CHAPTER 1

INTRODUCTION

PURPOSE AND SCOPE

The purpose of this manual is to introduce sewage collection system personnel to various aspects of a preventive maintenance program. To be effective, a preventive maintenance program should include an adequate mapping system, flow monitoring, inspection, sewer cleaning, new construction monitoring, and other rehabilitation and maintenance procedures. The implementation of an effective safety program is also very important. These points, as well as personnel and equipment requirements and budgeting, will be discussed in detail throughout this manual.

Preventive maintenance is the most effective and efficient type of maintenance program. This type of program should not be designed merely to make it possible to live with problem areas. It should try to prevent stoppages, failures, and complaints, and anticipate what is going to go wrong and prevent it from happening.

Preventive maintenance should be a total concept. A good preventive maintenance program requires a supervisor that knows what is likely to happen and where. The supervisor needs accurate functional maps, good records, and an understanding of how to apply and use them. Intelligent use and assignment of available staff and equipment is important, as well as properly planned and meaningful maintenance scheduling. All these factors, properly applied, will provide a true preventive maintenance program. The program will be effective, efficient, economical, and safe.

A preventive maintenance program may be set up in several different ways, ranging from a wall chart on which preventive maintenance tasks are assigned and checked off as they are completed, to a sophisticated computer system. A chart or card system is functional and is widely used. The computerized system, however, has many advantages over the card system. For example, information can be retrieved much quicker and can be used simultaneously by more than one person, schedule revision is much easier, and the computer can be programmed to alert the users to emergency situations. Chapter 11 of this manual presents some useful recordkeeping forms and suggested schedules that may be helpful when initially setting up a long-term preventive maintenance program.

Whatever form the preventive maintenance program takes, its success depends on the care and thought with which it was developed, implemented, and maintained.

A preventive maintenance program should be simple and functional. All groups that will have a part in the program should contribute to its development and implementation, including those who will provide information and perform maintenance tasks. After the first six months, the program should be reviewed to determine its efficiency. If after review, the existing preventive maintenance program is found to require modifications, the program should be changed as appropriate.

Many preventive maintenance programs fail before they are even started due to the inadequacy of the plan to fit the need of the particular facility, failure to properly record the information necessary to keep the program workable, or design of a program that is either too simple or too sophisticated.

The development of a preventive maintenance system should consist of the following three phases:

1. An initial survey of the size of the preventive maintenance system required and the selection of the hardware to be used (computer or cards).

2. Assembly of specific information on all pieces of equipment, pipelines, manholes, lift stations, and other appurtenances of the collection system, and a listing of specific maintenance tasks required for each.

3. Fine tuning of the system consisting of a periodic review to assess the effectiveness and efficiency of the system.

Proper scheduling is an important part of the program. For basic daily or weekly inspections and maintenance, personnel should be assigned to work in a variety of areas and perform a variety of tasks. Rotating personnel on weekly or daily activities is a good practice because it promotes a wider range of capabilities for each employee. For every twelve weeks of work, it is helpful to leave one week free to allow adjustments to the schedule and updates to the program as needed.

Every program must include a feedback system to allow staff to report problems and make suggestions to improve the efficiency of the program. This can be accomplished in part through the use of detailed record keeping of all maintenance activities. Also, all maintenance personnel should take part in preventive maintenance program evaluation meetings.

This manual generally covers separate sanitary sewer collection systems. It is impossible to discuss all of the problems which may arise or all the maintenance procedures required. However, with the information contained in this manual, it will be possible to handle routine operation and maintenance, and to recognize those problems which will require outside help from suppliers, manufacturers, contractors, or engineers. For example, this manual will help in making the decision as to which rehabilitation or cleaning method is suitable for a specific problem. The discussion of the actual operation of the required equipment, however, is left to manufacturer's guidebooks.

CIRCULATION AND USE OF MANUAL

This manual was developed for the Metropolitan Sanitary District (MSD) of Greater Chicago and is meant to be used by the District's member communities to set up a long-term operation and maintenance program. The MSD Sewer Permit Ordinance requires all communities tributary to the MSD collection and treatment system to develop a long-term operation and maintenance program aimed at preventing entry of excessive infiltration and inflow into the sanitary sewer system. The amount of excessive infiltration and inflow allowed to enter the sanitary sewer systems depends on the compliance option each community has selected. Appendix E details the wet weather flow requirements for the 150 gpcpd option and ICAP (Infiltration/Inflow Corrective Action Program) option agencies.

Copies of the Metropolitan Sanitary District of Greater Chicago's Sewer Permit Ordinance and Manual of Procedures for the Administration of the Sewer Permit Ordinance have been included as Appendix B and Appendix C respectively to this manual.

This manual should be read, studied, and referred to by all sewage collection system personnel. This includes field workers, foremen, supervisors, directors of public works and other management personnel. Although certain chapters may be more beneficial to one group of people, the entire manual should be read by everyone. This will provide an adequate orientation of all workers to what is required to implement an efficient preventive maintenance program.

As stated above, this manual is not designed to solve all of the problems that can occur in a collection system. Instead, it is meant as an easy reference to the options available to the agency. It provides examples of procedures, equipment, records, and forms that will help to upgrade the existing maintenance program or to implement a new one.

The importance of a preventive maintenance program cannot be emphasized enough. Sewer overloading caused by improperly maintained systems may cause health hazards, financial loss and inconvenience to area residents. This occurs as a consequence of sewage flows exceeding the sewer system and treatment facility capacities with resultant sewage overflows into streams, buildings, yards, and onto streets. Excessive clearwater flows also result in additional sewage treatment costs which are passed along to the public. Implementation of an effective long-term sewer management program by owners of separate sanitary sewers tributary to MSD sewage treatment facilities will reduce sewage overflows and create a better environment in which to live.

A list of references is provided in Appendix A that should be investigated if more detailed information regarding selected topics is desired.