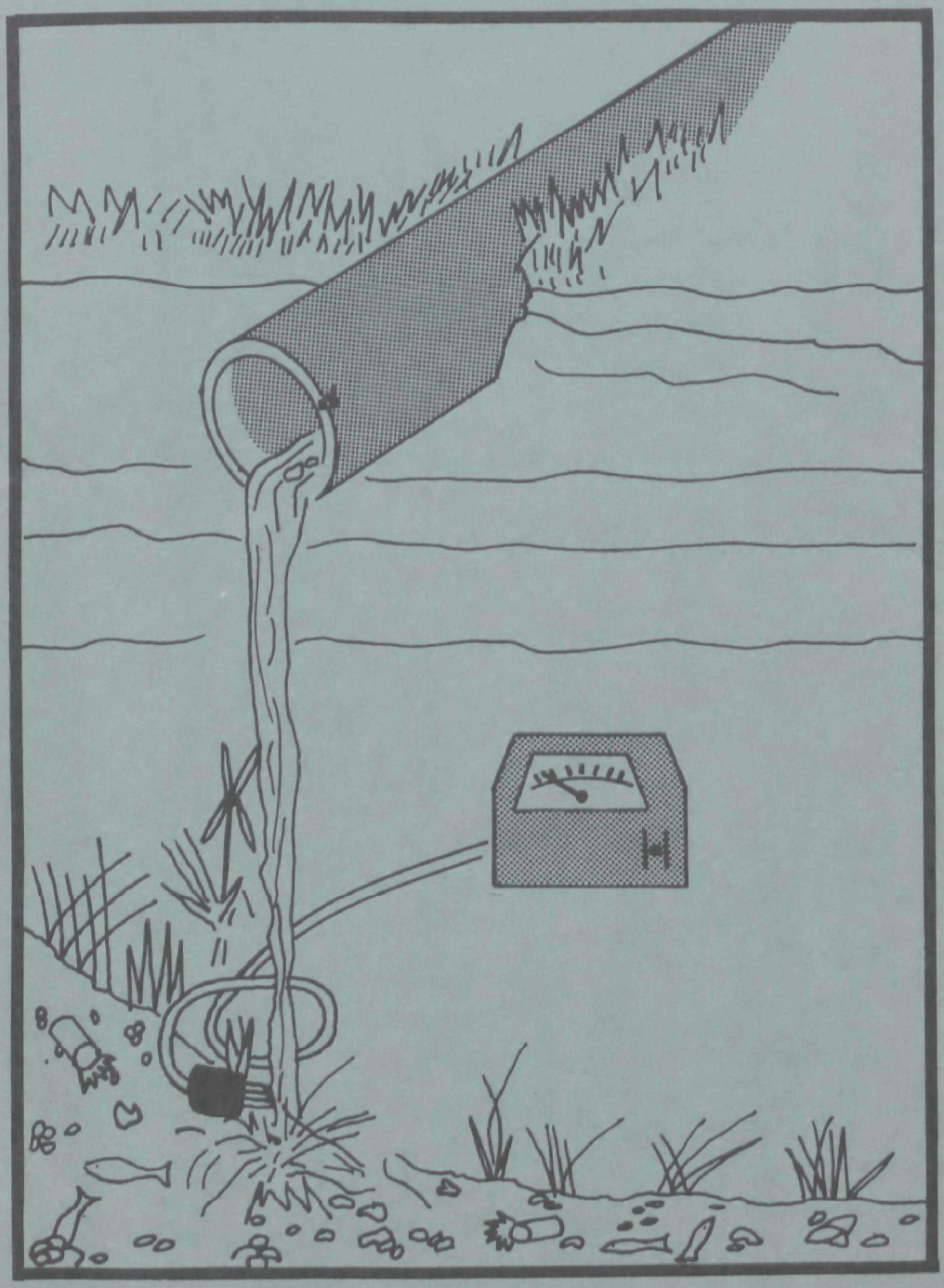
PERMIT PROGRAM GUIDANCE FOR SELF-MONITORING AND REPORTING REQUIREMENTS



OFFICE OF WATER ENFORCEMENT

FOREWORD

On October 18, 1972, the Federal Water Pollution Control Act Amendments of 1972 were enacted. One major feature of this sweeping revision of the Federal water pollution laws was the establishment of a new national permit system, which is defined in Section 402 of the Act as the National Pollutant Discharge Elimination System. According to this section, permittees will be required to monitor their discharges, to keep records of monitoring activities and to report periodically on what is occurring with regard to these discharges.

The purpose of this program guidance is to assist the EPA and State regulatory agencies establish a sound, practical self-monitoring and reporting program. National guidance such as this must be flexible in order to be applicable to the diversity of water pollution problems throughout the country. It is hoped that this guidance will encourage the development of more sophisticated monitoring programs, which will improve the capability of municipal and industrial dischargers to meet their permit limitations.

This program guidance is available upon request and will be given broad distribution especially to those regulatory agencies involved in monitoring activities. It may be revised periodically in order to accomodate policy decisions and new developments. Further copies may be ordered by writing to the Office of Water Enforcement, Permit Programs Division, Room 706, Crystal Mall Building Number 2, Environmental Protection Agency, Washington, D.C. 20460.

October 1, 1973

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Introduction

The following considerations are intended to delineate a practical approach to the self-monitoring and reporting requirements of the National Pollutant Discharge Elimination System under the Federal Water Pollution Control Act Amendments of 1972. The material contained in this document sets forth minimum requirements to insure national uniformity as guidance to those administering the NPDES. The Permit Program as a matter of policy should require such self-monitoring and reporting by a permittee as is necessary to reasonably assess his performance. Excessive data collection can be costly for the discharger who must pay for the analytical effort, as well as for Regulatory Agencies who must record and review the data. However, frequency of sampling, analysis, and reporting must be such as to enable reasonable assessment of the discharger's performance relative to his Discharge Permit effluent limitations, and relative to his potential impact on the environment. In order to determine appropriate requirements for a given discharger, certain considerations must be taken into account, including, but not limited to, State priority, effluent volume, economics of data gathering (and processing), discharger's previous history, potential public health hazards, receiving water use, and such other considerations as may be appropriate. Monitoring manuals outlining specific methodology have been published by the Water Pollution Control Federation, and by State Agencies. EPA is currently publishing a monitoring manual which will soon be available for distribution.

The purpose of self-monitoring and reporting effluent data is to permit Federal and State regulatory agencies to follow, on a continuing basis, the discharger's effluent quality trends as well as specific variations from established limitations. It also provides the discharger with a minimum data review at least equal to that afforded the Regulatory Agency to judge the efficiency of wastewater treatment operations and the adequacy of pollution abatement programs. The principal use of self-monitoring data by the regulatory agency will be to assess compliance with Permit limitations. Self-reported data indicating permit violations may be used as primary evidence in an enforcement action. In many cases, however, efforts will be made to verify or supplement such data through EPA or state surveillance investigations and monitoring activities. Where independent evidence is thus gathered by the regulatory agency, self-monitoring data will be used as corroborative evidence in an enforcement action.

As a general rule, data gathering other than that necessary to assess compliance with specific limitations should not be required.

Monitoring and reporting requirements for municipal and industrial dischargers will differ because industrial limitations are based on best practicable control technology currently available whereas municipal discharges are based on secondary treatment. Notwithstanding these differences each permit should address itself to the definition of a sample type, the frequency of analysis, the list of parameters to be analyzed, and the frequency of reporting to the regulatory agency.

Section I - Monitoring and Reporting

Industrial

The economics of sampling and analysis plus the economics of review and automated data processing at the present time preclude a statistical approach to monitoring and self-reporting requirements. Once enough relevant data has been collected, a statistical approach to monitoring can be initiated. Thus, engineering judgement has been exercised in order to describe a program for reasonable minimum monitoring and self-reporting programs which will provide a nationally equitable impact and response. The temptation inevitably will be to require higher frequency sampling and reporting in those industries which are routinely engaged in analyzing and monitoring their own performance for internal reporting requirements, such as the petroleum refining, organic chemicals, and other high technology industries. It must be emphasized however, that the economic burden does not fall on industry alone. Automated data processing requirements and man power requirements for review and report handling within State and Federal agencies must be controlled, thereby avoiding the problem of requiring more data than is really needed to provide a reasonable review of treatment performance.

The determination of effluent limitations must take into consideration the fact that certain pollutants added by the discharger may also be present in the intake water. In these instances, credit may be given for that pollutant in establishing the discharge limitation.

Generally, a discharger is not responsible for pollutants entering with his water supply if he takes water from the same source into which he is discharging. If his source is other than the receiving stream, he may be charged with the gross discharge.

Only very rarely will it be necessary to monitor influent values on the same schedule as effluent values in order to accurately determine net pollutants discharged. These instances must be held to a minimum because of the doubling of economic burdens both on industry and government. Unless industry specifically requests application of net considerations in writing, or unless it is determined that the difference between net and gross is of major significance to a discharger, the permit should be written on a gross basis with no stipulation for influent values. Where the difference between net and gross application of effluent guidance is of relatively minor significance but industry requests application of net values, the influent waste loading should be stipulated based on presentation of existing data by industry (i.e., adjust limitation accordingly and write permit in gross terms). Where application of net values is of great significance to the dischargers permit, requirements for sampling the influent wasteloadings must be included. The frequency of analysis of the influent may be ~~less than~~ that for the discharge if data is shown to substantiate the consistency of influent analysis.

Pollutants that are removed in the treatment of water in an industrial facility (e.g., silt removal, filter backwash) may not be returned to the receiving water. Once a pollutant is removed by the discharger it may not be reintroduced. In this situation net/gross considerations will be applied downstream of any pretreatment steps.

Since the thrust of legislative intent has been interpreted as limiting quantities of pollutants discharged, permit limitations are to be expressed in kilograms of each pollutant per day. In certain industrial categories (e.g., mining), effluent limitations must be expressed in concentration. The lack of control of discharge volume and its subsequent relation to production volume does not allow an adequate kilogram per unit of production determination.

Each permit should contain an operating (i.e., monthly) average as well as a daily maximum.

The time frame selected for the expression of limitations is a production day. It is, therefore, reasonable to define a sample as being a daily composite.* This simply means that the effluent stream in question should be sampled at reasonable intervals during a discharge day (whether 8 hours or 24 hours). The composite sample should be representative of what is being discharged. A composite sample is defined as a combination of individual samples obtained at regular intervals over a time period. The volume of each individual sample could be proportional to discharge flow rates or to the sampling interval. Some industrial plants discharge periodically, continuously or on a controlled basis. All these possibilities must be thoroughly considered.

Minimum requirements are shown for major parameters common to broad areas (Table I); however, there may be additional parameters of major importance which should be included in the monitoring requirement because of a specific situation.

Only those parameters of major significance should be limited and monitored.

In a few critical situations, the discharger may be required to analyze the effect of his discharge on the receiving water. This requirement should be separated from the self-monitoring and reporting requirement as described herein.

Consideration must be given to toxic pollutants. These are not shown on the chart of parameters to be reported because of the wide variety of potentially toxic pollutants which could be encountered

* Measurement of some parameters may require a grab sample. A grab sample is defined as an individual sample collected in less than fifteen minutes.

Table I

Major Parameters by Broad Industrial Categories

Only parameters of major significance to each specific area will be monitored for reporting purposes in order to limit processing and review of irrelevant data. The following table shows major parameters common to broad areas:

	Fecal Col.	BOD	COD	Metals	TSS	Oil	Temp.	pH	Flow
Agrarian Products (Food, forest, tanning, etc.)	X	X			X				X
Chemical Plants (Organic, inorganics, petroleum, textile, cement, fiberglass, pesticides, pharmaceuticals, etc.)		X	X		X	X		X	X
Metal Processing (Steel, Aluminum motor vehicles, electroplating, etc.)			X	X	X	X		X	X
Mining and Milling (Coal, Hard rock, etc.)				X	X			X	X
Light Business (Local service industry, e.g., restaurants, gas stations, laundries, etc.)			X			X			X
Cooling Water									
Power Industry							X		X
Other							X	X	X

across the width and breadth of industry. Each discharge must be evaluated for the presence of such other pollutants and, where appropriate, limits established. Effluent limitations will be established in accordance with guidelines stemming from section 307 of the Water Pollution Control Act as they are promulgated. Industry will be required to monitor and report on these additional pollutants as they are identified for specific discharges. Where possible, monitoring of parameters that are very similar in function should not be required, e.g., only one Oxygen Demand parameter should be monitored. (i.e., BOD_5 or COD). The use of alternative parameters rather than one specified in guidance may be approved if adequate information showing the correlation is provided by industry.

Minimum sampling and analysis frequency for process effluents are shown (Table II). Uncontaminated cooling water discharges should not be monitored more frequently than the reporting requirement unless thermal or hydraulic conditions dictate.

The following considerations must be taken into account when evaluating a minimum sampling and analysis frequency for process effluents:

Compliance Schedule - Unless the discharger has considerable portion of the abatement facility needed for meeting 1977 requirements already installed, and/or the effluent is to be specifically regulated during an interim period, monitoring and reporting requirements should be held to a minimum. It is suggested that the monitoring requirements during construction stages of the compliance schedule be less than those during operation of the treatment facilities. In this situation an infrequent sampling and analysis schedule for significant pollutants should be considered.

Wastewater detention time - Wastewater treatment facilities with short residence times should be sampled more frequently than wastewater treatment facilities with long residence times. Extremes of practice should be taken into consideration. In particular, you will occasionally encounter extremely long residence time holding, sedimentation, polishing, or treatment ponds. Monitoring requirements may be significantly less frequent for longer residence time facilities if the actual residence time is established. (e.g., dye tracer studies).

Despite the existence of plans, programs, safeguards and treatment facilities, any given plant potential for environmental impact in the event of upset conditions or systemic failures must be taken into consideration when determining the monitoring and self-reporting requirements. Generally speaking, these considerations include receiving water quality, plant size, plant age, process technology employed, potential presence of toxic or hazardous materials, and engineering judgment as to the discharger's capability to fulfill his requirements.

TABLE II

Minimum Sampling and Analysis Frequency
for Process Effluent

Volume, MGD	Major Parameters	Other Parameters
below 0.05	Once per month	Semi-annual
0.05 - 1.0	Once per month	Quarterly
1 - 10	Once per week	Once per month
10 - 50	Three times per week	Once per month
Over 50	Daily	Once per week

Municipal

The prime objective of this guidance is to identify and place some limits on the principal elements to consider in establishing minimum effluent sampling and reporting requirements so that a continuing assessment can be made as to whether effluent permit limitations are being met at individual municipal wastewater treatment facilities. Recommendations are provided for flow measuring, sampling, testing and analysis, including suggested reporting frequencies.

Table III lists minimum numbers of analyses that should be performed on a plant's effluent on a monthly basis for a range of four plant size categories. If a percentage removal to determine compliance is required, the influent must be monitored at the same frequency as the effluent. Monitoring requirements specified in the permit conditions should be based at least on these minimum values, but should also take into consideration the facility's present sampling program, the nature of the receiving waters, the presence of industrial discharges to the facility, or other controlling influences. The sampling frequency should not be less than that routinely practiced at the facility if that frequency is greater than the minimum shown in Table III. The minimum sampling frequencies and parameters indicated in Table III will necessarily require modification depending upon the particular effluent limitations specified in the discharge permit, such as for nutrient control or for control of industrial wastes discharged to a municipal system. In the latter case, minimum requirements should be based upon the industrial monitoring guidance provided in this document. In any case, the average monthly value reported for each type of analysis performed should be the average of all analyses actually performed of any given type and not limited to the minimum requirements specified in the permit.

The self-reporting form (Form 3320-1) Figure I provides for reporting the minimum*, average**, and maximum* values in terms of quantity and concentration of the analysis performed. The analytical results will be expressed in concentrations and should be based on composite samples in order to obtain a representative daily average. The most representative average concentrations will result from samples collected and composited according to flow, over a specified period of time. The monthly average values reported should represent the total volume discharged and should be calculated from the total loading.

The minimum and maximum values called for on Form 3320-1 should represent the results of a 24-hour day. In some situations this may be the result of a single composite analysis while in others it may be the average of the analysis of three 8-hour composite samples.

* Daily Values
** Monthly Value

Table III

Municipal Wastewater Treatment Facilities
Minimum Sampling Frequency

Plant Size (mgd)	Flow	EFFLUENT BOD_5 (mg/l)	Suspended Solids (mg/l)	pH	Residual Chlorine (mg/l)[3]	Fecal Coliform (N Per 100 ml)[1,3]	Settleable Solids (ml/l)[3]
Up to 0.99	Once each Wkday.[2]	Once per month					
1 - 4.99	Daily	Once per week					
5 - 14.99	Daily	Once per weekday[2]					
15 and greater	Daily	Once per day					

1 In smaller plants, we should accept total coliform rather than fecal coliform at this time.

2 Weekday = Monday -Friday

3 Grab Sample

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

DISCHARGE MONITORING REPORT

FIGURE I

Form Approved
OMB NO. 158-R0073

(2-3) ST	(4-16) PERMIT NUMBER	(17-19) DIS	SIC	LATITUDE	LONGITUDE

REPORTING PERIOD: FROM (20-21) YEAR (22-23) MO (24-25) DAY TO (26-27) YEAR (28-29) MO (30-31) DAY

INSTRUCTIONS

1. Provide dates for period covered by this report in spaces marked "REPORTING PERIOD".
2. Enter reported minimum, average and maximum values under "QUANTITY" and "CONCENTRATION" in the units specified for each parameter as appropriate. Do not enter values in boxes containing asterisks. "AVERAGE" is average computed over actual time discharge is operating. "MAXIMUM" and "MINIMUM" *are extreme* values observed during the reporting period.
3. Specify the number of analyzed samples that exceed the maximum *(and/or minimum as appropriate)* permit conditions in the columns labeled "No. Ex." If none, enter "0".
4. Specify frequency of analysis for each parameter as No. analyses/No. days. *(e.g., "3/7" is equivalent to 3 analyses performed every 7 days.)* If continuous enter "CONT."
5. Specify sample type *("grab" or "___ hr. composite")* as applicable. If frequency was continuous, enter "NA".
6. *Appropriate signature is required on bottom of this form.*
7. Remove carbon and retain copy for your records.
8. Fold along dotted lines, staple and mail Original to office specified in permit.

(32-37) PARAMETER		*(3 card only)* QUANTITY (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(62-63) NO. EX	*(4 card only)* CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(62-63) NO. EX	(64-68) FREQUENCY OF ANALYSIS	(69-70) SAMPLE TYPE
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												
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NAME OF PRINCIPAL EXECUTIVE OFFICER	TITLE OF THE OFFICER	DATE			
LAST FIRST MI	TITLE	YEAR	MO	DAY	*I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.*

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

EPA Form 3320-1 (10-72)

There is increasing use being made of TOC and COD, especially for process control purposes. Where enough analyses are conducted to establish and maintain adequate correlation to BOD, a community may choose to report analyses of TOC or COD instead of BOD. Details of correlation procedures will be provided at a later date.

Some types of wastewater treatment facilities, irrespective of size, may: (1) wholly contain the waste load and never discharge; (2) discharge continuously; (3) be operated to discharge seasonally; or (4) discharge on some other controlled basis. Thus, if there is no discharge there will be monthly reports from some facilities which will be void of data.

Reporting Requirements Submission of Monitoring Forms

Monitoring Forms

Standard forms, "Monitoring Discharge Report" (EPA Form 3320-1) have been developed to report self-monitoring data provided by dischargers as a condition of their permits. Identifying information, specific parameters, effluent limits, and sampling and analyses requirements are entered by the permit office prior to sending them to the permittee. Enough forms should be sent to cover the period of time during which the effluent conditions are applicable. For example, one set of effluent limits might apply during the first year of a permit before treatment facilities are constructed while another set of conditions might apply for three years after construction of facilities. If quarterly entries on the form were required before construction and semi-annual entries were required after construction, four reporting forms would be generated for each discharge to cover the first year's conditions and six forms would be produced for the remainder of the conditions. A similar procedure would apply if there were an increase in sampling frequency shortly before and after construction of treatment facilities.

Each Discharge Monitoring Report form may be used for the combined effluent measurements of an entire facility, combinations of selected outfalls, or a single outfall. The form is on two-part paper consisting of an original and a copy and is so designed that the original may be folded, stapled and sent to the permit reviewing office. There is space on the reverse of the form for any comments the discharger may wish to include. There is a complete computerized processing system to automatically process this form.

In some cases, States having authorized NPDES permit programs may wish to utilize their own form. This is considered acceptable under the NPDES Permit Program as long as such non-standard forms are approved by EPA and contain all of the requested data elements reported on the standard NPDES form.

Reporting Schedule

Monitoring Discharge Report Forms will be required to be filed on a regular basis with EPA Regional Offices or approved State Offices. Sufficient time should be given for the reporting period in order to allow for completion and mailing of forms. Reports will be required at the following frequency:

Quarterly - Any discharge greater than 1 mgd flow, any discharge classified as major and/or toxic, and all municipal treatment plants.
Semi-annually - Any industrial discharge less than 1.0 mgd.

Excessive Pollutant Discharges

Non-compliance to extreme value conditions (maximum and minimum quantities) might indicate a serious situation, the response time obtained from a self-reporting program is considered too long to be meaningful. In order to be responsive to exceptionally high pollutant loads an "Excessive Pollutant Discharge" response system will be used. Since the extreme value condition(s) (e.g., maximum and/or minimum) indicate out-of-control circumstances, the permittee will be instructed in the special conditions of the permit to notify the Regional Administrator or the Director of any approved State Agency immediately of the occurrence of the noncompliance. The permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitations specified in the permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

Section II

Data Management

I. Introduction

Any large monitoring program as has been described in Section I implies large amounts of data being generated. In order to successfully manage this quantity of data, automated data processing (ADP) techniques must be employed. However, several considerations must be given to the ADP system to be used to obtain a system which provides the most benefits for the least cost and still satisfies the requirements of a monitoring discharge program.

A description of the system that has been designed to handle the requirements of the permit program's self-reporting of monitoring analyses consists of the following:

A. Description of Data Flow
How reports and data flow between the EPA and the States and the interface between the office operating the ADP system and the system itself.

B. Resource Status and Requirements
What is required in the way of personnel and equipment (especially in State offices) compared to what is currently available.

C. System Description
The computer software available to aid in operation of the system.

D. Cost Considerations
An accounting of expected operating costs (exclusive of personnel).

II. System Description

A. Description of Data Flow:

The way in which data flows is dependent on where the data processing is being conducted. If the State office conducts its own data processing (as is highly recommended) the flow is quite straightforward. A diagram of data flow under this situation is presented as Version A in Figure II. It contrasts sharply with the complications that develop where EPA must handle the data processing for a State which is administering the program. This is presented as Version B in Figure III. As will be noted on the diagram there are options available at two flow points. These are at the beginning when the form is initially sent to the permittee and again when the form is returned to the reviewing office. These options are left to the particular EPA Regions and States involved to resolve which option is actually used. There is, of course, a Version C

Figure II

Flow Diagram for Processing of Discharge Monitoring Report
When State has Permit Authority and Conducts Data Processing (Version A)

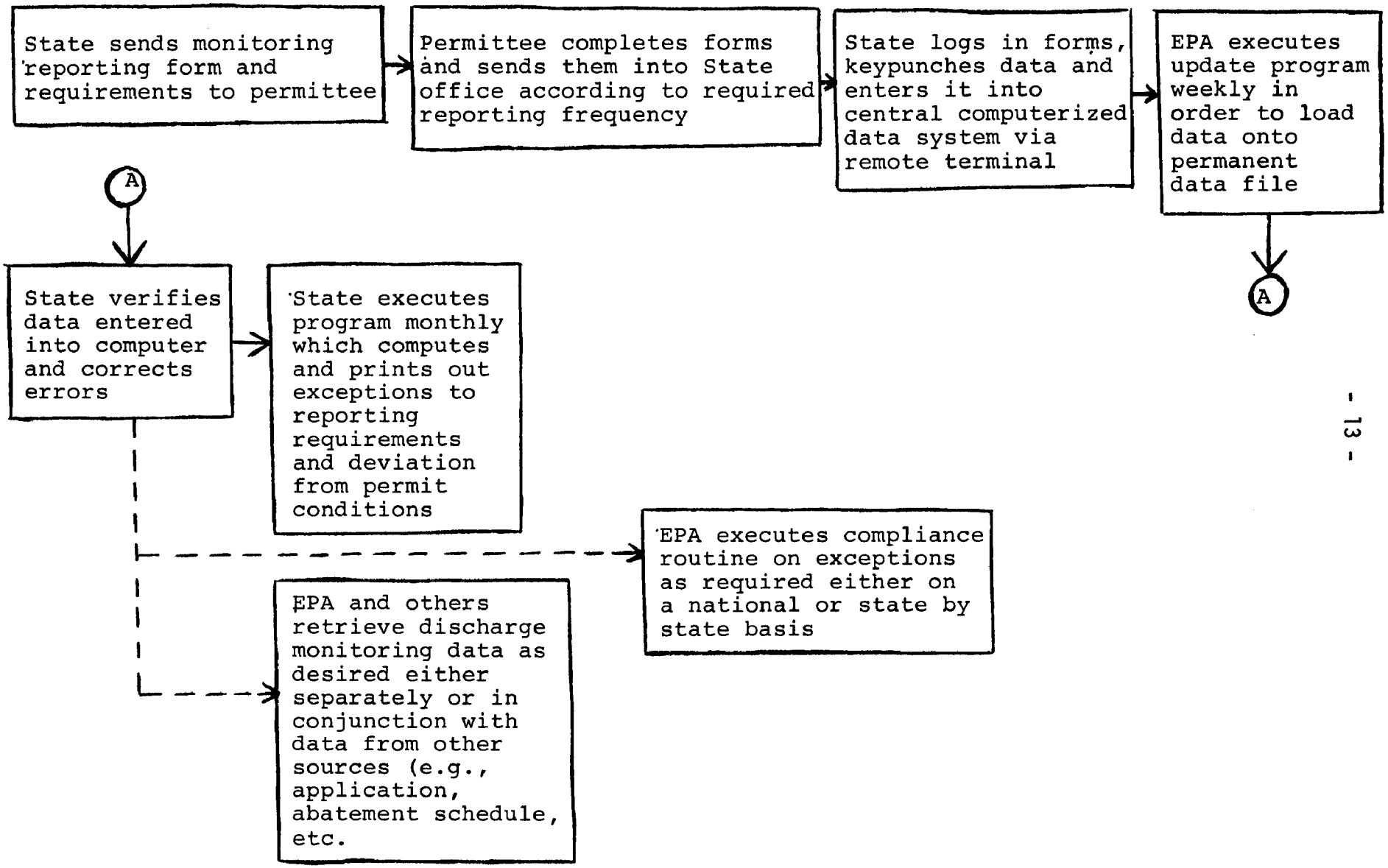


Figure III

Flow Diagram for Processing of Discharge Monitoring Report
When State has Permit Authority and EPA Conducts Data Processing (Version B)

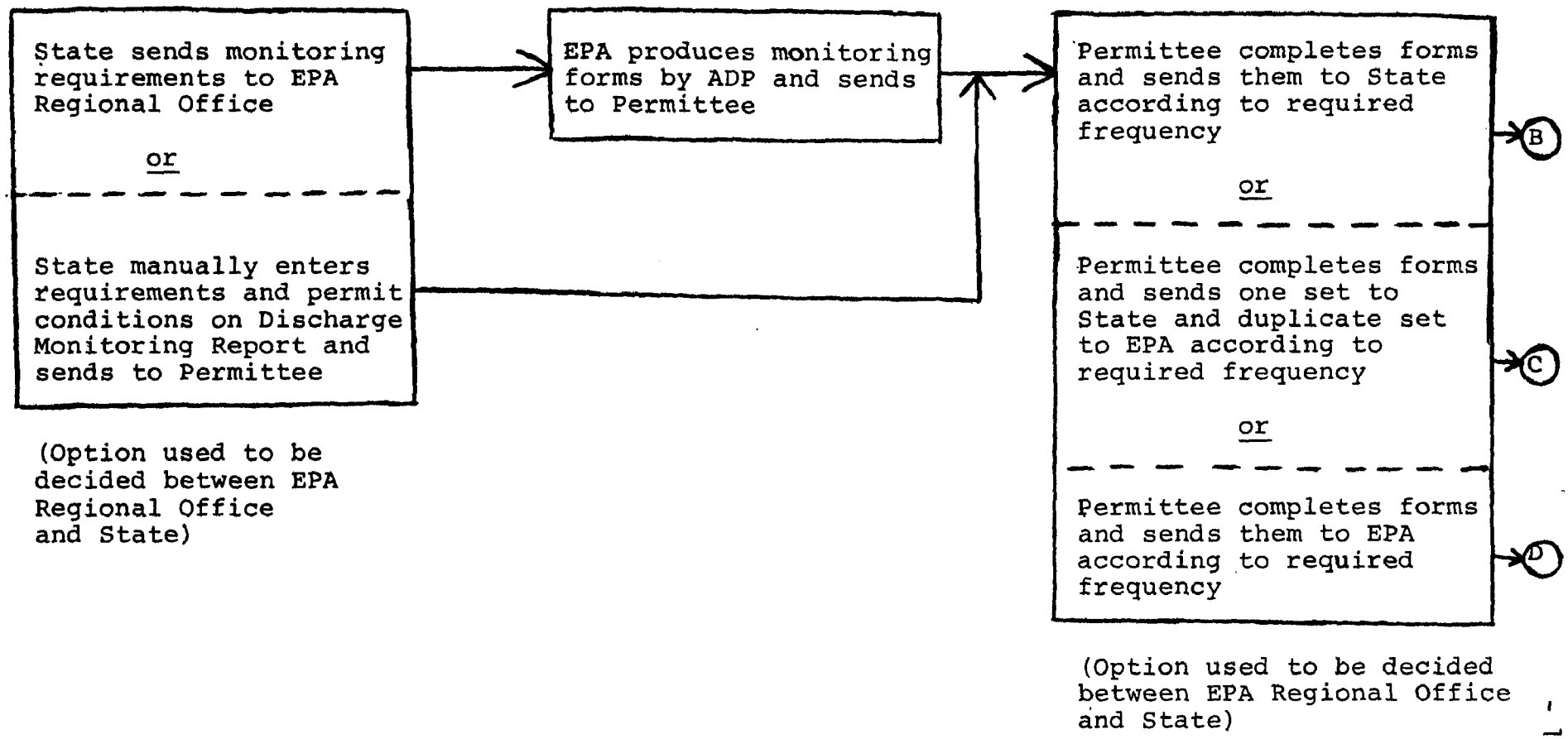
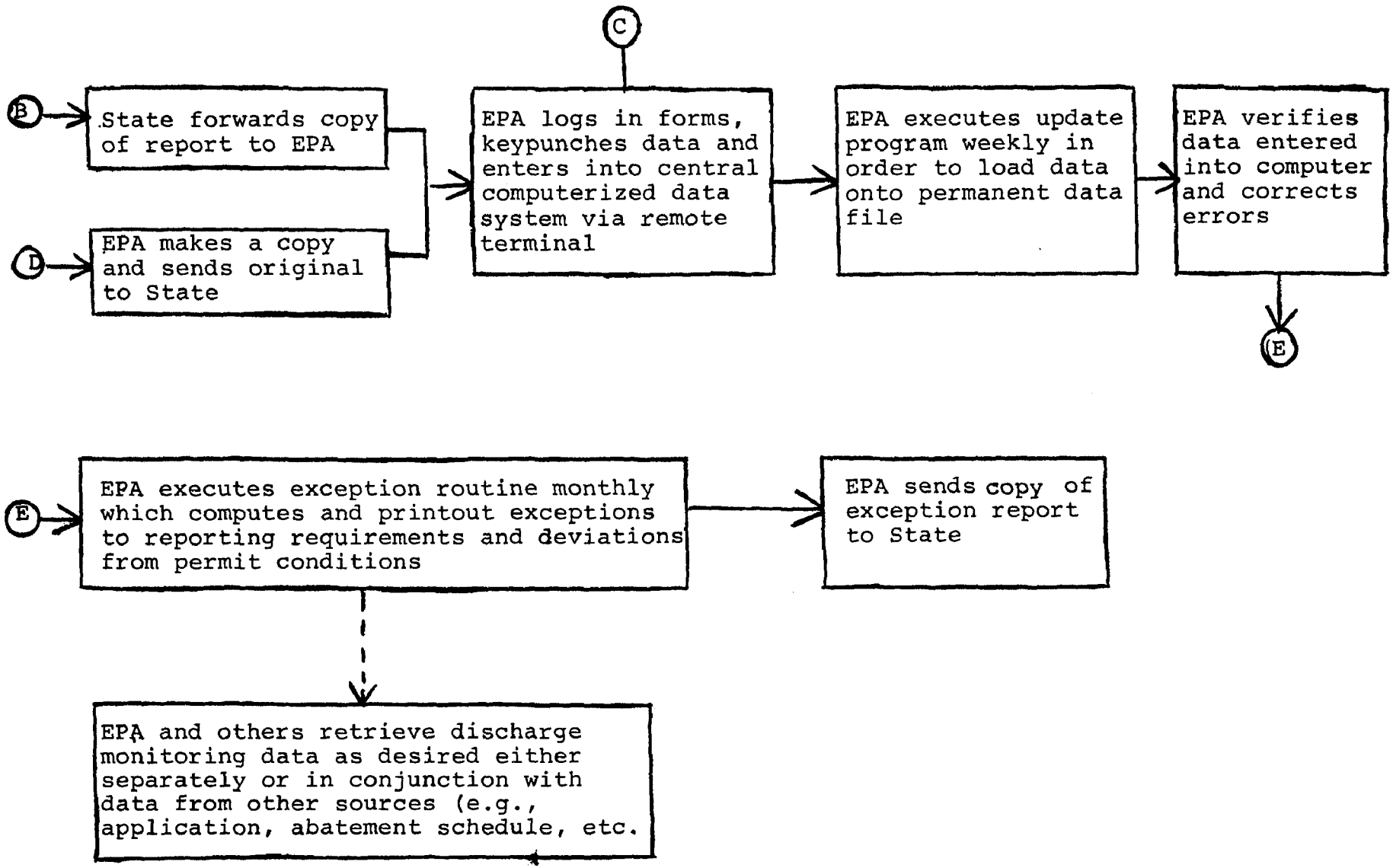


Figure III (Con't)



(not shown) which is similar to version A where EPA is administering the program as well as conducting the data processing.

The main feature of the data flow described above is that the data reflects the minimum requirements set by EPA through the use of standard forms and that it is entered into a centralized computer processing system over remote terminals. In this way many interested parties may review the same data from one central facility. If some State offices do not use the standard NPDES Discharge Monitoring Report forms (EPA Form 3320-1) but their own EPA approved forms containing the minimum data requirements, it will be necessary to either transfer the applicable data to the standard form or to develop a computerized conversion program to arrange the data in the proper format before it is processed by the ADP system described below.

In summary, three versions (A-C) of data flow have been presented. It is very important that each EPA Regional office and States where applicable decide on which version and options are to be utilized in each particular situation before any self-monitoring system is implemented. Maximum consideration should be given to working out arrangements which simplify the amount of data handling required while maintaining program integrity.

B. Resource Status and Requirements

The minimum resource that is required of any office which plans to utilize the ADP system described below is one basic low-speed (IBM 2741 type) configuration and one basic configured medium-speed (Data 100) remote computer terminal. These terminals are briefly described in Table IV with their approximate monthly rental costs. The low-speed terminal is necessary for practical entering of retrieval requests, some data entry, and printing of output. A medium-speed terminal is necessary for reading in any significant amount of data from punched cards or magnetic tape, printing large amounts of output, and preparing reporting forms to be sent out.

Table V lists those States that currently are using the EPA central computer system and currently have at least a low-speed terminal. Note that only three states currently have medium-speed terminals. All EPA Regions have sufficient equipment to accomplish the required processing.

Personnel required to operate the monitoring ADP system should consist of at least one subprofessional data processing clerk and one professional level computer specialist.

Table IV

Uses and Cost of Time Sharing Terminals

Type	Use	Cost
Low-Speed (typewriter type) (15 characters/sec.)	Minimal input and output such as with MICS. Good for making retrieval requests of data system	$100/mo (basic $250/mo (with mag card or cassett)
Medium-Speed (200-400 lines/sec.)	Required for reading in any significant amount of data (i.e., as from punched cards.) Needed for any significant amount of data retrieval and for producing input to self-monitoring reports to send to permittee	$900/mo (basic) 1800/mo (with mag tape and some local computing capability)

Table V

States Presently Having Remote Computer Terminals

State State	Type of Terminal Low-Speed	 Medium Speed
Arizona	X	
Arkansas	X	
California	X	
Colorado	X	
Connecticut	X	X
Delaware	X	
District of Columbia	X	
Florida	X	
Idaho	X	
Illinois	X	
Indiana	X	
Kansas	X	
Kentucky	X	
Maryland	X	
Massachusetts	X	
Michigan	X	
Missouri	X	
Montana	X	
Nebraska	X	
Nevada	X	X
New Jersey	X	
New Mexico	X	
New York	X	
North Carolina	X	
Ohio	X	
Oklahoma	X	
Oregon	X	
Pennsylvania	X	
South Carolina	X	
South Dakota	X	
Tennessee	X	
Texas	X	
Virginia	X	
Washington	X	X
West Virginia	X	
Wisconsin	X	

C. System Description

Computer software has been developed to assist in processing of self-monitoring data. Although the various programs are designed to process the standard NPDES Discharge Monitoring Report, it could also be used to some degree with data from approved non-standard reports arranged in the proper format for entry into the main data file.

The computerized monitoring system is an independently operating processor which is tied in with the General Point Source File (GPSF). In other words, the monitoring system works against the data but the data are stored in GPSF.[1] All the general retrieval capability of GPSF will consequently be available on the self-monitoring data processed.

An outline of the monitoring data processing system is presented in Figure IV. Initial monitoring requirements are entered on punched cards which automatically enters the monitoring conditions on the standard form, produces the required number of reports and mailing labels, and initializes the file in order to check for exceptions on reports received and non-compliance with permit conditions as they occur. After reports are received with self-reported monitoring data, they are entered into the system. The system then automatically checks the data for validity and supplies any exception to permit conditions as well as a list of late filers.

D. Cost Considerations

Costs for processing of monitoring data (exclusive of personnel) are presented in Table VI. The first group of costs cover producing the forms and initializing the file. The second group of costs cover processing of forms once they are received back from the discharger. The total monthly cost of $5,000 is based on 5,000 facilities with two discharges each reporting monthly on six parameters per discharge. The costs of processing are, therefore, approximately one dollar per facility or fifty cents per discharge. It should be noted that no cost is assigned to disc pack storage. This is because there are no charges for mounting off-line disc packs. It is not considered necessary that

1 A description of GPSF is available from the U.S. Environmental Protection Agency, Information Access and User Assistance Branch, Monitoring and Data Support Division, Office of Water Programs, Washington, D.C. 20460

Figure IV

- Monitoring Flow -

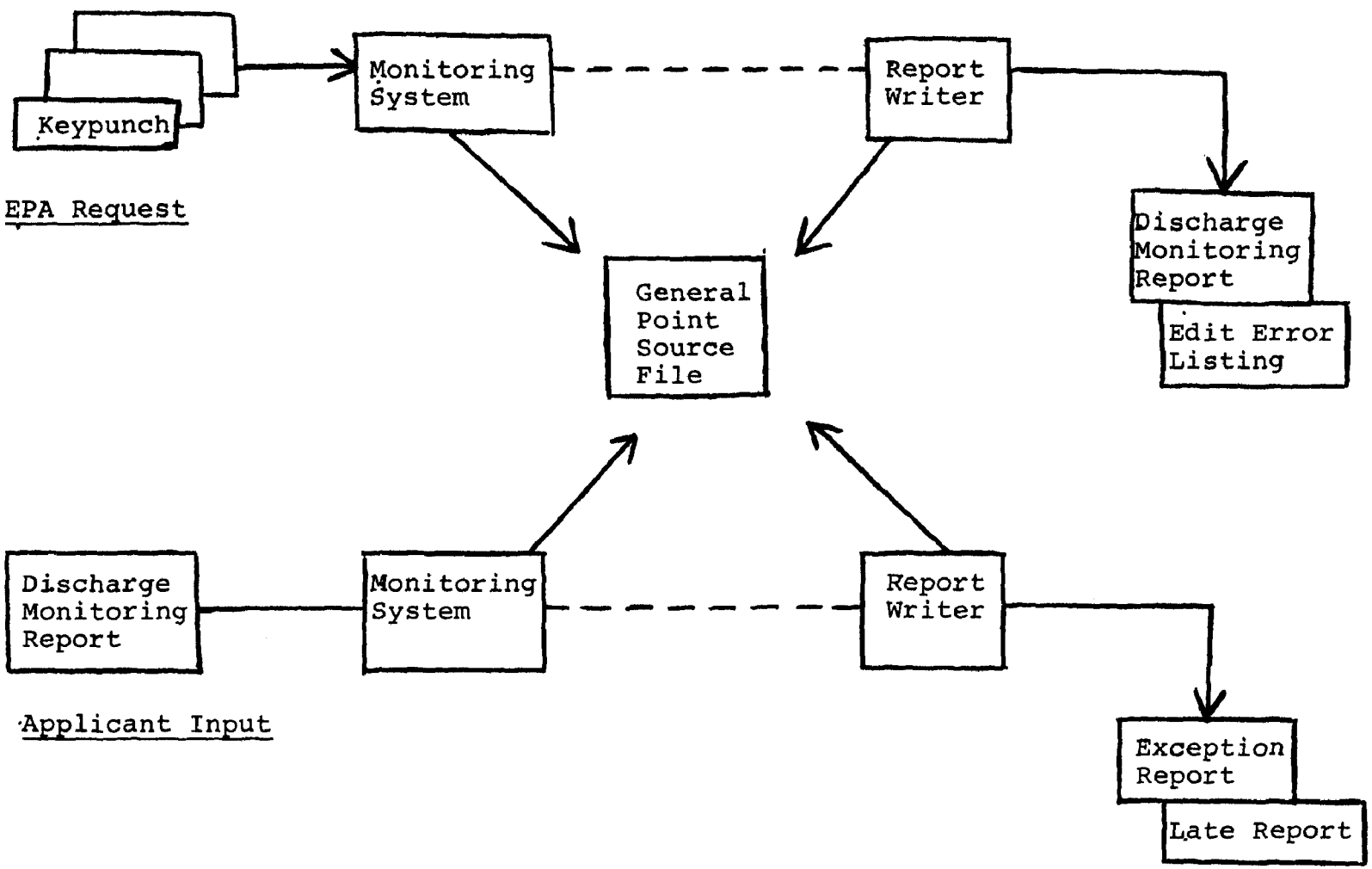


Table VI

Estimate of Automated Data Processing Costs of Self-Monitoring Program

(Basis of Costs: 5,000 facilities with two discharges (outfalls) each reporting monthly on six (6) parameters per outfall)

Initial Set Up (12 reports per discharge per year)

Item	Quantity/ Year	Cost per/month	Cost per/year
Print Lines	700,000	$ 15.00	$ 175.00
Punched Cards	70,000	175.00	2,100.00
Computer Time	6 hrs.	75.00	900.00
Data Storage (Off-line)	1 Disc Pack	0	0
		$265.00	$ 3,175.00

Processing Returned Reports

Item	Quantity/ Year	Cost per/month	Cost per/year
Print Lines*	10,000	$ 3	$ 36
Punched Cards	120,000	3600	43,320
Computer Time	6 hrs.	900	10,800
Data Storage (Off-line)	1 Disc Pack	0	0
		$ 4503	$54,156
	Total Cost/month	$ 4,768	
	Total Cost/year	$57,331	

* Assumes one-third exceptions reported

vast amounts of data be kept on-line at all times at a greatly increased cost. The off-line mode still allows a minimum four hour turnaround with overnight service obtainable with high reliability. These turnaround times are certainly sufficient for any intended use of the system.

The above are the types of cost that should be considered in conjunction with assigning monitoring reporting requirements and use of ADP systems to process self-monitoring data. Since it costs both in time and money approximately the same to process a minor discharger as a major discharger, it is very important for the reviewing offices to process reports according to a pre-established priority in order to achieve the greater benefit for the resource available.