

Written Guidance For Preparation of Plans to Prevent Sewage Spills

(8/13/07)

I. Introduction

On May 17, 2006, the Vermont State legislature passed Act #154, of which Section #5a. requires municipalities to prepare and implement Operation, Management and Emergency Response Plans for their Pollution Abatement Facilities (sewage treatment process and entire sewage collection system, including sewage pump stations and stream crossings). The act became effective on July 1, 2007.

Periodic updating of the “Sewage Spill Prevention Plans” will be necessary to account for changes in the conditions and configuration of the treatment facility, pump stations, stream crossings and collection system. Such an update will be required each time the Discharge Permit for a facility is renewed. Updates to the “Sewage Spill Prevention Plans” will need to be submitted to the Department within the time period prescribed in the renewed permit.

“Sewage Spill Prevention Plans” may be prepared by a facility chief operator, a municipality’s public works director/engineer, or an engineering consultant. In cases where the wastewater treatment facility and collection system are overseen by different sections of a municipality’s public works department, it is essential that both sections be consulted and involved in the preparation of the plan. If multiple people are providing input, it is the responsibility of the municipality to ensure that the information from all sources is incorporated into a comprehensive “Sewage Spill Prevention Plan”.

To develop a comprehensive “Sewage Spill Prevention Plan”, all components of the treatment facility and collection system must be evaluated and an assessment made as to which components are prone to failure that would result in a release of untreated or partially treated sewage to waters of the state. The basis for designating a component to be prone to failure should not be based on unforeseen circumstances, but rather on staff knowledge/observations and known problems. The reference to “the discharge of partially treated sewage to waters of the state” is intended to be associated with the failure of the disinfection system itself and/or a treatment component that is likely to render the disinfection process ineffective.

All of the supporting information reviewed/obtained in the development of the plan and the findings from the assessment of the facility components need to be compiled in a written report. The document needs to include a detailed written narrative discussing the findings and clearly identifying the components prone to failure; along with a schedule for inspecting those components in the future and a response plan for sewage spills.

The following written guidance is provided for use when preparing a response to the permit requirement. The guidance is designed to ensure that permittees are aware

of the condition of their facilities to better enable them to prevent illegal discharges, as well as to be better prepared in the case of an illegal discharge situation. The Department will be reviewing the plans to determine whether the documents are complete and the inspection schedules are reasonable.

II. Wastewater Treatment Facility

- A. Prepare or locate a site plan of the treatment facility clearly depicting the overall configuration and flow pattern through the process, as well as identifying all components and equipment. Any overflow structures associated with the treatment facility need to be clearly depicted on the site plan and a narrative needs to be included to indicate under what conditions an overflow is activated, and the frequency and manner by which the overflow structures are monitored.**
- B. Compile information to clearly reflect the age and overall condition of all treatment components and equipment (See Attachment A). As part of this exercise, identify components provided with redundancy (back up). If an alarm dialer system is provided for the facility, include a discussion to indicate under what conditions the alarm would be activated.**
- C. From the information obtained in Sections II.A. and B. make an assessment as to which of the components at the treatment facility are prone to failure (mechanical, structural, hydraulic, blockage, etc.), that would result in a release of untreated or partially treated sewage to waters of the state. The reasons for such a designation need to be clearly indicated.**
- D. From the assessment in Section II.C., establish a schedule for future inspections of those components identified to be prone to failure. This inspection schedule/routine may already be in place as part of the day to day operational oversight by the operators. Indicate the methodology of the inspection, particularly if other than visual.**
- E. In follow-up to Section II.D., include a discussion to indicate the equipment available and the actions to be taken in the event of a sewage spill at the wastewater treatment facility to reduce the volume of a spill and to mitigate the effect of a spill on public health and the environment.**

III. Sewage Pump/Ejector Stations

- A. Prepare a list of all of the sewage pump stations and ejector stations that are owned by the municipality, along with an overall plan of the sewage collection system depicting the location of each. Any overflow structures associated with pump/ejector stations need to be clearly depicted on the site plan. Include a discussion indicating under what conditions an overflow is activated and the frequency and manner by which the overflow structures are monitored.**
- B. Compile information to clearly reflect the age and overall condition of the stations and the equipment contained in each (See Attachment B). Indicate the**

- level of redundancy provided for the pump/ejector system at each station, and include a discussion of the alarm/dialer systems provided and emergency storage volumes available above the alarm level.
- C. From the information obtained in Sections III.A. and B., make an assessment as to which components of the sewage pump/ejector stations are prone to failure based on installation, age, design, or other relevant factors (i.e. wet weather hydraulic overload, compromised pumping capacity, recurring pump control problems, force main hydraulic limitations, impacts due to excessive grease/debris, etc.), that would result in a release of untreated or partially treated sewage to waters of the state. The reasons for such a designation need to be clearly indicated.
 - D. From the assessment in Section III.C., establish a schedule for the future inspections of those components identified to be prone to failure. This inspection schedule/routine may already be in place as part of the day to day oversight by the staff.
 - E. In follow up to Section III.D., include a discussion to indicate the equipment available and the actions to be taken in the event of a sewage spill at a sewage pump/ejector station to reduce the volume of a spill and to mitigate the effect of a spill on public health and the environment.

IV. Stream Crossings

- A. Prepare a list of all stream crossings that currently exist within the collection system, along with a description of their design (i.e. single or dual barrel inverted siphons, pressure sewer force main, aerial crossing, gravity sewer, etc.). Include an overall site plan of the collection system depicting the location of the stream crossings as part of the document. Any overflow structures associated with stream crossings need to be clearly depicted on the site plan. Include a discussion indicating under what conditions an overflow is activated and the frequency and manner by which the overflow structures are monitored.
- B. Compile information to reflect the age, material, structural integrity and overall condition of each crossing. Include a discussion as to how the current condition of the crossing was ascertained and when the assessment was completed.
- C. From the information obtained in Sections IV.A. and B., make an assessment as to which stream crossings are prone to failure based on installation, age, design, or other relevant factors (i.e. structural deficiencies, exposed/undermined pipes, hydraulic capacity limitations, recurring blockages, etc.), that would result in a release of untreated or partially treated sewage to waters of the state. The reasons for such a designation need to be clearly indicated.
- D. From the assessment in Section IV.C., establish a schedule for future inspections of the stream crossing identified to be prone to failure.

- E. In follow-up to Section IV.D., include a discussion to indicate the equipment available and the actions to be taken in the event of a sewage spill at a stream crossing to reduce the volume of a spill and to mitigate the effect of a spill on public health and the environment.**
- F. Establish a preventative maintenance program for flushing and inspecting stream crossings, in particular inverted siphons and gravity sewers, on a regular frequency to help assure that they continue to operate properly.**

V. Sewage Collection Systems

- A. A current site plan of the entire sewage collection system needs to be located or prepared. The site plan needs to also reflect the age, pipe material, pipe diameter and overall condition of each reach of sewer line. Include a discussion to indicate how and when the current condition of the sections of sewer line was ascertained. The collection system site plan needs to also clearly identify any existing overflow structures and a narrative needs to be included to indicate under what conditions an overflow is activated and the frequency and manner by which the overflow structures are monitored. Internal inspection of the entire collection system is not required; however, at a minimum known problem areas need to be inspected with appropriate internal inspection equipment to identify the reason(s) for recurring problems and corrective action needs to be taken to address the deficiencies identified.**
- B. From the information obtained in Section V.A., make an assessment as to which sections of sewer line are prone to failure based on installation, age, design, or other relevant factors (i.e. structural deficiencies, hydraulic capacity limitations, known problem areas due to recurring blockages, root intrusion, grease accumulation, etc), that would result in a release of untreated or partially treated sewage to waters of the state. The reasons for such a designation need to be clearly indicated.**
- C. From the assessment in Section V.B., establish a schedule for future inspections of the sections of sewer line prone to failure.**
- D. In follow up to Section V.C., include a discussion to indicate the equipment available and the actions that will be taken and in the event of a sewage spill within the collection system to reduce the volume of a spill and to mitigate the effect of a spill on public health and the environment.**
- E. Establish a preventative maintenance program for routine cleaning and inspection of the collection system to help prevent overflow incidents from occurring.**

Attachment A – Wastewater Treatment Facility Checklist

1. Headworks
 - a. Influent Flow Metering System
 - b. Bar Rack/Comminutor/Mechanical Screening Device
 - c. Grit Removal/Dewatering System
 - d. Equalization Tank
 - e. Influent Pumping System/Controls
 - f. Septage Receiving/Screening/Pumping System
 - g. Yard Piping

2. Primary Clarifiers/Septic Tanks
 - a. Tankage
 - b. Splitter Boxes
 - c. WAS Pumping
 - d. Yard Piping
 - e. Primary Effluent Pumping System/Controls

3. Biological Treatment
 - a. Aeration Tanks and Ditches
 - b. Splitter Boxes/Control Valves
 - c. Recirculation/Motive Pumps
 - d. Aerated Lagoons/Transfer Piping
 - e. RBC Units/Splitter Boxes
 - f. Sand Filter Beds/Recirculating Pump Station
 - g. Yard Piping

4. Secondary/Chemical Precipitation Clarifiers
 - a. Tankage
 - b. Splitter Boxes
 - c. RAS/WAS Pumping
 - d. Yard Piping
 - e. Secondary Effluent Pumping System/Controls

5. Filtration
 - a. Tankage

- b. Backwash System/Controls
- c. Yard Piping

6. pH Adjustment

- a. Tankage
- b. Yard Piping

7. Disinfection

- a. Chlorine Contact/Dechlorination Chambers
- b. UV Open Channels/Enclosed UV Units
- c. Yard Piping
- d. Effluent Flow Metering
- e. Effluent Pumping System/Controls

8. Sludge Handling

- a. Thickening/Dewatering Equipment
- b. Sludge Storage Tankage
- c. Anaerobic/Aerobic Digesters
- d. Sludge Pumping Systems
- e. Yard Piping

9. Emergency Power Generator/Controls

10. Effluent Disposal

- a. Effluent Holding Ponds
- b. Spray Pumping Systems
- c. Spray Field Piping
- d. Dosing Pump Stations/Siphon Units
- e. Force Mains
- f. Leachfields/Distribution Piping

Attachment B – Sewage Pump/Ejector Stations Checklist

1. Sewage Pump Stations
 - a. Sewage Pumping Units
 - b. Pump Control System
 - c. Alarm/Auto-Dialer Systems
 - d. Wet Well Compartment
 - e. Dry Well Compartment
 - f. Pump Intake/Discharge Piping
 - g. Valve Chamber
 - h. Pump Isolation/Check Valves
 - i. Sewer Force Main Piping
 - j. Air/Vacuum Release Structures
 - k. Emergency Storage Tank
 - l. Emergency Power Generator

2. Sewage Ejector Stations
 - a. Pneumatic Ejector Units
 - b. Ejector Control System
 - c. Air Compressors
 - d. Sewage Ejector Station Vault
 - e. Alarm/Auto-Dialer Systems
 - f. Ejector Intake/Discharge Piping
 - g. Ejector Isolation/Check Valves
 - h. Sewer Force Main Piping
 - i. Emergency Storage Tank
 - j. Emergency Power Generator