**Section 370.450 Emergency Operation**

a) Objective

 The objective of emergency operation is to prevent the discharge of raw or partially treated sewage to any waters and to protect public health by preventing back-up of sewage and subsequent discharge to basements, streets, and other public and private property.

b) Emergency Pumping Capability

 Provision of emergency pumping capability is mandatory and may be accomplished by connection of the station to at least two independent utility substations, or by provision of portable or in-place internal combustion engine equipment which will generate electrical or mechanical energy, or by the provision of portable pumping equipment. Emergency standby systems shall have sufficient capacity to start up and maintain the total rated running capacity of the station. Regardless of the type of emergency standby system provided, a riser from the force main with rapid connection capabilities and appropriate valving shall be provided for all lift stations to hook up portable pumps.

c) Emergency High Level Overflows

 For use during possible periods of extensive power outages, mandatory power reductions, or uncontrollable emergency conditions, consideration should be given to providing a controlled, high-level wet well overflow to supplement alarm systems and emergency power generation in order to prevent backup of sewage into basements, or other discharges which may cause severe adverse impacts on public interests, including public health and property damage. Where a high level overflow is utilized, consideration shall also be given to the installation of storage/detention tanks, or basins, which shall be made to drain to the station wet well. Where such overflows affect public water supplies or waters used for culinary or food processing purposes, a storage detention basin, or tank, shall be provided having 2-hour detention capacity at the anticipated overflow rate.

d) Equipment Requirements

1) General

 The following general requirements shall apply to all internal combustion engines used to drive auxiliary pumps, service pumps through special drives, or electrical generating equipment:

A) Engine Protection

 The engine must be protected from operating conditions that would result in damage to equipment. Unless continuous manual supervision is planned, protective equipment shall be capable of shutting down the engine and activating an alarm on site and as provided in Section 370.135. Protective equipment shall monitor for conditions of low oil pressure and overheating, except that oil pressure monitoring will not be required for engines with splash lubrication.

B) Size

 The engine shall have adequate rated power to start and continuously operate all connected loads.

C) Fuel Type

 Reliability and ease of starting, especially during cold weather conditions, should be considered in the selection of the type of fuel.

D) Engine Ventilation

 The engine shall be located above grade with adequate ventilation of fuel vapors and exhaust gases.

E) Routine Start-up

 All emergency equipment shall be provided with instructions indicating the need for regular starting and running of such units at full loads.

F) Protection of Equipment

 Emergency equipment shall be protected from damage at the restoration of regular electrical power.

2) Engine - Drive Pumping Equipment

 Where permanently-installed or portable engine-driven pumps are used, the following requirements in addition to general requirements shall apply:

A) Pumping Capacity

 Engine-drive pumps shall meet the design pumping requirements unless storage capacity is available for flows in excess of pump capacity. Pumps shall be designed for anticipated operating conditions, including suction lift if applicable.

B) Operation

 The engine and pump shall be equipped to provide automatic start-up and operation of pumping equipment unless manual start-up and operation is justified. Provisions shall also be made for manual start-up. Where manual start-up and operation is justified, storage capacity and alarm system must meet the requirements of subsection (d)(2)(C).

C) Portable Pumping Equipment

 Where part or all of the engine-driven pumping equipment is portable, sufficient storage capacity shall be provided to allow time for detection of pump station failure and transportation and hookup of the portable equipment.

3) Engine-Driven Generating Equipment

 Where permanently-installed or portable engine-driven generating equipment is used, the following requirements shall apply in addition to general requirements of subsection (d)(1):

A) Generating Capacity

i) Generating unit size shall be adequate to provide power for pump motor starting current and for lighting, ventilation, and other auxiliary equipment necessary for safety and proper operation of the lift station.

ii) The operation of only one pump during periods of auxiliary power supply must be justified. Such justification may be made on the basis of the design peak flows relative to single-pump capacity, anticipated length of power outage, and storage capacity.

iii) Special sequencing controls shall be provided to start pump motors unless the generating equipment has capacity to start all pumps simultaneously with auxiliary equipment operating.

B) Operation

 Provisions shall be made for automatic and manual start-up and load transfer unless only manual start-up and operation is justified. The generator must be protected from operating conditions that would result in damage to equipment. Provisions should be considered to allow the engine to start and stabilize at operating speed before assuming the load. Where manual start-up and transfer is justified, storage capacity and alarm system must meet the requirements of subsection (d)(3)(C).

C) Portable Generating Equipment

 Where portable generating equipment or manual transfer is provided, sufficient storage capacity shall be provided to allow time for detection of pump station failure and transportation and connection of generating equipment. The use of special electrical connections and double throw switches are recommended for connecting portable generating equipment.

4) Independent Utility Substations

 Where independent substations are used for emergency power, each separate substation and its associated transmission lines must be capable of starting and operating the pump station at its rated capacity.

(Source: Amended at 21 Ill. Reg. 12444, effective August 28, 1997)