made possible through committee meetings, training, and *ad hoc* conversations.

Annually the Laboratory publishes the [Environmental Report to the Director](#). This document details the Environmental Protection Program, which establishes the policies and procedures to ensure compliance with regulatory requirements imposed by Federal, State and local agencies and with DOE orders, as well as providing for the measurement and interpretation of the impact

of Laboratory operations on the public and the environment via the Environmental Monitoring Program. The Laboratory also encourages and engages in face-to-face meetings between specified representatives and community groups.

#### 4.8 Documentation and Document Control

Fermilab has established and maintains information to describe the EMS. In general, Fermilab documents specifying policies, prescribing processes, or establishing design specifications and requirements are controlled per the Document Management & Control Policy.

Conformance with document control elements is the responsibility of the individual D/S or line organization in accordance with FESHM Chapter 1051. Any organization with documents under the EMS will have processes in place to ensure that documents meet the requirements of document control.

#### 4.9 Operational Control

Operational controls are essentially procedures and processes for ensuring that operations and activities are carried out under specified conditions or performance standards and do not violate regulatory compliance limits. Controls are typically managed by the respective D/S operational owner. Controls include specific operating criteria or specifications in the case of equipment maintenance, pollution control equipment, and production processes which must be managed within specified parameters to achieve desired optimization. One of the goals of the Environmental Protection Group's assessment program is to evaluate many of these operational controls on a one-time or routine basis.

#### 4.10 Emergency Response and Preparedness

The identification of potential emergency situations and potential accidents that can have an impact(s) on the environment and appropriate mechanisms of response are outlined in FESHM Chapter 2040. This chapter provides a general description of Fermilab's emergency preparedness program which is detailed in the Comprehensive Emergency Management Plan (CEMP), and local emergency procedures. The purpose of the CEMP is to establish and document overall policy and assign and describe the organizational structure, interfaces, resources, decision-making processes and actions for the Emergency Management System. It provides the framework for comprehensive and integrated planning, preparedness and response to serious abnormal incidents involving the environment.

When warranted, Fermilab has developed specific plans to address environmental emergencies. Fermilab maintains a Spill Prevention Control and Countermeasures plan to address risks from oil spills as required by law. The plan is maintained by the ES&H EPG and includes an active database of oil sources. Emergency response to oil spills is integrated into the CEMP. Additionally, the EPG maintains an Environmental Protection Emergency Notification and Reporting Plan to provide notification and reporting guidance in situations where there is the

potential for an environmental impact from the release of a hazardous chemical, hazardous substance, oil, or regulated waste.

#### 4.11 Monitoring and Measurement

Effective monitoring and measuring provides essential mechanisms for evaluating environmental performance, analyzing root causes of problems, assessing compliance with legal requirements, identifying areas requiring corrective action, and improving performance and increasing efficiency. Pollution prevention and other strategic opportunities are identified more readily when current and reliable data is available.

All key characteristics of operations that can have a significant environmental impact must have a procedure(s) established, implemented and maintained, when appropriate, for monitoring and measuring. The procedure(s) must include documenting information to monitor performance, applicable operational controls and conformity with the objectives and targets.

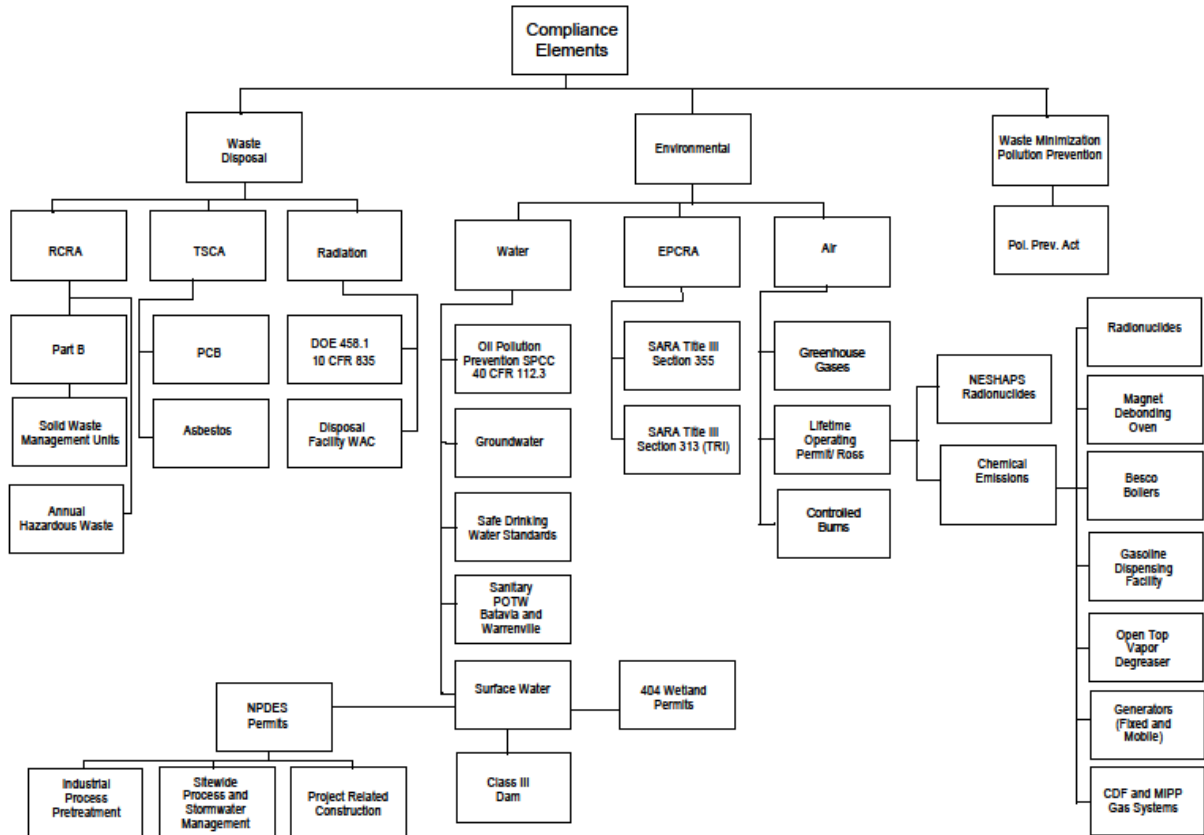
Fermilab's environmental monitoring program consists of compliance driven monitoring and environmental surveillance. The goal is to assist Laboratory management in decision-making by providing data relevant to impacts that Fermilab operations have on the surrounding environment. Compliance monitoring is conducted at specific locations in accordance with permit requirements, while environmental surveillance is done on the potential pathways to receptors and is conducted at various locations. Data is collected for reporting purposes or whenever it is necessary or useful in conducting the business of the Laboratory.

Fermilab maintains a metric dashboard known as FermiDash. This dashboard is used to monitor the health and performance of the organization including the EMS. Metrics presented in support of the EMS include data on environmental reviews, permit compliance, and air emission activity.

#### 4.12 Evaluation of Compliance

Compliance elements of Fermilab's EMS are listed in the table below. The Fermilab Self-Assessment Program Plan sets forth the Laboratory expectations for line self-assessment and independent oversight of the ES&H program. Quality Assurance Manual Chapter [12080](#), Fermilab ESH&Q Self-Assessment and Inspection Program, also covers ES&H appraisals and audits, both internal and external, which are conducted to assess and document compliance with ES&H policies, permits and regulatory requirements. The chapter covers appraisals and audits at four different levels: DOE Headquarters Reviews; DOE/FSO Group Reviews; Inspections by External Regulatory Agencies; and the Fermilab Self-Assessment Program. The Environmental Protection Group has established an environmental protection specific assessment program within the Fermilab ES&H Self-Assessment and Inspection Program intended to ensure regulatory compliance and evaluate the effectiveness of operational controls.

## Fermilab Environmental Management System



### 4.13 Nonconformity, Corrective Action and Preventative Action

The Laboratory uses the following mechanisms to address system deficiencies.

#### Significant and Reportable Occurrences

Laboratory management and DOE must be appropriately notified of events which adversely affect the environment. The process for reporting appropriate events is described in FESHM Chapter 3010, Significant and Reportable Occurrences. This process also outlines how to categorize events as well as investigate occurrence and generate and submit reports.

#### Preventative Action

Preventative action is incorporated into the corrective action program through the processes outlined in the following referenced FESHM chapters (3010, 3020 and 3030). These mechanisms provide information that can be used in evaluation of occurrences and projection of potential preventative actions for future projects. FESHM Chapter 3030, Noncompliance Tracking System, specifically points out in the Responsibilities section that the Price Anderson



Amendments Act (PAAA) Coordinator conduct quarterly review of reported incidents, inspection reports, and program reviews to identify programmatic trends.

#### 4.14 Control of Records

The value of records management lies in the ability to demonstrate that the EMS is being implemented as designed. While records have value internally, they also provide evidence of EMS implementation to external parties. The EMS would be difficult to operate in a consistent manner without accurate records. For records management, the process begins with a determination of what records need to be kept, how they will be kept and for how long. Records are a form of documentation and are dealt within the same mechanism as document control (refer to number 7 above).

#### 4.15 Internal Audit

The Fermilab Self-Assessment Program Plan sets forth the Laboratory expectations for line self-assessment and independent oversight of the ESH&Q program. Quality Assurance Manual chapter [12080](#), Fermilab ESH&Q Self-Assessment Program and Inspection Program, also covers ES&H appraisals and audits, both internal and external, which are conducted to assess and document compliance with ES&H policies. The chapter covers appraisals and audits at four different levels, DOE Headquarters Reviews, DOE/FSO Group Reviews, Inspections by External Regulatory Agencies and the Fermilab Self-Assessment Program. The Environmental Protection Group has established an environmental protection specific assessment program within the Fermilab ESH&Q Self-Assessment and Inspection Program intended to ensure regulatory compliance and evaluate the effectiveness of operational controls.

iTrack is a database that is used at Fermilab to support the Issues Management System. In particular, iTrack plays a key role in monitoring the status of Fermilab's self-assessment program. Quality Assurance Manual chapter [12030](#) contains the Lab's policy regarding its use as well as associated implementation procedures.

Negative events resulting in an impact on any of the environmental aspects are managed through the Human Performance Improvements (HPI) investigation process as necessary. HPI is a tool that is used to assess unwanted outcomes and promote organizational improvements. This process is referenced in FESHM 3020.

#### 4.16 Management Review

Management must periodically step back and evaluate the performance of the EMS. These reviews offer an opportunity to ensure its continuing suitability, adequacy and to keep the EMS efficient and cost effective. Management review occurs via multiple mechanisms. These include regular status reports to the Fermilab ESH Committee (FESHCom), the Annual Environmental Report to the Director, the Site Sustainability Plan and discussions in various management meetings, including the those of the Assurance Council. The Assurance Council



meetings are working meetings where key performance indicators are reviewed, results are discussed, actions are monitored, enterprise risks are identified, and assurance processes are evaluated for effectiveness.

FESHCom has the responsibility of reviewing the ESH policies and programs of the Laboratory, including the EMS. This is accomplished primarily by the actions of its subcommittees. FESHCom is chaired by the Director and is composed of members that include ex-officio members, the Chief Safety Officer, the chairperson of each subcommittee or working group, and a representative of each D/S. The EPG presents to FESHCom biannually and discusses the accomplishments, risks, and status of the Environmental Protection Program. Additionally, elements of the EMS are often addressed in presentations from the Tritium Task Force and Ecological Land Management Committee. Outputs from these reviews are documented in the FESHCom meeting minutes, including any relevant action items.

Higher level reviews of ES&H activities are also performed by Fermilab's governing board. FRA has established an ES&H Subcommittee of the Board of Directors. This committee meets each quarter with representatives of the Directorate and the Chief Safety Officer and his/her staff to review current ES&H performance. The results of the subcommittee's deliberations are reported to the full assembly of the Board.

## 5.0 RELEVANT STANDARDS

Executive Order 13693, Planning for Federal Sustainability in the Next Decade

ISO 14001:2015, Environmental Management Systems – Requirements with guidance for use

DOE Order 436.1, Departmental Sustainability

## Appendix A

### Initial Letter of Declaration from Facility Manager to Office of Science

DEC 02 2005

Raymond L. Orbach, Director  
Office of Science  
SC-1 FORS

SUBJECT: ENVIRONMENTAL MANAGEMENT SYSTEMS DECLARATION FOR  
FERMI NATIONAL ACCELERATOR LABORATORY

Pursuant to Department of Energy (DOE) Order 450.1, Section 5.d. (1), I am reporting to you that I have determined that the Fermi National Accelerator Laboratory (Fermilab) fully conforms to the Environmental Management System (EMS) requirements of DOE Order 450.1. I base my determination upon the results of a second-party assessment, which I requested as a component of my implementation of DOE Policy 450.5, Line Environment, Safety and Health Oversight.

The second-party assessment of the Fermilab EMS used the self-declaration procedure described in Attachment 2 of draft DOE Guidance 450.1-1A. The EMS Assessment Plan contains the specific lines of inquiry used to evaluate the adequacy of the EMS and its implementation. The Fermilab EMS Assessment Final Report includes the EMS Assessment Plan as an attachment. Using the second-party assessment, I confirmed that Fermilab has updated its approved description of its Integrated Safety Management System (ISMS) to include the EMS requirements of DOE Order 450.1.

I also confirmed that Fermilab has the appropriate ES&H performance objectives, performance measures and commitments incorporated into its ISMS/EMS and includes the appropriate environmental elements based on the environmental risks and impacts of the activities of the site and established Departmental pollution prevention/energy efficiency goals.

In addition, the Fermi Site Office (FSO) uses the following mechanisms to ensure that the requirements of DOE Order 450.1 are being (and will continue to be) implemented: FSO participation in the periodic review and comment on future revisions of Fermilab Environment, Safety and Health (ES&H) Manual Chapter 8010, "Environmental Management System," dated May 2005; FSO participation in the annual review, comment and approval of revisions to the "Fermilab Integrated ES&H Management Plan", which incorporates Fermilab's EMS; FSO participation in an annual EMS management review through the Fermilab Tripartite self-assessment program; and FSO participation in monthly Environmental Protection Subcommittee meetings and other environmental operational awareness activities.

Raymond L. Orbach

-2-

DEC 02 2005

In summary, I have reviewed Fermilab's

- environmental policy,
- approved ISM system description, including EMS,
- current list of significant aspects, and
- current measurable goals, objectives and targets,

and I have determined that Fermilab has implemented an EMS that meets the requirements of DOE Order 450.1.

The Fermi Site Office maintains documentation supporting this determination, including the Fermilab EMS Assessment Final Report and EMS Assessment Plan. The documentation is available for review by the Office of Science and the Office of Environment, Safety and Health.

*Original Signed by*  
*Dr. Joanna M. Livengood*  
*Site Manager*

Joanna M. Livengood  
Site Manager

cc: John Spitaleri Shaw, EH-1, FORS

bc: D. Erbschloe, SC-3, FORS  
A. Edelman, SC-31.1, GTN  
J. DiMatteo, CH  
J. Cooper, FSO  
S. Arnold, FSO

## Appendix B

### D/S Specific Environmental Permit-related Responsibilities

| Permit/ Certification/ Report   | Agency  | Division/<br>Section<br>Owner | Owner Responsibilities   | Correspondence  |
|---|---|-------------------------------|--|---|
| NPDES CUB Pre-treatment   | IEPA  | FESS                          | Conduct sampling and quarterly compositing of samples.   | ES&H prepares permit renewal applications and quarterly reports to DOE cc: FESS and COO. DOE transmits to IEPA.   |
| NPDES Storm Water for Construction ILR10<br>(Permit number varies by project)   | IEPA  | FESS                          | Prepare SWPPP and Notice of Intent (NOI)<br><br>Prepare Notice of Termination (NOT)  | Follow FESS Engineering Procedure, "SWPPP & NOI Submittals" with cc: ES&H   |
| Wetland Permits<br>(Permit number varies by project)  | U.S. Army Corps of Engineers  | FESS                          | Prepare a joint application for submittal to USACOE, IDNR, IEPA  | Preparation of the application is normally done by a sub-contracted A/E firm and is sent to DOE (via COO) with a cc: to ES&H. DOE-FSO transmits to USACOE cc: to ES&H & FESS                              |
| Domestic or Sanitary Water Permit-to-Construct<br>(Permit number varies by project)   | IEPA  | FESS                          | Prepare Application for Permit to Construct, Alter or Extend a Drinking or Sanitary Water System   | FESS transmits applications to IEPA with cc: to ES&H and DOE  |
| Main Injector Dam Permit<br>IDNR 21753 Dam<br>number IL50350  | IDNR  | FESS                          | Inspect Main Injector dam annually with ES&H. Maintain the "Operation and Maintenance Manual" for the Indian Creek Dam. Every 5 years, a PE must inspect the | ES&H prepares annual report to DOE cc: FESS and COO. DOE transmits report to IDNR.  |
| Nuisance Wildlife Control Permit<br>Type:<br>Class C (Governmental)   | IDNR  | FESS                          | Provide data to ES&H for annual report to IDNR   | ES&H prepares annual report to DOE cc: FESS and COO. DOE transmits report to IDNR.  |
| General Nuisance Wildlife Permit<br>Type:<br>Class C (Governmental)   | IDNR  | FESS                          | Provide data to ES&H for annual report to IDNR   | ES&H prepares annual report to DOE cc: FESS and COO. DOE transmits report to IDNR.  |
| <del>Canada Goose Depredation</del><br>Open Burning for Prairie/Land Management<br>IEPA 089010                                    | IEPA  | FESS                          | Transmit application materials (via COO) to DOE-FSO with cc: ES&H  | DOE-FSO transmits to IEPA cc: to ES&H & FESS  |
| Fox River Withdrawal Permit #12170  | IDNR  | FESS                          | Transmit application materials (via COO) to DOE-FSO with cc: ES&H  | DOE-FSO transmits to IEPA cc: to ES&H & FESS  |
| NPDES for Pesticide Application Point Source Discharges ILG87   | IEPA  | FESS                          | Maintain required records and follow Level 1 best practices from the permit.   | ES&H prepares application every 5 years to DOE. Cc: FESS and COO. DOE transmits application to IEPA.  |
| Illinois State Water Survey   | Illinois Water Inventory Program (University of Illinois - Champaign) | FESS                          | Provide data to ES&H for annual report   | This is not a permit <i>per se</i> , but is a mandatory annual report required by the Illinois Environmental Protection Act. ES&H prepares annual report to DOE. Cc: FESS and COO. DOE transmits to ISWS. |
| Underground Storage Tank Certification  | Office of the State Fire Marshall                                     | FESS                          | Maintain required records and be in compliance with requirements   | This is an annual certification that follows an inspection. FESS notifies DOE of bigger repairs to the fueling system and any audits/inspections with a CC to ES&H.                                       |
| Pretreatment System for Metal Finishing Rinse waters - Tributary to the City of Batavia WWTP - permit to construct and/or operate | IEPA  | TD                            | Coordinate with ES&H on semi-annual sampling schedule, determined by operations. Perform sample collection, providing samples to ES&H for lab submittal.     | ES&H prepares permit renewal applications and annual reports to DOE cc: TD and COO. DOE transmits to IEPA.  |