



FESHM 8050: DOMESTIC WATER PROTECTION

Revision History

Author	Description of Change	Revision Date
Rod Walton	FESHM 8050 has been extensively modified, due to the revision of the Fermilab water distribution system status. Previously, the system was considered to be a non-transient non-community system. After re-evaluating, the Illinois EPA re-classified Fermilab as an exempt community public water supply system. The chapter reflects those differences. Some responsibilities have shifted from the ESH&Q Section to FESS, under the MOU between the two sections assigning responsibilities for environmentally related permits. Finally, technical information concerning cross-connection protection has been relocated to FESS Procedures. The chapter retains the lab-wide policy requiring cross-connection protection.	August, 2013



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1.0 INTRODUCTION

Fermilab's main drinking water system is an Exempt Community Public Water Supply as defined by the Illinois Public Water Supply Act (415 ILCS 45/9.1). Fermilab purchases water from the City of Warrenville and maintains the distribution system that delivers water to the majority of the site. Regulatory authority for the system lies with the Illinois Environmental Protection Agency (IEPA). There are also semi-private wells at Sites 29, 52, 56, and 58, which provide drinking water for these buildings.

This chapter describes the organizational responsibilities for the Fermilab domestic water supplies as well as general procedures for construction, maintenance and monitoring in accordance with IEPA.

2.0 APPLICABLE STANDARDS AND REFERENCES

Safe Drinking Water Act, 42 U.S.C. 300 *et seq.*

Code of Federal Regulations, Title 40 Parts 141 and 142, National Primary Drinking Water Regulations.

State of Illinois Rules and Regulations, Title 77: Public Health, Chapter: Department of Public Health, Subchapter r: Water and Sewage, Part 900: Drinking Water Systems.

State of Illinois Rules and Regulations, Title 77: Public Health, Chapter: Department of Public Health, Subchapter r: Water and Sewage, Part 920: Illinois Water Well Construction Code.

State of Illinois Rules and Regulations, Title 77: Public Health, Chapter: Department of Public Health, Subchapter r: Water and Sewage, Part 925: Illinois Water Well Pump Installation Code.

State of Illinois Rules and Regulations, Title 35: Environmental Protection, Subtitle F, Public Water Supplies, Chapter I: Pollution Control Board.

State of Illinois Rules and Regulations, Title 35: Environmental Protection, Subtitle F, Public Water Supplies, Chapter II: Environmental Protection Agency, Parts 651-654 Technical Policy Statements.

State of Illinois, County of Kane, Ordinance No. 91-101, Water Supplies/Wells.

State of Illinois, County of DuPage, Ordinance No. OH-0002-90, Chapter 34, DuPage County Code, DuPage County Health Department Private Water Supply Ordinance.



Fermilab Environment, Safety and Health Manual, Chapter 8025, Wastewater Discharge To Sanitary Sewers, January 1996.

3.0 DEFINITIONS

Backflow Prevention & Cross Connection Policy – Fermilab policy that requires controls to prevent the contamination or pollution of the Laboratory potable water infrastructure from the flow of water or other liquids, mixtures, or substances into the potable water system from any source. Controls may include fixed air gaps, double check valve devices, reduced pressure zone (RPZ) devices, etc.

Community Water System - a public water system that serves the same people year-round.

Illinois Environmental Protection Agency (IEPA) - for the purpose of this chapter, the IEPA is the government agency that dictates the requirements for maintaining a safe Community Water System.

Operator in Responsible Charge – The Fermilab employee responsible for the overall maintenance and operation of the drinking water infrastructure.

Semi-Private Drinking Water Systems - a water supply that is not a public water system, yet which serves a segment of the public other than an owner-occupied single-family dwelling.

Public Water System – A system through which water is obtained and distributed to the public for the purpose of furnishing water for drinking or general domestic use and which serve[s] at least 15 service connections or which regularly serve at least 25 individuals daily at least 60 days per year (Section 3.28 of the Act).

4.0 RESPONSIBILITIES

4.1 Environment, Safety & Health Director

- Acts as a liaison between the government agencies and Fermilab and provides technical support to the FESS Operations and Engineering Departments and Environmental Officer.

4.2 Facilities Engineering Services Section Head

- Oversight of the following Department responsibilities.

4.3 Operations Department

- Maintains the Laboratory's public water distribution system infrastructure.
- Implements and oversees the sampling and testing program to ensure that adequate total chlorine residual is maintained in all distribution lines.
- Acts as the liaison to the City of Warrenville.



- Operates and maintains all semi-private water systems.
- Develop and maintain a program and procedures to prevent backflow and cross connection that protects the Laboratory's potable water infrastructure from contamination or pollution by contaminants that could backflow through service connections into the potable water infrastructure.
- Procure and manage a sub-contract to inspect all installed cross-connection and backflow prevention control devices. The sub-contractor must be approved by the agency as a cross-connection control device inspector (CCCDI).

4.4 Engineering Department

- Design domestic water system additions and modifications in compliance with all applicable standards and regulations.
- Advise Division/Section/Centers on installation of approved cross-connection and/or backflow prevention devices in accordance with applicable State and Federal regulations or if in the judgment of the Facilities Engineering Services (FES) Section it is necessary for the safety of the Laboratory water supply system.

4.5 Environmental Officer

- Coordinates with FESS Head, and the Engineering and Operations Departments to ensure that the appropriate level of NEPA review is carried out for any system additions or modifications, and that all necessary permits are obtained, including permits to construct/operate, storm water NPDES permits, etc.

4.6 Division/Section/Center Heads

- Initiate timely requests for supply system design or modification to the Facilities Engineering Services Section Engineering Department.
- Establish procedures to ensure that any and all changes to domestic water supply system within their organization will undergo the appropriate level of review and approval of plans or drawings by the FES Section prior to the commencement of any work and that the proposed changes will incorporate the appropriate cross-connection control according to the Fermilab Backflow Prevention & Cross Connection Policy.
- Ensure that no individuals or sub-contractors operating within their organization will establish, maintain, or permit to be established or maintained, any connection of a water supply to the Laboratory's drinking water supply or distribution system unless the method of connection, the alternative water supply, use of the alternative supply, and adequate cross-connection controls have been approved by the FES Section Engineering Department.

5.0 PROCEDURES

This chapter pertains to all areas of the Laboratory where employees, users, contractors or subcontractors may utilize the drinking water systems.



Fermilab operates, maintains and monitors its drinking water systems in accordance with the applicable referenced standards.

1. All proposed new water supply construction or modifications to existing supply infrastructure by division/sections shall be coordinated with the FESS Engineering Department through submission of an Application for Modifications or Additions to Fermilab Water Supply Systems. An application shall be submitted early in the decision process prior to work for modification of any Fermilab water supply system. It applies to work done by Fermilab employees as well as work done by subcontractors. Routine maintenance (i.e., routine in-kind replacement of pipe or fittings) that does not change piping configuration does not require an application.
2. A copy of the application shall be forwarded to the ESH&Q Section Head if modification includes construction or abandonment of a well. Early submission is necessary so that the appropriate notification can take place. The ESH&Q Section Head will transmit all necessary material to the appropriate agency. All necessary permit approvals are required before construction or modified system startup can begin.
3. FESS Operations Department and Environmental Officer shall ensure compliance of all existing, new or modified supply systems with applicable drinking water standards.

6.0 INSTRUCTIONS FOR COMPLETING THE APPLICATION FOR MODIFICATIONS OR ADDITIONS TO FERMILAB WATER SUPPLY SYSTEM INFRASTRUCTURE

1. The purpose of this application is to ensure the integrity of the Laboratory's drinking water infrastructure and improve communication and coordination within the Laboratory for the supply and monitoring of drinking water to consumers.
2. The application will be used as evidence that a review was made of proposed work and complies with Fermilab ES&H Manual Chapter 8050 - "Drinking Water Protection", as well as all applicable regulations and standards.
3. All portions of the form shall be filled in as completely as possible. The completed application, with all required documentation, shall be transmitted to the FESS Engineering Department.
4. A task number will be required for charge back (minimum 2 hours), for initial review and field visit, inspection at completion, and configuration control.
5. Included with the application shall be the following documentation:
 - copy of requisition,
 - location of project on Fermilab GIS,



- proposed modifications to water supply system in the form of scaled drawings consisting of plumbing plans (indicating location of proposed work), along with an isometric or riser diagram indicating modifications to existing water supply system.