

CHAPTER 10

BUDGETING

Introduction.....	10-1
Monthly Operating and Maintenance Cost Report	10-2
General.....	10-2
Routine Operating and Maintenance Costs.....	10-2
Abnormal Operating and Maintenance Costs	10-5
Employee Time Sheets	10-6
Purchase Orders.....	10-6
Annual Report.....	10-6
Budget Request Report.....	10-11
General.....	10-11
Staff Requirements	10-11
Equipment Needs	10-12
Supplies.....	10-12
Outside Contracting Services.....	10-12

FIGURES

10-1 Example Monthly Operating and Maintenance Cost Form.....	10-3
10-2 Example Employee Time Sheet	10-7
10-3 Example Purchase Order Form.....	10-9
10-4 Example Annual Cost Summary Form.....	10-10

INTRODUCTION

Part of meeting the Metropolitan Sanitary District of Greater Chicago's requirement of developing a long-term operation and maintenance program is to insure that adequate funding is available each year to complete routine operations and preventive maintenance functions. Annual budgets must be developed by each agency which summarizes the anticipated expenses for performing the necessary tasks in the agency's accepted operation and maintenance program. The revenue available for each agency's sewer system operation and maintenance program must be adequate to cover the budgeted expenses.

When preparing an annual budget for the operation and maintenance of a sanitary sewer collection system, the scope of work required to carry out the yearly objectives of the planned operation and maintenance program must be defined. Alternate methods of accomplishing the planned objectives must be evaluated. After methods have been selected

for completing the operation and maintenance functions, specific tasks to be performed need to be defined. The types and quantities of equipment, materials, and labor must then be estimated for each task. Costs are subsequently established for the equipment, materials, and labor needed to complete each task and the cost for each task is summed up to develop the overall budget.

When preparing a budget, records of past years labor, material, and equipment costs are essential to the supervisor preparing the budget. Accurate records detailing the current year's job tasks, costs, staff requirements, and productivity, provide the best support for the upcoming year's budget requests. All budgeting programs should be prepared to meet the needs of the agency and accomplish the objective of the operation and maintenance plan. The sanitary sewer system programs are normally competing for funds with other public service departments, so they should be documented well and with the care needed to show their importance.

Budgets will vary for each agency depending on factors such as the size and age of the collection system, the type of collection system, and the amount of equipment owned to maintain the collection system. The key is to budget enough money to be able to perform the maintenance tasks necessary to prevent the deterioration of the sanitary sewer collection system.

MONTHLY OPERATING AND MAINTENANCE COST REPORT

General

A summary of monthly operating and maintenance costs is essential for the management of a sanitary sewer collection system, especially during the preparation of a budget request. The collection system supervisor should be responsible for the preparation of the monthly operations and maintenance report and should submit it to his supervisor. The report should summarize all of the sewer system operation and maintenance activities completed during the month along with a summary of all costs. The costs can be summarized on a form similar to the example form shown in Figure 10-1. The example form can be revised to meet the needs of each agency tributary to the MSDGC facilities. The form can either be filled out manually each month or set up on a computer using one of the spread sheet type software packages currently available.

Routine Operating and Maintenance Costs

There are certain costs that can be normally expected for completing routine operation and maintenance activities in a wastewater collection system. These costs are those needed to complete day to day preventive maintenance activities and activities necessary to meet the requirements of a long-term operation and maintenance program aimed at reducing the quantity of infiltration and inflow entering the wastewater collection system. These costs include but are not limited to the following:

1. Lift Station operation and maintenance costs. Costs involved with operating and maintaining a lift station include:
 - a. Labor. The direct labor costs will include costs associated with personnel assigned to inspecting and performing routine maintenance on each lift station.

COMMUNITY/AGENCY NAME _____

MONTH _____ YEAR _____

PREPARED BY _____ TITLE _____

MONTHLY SEWER SYSTEM OPERATING AND MAINTENANCE COSTS

O&M TASK DESCRIPTION	UNIT OF MEASURE	UNITS THIS PERIOD		LABOR HOURS	LABOR COST	MATERIAL COST	EQUIPMENT COST	TOTAL COST	COMMENTS
		UNITS BUDGETED	UNITS ACTUAL						
ROUTINE O&M COSTS									
Lift Station O&M	Each								
Sewer Cleaning	Ln. Ft.								
Roof Cutting	Ln. Ft.								
Minor Sewer Repairs	Ln. Ft.								
Manhole Repairs	Ln. Ft.								
Sewer System Inspections									
Sewer Pipe	Ln. Ft.								
Manholes	Each								
New Construction	Each								
Flow Monitoring	Ln. Ft.								
Response to Customer Complaints	Each								
Subtotal O&M Costs									
Overhead									
Vehicle/Equipment Maintenance	Hours								
Administration	Hours								
Supervision	Hours								
Insurance	Hours								
Vacation Leave	Hours								
Holiday Leave	Hours								
Sick Leave	Hours								
Workmen Compensation	Hours								
Training	Hours								
Subtotal Overhead Costs									
Total Routine O&M Costs									

FIGURE 10-1. EXAMPLE MONTHLY OPERATIONS AND MAINTENANCE COST FORM

O&M TASK DESCRIPTION	UNIT OF MEASURE	UNITS THIS PERIOD		LABOR HOURS	LABOR COST	MATERIAL COST	EQUIPMENT COST	TOTAL COST	COMMENTS
		UNITS BUDGETED	UNITS ACTUAL						
ABNORMAL O&M COSTS									
Engineering Studies	Each								
Outside Contracts	Each								
Consulting Services	Each								
New Equipment Purchases	Each								
Replacement Equipment	Each								
Total Abnormal O&M Costs									
TOTAL MONTHLY COSTS									

FIGURE 10-1 (Cont.). EXAMPLE MONTHLY OPERATIONS AND MAINTENANCE COST FORM

- b. **Materials.** The material cost will include all items necessary to perform routine maintenance such as lubricants, cleaning supplies, paint, etc.
 - c. **Equipment.** The equipment costs will include any equipment rentals necessary to maintain the lift stations. One piece of equipment that may be rented would be a vacuum truck used to clean lift station wet wells.
- 2. Sewer cleaning costs.
- 3. Root cutting costs.
- 4. Sewer system inspection costs.
- 5. Periodic flow metering costs.
- 6. Minor sanitary sewer system repair costs for work items that can be typically planned for.
- 7. Costs associated with operating, maintaining, and repairing equipment such as inspection, cleaning, and flow metering equipment.
- 8. Costs associated with customer complaints.
- 9. Utility costs such as electric, telephone, water, and gas.
- 10. Map updating costs.
- 11. Overhead costs such as:
 - a. Administration.
 - b. Supervisory staff.
 - c. Vacation/holiday leave.
 - d. Sick leave.
 - e. Other employee benefits.
 - f. Workman's compensation.
 - g. Staff training.
 - h. Office supplies and equipment.
 - i. Vehicle maintenance and repairs.
 - j. Office or storage space rental.

Abnormal Operating and Maintenance Costs

At times the cost to operate and maintain a sanitary sewer collection system will include costs for items that are abnormal or not part of the normal operation and maintenance routine. These costs should still be included on the monthly operation and maintenance cost report. Some typical costs which would not be expected to be part of the normal operation and maintenance routine would be:

- 1. Costs for engineering studies possibly pertaining to the collection system capacity or system improvements.
- 2. Major system rehabilitation requiring help from outside contractors.

3. New equipment purchases.
4. Costs for replacing equipment and tools.

The monthly operating and maintenance cost report is developed using specific records such as employee time sheet, equipment usage tickets, purchase order forms, utility bills, invoices from outside contractors and consultants, and any other available cost records.

Employee Time Sheets

Employee time sheets should be coded so that time spent on specific tasks can be easily separated. Figure 10-2 shows an example employee time sheet.

Purchase Orders

Purchase order forms should be filled out in duplicate when ordering equipment, supplies, parts, etc. The first copy is sent to order the requested material; the second copy is filed for future reference. By tabulating the cost of materials purchased through these order forms, the supervisor can control expenses and include purchase order costs in budget figures.

When the items on the purchase orders are delivered, the purchase order information is to be reviewed to insure that all the materials requested have been received. Any discrepancies between the purchase order and the actual shipment should be noted and corrective action taken.

Figure 10-3 represents an example purchase order form.

ANNUAL REPORT

At the end of each calendar year, the supervisor should prepare an annual report for the sewage collection system. The report includes the costs of running the collection system for that year, the additions and changes made to the system during the year, and an evaluation of the sewage system performance.

The summary of annual operating and maintenance costs is an important tool to use when preparing the upcoming year's budget. Cost trends can be observed by reviewing annual cost summaries from the past several annual reports. An example annual cost summary form is shown in Figure 10-4. The monthly operating and maintenance cost report will be useful for preparing the annual cost summary report.

One way to present the annual cost to operate and maintain the sewage collection system is by the ratio of cost to sewage flow through the system. By determining the cost for each operation and maintenance item per volume of sewage, past costs can be compared to

Sample Index for Account Numbers,
Department Numbers, and Type of
Work Codes.

<u>Project or Account No.</u>	<u>Account Abbreviation</u>
XXXX	Sewer Cleaning
XXXX	Inspections
XXXX	Rehabilitation
XXXX	Budgeting
XXXX	Etc.
<u>Dept. No.</u>	
XXXX	Operation and Maintenance
XXXX	Civil Engineering
XXXX	Purchasing
XXXX	Etc.
<u>Type of Work Codes</u>	
XX	Administrative
XX	Training
XX	Technical Report Writing
XX	Sewer Baling
XX	Manhole Inspections
XX	Replacing Manhole Covers
XX	Etc.

FIGURE 10-2 (Cont.). EXAMPLE EMPLOYEE TIME SHEET

TO:

PURCHASE ORDER NUMBER: _____

WORK ORDER NUMBER: _____

DATE INITIATED: _____

DATE REQUIRED: _____

SHIP TO:

SHIP VIA: _____

F.O.B.: _____

TERMS: _____

DATE RECEIVED: _____

QUANTITY	STOCK NUMBER/DESCRIPTION	PRICE	PER	TOTAL

APPROVED BY: _____ DATE: _____

SHEET _____ OF _____

FIGURE 10-3. EXAMPLE PURCHASE ORDER FORM

Prepared by _____

19__ Month	Agency _____	Direct Labor S.T.	Overtime	Overhead	Utility Costs	New Equip. Purchases	Equip. Repair	Equip. Rental	Consultant Fees	Contractor Fees	Misc.	TOTAL
JAN												
FEB												
MAR												
APR												
MAY												
JUNE												
JULY												
AUG												
SEPT												
OCT												
NOV												
DEC												
TOTAL												

FIGURE 10-4. EXAMPLE ANNUAL COST SUMMARY FORM

present costs which will help when estimating future costs for each operation and maintenance task. An example of this concept is presented below:

Example:

<u>Year</u>	<u>Equipment Repair Costs</u>	<u>Sewage Flow</u>
1985	\$ 3,500	85.2 million gallons
1986	\$ 3,900	86.1 million gallons
1987	\$ 4,500	87.2 million gallons

The annual cost for equipment repairs per million gallons of sewage flow is therefore:

1985	\$ 3,500/85.2 = \$41.08 per mg
1986	\$ 3,900/86.1 = \$45.30 per mg (10 percent increase)
1987	\$ 4,500/87.2 = \$51.61 per mg (14 percent increase)

By comparing the repair costs to annual inflation rates, a conclusion can be made regarding the condition of the equipment. For example, if the annual cost to repair equipment increases more than the inflation rate it is possible that the equipment is wearing out and soon may need to be replaced.

BUDGET REQUEST REPORT

General

The annual budget request should be presented in a report form so that the request for sewage collection system operation and maintenance funds can be evaluated by agency officials along with budgets from other public works departments.

Each sewage collection system operating and maintenance task should have a scope of work defined for it, along with the desired objectives for performing the task.

The type and quantity of equipment, materials, and labor involved with each task must also be defined. The costs must be established for the involved labor, equipment, and materials. Normally at budget time the existing staff and equipment are evaluated to determine if they will be adequate for completing the upcoming years planned program.

Staff Requirements

Requesting additional staff for meeting increased system operating and maintenance needs is one of the most difficult budget items to present to management. Usually management will not accept a request for more staff when the request is based only on the supervisor's opinion or experience.

It is necessary for a supervisor to support the request for additional staff using data from the operating and maintenance records which are on file. Presentation of records covering several years can indicate a definite trend in activities. The trend observed may verify that the work load has increased and may continue to increase to a point where additional staffing could be justified.

Equipment Needs

The request to purchase additional or replacement equipment must also be justified in the budget request report. When requesting replacement equipment, age may not be the only factor for justifying replacement. Some equipment can be repaired over and over again so that it can be made to last almost forever. What must be considered though is the cost (time and money) to keep a piece of equipment operating. Other pieces of equipment may become outdated before they even need to be repaired. The newer versions of the outdated equipment may be much more productive which may be adequate justification for replacing a certain piece of equipment.

Replacement of sewage system equipment can create a strain on an annual budget when an expensive piece of equipment needs to be replaced and there is no replacement fund. A replacement fund is generally not included as part of an annual sewer system operating budget but should still be a part of the agency's overall budget. In order to determine an amount for the annual replacement fund, a periodic user rate study by a professional should be undertaken. User rate studies assist in determining and comparing the costs versus the revenues generated by the utility. Rates are then adjusted to offset costs and provide a replacement fund for equipment.

Justifying the need to purchase additional equipment will also be required in a budget request report. Records indicating the amount of time logged on a piece of equipment are essential for supporting the need for additional equipment. It is also possible that services previously provided by outside contractors will be incorporated into the agency's operation and maintenance program. Equipment formerly used by the outside contractor will need to be obtained by the agency. Often the need for additional equipment can be justified if more staff are also being requested in the same budget request report. The agency then must decide which option between purchasing, leasing, or renting is more beneficial.

Supplies

The best method to use when estimating the upcoming year's cost for supplies is to review past year's records. The trends observed in supply usage for each type of maintenance task should be reviewed to estimate the future demand for those same supplies.

Outside Contracting Services

When preparing the annual budget, the costs associated with outside contractors should be reviewed to determine if they have increased to the point where it may be more cost-effective to hire additional staff and purchase additional equipment to perform the same tasks in house.