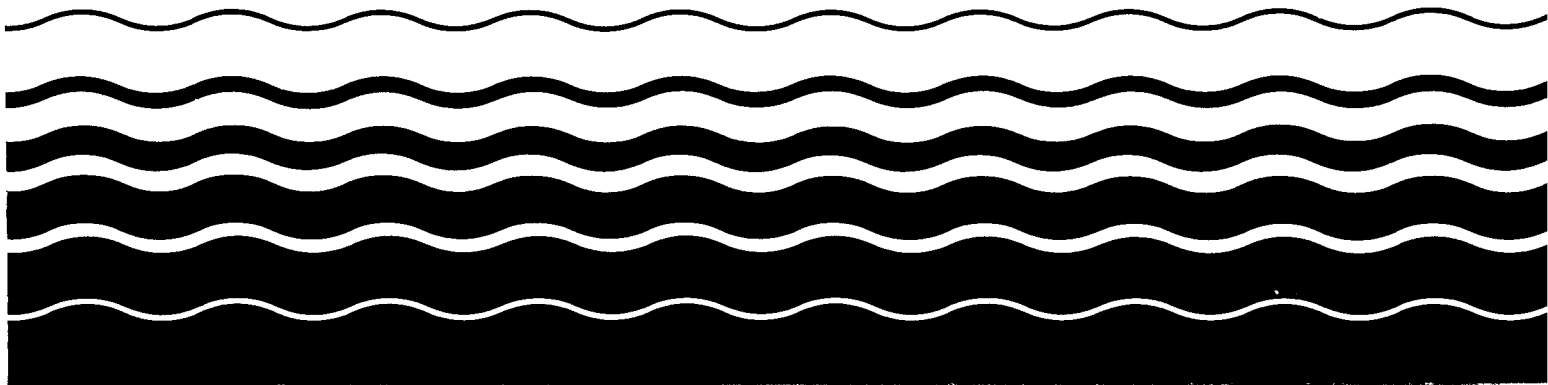




Guidance Manual For The Preparation Of Part 1 Of The NPDES Permit Applications For Discharges From Municipal Separate Storm Sewer Systems



**GUIDANCE MANUAL
FOR THE PREPARATION OF PART 1
OF THE NPDES PERMIT APPLICATIONS
FOR DISCHARGES FROM MUNICIPAL
SEPARATE STORM SEWER SYSTEMS**

April 1991

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Water quality problems have occupied an increasingly prominent role in the public's awareness and in environmental legislation over the past several decades. Since 1956, the trend in water pollution control legislation has been toward greater Federal authority in setting and enforcing discharge standards. In 1972, Congress passed significant amendments to the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act or CWA) which provide that the discharge of any pollutant to navigable waters of the United States from a point source is unlawful except in accordance with a National Pollutant Discharge Elimination System (NPDES) permit.

Efforts to improve water quality under the NPDES program have traditionally focused on reducing pollutants in discharges of industrial process wastewater and municipal sewage. At the onset of the program in 1972, industrial process discharges and municipal sewage outfalls were easily identified as being responsible for poor, often drastically degraded water quality conditions. However, as pollution control measures were developed for these discharges, it became evident that more diffuse sources (occurring over a wide area) of water pollution were also major causes of water quality problems. The growing awareness of the magnitude of these diffuse sources of water pollution has only occurred in the past two decades.

For years, many environmental lawmakers and much of the public alike assumed that runoff from urban (and suburban) areas was essentially "clean" water. However, during the past 20 years or so, this view has changed. We now recognize that rainfall picks up a multitude of pollutants as a result of falling on and draining off streets and parking lots; construction and industrial sites; and mining, logging, and agricultural areas. The pollutants are dissolved into and are carried off by the runoff as it drains from these surfaces and areas. Through natural processes or manmade systems, the runoff is

channeled into and transported by gravity and flows through a wide variety of drainage features. The runoff then scours accumulated pollutants out of gutters, catchbasins, storm sewers, and drainage channels. The runoff (and accumulated pollutants) eventually ends up in surface water bodies such as creeks, rivers, estuaries, bays, and oceans.

Many recent studies have shown that runoff from urban and industrial areas typically contains significant quantities of the same general types of pollutants that are found in wastewaters and industrial discharges and often causes similar water quality problems. These pollutants include heavy metals (e.g., chromium, cadmium, copper, lead, mercury, nickel, zinc), pesticides, herbicides, and synthetic organic compounds such as fuels, waste oils, solvents, lubricants, and grease. These pollutants can (and do) cause problems for both human health and the aquatic ecosystems supported by the diverse receiving water bodies.

Comprehensive and reliable assessments of water quality are extremely difficult to perform and verify. However, several national-scale assessments have been made. For the purposes of these assessments, runoff from urban and industrial areas has been considered as a diffuse source or "nonpoint" source of pollution. Legally, however, most urban runoff is discharged through conveyances such as separate storm sewers or other conveyances which are point sources under the CWA and are, therefore, subject to the NPDES program.

To provide a better understanding of the nature of storm water runoff from residential, commercial, and light industrial areas, EPA provided funding and guidance to the Nationwide Urban Runoff Program (NURP), which was conducted from 1978 through 1983. The NURP study provided insight on what can be considered background levels of pollutants for urban runoff. However, NURP concluded that the quality of urban runoff can be adversely impacted by several sources of pollutants that were not directly evaluated in the study, including illicit connections, construction and industrial site runoff, and illegal dumping.

Other studies have shown that many storm sewers contain illicit discharges of non-storm water, and that large amounts of wastes, particularly used oils, are improperly disposed of in storm sewers. Removal of these discharges presents opportunities for dramatic improvements in the quality of storm water discharges.

More recently, the EPA performed a general assessment of water quality based on biennial reports submitted by the States. In a document entitled "National Water Quality Inventory, 1988 Report to Congress," it was reported that pollution from diffuse or nonpoint sources such as runoff from urban areas and industrial sites was cited as the leading cause of water quality impairment in 37 states.

As a result of these studies, it became clear that the point source discharge of urban runoff would have to be regulated in some manner. The appropriate means of regulating storm water point sources within the NPDES program has been a matter of serious concern since implementation of the NPDES program in 1972. Each attempt to devise a workable program has been the focus of substantial controversy, in view of the large number of storm water sources, the nature of storm water runoff, and the realities of program priorities and resources.

EPA promulgated its first storm water regulations in 1973. Since that time, the history of the storm water permit application rulemaking has been long and complex. While EPA was evaluating the appropriate means to regulate storm water discharges, Congress was examining the storm water issue in the course of the reauthorization of the CWA. The CWA was amended on February 4, 1987, when Congress passed the Water Quality Act of 1987 (WQA).

The central provision of the WQA which governs storm water discharges is Section 405. Section 405 of the WQA added a new subsection "p" to existing Section 402 of the CWA. Section 402(p) of the CWA adopted a phased approach to control pollutants in storm water discharges. It established phased permit application requirements, permit issuance deadlines, and permit compliance conditions for different categories of storm water discharges.

Section 402(p) of the CWA requires the EPA to establish final regulations governing storm water discharge permit application requirements under the NPDES program. The permit application requirements pertain to storm water discharges associated with industrial activity; discharges from large municipal separate storm water systems (systems serving a population of 250,000 or more); and discharges from medium municipal separate storm water systems (systems serving a population of 100,000 or more, but less than 250,000). In response to this requirement, the EPA published in the November 16, 1990, Federal Register the regulations for NPDES permit application requirements for the above-mentioned storm water discharges. This manual provides guidance to the cities in how to fulfill these requirements for a municipal application.

1.1 WHY READ THIS MANUAL?

This guidance manual is intended to assist municipalities which are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharge (i.e., storm water discharge associated with a separate storm sewer system serving an area with a population greater than 100,000). If you are currently operating such a system, or plan to operate one, you are required to submit a permit application to the appropriate permitting agency listed in Appendix A. Note that for states that have approved NPDES programs, the permitting agency is the state office listed. Municipalities in states without approved programs must submit the permit application to the regional EPA office listed. Other addresses given in Appendix A are provided for additional assistance only.

This manual presents guidance on the methods that you should use to prepare both Parts 1 and 2 of the NPDES permit application for municipal separate storm water discharges to demonstrate compliance with the general requirements of 40 CFR Sections 122.21 and 122.26 (55 FR 47990). The regulations pertaining to completion of the application can be found in Appendix B. A summary of the new regulations and an interpretation of each part is contained in Section 4.0.

Part 1 of the application requires municipal applicants to:

- Provide general owner information.
- Describe legal authority used by the municipality to implement the requirements of 40 CFR Sections 122.21 and 122.26.
- Identify sources of discharge to the storm sewer system.
- Characterize the discharge from the sources in terms of water quality.
- Begin to identify sources of illicit discharges contributing to storm water pollution.

- **Propose Part 2 sampling plan.**

The Permitting Authority will review Parts 1 and 2 of the application, then develop appropriate permit conditions to ensure effective implementation of the municipality's storm water management program.

1.2 HOW IS THIS MANUAL ORGANIZED?

This guidance manual is organized in such a manner that it can be used by those interested in understanding and interpreting the NPDES permit application regulations, as well as those responsible for preparing the application itself. The preface presents an overview of the development of storm water regulations. Section 2.0 describes the basic NPDES storm water permitting process as follows:

- Who is required to apply
 - Classes of applicants (large or medium municipalities)
 - Types of applications (individual or system-wide)
- Who issues and enforces the permit

Section 3.0 of the guidance manual gives the permit application deadlines and locations to submit the application. A completeness checklist is also included in this section. This checklist is similar to those which will be used by agency personnel when reviewing the applications submitted by the municipalities. Every applicant should therefore verify that all items on the checklist have been satisfied before submitting the application. Sections 4.0 provides guidance for understanding and interpreting the regulations for Part 1 applications, and gives examples which are based on a case study of a city in California.

Appendices are included at the end of the manual to provide supplementary information, as follows:

- Appendix A: A list of Federal, State and regional permitting agencies.
- Appendix B: Final NPDES storm water regulations for Parts 1 and 2 of the permit application.

- **Appendix C: Definitions of frequently used terms in the regulations and in storm water pollution control.**
- **Appendix D: Sample Characterization Plan.**
- **Appendix E: Guidance Materials.**

1.3 IS THIS MANUAL SUBJECT TO REVISION?

This manual has been prepared by the Permits Division, Office of Water Enforcement and Permits, U.S. Environmental Protection Agency. It is organized in such a manner that it can be used by those interested in understanding and interpreting the NPDES permit application regulations, and for the preparation of the application itself. Because the storm water permitting program is relatively recent, the application guidance may be subject to revisions. In addition, further guidance or policy statements may be issued by EPA to clarify questions that may arise as experience is gained in relation to the permit application process.

1.4 WHAT OTHER GUIDANCE MATERIALS ARE AVAILABLE?

Several resource documents exist which may prove useful; these documents are as follows:

- Federal Register, U.S. EPA; 40 CFR Parts 122, 123, and 124; (55 FR 47990). National Pollutant Discharge Elimination System Permit Application Regulations for Storm Water Discharges; Final Rule. This document contains supplementary background information and commentary on the current storm water regulations.
- Guidance Manual for the Preparation of NPDES Permit Applications for Storm Water Discharges Associated with Industrial Activity, U.S. EPA: This manual would be useful to those municipalities which conduct activities covered by the definition of storm water discharges associated with industrial activity.

Appendix E contains a more detailed list of additional guidance materials available for use by permit applicants.

It is recommended that the applicant be familiar with all available guidance materials in order to prepare an application for the municipality. However, the permit application can be completed without the additional guidance simply by following the regulations, the permit instructions and using this guidance manual. Please note that there is no application form for submitting the information required for municipal separate storm sewer systems. Therefore, it is important that the applicant submit information that is concise and can be easily identified by the permitting authority.

2.1 WHO IS REQUIRED TO APPLY?

Any municipality owning or operating a separate storm sewer system which discharges, is required to obtain an NPDES permit, if the population within the geographic boundaries of the municipality served by the separate storm sewer system meets the following criteria, as determined by the most recent Bureau of Census estimates:

Medium Storm Sewer System

- An incorporated municipality (city) with a population greater than or equal to 100,000 but less than 250,000 persons.
- Counties with census designated urbanized areas that have a population greater than or equal to 100,000 but less than 250,000 after incorporated areas, towns, and townships within such counties are excluded.

Large Storm Sewer System

- An incorporated municipality (city) with a population greater than or equal to 250,000 persons.
- Counties with designated areas that have a population greater than or equal to 250,000 after incorporated areas, towns and townships within such counties are excluded.

Tables 2-1a and 2-1b are a listing of incorporated places (cities) in the United States with over 100,000 inhabitants; these cities must obtain an NPDES storm water permit. In addition, Tables 2-2a and 2-2b contain a listing of counties in the United States which are required to obtain an NPDES storm water permit. These lists have been compiled according to the 1980 U.S. Census.

Table 2-1a.

INCORPORATED PLACES WITH POPULATIONS GREATER THAN 250,000 ACCORDING TO
LATEST DECENNIAL CENSUS BY BUREAU OF CENSUS

| <u>State</u> | <u>Incorporated Place</u> |
|----------------------|--|
| Alabama | Birmingham |
| Arizona | Phoenix Tucson |
| California | Long Beach Los Angeles Oakland Sacramento San Diego San Francisco San Jose |
| Colorado | Denver |
| District of Columbia | |
| Florida | Jacksonville Miami Tampa |
| Georgia | Atlanta |
| Illinois | Chicago |
| Indiana | Indianapolis |
| Kansas | Wichita |
| Kentucky | Louisville |
| Louisiana | New Orleans |
| Maryland | Baltimore |
| Massachusetts | Boston |
| Michigan | Detroit |
| Minnesota | Minneapolis St. Paul |
| Missouri | Kansas City St. Louis |

Table 2-1a.

**INCORPORATED PLACES WITH POPULATIONS GREATER THAN 250,000 ACCORDING TO
LATEST DECENNIAL CENSUS BY BUREAU OF CENSUS (continued)**

| <u>State</u> | <u>Incorporated Place</u> |
|----------------|--|
| Nebraska | Omaha |
| New Jersey | Newark |
| New Mexico | Albuquerque |
| New York | Buffalo Bronx Borough Brooklyn Borough Manhattan Borough Queens Borough Staten Island Borough |
| North Carolina | Charlotte |
| Ohio | Cincinnati Cleveland Columbus Toledo |
| Oklahoma | Oklahoma City Tulsa |
| Oregon | Portland |
| Pennsylvania | Philadelphia Pittsburgh |
| Tennessee | Memphis Nashville/Davidson |
| Texas | Austin Dallas El Paso Forth Worth Houston San Antonio |
| Virginia | Norfolk Virginia Beach |
| Washington | Seattle |
| Wisconsin | Milwaukee |

Table 2-1b.

INCORPORATED PLACES WITH POPULATIONS GREATER THAN 100,000 AND LESS THAN 250,000 ACCORDING TO THE LATEST DECENNIAL CENSUS BY BUREAU OF CENSUS

| <u>State</u> | <u>Incorporated Place</u> |
|--------------|--|
| Alabama | Huntsville Mobile Montgomery |
| Alaska | Anchorage |
| Arizona | Mesa Tempe |
| Arkansas | Little Rock |
| California | Anaheim Bakersfield Berkeley Concord Fremont Fresno Fullerton Garden Grove Glendale Huntington Beach Modesto Oxnard Pasadena Riverside San Bernadino Santa Ana Stockton Sunnyvale Torrance |
| Colorado | Aurora Colorado Springs Lakewood Pueblo |
| Connecticut | Bridgeport Hartford New Haven Stamford Waterbury |

Table 2-1b.

INCORPORATED PLACES WITH POPULATIONS GREATER THAN 100,000 AND LESS THAN 250,000 ACCORDING TO LATEST DECENNIAL CENSUS BY BUREAU OF CENSUS (continued)

| <u>State</u> | <u>Incorporated Place</u> |
|---------------|--|
| Florida | Fort Lauderdale Hialeah Hollywood Orlando St. Petersburg |
| Georgia | Columbus Macon Savannah |
| Idaho | Boise City |
| Illinois | Peoria Rockford |
| Indiana | Evansville Fort Wayne Gary South Bend |
| Iowa | Cedar Rapids Davenport Des Moines |
| Kansas | Kansas City Topeka |
| Kentucky | Lexington-Fayette |
| Louisiana | Baton Rouge Shreveport |
| Massachusetts | Springfield Worcester |
| Michigan | Ann Arbor Flint Grand Rapids Lansing Livonia Sterling Heights Warren |
| Mississippi | Jackson |

Table 2-1b.

INCORPORATED PLACES WITH POPULATIONS GREATER THAN 100,000 AND LESS THAN 250,000 ACCORDING TO LATEST DECENNIAL CENSUS BY BUREAU OF CENSUS (continued)

| <u>State</u> | <u>Incorporated Place</u> |
|----------------|---|
| Missouri | Independence Springfield |
| Nebraska | Lincoln |
| Nevada | Las Vegas Reno |
| New Jersey | Elizabeth Jersey City Paterson |
| New York | Albany Rochester Syracuse Yonkers |
| North Carolina | Durham Greensboro Raleigh Winston-Salem |
| Ohio | Akron Dayton Youngstown |
| Oregon | Eugene |
| Pennsylvania | Allentown Erie |
| Rhode Island | Providence |
| South Carolina | Columbia |
| Tennessee | Chattanooga Knoxville |
| Texas | Amarillo Arlington Beaumont Corpus Christi Garland Irving Lubbock Pasadena Waco |

Table 2-1b.

INCORPORATED PLACES WITH POPULATIONS GREATER THAN 100,000 AND LESS THAN 250,000 ACCORDING TO LATEST DECENNIAL CENSUS BY BUREAU OF CENSUS (concluded)

| <u>State</u> | <u>Incorporated Place</u> |
|--------------|--|
| Utah | Salt Lake City |
| Virginia | Alexandria Chesapeake Hampton Newport News Portsmouth Richmond Roanoke |
| Washington | Spokane Tacoma |
| Wisconsin | Madison |

Table 2-2a.

**COUNTIES WITH UNINCORPORATED URBANIZED AREAS WITH A
POPULATION OF 250,000 OR MORE ACCORDING TO THE LATEST
DECENNIAL CENSUS BY THE BUREAU OF CENSUS**

| <u>STATE</u> | <u>COUNTY</u> | <u>UNINCORPORATED URBANIZED POPULATION</u> |
|--------------|-----------------|--|
| California | Los Angeles | 912,664 |
| | Sacramento | 449,056 |
| | San Diego | 304,758 |
| Delaware | New Castle | 257,184 |
| Florida | Dade | 781,949 |
| Georgia | DeKalb | 386,379 |
| Hawaii | Honolulu | 688,178 |
| Maryland | Anne Arundel | 271,458 |
| | Baltimore | 601,308 |
| | Montgomery | 447,993 |
| | Prince George's | 450,188 |
| Texas | Harris | 409,601 |
| Utah | Salt Lake | 304,632 |
| Virginia | Fairfax | 527,178 |
| Washington | King | 336,800 |

Table 2-2b.

**COUNTIES WITH UNINCORPORATED URBANIZED AREAS GREATER THAN
100,000 BUT LESS THAN 250,000 ACCORDING TO THE LATEST DECENNIAL
CENSUS BY THE BUREAU OF CENSUS**

| <u>STATE</u> | <u>COUNTY</u> | <u>UNINCORPORATED URBANIZED POPULATION</u> |
|----------------|----------------|--|
| Alabama | Jefferson | 102,917 |
| Arizona | Pima | 111,479 |
| California | Alameda | 187,474 |
| | Contra Costa | 158,452 |
| | Kern | 117,231 |
| | Orange | 210,693 |
| | Riverside | 115,719 |
| | San Bernardino | 148,644 |
| Florida | Broward | 159,370 |
| | Escambia | 147,892 |
| | Hillsborough | 238,292 |
| | Orange | 245,325 |
| | Palm Beach | 167,089 |
| | Pinellas | 194,389 |
| | Polk | 104,150 |
| | Sarasota | 110,009 |
| Georgia | Clayton | 100,742 |
| | Cobb | 204,121 |
| | Richmond | 118,529 |
| Kentucky | Jefferson | 224,958 |
| Louisiana | Jefferson | 140,836 |
| North Carolina | Cumberland | 142,727 |
| Nevada | Clark | 201,775 |
| Oregon | Multnomah | 141,100 |
| | Washington | 109,348 |
| South Carolina | Greenville | 135,398 |
| | Richland | 124,684 |
| Virginia | Arlington | 152,599 |
| | Henrico | 161,204 |
| | Chesterfield | 108,348 |
| Washington | Snohomish | 103,493 |
| | Pierce | 196,113 |

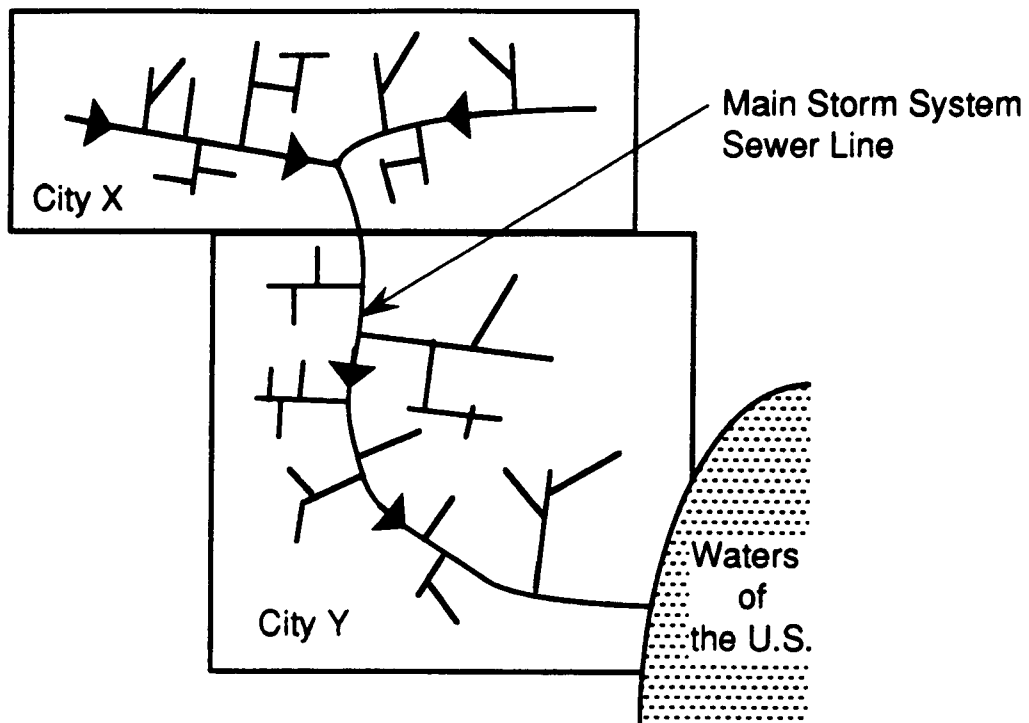
Two types of applications can be submitted for either the medium or large storm sewer system:

Individual: A single city or county files an application for its own separate storm sewer system. No parts of the system are owned or operated by another public entity.

Joint: Two or more cities and/or counties act as co-applicants to file a single joint application. This may apply in cases where more than one city or county owns or operates a municipal separate storm sewer within a geographic area, or where municipal separate storm sewer systems are adjacent to or interconnected with one another. It should be noted that for municipalities with interconnecting systems, all involved municipalities if designated by the Director of the permitting agency, are required to submit applications either jointly or individually, even if one or more have populations less than 100,000. An example of this is shown on Figure 2-1.

Following a review of the application, the appropriate permitting agency may either issue one system-wide (jurisdiction-wide) permit covering all discharges from municipal storm sewers within a large or medium system, or issue separate permits for appropriate categories of discharges within a large or medium system including but not limited to:

- All discharges owned or operated by the same municipality.
- All discharges located within the same jurisdiction.
- All discharges within a system that discharges to the same watershed.
- Several discharges within a system that are similar in nature.
- Individual discharges from municipal separate storm sewers within the system.



City X discharges most of its stormwater into City Y's separate storm sewer system and City Y ultimately discharges to waters of the U.S. The two cities should submit a joint permit application.

Figure 2-1. Example of a Joint Application

Designation Authority

Under the rule, small municipal separate storm sewer systems (less than 100,000) that are owned or operated by a municipality other than those identified in the NPDES regulations can be designated by the Director as part of the large or medium municipal separate storm sewer system due to the interrelationship between the discharges of the designated storm sewer and the discharges from municipal separate storm sewers. In making this determination the Director may consider the following factors:

- (A) physical interconnections between the municipal separate storm sewers;
- (B) the location of discharges from the designated municipal separate storm sewer relative to discharges from municipal separate storm sewers systems;
- (C) the quantity and nature of pollutants discharged to waters of the United States;
- (D) the nature of the receiving waters; or
- (E) other relevant factors.

Petitions

Storm Water Management Regional Authorities

The Director may, upon petition, designate as a system, any municipal separate storm sewers located within the boundaries of a region defined by a storm water management regional authority. Such an authority can be based on a jurisdictional, watershed, or other appropriate basis that includes one or more of the systems as covered in the regulations.

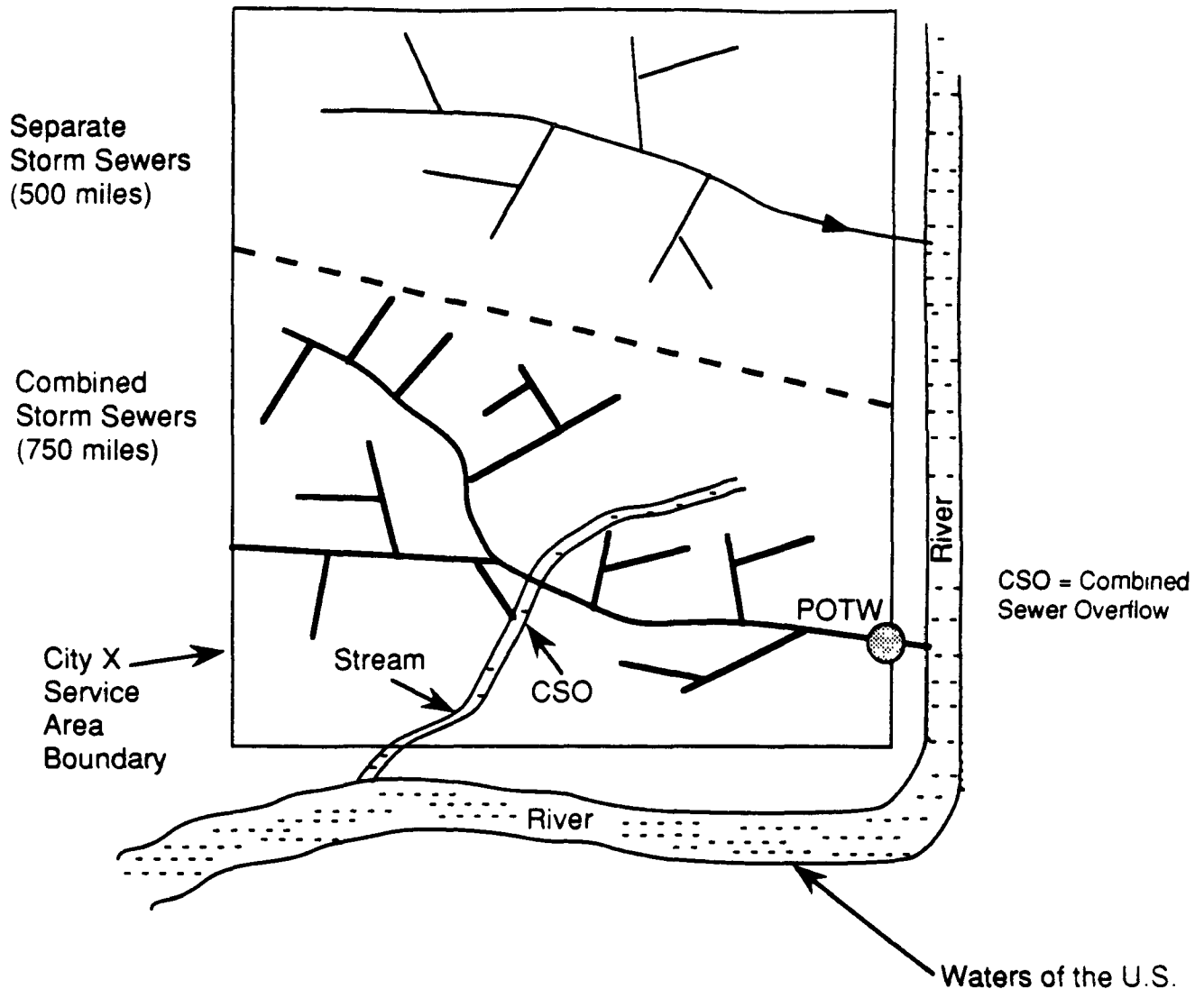
CSO Population Reduction

Also, if a municipality's storm sewer system is composed of both separate and combined sewers, the municipality may petition the EPA to reduce its listed population. The regulation states that the listed population served by such separate storm sewer systems

may be reduced to account for storm water discharged to combined sewers and treated in a POTW. Hence, discharges to combined sewers are not always treated due to combined sewer overflows. In municipalities with combined sewers, the Census estimates of population may be reduced by using the following method:

Reduce the population by an amount proportional to the fraction of length of combined sewers over the sum of the lengths of combined sewers and municipal separate storm sewers.

The applicant should estimate all lengths and must submit the NPDES permit number associated with each discharge point. In addition, a map must be submitted showing areas served by combined sewers and the location of any combined sewer overflow discharge point. An example of this method of reducing a listed population is given in Figure 2-2. The Director will make a final determination on any petition within 90 days of the receipt of such petition.



Estimated length of separate stormwater sewer system: 500 miles

Estimated length of combined sewer: 750 miles

The population of City X according to latest Census: 260,000

Therefore, the system is considered a Large Municipal Storm Sewer System

LARGE MUNICIPAL STORM SEWER SYSTEM

Fraction of combined sewer length over the sum of combined and separate sewer lengths:

$$\frac{750 \text{ mi}}{750 \text{ mi} + 500 \text{ mi}} = 0.6$$

Reduced Population: $0.6 (260,000) = \underline{156,000}$

MEDIUM MUNICIPAL STORM SEWER SYSTEM

Based on this calculation, City X could petition the EPA to reduce its population from 260,000 to 104,000, thereby making it a medium municipal storm sewer system. This would give City X an additional 6 months to prepare and file its application for a NPDES stormwater permit.

Figure 2-2. Method to Reduce Population In a Municipality Served by Both Combined and Separate Stormwater Sewers

2.2 WHO ISSUES AND ENFORCES THE PERMIT?

NPDES permits for storm water discharge will be issued for a period up to, but no longer than 5 years by the EPA Regional office, or by the State NPDES agency, in States where such a program has been approved and established. Appendix A contains a list of permitting agencies responsible for issuance of the permits, by State.

Enforcement of the permit requirements will also be accomplished by the responsible regional EPA or State permitting agency. The term "Director", as it appears in this guidance manual, refers to the Regional EPA Administrator or the State NPDES Program Director, whichever is applicable.

The owner or operator, as listed in the permit, of a municipal separate storm sewer system must comply with all permit conditions applicable to that system. Any violation of the conditions shall be considered a violation of the CWA and shall be subject to enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. For example, the CWA provides that any person who violates a permit condition shall be subject to a civil penalty not to exceed \$25,000 per day of such violation. Any person who willfully or negligently violates permit conditions shall be subject to criminal penalty of a fine of not less than \$2500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or both (40 CFR 122.41(a)). Civil and criminal penalties in delegated States may vary somewhat from Federal penalties.

The CWA also provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both. In addition, any person who knowingly makes any false statement, representation, or

certification in any record or other document submitted shall be subject to the same punitive action (40 CFR 122.41(j)(5) and (k)(2)).

COMPLETING THE PERMIT APPLICATION

3.1 WHAT ARE THE PERMIT APPLICATION DEADLINES?

The steps involved with permit application preparation, and a recommended schedule for completion of parts of the application are shown on Figure 3-1. The recommended schedule is based on the estimated minimum amount of time needed to complete tasks and compile data for each section of the application. The estimates have been made based on performance of a case study of a medium municipality in California. The schedule has been formatted to show the order in which some of the sections should be completed so that an applicant can complete the application in a timely, efficient, and cost-effective manner.

The deadlines for submittal of an application, based on the regulations, are listed below.

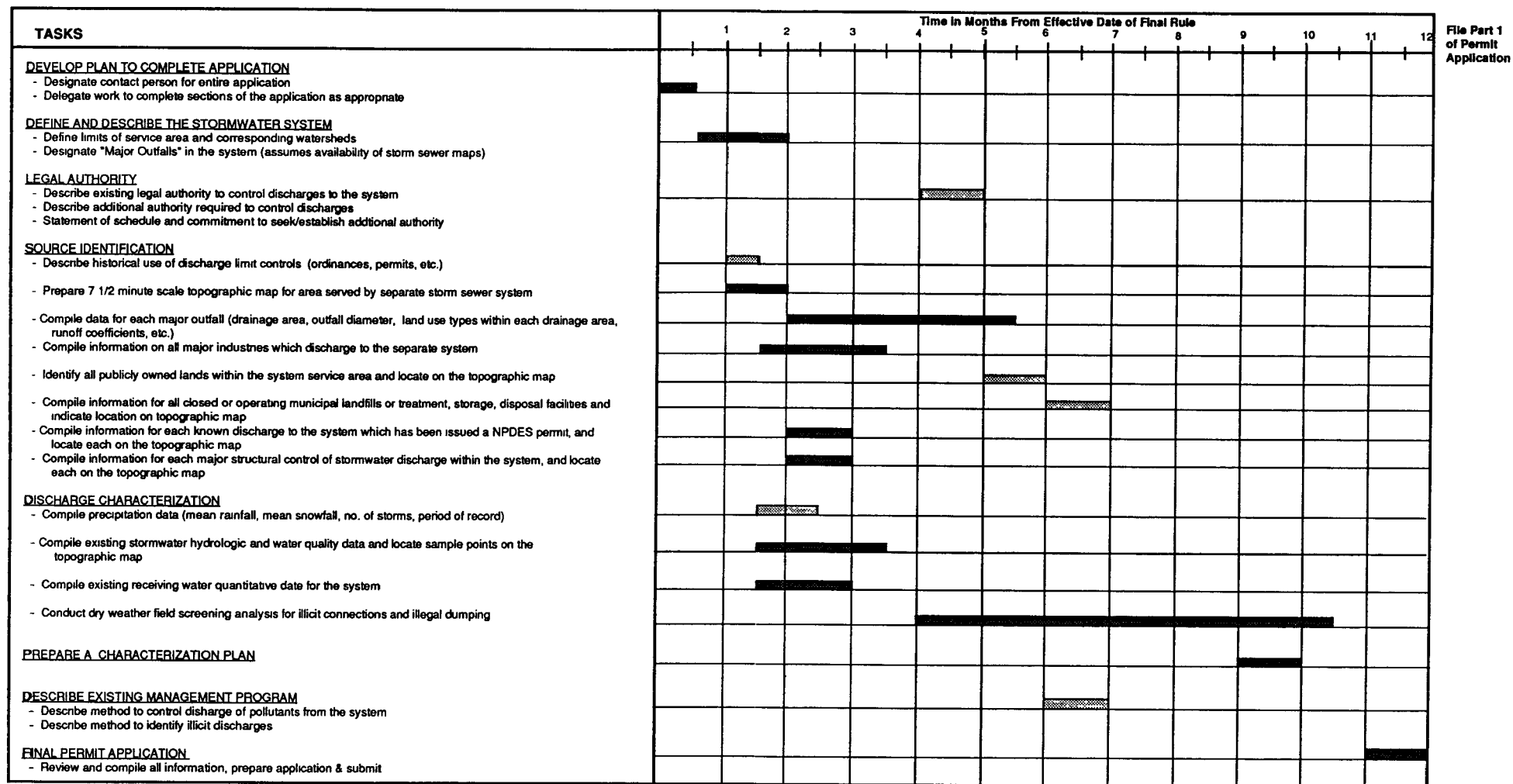
Large Municipal Separate Storm Sewer Systems (Population greater than 250,000)

- Submit Part 1 of the application to the permitting authority -
November 18, 1991.
- Director approves or denies the sampling plan described in Part 1 of the application - **90 days after receiving Part 1 of the application.**
- Submit Part 2 of the application to the permitting authority -
November 16, 1992

Medium Municipal Separate Storm Sewer Systems (Population greater than 100,000, but less than 250,000)

- Submit Part 1 of the application to the permitting authority -
May 18, 1992
- Director approves or denies the sampling plan described in Part 1 of the application - **90 days after receiving Part 1 of the application.**

- **Submit Part 2 of the application to the permitting authority -
May 17, 1993**



File Part 1
of Permit
Application

Figure 3-1. Recommended Timeline for Completing Sections of the NPDES Stormwater Permit Application

LEGEND



This task should be completed during time specified due to interdependence with other tasks



The timeframe given for this task is recommended, the task could be completed at any time during the permit application process

Note that the bars shown on this figure do not indicate an estimate of the labor hours needed to complete the tasks. The timeframe given for each task allows for preparation and review of documents and takes into account a municipality's approval process.

3.2 WHERE TO SUBMIT THE APPLICATION?

Appendix A contains a list of the mailing addresses and the telephone numbers of the State and EPA regional permitting agencies. The agencies listed for each State are those responsible for issuing the permit and enforcing and providing guidance for the storm water regulations in that particular state. Personnel in these offices should be contacted when questions arise during the preparation of the application, and completed permit applications should be submitted to the locations indicated.

3.3 IS THE APPLICATION COMPLETE?

As described in the regulations (40 CFR 122.26(e)(3)), every application will be reviewed and a decision to deny or approve a sampling plan under 40 CFR 122.26(d)(1)(iv)(E) will be made by the Director within 90 days of its receipt. Of course, applications which do not contain all information required to be submitted (40 CFR 122.26(d)) may have their plan denied for this reason. To avoid this problem, the completeness checklist contained in Table 3-1 can be helpful in developing the application. It is recommended that every applicant review the checklist prior to, during, and after preparation of the application, to ensure that all necessary requirements have been met.

Table 3-1. PERMIT APPLICATION CHECKLIST

| <u>ACTION</u> | <u>CHECK WHEN COMPLETED</u> | <u>NAME OF PERSON COMPLETING CHECKLIST</u> |
|--|-----------------------------|--|
| 1. Contact the State NPDES Program or EPA Regional office to obtain guidance, instructions, and contact name (see Appendix A of for the name and address of the permitting agency in your State). | | |
| 2. Determine the submittal deadlines for the permit application from the regulations: | | |
| Part 1 _____ | | |
| Part 2 _____ | | |
| (from Section 3.0 of the Guidance Manual) | | |
| 3. Part I of the application - General Information | | |
| Is the name, address, and telephone number of applicant provided? | | |
| Is the name, address, and telephone number of contact person at the municipality provided? | | |
| Is the ownership or operator of the municipal separate storm water facility described? | | |
| 4. Section II of the application - Legal Authority | | |
| Is a description of existing or proposed legal authority for each of the five areas outlined in the permit application provided? | | |
| <ul style="list-style-type: none"> • Authority to prohibit/limit discharges from industrial activity • Authority to prohibit illicit discharges to storm sewer • Authority to control discharges from spills, dumping, and illegal disposal • For joint applicants, authority to set up interagency agreements • Authority to require compliance with all ordinances and regulations which control discharges | | |

Table 3-1. PERMIT APPLICATION CHECKLIST

| <u>ACTION</u> | <u>CHECK WHEN COMPLETED</u> | <u>NAME OF PERSON COMPLETING CHECKLIST</u> |
|---|--|---|
| <p>If the authority for any of the above does not exist in the municipality, has a schedule for obtaining additional required authority been included?</p> <p>5. Section III of the application - Source Identification</p> <p>Is the required topographic or site map attached?</p> <p>Are the following features detailed clearly on the map or otherwise identified?</p> <ul style="list-style-type: none"> ● Location of outfalls ● Location of landfills and TSD facilities ● Location of NPDES discharges ● Location of major structural controls for storm water discharge <p>Does the application clearly indicate the following:</p> <ul style="list-style-type: none"> ● Land use types within each drainage area served by the municipal separate storm sewer system ● For each land use identified: <ul style="list-style-type: none"> ● % of the drainage area within that land use ● Population density ● Projected growth in population ● Runoff coefficient ● Location of major structural controls <p>For each publicly-owned land use identified:</p> <p>Owner, address and description</p> | | |

Table 3-1. PERMIT APPLICATION CHECKLIST

| <u>ACTION</u> | <u>CHECK WHEN COMPLETED</u> | <u>NAME OF PERSON COMPLETING CHECKLIST</u> |
|---|--|---|
| 6. Section IV of the application - Discharge Characterization | | |
| Have all necessary precipitation data including monthly mean rain/snow fall estimates, average number of storm events per month and period of record analyzed been provided? | | |
| Have existing quantitative data describing volume and quality of discharges from the storm sewer been compiled? | | |
| Is a list of the water bodies that receive discharges from the storm sewer provided, briefly describing the beneficial uses, water quality objectives, and water quality impacts to that water body? | | |
| Are the analytical methods to be used in the field screening analysis to analyze the samples collected at outfalls shown on the topo map, and a description of the field screening program provided? | | |
| Following the field inspection of all major outfalls, are the results documented? | | |
| Are the location of where grab samples were obtained for dry field screening analysis indicated? | | |
| 7. Section V of the application - Management Programs | | |
| Was the existing management program to control pollutant discharge into the storm sewer system described, and does it include the following required elements? | | |
| <ul style="list-style-type: none"> • description of existing structural and source controls • operation and maintenance measures for the controls • an estimate of the reduction of pollutant loads (for Part 2) | | |
| Were existing program to identify illicit connections connections to the storm sewer described, including the following required elements: | | |
| <ul style="list-style-type: none"> • description of inspection procedures and methods to detect illicit discharges | | |

Table 3-1. PERMIT APPLICATION CHECKLIST

| <u>ACTION</u> | <u>CHECK WHEN COMPLETED</u> | <u>NAME OF PERSON COMPLETING CHECKLIST</u> |
|---|-------------------------------------|--|
| <ul style="list-style-type: none"> description of the areas in which this program has been implemented to date | | |
| 8. Fiscal Resources | | |
| <ul style="list-style-type: none"> description of the financial resources currently available to your municipality to complete Part 2. description of your municipality's budget for existing storm water programs, including overview of your municipality's financial resources and budget. | | |

**DETAILED GUIDANCE FOR
PART 1 OF APPLICATION**

This section provides detailed guidance on information needed to satisfy Part 1 of the municipal NPDES storm water application requirements. The NPDES municipal storm water application requests information on six topics: General Information, Legal Authority, Source Identification, Discharge Characterization, Management Programs, and Fiscal Resources. Each of these topics is covered in a separate section. Each section follows the format below:

- The relevant part of the regulation is supplied or summarized.
- The intent of the regulation is summarized.
- Background information and a discussion of the regulation is provided.
- A procedure to follow which satisfies the requirements of the regulation is given.
- An example showing the type of information requested is provided.

In order to ensure that the application is complete and correct, the applicant should refer to this section when completing the application.

4.1 GENERAL INFORMATION

Regulation

40 CFR 122.26(d)(1)(i)

The Applicant's name, address, telephone number of contact person, ownership status and status as a State or local Government entity.

Intent

Supply information about applicant and ownership of separate storm sewer system.

Background and Discussion

There are two types of applications; individual and joint. An individual application must be filed by a single municipality which owns the entire separate storm sewer system. A joint application can be filed when two or more municipalities (co-applicants) share portions of the same separate storm sewer system, or are interconnected to each other, whereby one municipality's storm water is discharged to another's system.

Include with the application the name, address and telephone number of the agency or agencies applying for the permit as well as the name of the individual to contact if there are questions concerning the application. Include the type of agency with the name; state, municipal or other (e.g., flood control district). If the application is a joint application, include one contact for each agency on the application; however, a single individual should be designated as the prime contact. Include an address and telephone number corresponding to each name on the application.

The description of the ownership status should include the names of all owners of the system and the approximate percentage owned by each. For example, if a local flood control district owns and maintains all open channel conveyances, then their name would be included on the application as a co-owner. If one agency owns the storm sewer but another maintains it; the operator applies for the permit.

Figure 4-2 is a map of a portion of City X's sewer system showing which segments are owned by the city and which are owned by the local flood control district. The general information submitted by City X is presented in Figure 4-1. In this case, City X and the local flood control district apply as co-applicants for the permit since the storm sewer system is owned by both of them.

Example

Figure 4-1. General Information Supplied with City X's Storm Water Permit Application

Individual Application _____ Joint Application X

Name of Applicant: City X and Flood Control District Y

Contact Person(s): 1. John Smith, Deputy Director of Public Works
for City (Primary Contact)
2. Jane Jones, Director, Flood Control District

Address: 1. 123 Elm St., City X, California xxxxx
2. 456 Main St., City X, California xxxxx

Telephone No.: 1. (415) 123-4567
2. (415) 765-4321

Ownership Status: The city owns and maintains approximately 80% of the storm sewers within the city limits. The Flood Control District owns and maintains 20% of the storm sewers. Figure 4-2 shows the ownership of the different storm sewer lines.

4.2 LEGAL AUTHORITY

Regulation

40 CFR 122.26(d)(1)(ii) -- Part 1 requirements

A description of existing legal authority to control discharges to the municipal separate storm sewer system. When existing legal authority is not sufficient to meet the criteria provided in paragraph (d)(2)(i) of this section, the description shall list additional authorities as will be necessary to meet the criteria and shall include a schedule and commitment to seek such additional authority that will be needed to meet the criteria.

40 CFR 122.26(d)(2)(i) -- Part 2 requirements

A demonstration that the applicant can operate pursuant to legal authority established by statute, ordinance or series of contracts which authorizes or enables the applicant at a minimum to:

(A) control through ordinance, permit, contract, order or similar means, the contribution of pollutants to the municipal storm sewer by storm water discharges associated with industrial activity and the quality of storm water discharged from sites of industrial activity;

(B) prohibit through ordinance, order or similar means, illicit discharges to the municipal separate storm sewer;

(C) control through ordinance, order or similar means the discharge to a municipal separate storm sewer of spills, dumping or disposal of materials other than storm water;

(D) control through interagency agreements among coapplicants the contribution of pollutants from one portion of the municipal system to another portion of the municipal system;

*(E) require compliance with conditions in ordinances, permits, contracts or orders;
and*

(F) carry out all inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions including the prohibition on illicit discharges to the municipal separate storm sewer.

Intent

EPA intends that the applicant (e.g., municipality) be primarily responsible for controlling most discharges or flows (quality and quantity) to its separate storm sewers. The applicant must have the authority to control discharges to the separate storm sewers and have the authority to impose penalties sufficient to enforce compliance. enforcement.

With regard to storm water discharges associated with industrial activity, responsibility for control of these discharges will lie both with NPDES permit issuing authorities and municipalities. Municipalities will need adequate legal authorities to conduct inspections and perform monitoring to insure that municipal landfills, hazardous waste treatment, disposal and recovery facilities, industrial facilities that are subject to Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), and industrial facilities that the municipal permit applicant determines are contributing a substantial pollutant loading to the municipal storm sewer system facilities are complying with NPDES permits issued to those facilities.

Background And Discussion

Most local agencies regulate the quantity and quality of flow in their separate storm sewers. To satisfy the requirements of the permit application, the applicant must show what legal authority it has and what additional legal authority it needs.

The legal authority for local jurisdictions to enact specific ordinances controlling discharges to the separate storm sewer system usually derives from the state, either through the state constitution or through state statute. It is important that relevant statutes or constitutional sections (or their descriptions) be included with the application.

Applicants should include a discussion on their ability to enforce regulations controlling discharges to their storm sewers based on existing and demonstrated legal authority. An agency may have the authority to pass ordinances controlling these discharges to its separate storm sewers yet currently lack budgeted resources to enforce these ordinances.

Procedure for Describing Existing Legal Authority

Step 1 Obtain Copies Of Relevant State Statutes Or Constitutional Sections.

These should be the sections which describe the legal authority granted to the applicant. A statement from the local government's attorney describing the municipalities legal authority can also be included. If the municipality lacks the legal authority to fulfill the requirements of 122.26(d)(2)(i), the applicant should describe the necessary steps which will be taken to obtain the authority and a schedule for obtaining it.

Step 2 Provide a Copy of Local Ordinances Regulating Discharges to the

Municipal Separate Storm Sewers. These ordinances would include erosion control plans, flood control ordinances, zoning ordinances when they regulate building near water sources, or other local ordinances which affect urban runoff. Again where necessary ordinances are not in existence, the permit applicant must provide a schedule for obtaining the authority.

Step 3 Provide A Description Of Constraints. These include any inadequacies

and/or constraints under existing laws or statutes that might prevent the municipality from effectively enforcing ordinances which govern discharges to its separate storm sewer system. A description of actions and a schedule to mitigate or eliminate these constraints shall also be provided by the applicant.

Figure 4-3. EXAMPLE PRESENTATION OF LEGAL AUTHORITY

The following serves to demonstrate how legal authorities may be presented in the application, and exemplify the types of authorities some municipalities currently have. The following cited legal authorities are from a hypothetical municipality and are not intended to serve as an example of adequate or appropriate authority. Rather, legal authorities will be evaluated on case-by-case basis by NPDES permitting authorities, as municipal part 1 permit application are assessed as a whole.

A. Legal authority in place which controls through ordinance, permit, contract, order or similar means, the contribution of pollutants to the municipal storm sewer by storm water discharges associated with industrial activity and the quality of storm water discharged from sites of industrial activity.

Applicant's Response:

The municipality is chartered by the State Constitution and as such has broad general police powers to enact legislation for health and public welfare of the community to the extent not preempted by Federal or State law.

Municipal Code Section 1-1 provides criminal penalties of fines and imprisonment for nuisances including the discharge of waters containing toxic or poisonous solids, liquids, or gases which constitute a hazard to humans or animals, cause corrosion, discoloration or deposition on structures and equipment. Section 1-2 of the Municipal Code requires an erosion control plan for construction activity. Section 1-3 prohibits the dumping of junk, refuse, garbage and dirt into a stream; Section 1-4 prohibits the placement of rubbish in a lake, stream, or storm sewer if it interferes with the flow, and, Section 1-5 gives the municipal the authority to abate a nuisance. Section 2-1 authorizes the municipal police and health department to inspect storm drainage system, receive complaints, investigate complaints, and enter upon private or public property for inspection and investigation of possible discharges of pollutants into any waters.

(Applicant should attach relevant sections of the law)

B. Legal authority which prohibits illicit (unpermitted non-stormwater) discharges to the storm sewer. An example of an illicit discharge is a connection to the separate storm sewer from a sanitary sewer line.

Applicant's Response:

As noted above municipal code section 1-1 provides criminal penalties of fines and imprisonment for nuisances including the discharge of waters containing toxic or poisonous solids, liquids, or gases which constitute a hazard to humans or animals, cause corrosion, discoloration or deposition on structures and equipment. Section 1-3 prohibits the dumping of junk, refuse, garbage and dirt into a lake, stream, or other body of water; Section 1-4 prohibits the placement of rubbish in a lake, stream, or storm sewer if it interferes with the flow, and, Section 1-5 gives the municipality the authority to abate a nuisance.

The municipality intends to amend section 1-1 and 1-3 to specifically prohibit the above discharges to separate storm sewers and specifically provide for the prohibition on sanitary discharges to separate storm sewers by November 16, 1992.

(Applicant should attach relevant portions of municipal code and may include draft of scheduled amendments)

C. Legal authority to control through ordinance, order or similar means the discharge to a municipal separate storm sewer of spills, dumping or disposal of materials other than storm water;

Applicant's Response:

In addition to the authorities previously noted the following legal authority is available. Section 1-6 of the municipal code makes it a crime to throw, discharge, or otherwise cause to be placed in water of any lake, stream, or any other body of water, any

substance, matter or thing, liquid or solid, which will or may result in the pollution of said waters.

The municipality intends to amend this provision to specifically address the discharge or placement of pollutants into separate storm sewers by November 16, 1992.

D. Interagency agreements set up between coapplicants to control the contributions of pollutants from one part of the storm sewer system to another portion of the system. (Not applicable to applicants who own the entire separate storm sewer system; state if the applicant owns or controls all portions of the storm sewer system).

Applicant's Response:

The municipality may enter into joint powers agreements pursuant to municipal code Section 500 et seq. Currently, no such agreements exist on the topic of storm drainage. The municipality will to enter into a cooperative agreement with the County Flood Control District to fully control discharges to the storm sewer system.

After approval of Part 1 of the application by the EPA, the municipality will meet with the County Flood Control District to form an agreement before submittal of Part 2 of the application on November 16, 1992. (Applicant should attach a draft of the agreement.)

(Applicant should attach all relevant portions of the cited code)

E. Legal authority which requires compliance with conditions in ordinances, permits, contracts or orders.

Applicant's Response:

Municipal code section 4-1 requires dischargers of pollutants to any lake, stream or other body of water to report the discharge to the Director of the municipal health department.

The municipal code provides for criminal and civil penalties for addition of pollutants harmful to human health to the environment including lakes, streams, and other bodies of water. (Applicant should set forth what these criminal and civil penalties are.) The municipality intends to expand this provision to specifically include the addition of pollutants to the separate storm sewers by November 17, 1992.

As note above the municipal code establishes that the introduction of any liquids other than water into the separate storm sewer as a criminal misdemeanor, punishable by fine and/or imprisonment. The Municipal Code Enforcement Office has the express role of issuing citations and preparing arrest warrants for violations of municipal codes.

Every day the ordinance is violated can be considered a separate violation. The municipal also has the option to bring a civil suit. Violation of an injunction issued because of a civil suit can result in more severe penalties.

(Applicant should attach relevant portion of each cited code)

F. Sufficient authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure that permit and ordinance conditions are being complied with, including prohibiting illicit discharges to the storm sewer.

Applicant's Response:

As noted above, section 2-1 authorizes the municipal police and health department to inspect storm drainage system, receive complaints, investigate complaints, and enter upon private or public property for inspection and investigation of possible pollution of any waters.

Municipality intends to amend this section to specifically address the inspection and investigation of illicit discharges by November 16, 1992.

4.3 SOURCE IDENTIFICATION

Regulation

40 CFR 122.26(d)(1)(iii)

The regulation requests two types of information: information on the historic use of ordinances, guidance, or other controls which limit discharges to Publicly Owned Treatment Works; and a description of the watersheds within the municipality.

(A) A description of the historic use of ordinances, guidance or other controls which limited the discharge of non-storm water discharges to any Publicly Owned Treatment Works serving the same area as the municipal separate storm sewer system.

(B) A USGS 7.5 minute topographic map (or equivalent topographic map with a scale between 1:10,000 and 1:24,000 if cost-effective) extending one mile beyond the service boundaries of the municipal storm sewer system covered by the permit application. The following information shall be provided:

- 1. The location of known municipal storm sewer system outfalls discharging to waters of the United States;*
- 2. A description of the land use activities (e.g. divisions indicating undeveloped, residential, commercial, agricultural and industrial uses) accompanied with estimates of population densities and projected growth for a ten year period within the drainage area served by the separate storm sewer. For each land use type, an estimate of an average runoff coefficient shall be provided;*
- 3. The location and a description of the activities of the facility of each currently operating or closed municipal landfill or other treatment, storage or disposal facility for municipal waste;*

4. *The location and the permit number of any known discharge to the municipal storm sewer that has been issued a NPDES permit;*
5. *The location of major structural controls for storm water discharge (retention basins, detention basins, major infiltration devices, etc.); and*
6. *The identification of publicly owned parks, recreational areas, and other open lands.*

Intent

This section of the application is intended to identify possible sources of pollutants to the separate storm sewer system and to identify possible locations for treatment based controls. This information is intended to provide the applicant with a better understanding of potential water quality problems which might be encountered and forms a starting point for the development of a storm water management program.

Background And Discussion

The regulation requires two types of information: information on prohibited discharges to the sanitary sewer; and information on sources of storm water to the separate storm sewer system.

Municipalities or local agencies which operate their own waste water treatment plants typically prohibit certain discharges to their treatment plant if these discharges adversely affect operation of the treatment plant. For example, a municipality may prohibit the discharge of non-contact cooling water to the sanitary sewer if it hydraulically overloads the treatment plant. Other discharges (such as metals and petroleum hydrocarbons) may be prohibited if they interfere with treatment processes (e.g., biological processes). If a discharge is prohibited from the sanitary sewer it becomes a possible source to the storm sewer.

Various broad categories of land use may contribute different pollutants to the storm sewer system and may discharge them in different ways. For example, in residential areas non-storm water discharges generally consist of spills (e.g., motor oil, old paint) and runoff from lawn watering (which could contain pesticides) and car washing. By contrast, commercial land use areas can contain a high number of illicit connections. For example, the Huron River Pollution Abatement Program inspected 660 businesses, homes and other buildings located in Washtenaw County, Michigan and identified 14% of the buildings as having improper storm drain connections. Illicit discharges were detected at a higher rate of 60% for automobile related businesses, including service stations, automobile dealerships, car washes, body shops and light industrial facilities.

The regulation requires the applicant to submit the location and description of known storm sewer system outfalls discharging to waters of the U.S. In addition, the regulation requires a description includes land use activities, area and population data. By compiling this information on all outfalls, the applicant and the permitting authority can identify those areas most likely to be sources of pollutants to the receiving waters.

Source control is generally cheaper and easier to implement in most U.S. municipalities than treatment-based control. Also, EPA's philosophy on pollution prevention is to emphasize source control where possible. For these reasons, the regulations require the applicant to submit data on possible sources of pollutants to the storm sewer system. These sources include industries, municipal landfills, and discharges that have been issued NPDES permits.

However, sometimes treatment based controls will be necessary in addition to source controls. One cost effective method of treating storm water is to retrofit existing flood control structures. For example, retrofitting a detention basin to contain storm water until a significant fraction of the suspended solids have settled may result in a significant increase in storm water quality. Since it is important to be aware of possible treatment options, the regulations require the applicant to submit information on the location of existing storm water controls. Public land is necessary if new structures are to be built; therefore, the regulations require the applicant to identify the location of these lands.

Procedure for Source Identification:

- Step 1** **Include A Copy Of Any Ordinances Limiting Discharges To The Publicly Owned Waste Treatment Plant.** This would include a description of any pretreatment programs that exist, any interagency agreements (for a sanitary sewer district for example) or municipal ordinances. Also include a description of the use of historic ordinances (no longer effective).
- Step 2** **Obtain Copies Of 7.5 Minute Topographic Maps.** The maps need to cover an area which extends at least one mile beyond the boundaries of the storm sewer system. This will usually require more than one map. If unavailable, a map (or maps) with a scale of between 1:10,000 to 1:24,000 can be substituted. USGS maps can be obtained from most USGS offices and local map and outdoor stores throughout the U.S. at a nominal fee. If maps other than topographic maps are already available at these scales, they can be used in place of the topographic maps (for example, if topographic maps are unavailable or the information has already been recorded on municipal base maps).
- Step 3** **Locate Waters Of The United States.** Identify on the map, all Waters of the United States. The definition of Waters of the United States is given in Appendix C. This definition may be hard to apply in some instances. The following guidelines can help determine which drainage conveyances are considered Waters of the U.S. However, to determine the status of any specific conveyance it is essential that the appropriate State (or EPA Regional Office) be

contacted. Examples of waters usually involved in the definition are;

- If flow is year round and of natural origin, it is a Water of the United States.
- If the flow is intermittent but flows seasonally (not just during storm events) it is a Water of the United States.
- If Federal or State instream water quality standards apply, it is a Water of the United States.
- Naturally occurring drainage ditches are considered "tributaries thereof" to Waters of the United States.

Step 4 **Obtain A Sewer Map Of The Storm Sewer System.** A current map of the municipal storm sewer is important to complete this portion of the application. It will also be important when a municipality develops its management plans. If a map is unavailable, the municipality should begin to prepare adequate maps and/or overlays. Typical map scales are on the order of 1 in = 100 ft to 1 in = 500 ft.

Step 5 **Locate All Outfalls.** The term outfall means *a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to Waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.*

Step 6 **Mark The Location Of The Outfalls On The Topographic Map Obtained In Step 1.** Identify each outfall using a unique label (e.g., O1, O2, A1-1, A1-2).

Step 7

Identify The Land Uses (Undeveloped, Residential, Commercial, Agricultural And Industrial) in the Municipality Served by the Separate Storm Sewer. These should be actual land uses; not necessarily zoning designations. Distinguish between heavy industry (e.g., manufacturing) and light industry (industrial parks). Include the fraction associated with each land use type. If this information is not available it may be estimated from aerial photographs. If neither land use information nor aerial photographs are available then zoning maps can be used. Care should be taken when using zoning maps since they usually represent proposed or planned land use, rather than actual land use. To minimize errors, zoning maps should only be used by someone familiar with land use in the municipality (e.g., planning department).

Step 8

Estimate The Population Density And Estimated Growth with the Drainage Area Served by the Municipality. These estimates can usually be obtained from the municipal Planning or Public Works Departments. If the available data is not detailed enough to distinguish the population density of each individual drainage, then use estimates of the average population density for each land use type to estimate the population density of a drainage. Equation 4-1 can be used to calculate the land use weighted average population density:

Equation 4-1:

$$PD = \sum_{i=1}^N (F_i \times PD_i)$$

Where:

| | | |
|--------|---|---|
| PD | = | Population density of the drainage, |
| F_i | = | Fraction of the drainage in land use i |
| PD_i | = | Population density of land use i |
| N | = | Number of different land uses in the drainage |

After assigning population densities using the above equation, the total population provided by these estimates should be compared to the actual

population. If they disagree, adjust the densities accordingly. Population growth rates can usually be obtained from the municipal planning department.

Step 9 It is recommended that the applicant begin to compile information on all dischargers of storm water associated with industrial activity to the municipal separate storm sewer system. This information should be kept on site for use in the development of the storm water management program and for submission in the source identification portions in Part 2 (40 CFR 122.26(d)(2)(ii)).

Step 10 **Identify the location on the map of each currently occupied or closed municipal landfill (LF) or hazardous waste treatment, storage or disposal (TSD) facility and label on the topographic map. Indicate in a table the name of the facility, the status (open/closed), the type (LF or TSD), address. Label the location on the topographic map from Step 2.**

Step 11 **Identify the location of any known discharge to the storm water system that has been issued an NPDES permit. Label each location on the topographic map in Step 2. On a table provide: the name of the permit holder/facility; the address and the NPDES permit number.**

NPDES programs have been approved in 39 States, placing responsibility for issuing NPDES permits with the designated State agency. The NPDES state agency contacts and the EPA Regional contacts for unapproved states are listed in Appendix A. These agencies should be contacted to compile the necessary information for this section.

Step 12 **Locate any major structural controls for storm water discharges, such as retention basins, detention basins and major infiltration devices. Label each location on the topographic map. The location of such controls may already be shown on city, county or Public Works maps.**

Step 13 Identify publicly-owned lands located within the separate storm sewer system service area. Such lands include public parks, recreation areas, municipal buildings, and public utility lands. Public roads with the exception of freeways, interstate highways and major arterials do not have to be included. Identify publicly-owned lands on the map from Step 2. In a table provide: the owner; the address; the description (i.e., name/land use).

Example

City X owns its waste water treatment plant but discharges through an outfall owned and maintained by the Dischargers Authority, a multi-government agency set up to maintain a shared outfall. Table 4-1 lists the Municipal and Dischargers Authority regulations which limit discharges to the waste treatment plant.

Four 7.5 minute topographic maps are required which cover the area drained by City X's storm sewer system. Figure 4-4 shows a portion of one of these maps. Line A, shown on the map, flows seasonally so was identified as a Water of the United States in Step 3 of the procedures. In the figure, the KNOWN outfalls along Line A are indicated. It should be noted that Line A does not drain the entire area shown in Figure 4-4, other storm drains, not shown, drain parts of the area. The outfalls shown in Figure 4-4 were identified using the city storm sewer maps. They constitute the KNOWN outfalls. Since some areas are not covered by up-to-date storm sewer maps, additional outfalls along this line will be identified for Part 2 of the application. The location of each of the identified outfalls is given in Table 4-2. If outfalls are identified on the map, the longitude and latitude information is not required. It should be noted that even though the population growth in the drainages presented is expected to be negligible over the next ten years, the population will increase in other parts of the city. Growth rates for these parts of the city would be presented in additional tables. Table 4-3 lists the industrial facilities which may discharge to Line A. Table 4-4 lists all of the publicly owned land in the drainage of Line A. This does not include roads or small

city parks. The purpose of identifying publicly owned lands is to identify areas that could be used as part of a management program in the future. No permitted discharges, landfill or treatment facilities or structural controls of storm water are located in this drainage.

Table 4-1. MUNICIPAL AND DISCHARGERS AUTHORITY ORDINANCES LIMITING DISCHARGES TO THE POTW

| Ordinance, Guidance or Control Name and Number | Description of Ordinance |
|---|---|
| City X Municipal Code, Sanitary Sewer System, Article 3, Section 11-3.383 | Prohibits any connection between the sewer and any swimming pool |
| Dischargers Authority - Uniform Wasterwater Discharge <u>Regulations</u> | |
| Section 2.01 | Prohibits discharges which cause a nuisance, interferes with the treatment process or is in a quantity which would overload the treatment facilities. |
| Section 2.02 | Prohibits the discharge of stormwater, groundwater, rainwater, street drainage, subsurface or yard drainage |
| Section 2.03 | Prohibits the discharge of unpolluted water |
| Section 2.04 | Prohibits the discharge of radioactive wastes |
| Section 2.05 | Places limits on the use of food grinders |
| Section 2.07 | Places limits on discharges from holding tanks |
| Section 2.08 | Places limits on waste strength (quality) |



Figure 4-4. LOCATION OF KNOWN MAJOR OUTFALLS ON LINE A IN CITY X

Table 4-2. LOCATION OF KNOWN OUTFALLS ALONG LINE A

| Outfall Number | Latitude | | | Longitude | | |
|-------------------|----------|------|------|-----------|------|------|
| | Deg. | Min. | Sec. | Deg. | Min. | Sec. |
| 1 | 37 | 38 | 45 | 122 | 8 | 15 |
| 2 | 37 | 38 | 45 | 122 | 7 | 15 |
| 3 | 37 | 37 | 45 | 122 | 7 | 30 |
| 4 | 37 | 38 | 40 | 122 | 7 | 10 |
| 5 | 37 | 38 | 40 | 122 | 7 | 10 |
| 6 | 37 | 38 | 40 | 122 | 7 | 5 |
| 7 | 37 | 38 | 40 | 122 | 6 | 45 |
| 8 | 37 | 38 | 40 | 122 | 6 | 40 |
| 9 | 37 | 38 | 50 | 122 | 6 | 15 |
| 10 | 37 | 38 | 50 | 122 | 6 | 15 |
| 11 | 37 | 38 | 0 | 122 | 6 | 5 |
| 12 | 37 | 38 | 5 | 122 | 5 | 50 |
| 13 | 37 | 38 | 45 | 122 | 8 | 15 |

NOTE: If the Location is identified on the map, this Table would not be necessary.

Table 4-3. INDUSTRIAL DISCHARGES THAT HAVE BEEN ISSUED AN NPDES PERMIT LOCATED IN CATCHMENT TO LINE A

| Name | Address | Description (SIC code) | Geographical Location | | | | | |
|---------------------------------|--------------------|---------------------------|-----------------------|------|------|-----------|------|------|
| | | | Latitude | | | Longitude | | |
| | | | Deg. | Min. | Sec. | Deg. | Min. | Sec. |
| K-T Metal Finishing | 2436 American Ave. | | 37 | 38 | 50 | 122 | 07 | 30 |
| Belvedere Labs | 21093 Forbes | 2894 | 37 | 38 | 50 | 122 | 08 | 00 |
| Kruger Pickle Factory | 22958 Sakian Rd. | 2035 | 37 | 39 | 30 | 122 | 07 | 00 |
| Robinson Metal Finishing | 2303 American Ave. | | 37 | 39 | 30 | 122 | 07 | 00 |
| American Fund Equipment Shaping | 2412 American Ave. | | 37 | 39 | 30 | 122 | 07 | 00 |
| Bateman Manufacturing Co. | 2379 American Ave. | | 37 | 39 | 30 | 122 | 07 | 00 |
| CAR Tool Mfg. Co. | 23850 Clawiter Rd. | | 37 | 39 | 30 | 122 | 07 | 00 |

Note: Geographical location by longitude/latitude is not a requirement, if located on the topographic map.

Table 4-4. PUBLICLY OWNED LANDS ALONG LINE A IN CITY X

| (Name/Land Owner | Address | Description (Use) | Geographical Location | | | | | |
|---|--------------------------|-------------------------------|-----------------------|------|------|-----------|------|------|
| | | | Latitude | | | Longitude | | |
| | | | Deg. | Min. | Sec. | Deg. | Min. | Sec. |
| City X Community College/ Community College District | 25555 Hesperian Blvd. | City X Comm. College | 37 | 38 | 30 | 122 | 06 | 15 |
| County X Building/ County | 399 Elmwood St. | Court House & Public Works | 37 | 38 | 45 | 122 | 08 | 15 |

Note: Geographical location by longitude/latitude is not a requirement where located on the topographic map.

4.4 DISCHARGE CHARACTERIZATION

This section provides guidance to complete Section IV, Part 1 of the permit application, by describing the procedures to be followed by the applicant in order to characterize the municipal discharge. It consists of three subsections: Existing precipitation and water quality data, field screening analysis, and characterization plan.

4.4.1 Existing Precipitation And Water Quality Data

The Regulation

40 CFR 122.26(d)(1)(iv)

This portion of the application is designed to provide the permitting authority with existing data describing storm water discharges. It requires information in three areas, as summarized below. The complete regulation is given in Appendix B.

- A. Monthly mean rain and snow fall estimates (or summary of weather bureau data) and the monthly average number of storm events.*
- B. Existing quantitative data describing the volume and quality of discharges from the municipal storm sewer, including a description of the outfalls sampled, sampling procedures and analytical methods used.*
- C. A list of water bodies that receive discharges from the municipal separate storm sewer system, including downstream segments, lakes and estuaries, where pollutants from the system discharges may accumulate and cause water degradation and a brief description of known water quality impacts. At a minimum, the description of impacts shall include a description of whether the water bodies receiving such discharges have been:*

1. *Assessed and reported in Section 305(b) reports submitted by the State, the basis for the assessment (evaluated or monitored), a summary of designated use support and attainment of Clean Water Act (CWA) goals (fishable and swimmable waters), and causes of nonsupport of designated uses;*
2. *Listed under Section 304(l)(1)(A)(i), 304(l)(1)(A)(ii), or 304(l)(1)(B) of the CWA that is not expected to meet water quality standards or water quality goals;*
3. *Listed in State Nonpoint Source Assessments required by Section 319(a) of the CWA that, without additional action to control nonpoint sources of pollution, cannot reasonably be expected to attain or maintain water quality standards due to storm sewers, construction, highway maintenance and runoff from municipal landfills and municipal sludge adding significant pollution (or contributing to a violation of water quality standards);*
4. *Identified and classified according to eutrophic condition of publicly owned lakes listed in State reports required under Section 314(a) of the CWA (include the following: a description of those publicly owned lakes for which uses are known to be impaired; a description of procedures, processes and methods to control the discharge of pollutants from municipal separate storm sewers into such lakes; and a description of methods and procedures to restore the quality of such lakes);*
5. *Areas of concern of the Great Lakes identified by the International Joint Commission;*
6. *Designated estuaries under the National Estuary Program under Section 320 of the CWA;*
7. *Recognized by the applicant as highly valued or sensitive waters;*
8. *Defined by the State or U.S. Fish and Wildlife Services's National Wetlands Inventory as wetlands; and*
9. *Found to have pollutants in bottom sediments, fish tissue or biosurvey data.*

Intent

This section of the application is intended to identify existing short and long-term water quality problems. This is accomplished by compiling existing receiving water quality data (short term effects) and sediment and biosurvey data (long-term effects). To accomplish these goals, the municipality must do the following:

- Obtain precipitation data.
- Compile any existing water quality data.
- Compile existing information on water bodies receiving discharges from the storm sewer system including any water quality problems.

Background And Discussion

One of the goals of the NPDES storm water permit requirements is the development of municipal storm water management plans. A principal objective of the management plans is to control pollutant loadings into the receiving water bodies. Pollutant load is a function of both flow quantity and quality. Before developing an effective management plan it is necessary to estimate potential flows and to evaluate existing water quality.

Following is a brief description of each requirement.

Precipitation data is needed to estimate expected flows in the storm sewer system. For this purpose monthly precipitation data is requested. In addition, to comply with the monitoring requirements of Part 2 of the application a determination of the average or median rain events is needed. A representative storm is a storm that is "typical" for the area in terms of intensity, volume and duration. For representative sampling, the storm must have a volume greater than 0.1 inch, must be preceded by at least 72 hours of dry weather, and cannot vary by more than 50% from the average rainfall volume and duration where feasible. The Director may allow or establish appropriate site specific sampling procedures or requirements, including sampling locations, the season in which

the sampling takes place, the minimum duration between previous measurable storm event and the storm event sampled, the minimum or maximum level of precipitation required for an appropriate storm event, the form of precipitation sampled (snow melt or rainfall), protocols for collecting samples under 40 CFR Part 136, and additional time for submitting data on a case-by-case basis. Determining the average storm volume and duration may be accomplished by using a computer program such as SYNOP to determine average storm characteristics. SYNOP was developed jointly by the EPA and the Federal Highway Administration. SYNOP takes hourly precipitation data and sorts it into a sequence of "storm events" based upon a user-specified minimum number of consecutive dry hours between storms. The characteristics of each storm event (volume, duration, intensity, etc.) is then calculated and this information is used to estimate the average storm characteristics. These results can be used to define the appropriate precipitation events for sampling.

Many municipalities have conducted sampling programs in their storm sewers or in receiving waters near their outfalls. This data, depending on quality, provides information on the existing water quality of the storm sewer discharges and is intended to help identify locations where screening level sampling should be concentrated. For example, if existing water quality data indicates a problem with the discharges from a particular outfall, that outfall can be included in the screening program described in Section 4.4.2.

The regulations (Section 122.26(d)(1)(iv)(C)) require the applicant to list the water bodies which receive discharges from separate storm sewer systems and any identified water quality impacts, including water bodies listed in State 305(b) reports or 304(l) lists. The intent of this requirement is to identify existing water quality problems and determine whether the municipal storm water discharges are a possible cause. The type of information the applicant can obtain from the 305(b) reports and 304(l) lists is described in the following paragraphs.

The states are required by the Clean Water Act (CWA) to submit biennial reports to the EPA [305(b) reports] which provide an assessment of state water quality and provide

data the state can use to develop water quality management plans. These reports include, in part:

- 1) A description of the water quality of Waters of the United States
- 2) An estimate of the environmental, economic, and social costs and benefits needed to achieve the objectives of the CWA
- 3) A description of the nature and extent of nonpoint source pollution

In addition to 305(b) reports, EPA requires (under Section 304(l) of the CWA) that each state submit various lists of waters, including those waters not expected to attain or maintain water quality standards or goals after application of effluent limitations guidelines, as well as a list of waters not meeting the goals of the CWA. The latter list could include waters impacted by either point or nonpoint sources of pollution. Nonpoint sources would include those identified in state nonpoint source assessment reports. The regulations also require a list of waters identified as impaired in the most recent Clean Lake Assessment (Section 314 of the CWA). Specifically, EPA is concerned about waters classified as eutrophic [Section 314(a) of the CWA]. Other receiving waters of concern include areas of the Great Lakes identified by the International Joint Commission; estuaries designated under the National Estuary Program, and any other significant or highly valued waters, such as wetlands.

The above information describes existing water quality conditions. It does not provide information on long-term problems or bioaccumulation. The regulations request information on pollutants found in bottom sediments, fish tissue, and/or biosurvey data. Pollutants tend to build up in these receptors slowly, smoothing out short-term variations in pollutant concentrations. In addition, other problems not identified in water quality samples, such as toxicity and food chain effects, may be identified in these samples.

Procedure for Discharge Characterization

Step 1 **Obtain Precipitation Data.** The regulations require only estimates of mean monthly rain, snowfall and number of storm events (averaged over at least ten years). These can be estimated from daily precipitation volume records. Rainfall data can be obtained from a number of sources. Addresses and telephone numbers for obtaining the data are listed in Table 4-5.

If there is a high geographical variability in rainfall, the range represented throughout the municipality should be presented. This could be accomplished by including data from more than one rainfall gauge located within or near the municipality.

Step 2 **Compile All Of The Existing Storm Sewer Discharge Quality And Quantity Data.** Attach summaries of all data collected. The summary should include the location of the sample, sampling procedures, analytical methods used, and date and time sample was collected. All known data should be included with the application whether collected by the applicant or by another party. If a report was written describing the data, include the report if it is an unpublished report; include the reference if it is a published report.

Step 3 **List All Water Bodies Which Receive Discharges From The Municipal Storm Sewer System.** This would include the names of downstream segments, lakes and estuaries where pollutants from the storm drain system may accumulate and cause water degradation. For each water body listed, provide a brief description of the impacts the discharges have on the quality of water in that water body and all instream water quality standards which apply. If any data compiled in step 2 exceeds these standards note the

exceedance in the discussion. At a minimum, the description of impacts should address the concerns discussed in the background discussion. The applicant should describe the designated and beneficial uses of the receiving water bodies and if they are attained. If they are not attained, identify the causes of non-attainment.

The State agency charged with protecting water quality should be contacted to obtain 305(b) reports, 304(l) lists, 319 State Assessment Reports, 314 reports, and information regarding any estuaries nominated to the National Estuary Program. A list of these agencies is provided in Appendix A. Existing sediment and fish tissue data may be available from a variety of sources, including State agency studies, EPA studies, university studies, environmental impact statements drafted for the area of concern, and local investigations. Any information describing the water body found in these sources should be included. If the reports contain extensive discussions, the reports themselves should be attached to the application. Information sources should not be restricted to these reports and lists. Include with the application any other studies consulted. Additional available information describing the water body should also be included such as type of water body, location (USGS Quad Sheet, name of sheet and quadrants), identification of any nearby dam or manmade impoundment or other structures that control or influence the receiving waters, identification of nearby USGS monitoring stations, size of water body in acres or miles, description of tidal influences, determination of whether waters are navigable, and description of shoreline.

Example

City X obtained precipitation data from the local flood control district and the U.S. Weather Service. The flood control district provided precipitation data from the four stations shown in Figure 4-5. These data are presented in Table 4-6. The data indicate

two precipitation zones in the city, the north-eastern and south-eastern areas. The north-eastern zone of City X is hilly and is only lightly developed (park land and light to medium residential) and receives about 25% more precipitation than the south-western zone (flat and heavily developed). However, because the north-eastern zone is less developed than the south-western zone, less runoff is expected. Table 4-7 presents results from a SYNOP simulation using National Weather Service data from the City X airport. This analysis provides an estimate of the representative storm. Table 4-7 indicates that the representative storm has a volume between 0.28 inch and 0.85 inch and a duration of 7 to 21 hours. City X has not collected any data in its storm sewer system. However, the State Water Quality Agency collected data in Wet Creek, a perennial stream in City X that carries storm water during storms. The State also collected data in the receiving water body to which Wet Creek discharges. This data was never published; City X obtained the data by contacting the State Water Quality Agency. The data are presented in Table 4-8.

Table 4-5. LOCATIONS TO OBTAIN PRECIPITATION DATA

A source of long-term rainfall data in the U.S. is the National Weather Service (NWS). The National Weather Service maintains a database of over 1000 weather stations in the United States which record hourly precipitation data. This data can be obtained directly from the National Weather Service on magnetic tape or in annual publications printed by the Weather Service. This data is also available on compact disk from private vendors. This data requires a PC compatible with a compact disk reader. It typically comes with its own database and software. For both sources the period of record is generally from August 1949 to the current date, with a few data gaps. The information can be obtained by contacting:

| | | |
|---------------------------------|----|---------------------|
| U.S. Department of Commerce | | EarthInfo |
| National Climatic Center | | 5541 Central Avenue |
| NOAA Environmental Data Service | or | Boulder, CO 80301 |
| Federal Building | | (800) 222-0920 |
| Asheville, NC 28801 | | |
| (704) 258-2850 | | |

Summaries are published monthly for each state as Climatological Data. These publications contain a monthly summary of the climatological data for each weather station within the state as well as a description of the location of each station within the state.

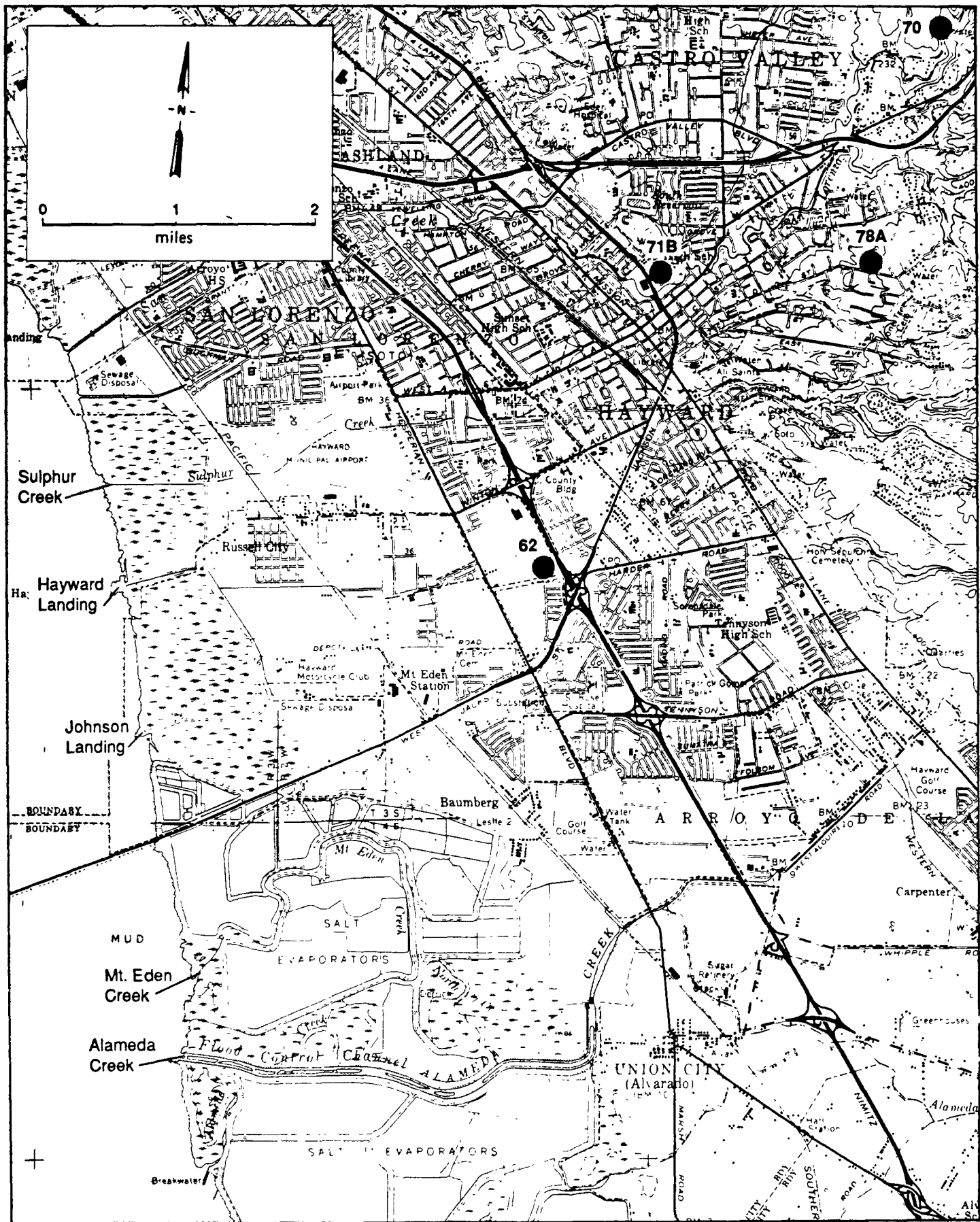


Figure 4-5. LOCATION OF RAIN GAGES IN CITY X

Table 4-6. MEAN RAINFALL AND NUMBER OF STORMS FOR PRECIPITATION GAGES IN CITY X

Year:

| Month | Station 1 | | Station 2 | | Station 3 | | Station 4 | |
|-------|--------------------------|------------------|--------------------------|------------------|--------------------------|------------------|--------------------------|-------------------------------|
| | Mean Rainfall (in) | No. of Storms | Mean Rainfall (in) | No. of Storms | Mean Rainfall (in) | No. of Storms | Mean Rainfall (in) | No. of Storms ¹ |
| Jan | 5.1 | 9 | 4.1 | 9 | 2.6 | 7 | 3.6 | |
| Feb | 4.2 | 8 | 3.9 | 10 | 3.0 | 6 | 2.9 | |
| Mar | 3.4 | 10 | 4.0 | 11 | 3.7 | 9 | 2.3 | |
| Apr | 1.8 | 5 | 1.6 | 7 | 1.2 | 4 | 1.4 | |
| May | 0.8 | 2 | 0.3 | 3 | 0.4 | 2 | 0.5 | |
| Jun | 0.2 | 1 | 0.1 | 1 | 0.1 | 1 | 0.1 | |
| Jul | 0.0 | 1 | 0.1 | 1 | 0.1 | 1 | 0.0 | |
| Aug | 0.0 | 1 | 0.1 | 1 | 0.1 | 1 | 0.0 | |
| Sep | 0.3 | 2 | 0.5 | 2 | 0.4 | 2 | 0.0 | |
| Oct | 1.3 | 4 | 1.5 | 5 | 1.3 | 3 | 0.9 | |
| Nov | 2.9 | 8 | 3.9 | 8 | 2.7 | 7 | 2.0 | |
| Dec | 4.2 | 8 | 3.5 | 10 | 2.7 | 8 | 3.3 | |
| | 24.2 | | 23.6 | | 18.4 | | 17.1 | |

1. Number of storms not available

Station 1 located in the hills

Station 2 located in the hills

Station 3 located in downtown

Station 4 located near Bay

Table 4-7. STORM EVENT STATISTICS FOR CITY X CALCULATED USING THE SYNOP PROGRAM

Year:

| Month | Duration (hrs) | Intensity (in/hr) | Volume (in) | Delta (hrs) | Number of Storms |
|-------------------------|-------------------|----------------------|-----------------|----------------|---------------------|
| Jan | 15.7 | 0.05 | 0.7 | 165.7 | 5.5 |
| Feb | 12.9 | 0.05 | 0.5 | 143.5 | 5.0 |
| Mar | 13.0 | 0.04 | 0.5 | 158.6 | 4.6 |
| Apr | 12.4 | 0.04 | 0.5 | 181.4 | 3.0 |
| May | 7.9 | 0.04 | 0.3 | 346.5 | 1.1 |
| Jun | 13.4 | 0.04 | 0.5 | 953.4 | 0.2 |
| Jul | 9.3 | 0.03 | 0.3 | 1863.0 | 0.1 |
| Aug | 5.3 | 0.04 | 0.3 | 1042.0 | 0.1 |
| Sep | 10.2 | 0.05 | 0.5 | 2621.0 | 0.4 |
| Oct | 9.8 | 0.07 | 0.7 | 945.9 | 1.6 |
| Nov | 11.9 | 0.05 | 0.6 | 453.4 | 3.8 |
| Dec | 16.3 | 0.05 | 0.7 | 172.7 | 4.7 |
| Yr. Avg. | 11.0 | 0.05 | 0.5 | | |
| Wet Season ¹ | 14.0 | 0.05 | 0.6 | | |
| Average Storm | (7-21 hr.) | | (0.28-0.85 in.) | | |

Which is +/- 50% of the mean wet season value

1. Wet Season is November through April 1.

Table 4-8. STORM WATER QUALITY DATA COLLECTED IN CITY X

| Sample I.D. | Date Sampled Month Day Year | | | TOC | | BOD | | Total Coliform MPN per 100 ml of Sample | Fecal Coliform MPN per 100 ml of Sample |
|----------------|--------------------------------|----|------|----------------|--------------|----------------|--------------|---|---|
| | | | | Actual mg/L | D.L. mg/L | Actual mg/L | D.L. mg/L | | |
| S2 | 2 | 1 | 1989 | 2.1 | 1 | 2.7 | 1 | 11000 | 93 |
| S2 | 4 | 6 | 1986 | 1.9 | 1 | 2.5 | 1 | 2400 | 460 |
| S2 | 4 | 20 | 1988 | 13 | 1 | | | 54000 | 7000 |
| S2 | 11 | 23 | 1987 | 14 | 0.1 | 45 | 1 | >240000 | <240000 |
| S3 | 2 | 26 | 1988 | 2 | 1 | | | 5400 | 2400 |
| S3 | 3 | 30 | 1987 | | | 6 | 1 | 7900 | 4900 |
| S3 | 5 | 11 | 1986 | 6.4 | 1 | 2 | 1 | 110000 | 2000 |
| S4 | 4 | 20 | 1988 | 13 | 1 | | | 240000 | 17000 |
| S4 | 11 | 23 | 1986 | 23 | 0.1 | 4 | 1 | >240000 | <240000 |
| S4 | 11 | 23 | 1985 | 9 | 0.1 | | | >240000 | 46000 |

Notes: Station S2 located near the headwaters of Wet Creek.
Station S3 located 1/4 mile upstream of the mouth of Wet Creek.
Station S4 located in Big Bay near the mouth of Wet Creek.

D.L. = Detection Limit
MPN = Most Probable Number

There are three receiving water bodies which receive discharges from the City X storm sewer system, Wet Creek, Big Creek and Big Bay. Wet Creek forms the boundary between City X and City Y, Big Creek is entirely contained within City X's boundaries and Big Bay is a large salt water bay which receives runoff from City X, Wet Creek, Big Creek and a large urban area containing approximately 2 million people. City X obtained a copy of the latest 305(b) report and 304(l) list from the State Water Quality Agency. Wet Creek and Big Creek are not mentioned in either; Big Bay is on one of the 304(l) lists.

Wet Creek is channelized most of its length except near its headwaters and its mouth. The channelized portion of the creek is maintained by the Flood Control District and public access is restricted. Existing uses include non-contact recreation and wildlife habitat in the lower reaches, groundwater recharge and cold fresh water fish habitat. Big Creek is a natural creek along its entire length even though some sections have been "improved" by the Flood Control District (bank stabilization, dredging). Classified uses include fish and wildlife habitat, non-contact recreation and groundwater recharge.

Big Bay covers an area of approximately 300 sq mi. Three major ports are located along its shore plus numerous industries. The population surrounding the bay is approximately 2 million people. Beneficial uses include: Industrial water supply, commercial and naval shipping, contact (windsurfing, sailing, and swimming) and non-contact recreation, commercial fishing, wildlife habitat, habitat for rare and endangered species, marine habitat, fish migration and spawning and shellfish harvesting. State water quality standards which apply to all three receiving water bodies are presented in Table 4-9.

Table 4-9. WATER QUALITY STANDARDS FOR WET CREEK, BIG CREEK AND BIG BAY

| Parameter | Standard mg/L |
|--|------------------|
| Physical | |
| Color (units) | 15 |
| Odor (number) | 3 |
| Turbidity (NTU) | 5 |
| pH (units) | 6.0-8.5 |
| TDS | 1000 |
| EC (mmhos/cm) | 1.6 |
| Inorganic Constituents | |
| Arsenic | 0.05 |
| Barium | 1.0 |
| Chloride | 500 |
| Cadmium | 0.010 |
| Chromium | 0.05 |
| Copper | 1.0 |
| Cyanide | 0.2 |
| Fluoride | 0.8-1.7 |
| Iron | 0.3 |
| Lead | 0.05 |
| Manganese | 0.05 |
| Mercury | 0.002 |
| NO ₃ + NO ₂ (as N) | 10 |
| Selenium | 0.01 |
| Sulfate | 500 |
| Zinc | 5.0 |
| Organic Constituents | |
| MBAS | 0.5 |
| Oil and Grease | None |
| Phenols | 0.001 |
| Trihalomethanes | 0.1 |
| Endrin | 0.0002 |
| Lindane | 0.004 |
| Methoxychlor | 0.1 |
| Toxaphene | 0.005 |
| 2,4-D | 0.1 |
| 2,4,4-TP Silvex | 0.01 |
| Bacteriological Properties | |
| Total Coliform | <100 MPN/100 ml |

NTUs = Nessler Turbidity Unit

MBAS = Methylene Blue Activated Substances

TDS = Total Dissolved Solids

EC = Electrical Conductivity

4.4.2 Field Screening Analysis

The Regulation

40 CFR 122.26(d)(1)(iv)(D)

This part of the application shall consist of...

...results of a field screening analysis for illicit connections and illegal dumping for either selected field screening points or major outfalls covered in the permit application. At a minimum, a screening analysis shall include a narrative description, for either each field screening point or major outfall, of visual observations made during dry weather periods. If any flow is observed, two grab samples shall be collected during a 24 hour period with a minimum period of four hours between samples. For all such samples, a narrative description of the color, odor, turbidity, the presence of an oil sheen or surface scum as well as any other relevant observations regarding the potential presence of non-storm water discharges or illegal dumping shall be provided. In addition, a narrative description of the results of a field analysis using suitable methods to estimate pH, total chlorine, total copper, total phenol, and detergents (or surfactants) shall be provided along with a description of the flow rate. Where the field analysis does not involve analytical methods approved under 40 CFR Part 136, the applicant shall provide a description of the method used including the name of the manufacturer of the test method along with the range and accuracy of the test. Field screening points shall be either major outfalls or other outfall points (or any other point of access such as manholes) randomly located throughout the storm sewer system by placing a grid over a drainage system map and identifying those cells of the grid which contain a segment of the storm sewer system or major outfall. The field screening points shall be established using the following guidelines and criteria:

- 1. A grid system consisting of perpendicular north-south and east-west lines spaced 1/4 mile apart shall be overlayed on a map of the municipal storm sewer system, creating a series of cells;*

2. *All cells that contain a segment of the storm sewer system shall be identified; one field screening point shall be selected in each cell; major outfalls may be used as field screening points;*
3. *Field screening points should be located downstream of any sources of suspected illegal or illicit activity;*
4. *Field screening points shall be located to the degree practicable at the farthest manhole or other accessible location downstream in the system, within each cell; however, safety of personnel and accessibility of the location should be considered in making this determination;*
5. *Hydrological conditions; total drainage area of the site; population density of the site; traffic density; age of the structures or buildings in the area; history of the area; and land use types;*
6. *For medium municipal separate storm sewer systems, no more than 250 cells need to have identified field screening points; in large municipal separate storm sewer systems, no more than 500 cells need to have identified field screening points; cells established by the grid that contain no storm sewer segments will be eliminated from consideration; if fewer than 250 cells in medium municipal sewers are created, and fewer than 500 in large systems are created by the overlay on the municipal sewer map, then all those cells which contain a segment of the sewer system shall be subject to field screening (unless access to the separate storm sewer system is impossible); and*
7. *Large or medium municipal separate storm sewer systems which are unable to utilize the procedures described in paragraphs 1 through 6 of this subsection, because a sufficiently detailed map of the separate storm sewer systems is unavailable, shall field screen no more than 500 or 250 major outfalls respectively (or all major outfalls in the system, if less); in such circumstances, the applicant shall establish a grid system consisting of north-south and east-west lines spaced 1/4 mile apart as an overlay to the boundaries of the municipal storm sewer system, thereby creating a series of cells; the applicant will then select major outfalls in as many cells as possible until at least 500 major outfalls (large municipalities) or 250 major outfalls (medium*

municipalities) are selected; a field screening analysis shall be undertaken at these major outfalls.

Intent

The intention of this section of the application is to provide a preliminary determination about the existence, extent, and location of illicit connections and illegal dumping.

Background And Discussion

The field screening portion of the application requirements is designed to identify sources of non-storm water to the municipal separate storm sewer system. During dry weather, separate storm sewers may convey a variety of legally and illegally discharged substances which originate from:

- Illicit connections with sanitary sewers and/or industrial discharges
- Improper disposal of wastes, wastewater and litter (e.g., used oil, paints, etc.)
- Spills
- Leaking sanitary sewage systems
- Malfunctioning septic tanks
- Infiltration of ground water polluted by a variety of sources including leaking storage tanks

Non-storm water discharges to separate storm sewer systems occur in a haphazard and apparently random manner; they can occur in any segment of the system at any time; and, they can have continuous or intermittent flow. Numerous studies (Schmidt and Spencer, 1986; Falkenburg, 1987; Gartner, 1983; Montoya 1987) have demonstrated the effect of illicit connections on water quality. The results of these studies indicate that the contribution of such pollutants as metals, nutrients, oil and grease, phenols and solvents can cause significant water quality problems in the receiving surface waters. Pitt et al. (1989) in a study in the Toronto area reported that dry weather flows from

residential areas were high in pesticides and those from industrial areas high in toxicants and metallics. A more detailed study in the same area (GLA, 1983) determined that about 10% of the 625 outfalls sampled during dry weather were significant sources of pollutants. A study in the Allen Creek Drainage in Ann Arbor, Michigan (Schmidt and Spencer, 1986) came to a similar conclusion. Dye tests conducted in the Allen Creek drainage showed that 60% of facilities known to use petroleum products or other hazardous materials discharged to the storm sewer system. Twenty-five percent of other industries that use or store lesser quantities of petroleum products or hazardous wastes (e.g., photographic processing labs, dry cleaners, utility companies) were found to be connected to the storm sewers. Table 4-10 presents the results from dye studies conducted in the drainage.

Past studies have shown that illicit connections can have a significant effect on receiving water quality. Therefore, one of the goals of the NPDES storm water regulations is to eliminate all ILLICIT discharges (as defined in Appendix C) to the separate storm sewer system. However, EPA has recognized that some illicit discharges do not pose an environmental hazard. Therefore, some non-storm water discharges may not have to be eliminated in a municipal storm water management plan and may be allowable under the terms of an NPDES permit if identified by the municipality as not being sources of pollutants to waters of the United States. Examples of these types of discharges are listed in Table 4-11.

Table 4-10.

**SUMMARY OF STORM DRAIN CONNECTIONS BY BUSINESS
TYPE FOR ALLEN CREEK DRAINAGE BASIN, ANN ARBOR,
MICHIGAN**

| Business Type | Number of Businesses Dye-Tested | Percent Tested Connected to Storm Drain |
|---------------------------------------|--|--|
| Auto repair shops/tire stores | 26 | 65 |
| Service stations | 16 | 63 |
| Printers/copiers | 11 | 9 |
| Manufacturers ^a | 9 | 56 |
| Dry cleaners/laundries | 9 | 0 |
| Government facilities ^a | 5 | 80 |
| Auto parts stores | 5 | 40 |
| Auto body shops | 4 | 75 |
| University facilities ^a | 4 | 75 |
| Muffler/transmission shops | 4 | 50 |
| Car washes | 4 | 50 |
| Auto dealerships | 3 | 100 |
| Auto/truck rental agencies | 3 | 33 |
| Photographic processors | 3 | 33 |
| Utilities | 3 | 33 |
| Private service agencies ^a | 2 | 50 |
| Train/bus stations | 2 | 0 |
| Paint stores ^a | 2 | 0 |
| Plating shops | 1 | 100 |
| Water conditioning companies | 1 | 100 |
| Party stores ^a | 1 | 100 |
| Private homes ^a | 1 | 100 |
| Chemical laboratories | 1 | 0 |
| Construction companies | 1 | 0 |

Source: Schmidt, Stacey D., and Spencer, Douglas R. "The Magnitude of Improper Waste Discharges in an Urban Storm Water System" Journal WPCF, July 1986.

Table 4-11. EXAMPLES OF NON-STORM WATER DISCHARGES TO MUNICIPAL SEPARATE STORM SEWER SYSTEMS THAT MAY NOT BE ADDRESSED IN MANAGEMENT PROGRAMS UNLESS IDENTIFIED AS SOURCES OF POLLUTANTS TO WATERS OF THE UNITED STATES

Water Line Flushing
Runoff from Fire Fighting
Diverted Stream Flows
Rising Ground Waters
Ground Water Infiltration (see definition Section 4)
Discharges from Potable Water Sources
Foundation Drains
Air Conditioning Condensation
Springs
Water from Crawl Space Pumps
Footing Drains
Lawn Watering
Individual Residential Car Washing
Flows from Riparian Habitats and Wetlands
Dechlorinated Swimming Pool Water Dischargers
Street Wash Waters Related to Cleaning and Maintenance

The first step in any illicit discharge monitoring program is to identify all outfalls to the storm sewer system. Pitt et al. in his Toronto study reported that three field trips were necessary to locate all of the known outfalls of the storm sewer system. Still, additional unmapped outfalls were found during the course of the study. Because of the inherent difficulty in locating all outfalls, the NPDES municipal storm water regulations provide an alternative method to locate sampling stations for the illicit discharge field screening monitoring program. The alternative method requires the applicant to place a square grid, 1/4 mile on a side, over a map of the municipal storm sewer system and locate a sampling point within each grid cell. The following provides a procedure that will help the applicant fulfill this requirement of the permit application. Note that the applicant has a choice of using the following procedure or locating and screening all major outfalls. Major outfalls are defined in Appendix C.

Procedure

The following is a step-by-step procedure to use in developing a field screening program which satisfies EPA application requirements for a Municipal NPDES Storm Water Permit. The program provides a basis for an illicit connection and illegal discharge program conducted during the term of the permit.

- | | |
|---------------|--|
| Step 1 | Obtain A Map Of The Municipal Storm Sewer System. If the storm sewer map scale is too small for 1/4 mile square grids it may be necessary to obtain a larger scale map also (e.g., 7.5 minute map). Example 2 below offers a suggestion on how to deal with this problem. |
| Step 2 | Determine The Length Of 1/4 Mile On Map. |
| Step 3 | Draw Grid On Map. A grid consisting of square grid cells 1/4 mile on a side ($1/16 \text{ mi}^2$ in area) is drawn on the storm sewer map obtained in Step 1. It is not necessary to draw a grid in those areas of the city which do not contain separate storm sewers. |

Step 4

Count The Number Of Grid Cells. The maximum number of grid cells required for large municipalities is 500; medium sized municipalities should require no more than 250 grid cells. If more than 500 (or 250 for a medium city) grid cells are generated in Step 3 concentrate grid cells in those areas suspected of containing illicit discharges (note: only those cells with portions of the storm sewer are of concern). Lacking any other information, these areas can be determined using information obtained in the source and discharge characterization sections of the application. The guidelines below can be used to help reduce the number of grid cells to the maximum required by the regulations. The guidelines are based upon avoiding sampling in areas that are not expected to contain illicit discharges. The following guidelines should not be used to eliminate cells in areas suspected of containing illicit connections or illegal dumping.

Guidelines

- Eliminate cells in parks and areas that are undeveloped.
- Sample only half of the grid cells in areas with low density residential development.
- Sample three-fourths of the grid cells in other residential areas.
- Concentrate grid cells in older industrial areas. Limit industrial grid cells to three-fourths of the total.
- Eliminate grid cells in the areas with the lowest density of development.

Step 5

Locate A Sampling Point In Each Grid Cell. Criteria used to locate sampling points are listed below. The criteria are listed in the order of importance but the order does not have to be strictly adhered to.

- Locate the sampling point downstream of any suspected source of illegal or illicit activity
- Locate the sampling point at the location which drains the largest percentage of the grid cell if more than one location is available.
- Locate a sampling point at a major outfall.

In addition, the following suggestions can also be used to determine the location of sampling points.

- Sampling points should be located at least 1/4 mile apart along a given sewer line except in intensely developed areas, older areas or areas of suspected illicit or illegal activity where they can be spaced 400 feet apart along a given sewer line.
- Locate a sampling point where each branch of the applicant's storm water system discharges to a receiving water body.

Step 6 **Determine A System To Label The Grid.** A convenient method is to use letters in the East-West direction and numbers in the North-South direction (e.g., A1, A2, B1, B2, etc.).

Step 7 **Conduct Screening Level Sampling.** The Municipal NPDES storm water sampling program for illicit connections and illegal dumping requires two types of data:

- (1) A narrative description of each field screening point or major outfall (defined in Step 5); this description should be detailed enough so that a determination if illegal dumping is a problem can be made (see Figure 4-6 for example of types of information required).
- (2) The collection of two grab samples at all screening points where flow is observed.

The NPDES storm water regulations (40 CFR 122.21(g)(7)) require that each sampling point be examined during dry weather (a period preceded by at least 72 hours with no precipitation) and the results reported with the application including points where no flow was observed. The following data should be recorded for each grab sampled collected:

- color
- odor
- turbidity
- presence of surface sheen/scum
- other relevant observations
- list the methods (physical and/or chemical) used to analyze samples
- pH
- total chlorine
- total copper
- total phenol
- flow rate
- detergents or surfactants

EPA does not require that analytical methods approved under 40 CFR Part 136 be used for the Field Screen. Rather, it is recommended that inexpensive colormetric field test kits be used to analyze for total chlorine, total copper, total phenol, and detergents. All of these tests follow the same general procedure:

add reagent to a small quantity of the water to be sampled, wait the appropriate reaction time, and compare the resulting color of the sample to a set of standards. These tests have detection limits on the order of 1 mg/l and require only a few minutes to conduct. These kits can be obtained from a number of manufacturers.

An efficient screening analysis program requires early development of a field data sheet. A sample data sheet is shown in Figure 4-6. A data sheet should be completed for each field sampling point identified in Step 5. For points where no flow is observed, provide other relevant data (cell number, vegetation condition, type of outfall or channel, etc.). For sampling points where flow was observed at least two grab samples must be collected. The two samples should be collected within 24 hours of each other and at least four hours apart.

Figure 4.6

**FIELD DATA SHEET
ILLEGAL DISCHARGE FIELD SCREENING PROGRAM**

SHEET NO. _____

OUTFALL ID NO: _____

DATE: _____

TIME: _____

GENERAL INFORMATION:

TIME SINCE LAST RAIN: >72 hrs <72 hrs INSPECTION TEAM: _____

QUANTITY OF LAST RAIN: ≥0.1in <0.1in

FIELD SITE DESCRIPTION

LOCATION: _____

OPEN CHANNEL

MANHOLE

OUTFALL

OTHER _____

DOMINANT WATERSHED LAND USES: INDUSTRIAL COMMERCIAL RESIDENTIAL UNKNOWN OTHER _____
IF KNOWN, LIST THEM: _____

FLOW ESTIMATION:

FLOW OBSERVED YES NO APPROXIMATE CHANNEL WIDTH OR PIPE DIAMETER: _____

1.) WIDTH OF WATER SURFACE (FEET) _____

2.) APPROXIMATE DEPTH OF WATER (FEET) _____

3.) APPROXIMATE FLOW VELOCITY (FEET PER SECOND) _____

4.) FLOW RATE (CUBIC FEET PER SECOND) = 1 x 2 x 3 = _____

VISUAL OBSERVATIONS:

PHOTO TAKEN NO YES...ROLL(S) AND PHOTO NUMBER(S) _____

ODOR: NONE MUSTY SEWAGE ROTTEN EGGS SOUR MILK OTHER _____

COLOR: CLEAR RED YELLOW BROWN GREEN GREY OTHER _____

CLARITY: CLEAR CLOUDY OPAQUE SUSPENDED SOLIDS

FLOATABLES: NONE OILY SHEEN GARBAGE/SEWAGE OTHER _____

DEPOSITS / STAINS: NONE SEDIMENTS OILY OTHER _____

VEGETATION CONDITION: NONE NORMAL EXCESSIVE GROWTH INHIBITED GROWTH

STRUCTURAL CONDITION: NORMAL CONCRETE CRACKING/SPALLING METAL CORROSION OTHER _____

BIOLOGICAL: MOSQUITO LARVAE BACTERIA/ALGAE OTHER _____

FIELD ANALYSES:

FIELD ANALYSES:

WATER TEMP: _____degrees C

CHLORINE (TOTAL): _____mg/l

pH _____

COPPER: _____mg/l

PHENOL _____mg/l

DETERGENTS: _____mg/l

LABORATORY SAMPLE COLLECTED YES NO
IF YES ATTACH COPY OF CHAIN-OF-CUSTODY RECORD

COMMENTS: _____

DATA SHEET FILLED OUT BY (SIGNATURE): _____

Examples of Storm Water Discharge Characterization:

Example 1.

City X is a medium size city. A map of City X's storm sewer system at a scale of 1 in = 800 ft (1:9600) was obtained. Grid cells were then drawn on the map.

Figure 4-1 is an industrial portion of the sewer map showing the grid cells. In this portion of the city there are 36 grid cells. A sampling location was located in each grid cell. Table 4-12 lists each sample point and the reason it was chosen.

Most of the sampling stations were located at major storm sewer junctions. At junctions where more than two channels or pipes come together a sample would be collected from any conveyance which contained flow. This process would be repeated for the entire city until the required number of cells with stations were identified.

Example 2.

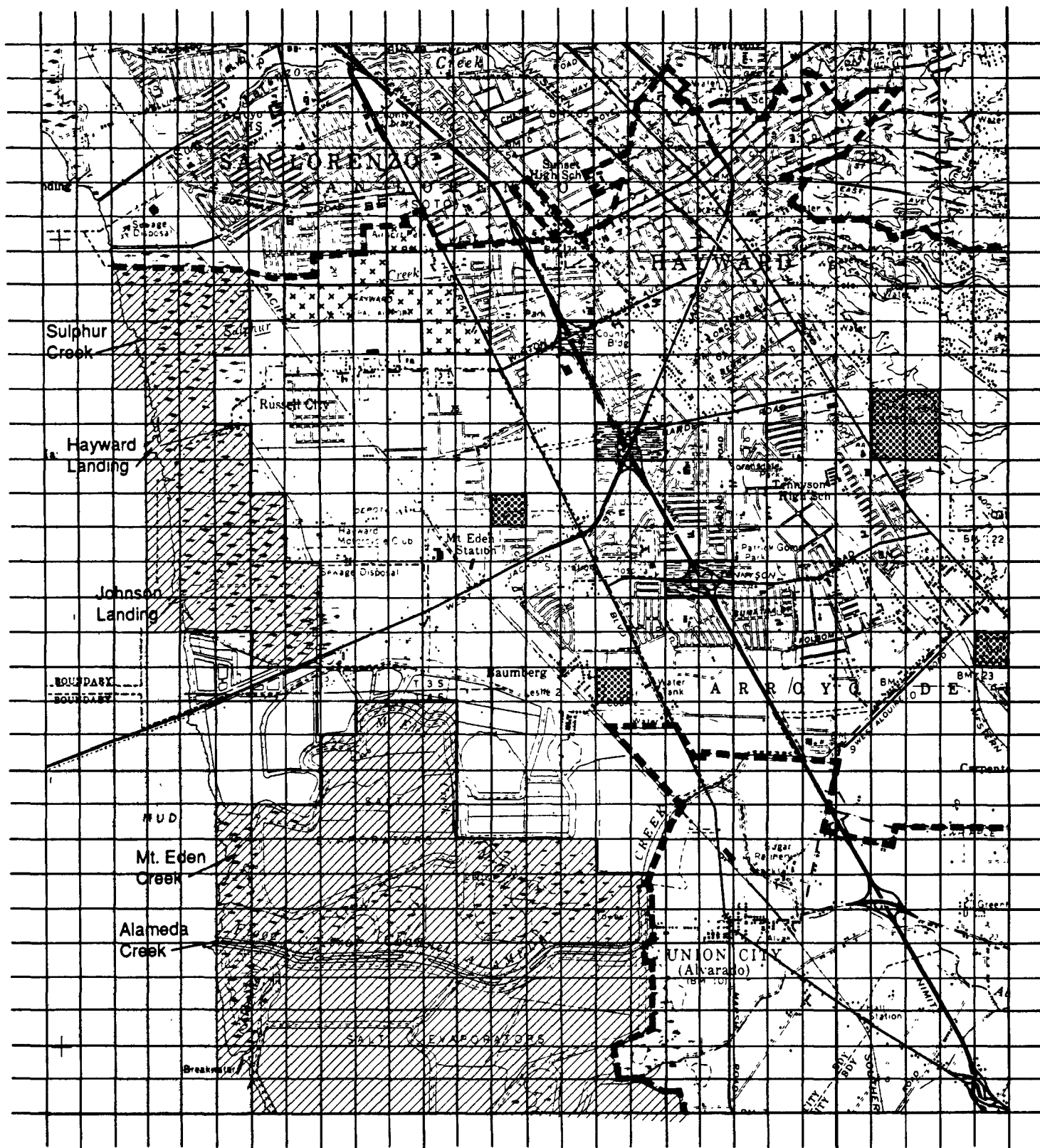
City Y is a medium sized city. Its storm sewer maps are contained on over 100 sheets at a scale of 1 in = 250 ft. Since each map covers a small area, it is not practicable to draw the 1/4 mile square grids on the individual sheets. The following provides an approach to this problem.

- A) Follow steps 2 through 4 of the preceding procedure using a large scale map such as a 7.5' or 15' USGS topographic map. This map is used to determine where to locate the 250 required grid cells. Figure 4-7 presents a 15 minute map of city Y with 1/4 mile square grid cells. The eastern portion of the city not shown on the map is undeveloped land consisting mainly of open space and park land. It does not contain storm sewers. The southern portion of the city not shown on the map is undeveloped marsh land and abandoned salt evaporators. It also does not contain storm sewers. Approximately 550 grid cells are shown on Figure 4-7 within city Y's boundaries. Figure 4-7 also shows those grid cells containing open space and marsh areas which were eliminated from the field screening analysis.

Table 4-12. LOCATION OF SAMPLING POINTS AND RATIONALE FOR CHOOSING SAMPLE LOCATIONS IN EXAMPLE 1

| Grid Cell | Rationale |
|-----------|---|
| A1 | Manhole where Connecticut sewer joins Line E-2. |
| A2 | Farthest downstream manhole in cell. |
| A3 | Manhole on America Avenue drains cells A3, B3, B4. |
| A4 | Farthest downstream on Line B-1. |
| A5 | Farthest downstream on Line B. |
| A6 | Drains more of cell than any other storm sewer. |
| B1 | Farthest downstream manhole on Line E-2. |
| B2 | Line A; largest line in cell. |
| B3 | Manhole where 39" sewer joins American Avenue sewer. (This station is less than 1/4-mile from Station A3 but since the area is industrial include station.) |
| B4 | Farthest downstream manhole on Line B-1. |
| B5 | No station since any station would be less than 1/4-mile from Station C5 or B6. |
| B6 | Manhole on Cursair Blvd. Drains most of cell. |
| C1 | Line C; largest line in cell. |
| C2 | Where Line C joins Line A. |
| C3 | Line A-2; drains most of cell. |
| C4 | Line A-2; drains most of cell. |
| C5 | Line B; drains most of cell. |
| C6 | No station; airport runway. |
| D1 | Line E-2; drains most of cell. |
| D2 | Line C; drains most of cell. |
| D3 | Where Line A-3 joins Line A. |
| D4 | Line A-3; drains most of cell. |
| D5 | Line B; drains entire cell except airport. |
| D6 | No station; airport runway. |
| E1 | Farthest downstream point in cell. |
| E2 | No mapped storm sewers. |
| E3 | Manhole station drains bottom half of cell. Station on West Street would be equally valid. |
| E4 | Line A-3; drains entire cell. |
| E5 | Line B; drains most of cell. |
| E6 | Manhole; drains most of cell. |
| F1 | Manhole; drains entire cell. |
| F2 | Manhole; only storm sewer in cell. |
| F3 | Manhole in Line A and junction of Line A, 45" and 51" pipes. |
| F4 | Manhole; drains top half of cell. Choosing station on Line A would be less than 1/4-mile from Station F3. |
| F5 | No station; only mapped storm sewers are less than 1/4-mile from Station F4. |
| F6 | No mapped storm sewers. |

Note: A table such as 4-12 is not required to be submitted with the application.



LEGEND

- | | |
|---|--|
|  Undeveloped Marsh |  Airport Runways |
|  Open Space |  Freeway Interchanges |

0 1
mile

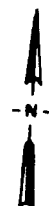


Figure 4-7. 1:62,000 SCALE MAP SHOWING GRID CELLS FOR CITY Y (EXAMPLE 2)

Cells were eliminated from the screening program for the following reasons:

- a. Undeveloped marsh land. There are 130 cells in this category.
- b. Open space areas such as golf courses and cemeteries surrounded by developed land.
- c. Airport runways. Those cells which are mainly occupied by runways were eliminated due to access problems.

- B) Collect all sewer maps covering the areas containing grid cells.
- C) Reduce all maps obtained in step B (by 50% if possible).
- D) Use a large work area and join maps from step C. If this creates a map that is too large, adjoin the maps in useable sized sections.
- E) Draw 1/4 mile square grid cells on map(s) obtained in Step D. Figure 4-8 presents a map obtained in step B. This map is composed of four individual sewer maps reduced by 50% then joined together.
- F) Locate the sampling points. Figure 4-8 shows the sampling points. The sampling point locations are listed in Table 4-13.

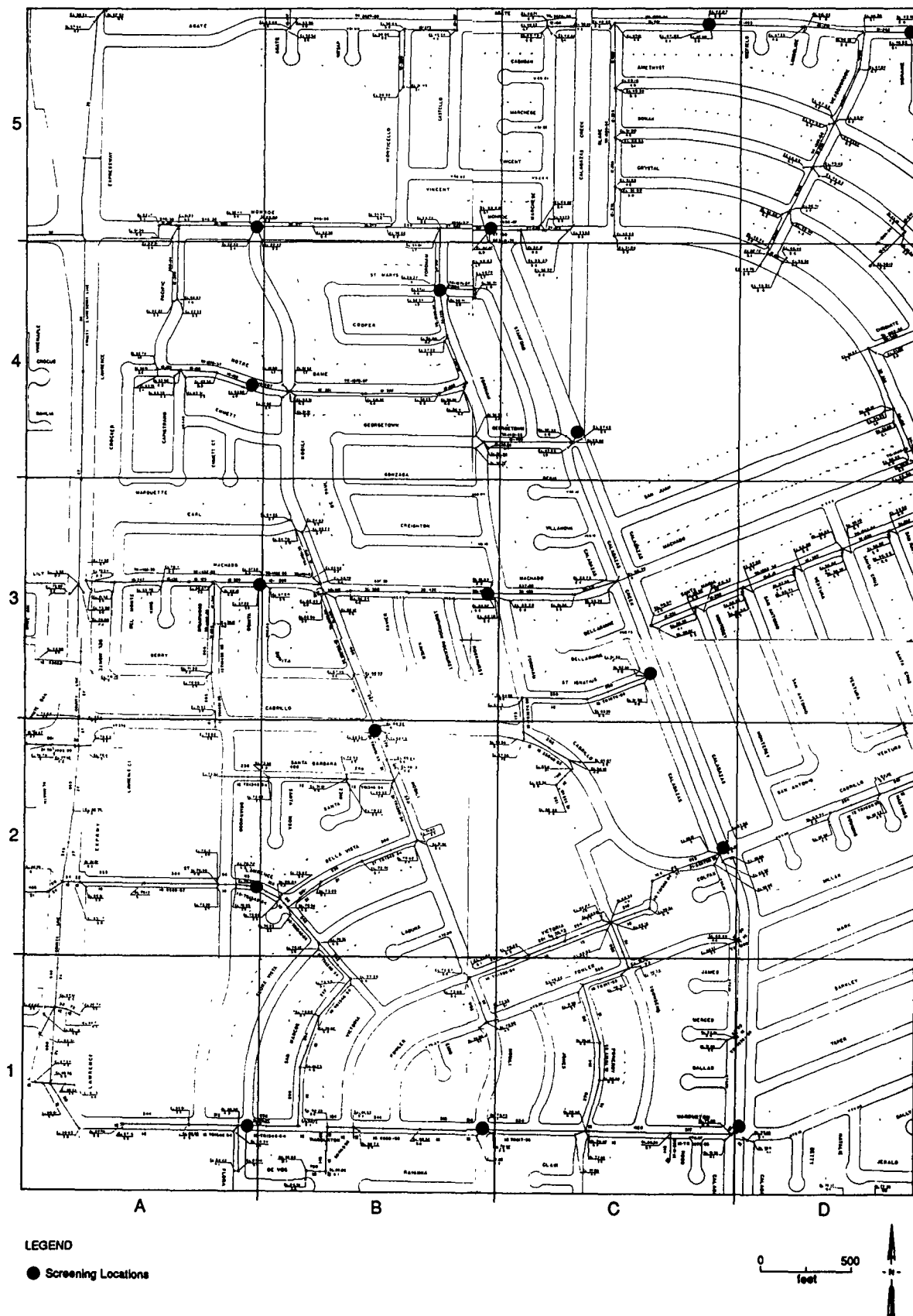


Table 4-13. LOCATION OF SAMPLING POINTS AND RATIONALE FOR CHOOSING SAMPLE LOCATIONS IN EXAMPLE 2

| Grid Cell | Rationale |
|-----------|---|
| A1-5 | Manhole on Flora Vista. The only other storm sewer in the grid is County owned and maintained and drains the Expressway |
| B1 | Manhole on Warburton. Manhole on San Marcos equally good. |
| B2 | Manhole on Nobili drains entire cell. |
| B3 | Manhole on Machado. Drains entire cell. |
| B4 | Manhole on Fordham. Drains greater percentage of cell than other options. |
| B5 | Manhole on Monroe. Manhole on Agate equally good. |
| C1 | Outfall on Calabazas Creek which drains cells A1,B1 and C1. This outfall does not drain most of the cell but the rest of the cell drains to the outfall sampled in cell C2. |
| C2 | Outfall to Calabazas Creek. Drains part of C1 and C2. |
| C3 | Outfall to Calabazas Creek. Drains part of C2 and C3. Alternative would be next outfall north. This outfall could be sampled instead of manhole B3. |
| C4 | Outfall to Calabazas Creek. Drains most of cell. |
| C5 | Manhole on Agate. Drains most of cell. |

Note: A table such as this is not required to be submitted with the application.

4.4.3 Characterization Plan

Regulation

40 CFR 122.26(d)(1)(iv)(E)

This part of the application shall consist of:

information and a proposed program to meet the requirements of paragraph (d)(2)(iii).

Such description shall include: the location of outfalls or field screening points appropriate for representative data collection under paragraph (d)(2)(iii)(A), a description of why the outfall or field screening point is representative, the seasons during which sampling is intended, and a description of the sampling equipment. The proposed location of outfalls or field screening points for such sampling should reflect water quality concerns (see subparagraph (1)(iv)(C) of this paragraph) to the extent practicable.

Intent

Part 2 of the regulations require monitoring of storm water discharges from representative outfalls or field screening points. The intent of this section of the application is to provide the permitting agency with a description of this program including sampling locations, sampling equipment and when sampling will occur. Approval of this plan is required before Part 2 monitoring data can be accepted as part of the completed permit application.

Background and Discussion

The Characterization Plan is designed to describe a program for monitoring major outfalls whose catchments are representative, in terms of land use, of the municipality. The objective of the representative monitoring program is to collect information for estimating annual pollutant loadings and the mean concentration of pollutants in discharges resulting from representative storm events.

Procedure for Developing a Characterization Plan

The following is a step-by-step procedure to develop a Characterization Plan:

- Step 1 Obtain A Map of the municipal storm sewer system.** On the maps used in Section 4.3 of this guidance, delineate different catchment areas within the municipality based on drainage characteristics. For each catchment area, a summary of land use activities should be compiled (e.g., divisions indicating undeveloped, residential, commercial, agricultural, or industrial). It is most useful if the land use information is summarized on the storm sewer map.
- Step 2 Select Sampling Locations.** Selection criteria for the sampling stations should be based on catchment characteristics, hydraulic factors, accessibility and safety factors.

The catchment characteristics of primary concern are representativeness of land use, overall size of the catchment, and uniformity of land use. In practice, the latter two factors are inconsistent, requiring that sighting of sampling stations be a compromise. With increasing size of the catchment, it becomes more unlikely that the requirement for uniformity of land use can be met.

Hydraulic factors are important considerations in selection of sampling stations. Each station may be located at a site with an existing stage-discharge rating or at a site where adequate stage-discharge ratings can be established. Thus, the following hydraulic factors are important considerations in the site selection process:

- Location at a site with an existing stage-discharge rating or at a site having a suitable control where a reliable rating curve can be developed
- Uniform and stable channel conditions for a distance equal to at least six channel widths upstream of the station

- Lack of tidal influence or backwater effects caused by downstream conditions
- No evidence of surcharging or submergence over the normal range of precipitation (manhole installations)
- Adequate distance from major tributaries in order to allow for complete mixing

Safety and accessibility are important considerations, primarily to avoid accidents and injury, but also to ensure that field crews feel sufficiently safe so that they exercise due care in conducting the field effort. Considerations include avoiding heavily trafficked areas or areas where light and/or visibility create conditions conducive to an accident with passing cars or trucks.

Good sampling stations cannot be located using map information only. The storm sewer maps are used to identify possible sites for representative sampling stations. After locating possible sampling stations, a field trip may be necessary to determine the exact site for the sampling station. Storm sewer and land use maps should be taken into the field and compared to actual conditions. The actual sampling station can be chosen while in the field based upon:

- Safety
- Land Use (representativeness)
- Catchment Area
- Accessibility
- Security for equipment and people
- Good Hydraulics

Step 3 Sampling Period And Frequency. The Characterization Plan should specify when sampling will occur (i.e., season) and the rationale for choosing this time. The regulations require samples from a minimum of three storms per station.

Step 4 Sampling Methods. The Characterization Plan should describe the methods and equipment used to collect the samples. 40 CFR 122.21(g)(7) (Federal Register, Nov. 16, 1990) describes approved sampling methods.

For each sampling event, a narrative description of the date and duration of the storm event should be provided, including rainfall estimates and the duration between the storm event sampled and the previously measured storm event (at least 72 hours and greater than 0.1 inches of rainfall).

A flow-weighted composite sample (manual or automatic compositing) should be collected for either the entire discharge or for the first three hours of the discharge. The methods and equipment should be described in the Characterization Plan.

Step 5 Sampling Parameters. The Characterization Plan should include a list of the parameters to be analyzed for each sample collected. For each sampling event, a representative storm water sample will be collected. Sampling parameters for each type of sample are shown in Tables 4-14. The samples will be collected in the field and transported to the laboratory for analysis, except for pH, which should be measured in the field immediately after collection.

Step 6 Quality Assurance and Quality Control. A description of the QA/QC procedures that will be followed should be provided in the characterization plan. This would include a discussion of the use of trip blanks, travel blanks, replicates and other QA/QC procedures used. The procedures used to guarantee laboratory quality should also be discussed.

Step 7 Analytical Methods. The Characterization Plan should describe the analytical methods which will be used to analyze the samples. The samples should be analyzed using one of the methods approved in 40 CFR 136. The analytical laboratory should usually be able to confirm that an approved method will be

used to analyze the samples. The description of analytical methods should include target detection limits for each method.

Example

Appendix E presents the Characterization Plan for City X.

Table 4-14. PARAMETERS FOR REPRESENTATIVE STORM WATER SAMPLING

| Grab Sample | Representative Stormwater Flow-Weighted Sample |
|---|---|
| <u>Organics</u> | <u>Organics</u> |
| Volatile Organic Carbon (VOCs) ¹ | Base/Neutral-Acid Extractable Oil and Grease |
| Compounds (BNA) | |
| Base/Neutral-Acid | |
| Extractable Compounds (BNA) | |
| Pesticides/Polychlorinated | Pesticides/Polychlorinated |
| Biphenyls (PCB) | Biphenyls (PCB) |
| Phenols (total) | |
| <u>Metals</u> | <u>Metals</u> |
| Antimony | Antimony |
| Arsenic | Arsenic |
| Beryllium | Beryllium |
| Cadmium | Cadmium |
| Chromium (total) | Chromium (total) |
| Chromium (hexavalent) | Chromium (hexavalent) |
| Copper | Copper |
| Lead | Lead |
| Mercury | Mercury |
| Nickel | Nickel |
| Selenium | Selenium |
| Silver | Silver |
| Thallium | Thallium |
| Zinc | Zinc |
| <u>Physical</u> | <u>Physical</u> |
| pH | |
| Total Dissolved Solids (TDS) | Total Dissolved Solids (TDS) |
| Total Suspended Solids (TSS) | Total Suspended Solids (TSS) |
| Biochemical Oxygen Demand (BOD ₅) | Biochemical Oxygen Demand (BOD ₅) |
| Chemical Oxygen Demand (COD) | Chemical Oxygen Demand (COD) |
| <u>Other</u> | <u>Other</u> |
| Fecal coliform | Phosphorous (total) |
| Fecal streptococcus | Phosphorous (dissolved) |
| Phosphorous (total) | Nitrogen (total) |
| Phosphorous (dissolved) | Total ammonia and |
| Cyanide (total) | Organic nitrogen |
| Nitrogen (total) | |
| Total ammonia and organic nitrogen | |

¹ except for bis(chloromethyl)ether, dichlorofluoromethane, and trichlorofluoromethane.

4.5 MANAGEMENT PROGRAMS

Regulation

40 CFR 122.26(d)(1)(v)

The regulations require information on existing management programs, including:

- A. *A description of the existing management programs to control pollutants from the municipal separate storm sewer system. The description shall provide information on existing structural and source controls, including operation and maintenance measures for structural controls, that are currently being implemented. Such controls may include, but are not limited to: procedures to control pollution resulting from construction activities; floodplain management controls; wetland protection measures; best management practices for new subdivisions; and emergency spill response programs. The description may address controls established under State law as well as local requirements.*
- B. *A description of the existing program to identify illicit connections to the municipal storm sewer system. The description should include inspection procedures and methods for detecting and preventing illicit discharges, and describe areas where this program has been implemented.*

Intent

One of the goals of the Municipal Storm Water Permit Application Regulations is to encourage municipalities to develop storm water management plans. Part 2 of the application requires submission of a proposed management plan describing how the municipality proposes to improve the water quality of its stormwater runoff. This

section of the application is intended to provide the permitting authority with information on the existing management programs in the municipality.

Background and Discussion

Many municipalities have implemented programs to control urban runoff. However, most of these efforts have been directed towards controlling runoff quantity (e.g., flood control projects), not quality. Since loading is a function of runoff quality and quantity, permitting authorities would like information on programs designed to control both runoff quality and quantity. Flood control projects exist in almost every municipality. Examples include: detention/retention basins, channel "improvement" projects and wetland preservation (used to retain flood waters). Many of these projects are undertaken by agencies other than the municipality, such as the Army Corps of Engineers, local flood control or water districts, or State agencies. Many of these projects with modification can be used to control both the quality and the quantity of urban runoff (e.g., retrofit detention basins). A description of these projects should be included with the application. Information on projects undertaken only to increase the storm sewer capacity do not have to be included. Examples of programs that control quantity of flow include:

- Flood control projects including detention/retention ponds
- Flood plain management
- Regulations controlling discharges (quantity) to storm sewers
- Regulations on new construction controlling allowable peak discharges
- Regulations prohibiting the disposal of refuse and debris into storm sewers to avoid interferences with flow
- Infiltration basins

If the municipality plans to retrofit or modify any of these structures or modify or add regulations in the future to better control urban runoff, a description of these plans should be included.

Fewer municipal programs exist to control the quality of urban runoff. However, some routine public works programs improve urban runoff quality. Typically, these projects control the sources of pollutants. Examples of these types of projects are:

- Anti-litter regulations
- Recycling programs
- Street sweeping
- Special garbage pick-ups for hazardous wastes

Lastly, some municipalities have programs in place specifically designed to control the quality of urban runoff. These programs include:

- Regulations requiring erosion control plans for construction sites
- Best management plans for new construction (e.g., grading of slopes, soil stabilization, swales, etc.)
- Public education programs (e.g., proper disposal methods of used oil, pesticides, antifreeze, etc.),
- Retrofitting of detention/retention ponds

Implementation of any of the above programs will not, in itself, necessarily improve urban runoff water quality; proper operation and maintenance over time are critical factors in assuring effectiveness of many of these measures. For example, a detention basin designed to pass flows under a certain size may provide adequate flood control but result in little improvement in water quality; or, if the time between street sweeping and rainfall is great enough to allow build up on streets, street sweeping will have little effect on storm water quality. For these reasons it is important to include with the description a schedule of operation and maintenance.

As described in Section 4.4.1. illicit connections and illegal dumping are major problems in urban areas. One of the priorities of the NPDES storm water regulations is to require cities to implement programs to identify illicit connections. Some cities have already implemented programs. EPA requests information on these programs.

Procedure for Submitting Information on Existing Management Programs

Step 1 Obtain and Compile a List of Flood Control Projects within the City or County Limits. Contact the Army Corps of Engineers, the local flood control district and the Public Works Department for a description of projects each maintains within the city. Projects designed only to increase the capacity of the storm sewer system without causing any other changes in the system do not have to be included.

Step 2 Compile a List of Local Requirements (codes, local/State laws, ordinances) Designed to Control Storm Water Quality and/or Quantity, that the Municipality or other Government Agency has Enacted that are Enforced within the Municipality. These would include, but are not limited to local or state laws implemented by the municipality which:

- Prohibit littering
- Prohibit the disposal of oil, debris or garbage in storm drains, sewers or channels
- Require erosion control plans
- Require best management plans

(Attach a copy of each regulation or ordinance to the application)

Step 3 Compile a List of Programs Conducted within the Municipality which are Designed to Improve Storm Water Quality. These programs do not have to be municipal programs or require structural controls. A description of the schedule of operation and maintenance should also be provided. They include such programs as:

- Street sweeping
- Education programs
- Recycling programs
- Industrial inspection programs

With each of the program or regulation descriptions provide a discussion of the extent and level of application. This would include the fraction of the municipality affected by the program (e.g., channel improvement for a channel that drains 15% of the municipality). Do not include programs conducted by private organizations unless they receive active municipal support (operate under a city contract or receive public subsidies).

Example of Existing Management Programs

City X does not conduct any programs specifically designed to control the quality of storm water runoff. However, it does have ordinances controlling the dumping of rubbish and debris into streams and open channels; ordinances prohibiting littering; and ordinances requiring erosion control plans for all new construction and which prohibit construction within 100 ft of a stream bank. A copy of all of these ordinances would be attached to the application.

Army Corps of Engineers projects within the city are maintained exclusively by the Corps. City X contacted the Army Corps of Engineers for a description of all flood control projects within the city limits. The Army Corps of Engineers is conducting two projects in the city; replacing rip-rap on a section of a creek running through downtown, and channelizing another creek in a residential portion of the city. A description of both projects would be included with the application. The first project is important because it may decrease erosion from the stream banks thus decreasing the sediment load in the storm channel. The second project is important because it changes the character of the storm sewer from a natural channel to a manmade channel.

The local flood control district has no new projects under way. They reported that they attempt to clean their storm drains of debris every five years. This information is included with the application since it indicated the degree of maintenance of the storm sewers.

The city Public Works Department is presently upgrading an old part of the sewer system, replacing a 40 inch diameter conduit installed in the 1940's with a modern 60 inch diameter conduit. It is not necessary for the city to provide a description of this project with the application since this project only increases the capacity of the system without changing its function. The Public Works department also conducts street sweeping on city streets. It schedules street sweeping in the downtown commercial areas once a month and in residential areas every six months. The street sweeping program is not designed to control the quality of runoff but to improve the aesthetic appearance of the city's streets. However, since it may improve runoff water quality a description of the program is included.

4.6 FISCAL RESOURCES

Regulation

40 CFR 122.26(d)(1)(vi)

A description of the financial resources currently available to the municipality to complete Part 2 of the permit application. A description of the municipality's budget for existing storm water programs, including an overview of the municipality's financial resources and budget, including overall indebtedness and assets, and sources of funds for storm water programs.

Intent

To inform the permitting authority if the municipality has the fiscal resources to complete Part 2 of the application and to implement its proposed Storm Water Management Program.

Background and Discussion

The Information Collection Request (ICR) developed by EPA on storm water programs (EPA, 1990) estimated the average cost to the applicant to complete the application at \$49,227 to \$76,681. Municipalities need to include this cost into their budgets if they are to comply with the application's requirements. In addition, the municipality will need sufficient resources to implement the programs proposed in Part 2 of the application.

EPA is interested in the applicant's commitment to implement storm water quality programs. A measure of commitment is the amount of money devoted to current programs.

Procedure for Identifying Fiscal Resources

- Step 1** **Attach a description of the portion of the municipal budget for storm water for the year following submittal of the Part 1 application.** If the budget has yet to be developed, attach an estimate of the budget.
- Step 2** **Attach a description of the funding mechanisms used to obtain the monies described in Step 1.** These would include sources such as general funds, special assessment district funds, revenue bonds and user fees.
- Step 3** **Include a description of the municipalities' indebtedness and a list of municipal assets.** Include with this description a list of sources of municipal funds with the approximate percentage associated with each.

Example

City X increased the budget of the Public Works Department by \$100,000 for completion of the storm water permit application. A copy of the 1991 budget for Public Works is attached. These monies were from the general fund.

APPENDIX A

**INFORMATION FOR EPA REGIONAL OFFICES
AND STATES WITH APPROVED NPDES PROGRAMS**

- A.1 Federal, State, and Regional Permitting Agency Contacts**
- A.2 Addresses and Telephone Numbers of EPA Regional Offices
and States within the Regional Office Jurisdictions**

APPENDIX A.1

FEDERAL, STATE, AND REGIONAL PERMITTING AGENCY CONTACTS

| | | |
|------------|--|---|
| Alabama | Department of Environmental Management Water Division 1751 Cong. W.L. Dickinson Drive Montgomery, AL 36130 (205) 271-7825 | |
| Alaska | Department of Environmental Conservation Division of Environmental Quality Management Pouch O Juneau, AK 99811 (907) 465-2640 | and U.S. EPA * Region 10 Permits Branch 1200 Sixth Avenue Seattle, WA 98101 (206) 442-8399 |
| Arizona | Department of Health Services Office of Waste and Water Quality Management 2005 N. Central Avenue Phoenix, AZ 85007 (602) 257-2305 | and U.S. EPA Region 9, W-5-1, 75 Hawthorne Street San Francisco, CA 94105 (415) 974-1906 |
| Arkansas | Department of Pollution Control and Ecology NPDES Branch 8001 National Drive Little Rock, AR 72209 (501) 562-7444 | |
| California | State Water Resources Control Board P.O. Box 100 901 P Street Sacramento, CA 95801 (916) 322-3132 | |
| Colorado | Department of Health Water Quality Control Division Permits and Enforcement Section 4210 E. 11th Avenue, Room 200 Denver, CO 80220 (303) 331-3015 | |

* Where EPA is also listed, permitting actions should be sent to EPA with copies sent to the State

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|-------------------------|---|--|
| Connecticut | Water Compliance Unit Connecticut Department of Environmental Protection 122 Washington Street Hartford, CT 06106 (203) 566-7167 | |
| Delaware | Department of Natural Resources and Environmental Control Division of Water Resources 89 Kings Highway P.O. Box 1401 Dover, DE 19903 (302) 736-4761 | |
| District of Columbia | Department of Consumer and Regulatory Affairs Environmental Control Division 2100 Martin Luther King Avenue, S.E. Washington, D.C. 20020 (202) 404-1136 | and U.S. EPA Water Management Division, 3-WM-53, 841 Chestnut Building Philadelphia, PA 19107 (215) 597-1651 |
| Florida | Department of Environmental Regulation Div. of Environmental Programs Water Quality Planning Section 2600 Blairstone Road, Ste 531 Twin Towers Office Building Tallahassee, FL 32301 (904) 488-0780 | and EPA Region 4 Water Management Division Facilities Performance Branch 345 Courtland Street, N.E. Atlanta, GA 30365 (404) 347-3012 |
| Georgia | Department of Natural Resources Environmental Protection Division, Water Protection Branch Floyd Towers East - Room 1058 205 Butler Street, S.W. Atlanta, GA 30334 (404) 656-4887 | |
| Hawaii | Department of Health Pollution Investigation and Enforcement Division P.O. Box 3378 Honolulu, HI 96801 (808) 548-6505 | |
| Idaho | Department of Health and Welfare Bureau of Water Quality State House Boise, ID 83720 (208) 334-4250 | and U.S. EPA Region 10 Permits Branch 1200 Sixth Avenue Seattle, WA 98101 (206) 442-8399 |
| Illinois | Illinois Environmental Protection Agency Division of Water Pollution Control 2200 Churchill Road Springfield, IL 62706 (217) 782-1654 | |

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|-----------|---|---|
| Indiana | Indiana Department of Environmental Management 105 S. Meridian Street P.O. Box 6015 Indianapolis, IN 46225 (317) 232-8488 | |
| Iowa | Department of Natural Resources Environmental Protection Division Surface and Ground Water Protection Bureau Henry A. Wallace Building 900 E. Grand Avenue Des Moines, IA 50319 (515) 281-8690 | |
| Kansas | State Department of Health and Environment Division of Environment Bureau of Water Quality Forbes AFB Building No. 740 Topeka, KS 66612 (913) 862-9360x257 | |
| Kentucky | Department for Natural Resources and Environmental Protection Cabinet Division of Water 18 Reilly Road, Fort Bloom Plaza Frankfort, KY 40601 (502) 564-3410 | |
| Louisiana | Department of Environmental Quality Office of Water Resources Permits Programs P.O. Box 44091 Baton Rouge, LA 70804-4091 (504) 922-0530 | and U.S. EPA Region 6 Water Management Division Permits Branch, 6W-P, 1445 Ross Avenue Dallas, TX 75202-2733 (214) 655-7100 |
| Maine | Bureau of Water Quality Control Licensing and Enforcement ME Dept of Envir. Protection State House, Station 17 Augusta, ME 04333 (207) 289-3355 | and U.S. EPA Region 1 Water Management Division John F. Kennedy Federal Building WCP-510 Boston, MA 02203 (617) 565-3525 |
| Maryland | Department of Health and Mental Hygiene Environmental Health Administration (water quality standards, NPDES permits, and sewage treatment) 201 W. Preston Street Baltimore, MD 21203 (301) 225-6300 | |

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| Massachusetts | Division of Water Pollution Control Department of Environmental Protection 1 Winter Street Boston, MA 02108 (617) 292-5658 | and U.S. EPA, Region 1 Water Management Division John F. Kennedy Federal Building WCP-510 Boston, MA 02203 (617) 565-3525 |
| Michigan | Department of Natural Resources Surface Water Quality Division P.O. Box 30028 Lansing, MI 48909 (517) 373-1949 | |
| Minnesota | Minnesota Pollution Control Agency Division of Water Pollution Control 520 Lafayette Road St. Paul, MN 55155 (612) 296-7202 | |
| Mississippi | Department of Environmental Quality Surface Water Division Bureau of Pollution Control P.O. Box 10385 Jackson, MS 39289 | |
| Missouri | Department of Natural Resources Water Quality Program Division of Environmental Quality Jefferson State Office Building 205 Jefferson Street Jefferson City, MO 65102 (314) 751-1300 | |
| Montana | Department of Health and Environmental Sciences Division of Environmental Sciences Water Quality Bureau Cogswell Building, Room A206 Helena, MT 59620 (406) 444-2406 | |
| Nebraska | Department of Environmental Control Water Pollution Control Division State House Station P.O. Box 94877-301 Centennial Mall Lincoln, NE 68509 (402) 471-2186 | |
| Nevada | Department of Conservation and Natural Resources Water Resources Division 201 S. Fall Street, Room 221 Carson City, NV 89710 (702) 885-4380 | |

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|----------------|---|---|
| New Hampshire | Permit and Compliance Section Water Management Bureau Dept. of Environmental Services 6 Hazen Drive P.O. Box 95Concord, NH 03301 Concord, NH 03301 (603) 271-2458 | and U.S. EPA Region 1 Water Management Division John F. Kennedy Federal Building WCP-510 Boston, MA 02203 (617) 565-3525 |
| New Jersey | Department of Environmental Protection Division of Water Resources 1474 Prospect Street P.O. Box CN029 Trenton, NJ 08625 (609) 292-1638 | |
| New Mexico | Health and Environment Department Environmental Improvement Division Surface Water Quality Bureau 1190 St. Francis Drive Santa Fe, NM 87504-0968 (505) 827-2918 | and U.S. EPA Region 6 Water Management Div. Permits Branch, 6W-P, 1445 Ross Avenue Dallas, TX 75202-2733 (214) 655-7100 |
| New York | Department of Environmental Conservation Regional Permit Administrator 50 Wolf Road Albany, New York 12233 | |
| North Carolina | Department of Natural Resources and Community Development Division of Environmental Management Water Quality Section P.O. Box 27687 Raleigh, NC 27611 (919) 733-5083 | |
| North Dakota | State Department of Health Division of Water Supply and Pollution Control 1200 Missouri Avenue Bismark, ND 58501 (701) 224-2345 | |
| Ohio | Environmental Protection Agency Waste Water Pollution Control 1800 Watermark Drive P.O. Box 1049 Columbus, OH 43266-0149 (614) 466-7427 | |

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| Oklahoma | Water Resources Board P.O. Box 53585 Oklahoma City, OK 73152 | and U.S. EPA Region 6 Water Management Division Permits Branch (6W-P) 1445 Ross Avenue Dallas, TX 75202-2733 (214) 655-7190, FTS 255-7190 |
| | State Department of Health Permits and Compliance Division P.O. Box 53551 Oklahoma City, OK 73152 | |
| Oregon | Department of Environmental Quality (DEQ) Water Quality Division 522 S.W. Fifth Avenue P.O. Box 1760 Portland, OR 97207 (503) 229-5324 | |
| Pennsylvania | Department of Environmental Resources Bureau of Water Quality Management P.O. Box 2063, 11th Floor/Fulton Bldg. 200 N. 3rd Street Harrisburg, PA 17120 (717) 787-2666 | |
| Puerto Rico | Environmental Quality Board Division of Water/Water Resources P.O. Box 11488 Santurce, PR 00910 (809) 725-5140 | and U.S. EPA Region 2 26 Federal Plaza Room 505 New York, NY 10278 (212) 264-9880 |
| Rhode Island | Division of Water Resources Department of Environmental Management 75 Davis St., 209 Cannon Bldg. Providence, RI 02908 (401) 277-2234 | |
| South Carolina | Department of Health and Environmental Control Environmental Quality Control 2600 Bull Street Columbia, SC 29201 (803) 734-5300 | |

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|--------------|--|---|
| South Dakota | Department of Water and Natural Resources Division of Environmental Regulation Point Source Control Program Joe Foss Building 120 E. Capitol Pierre, SD 57501 (605) 773-3351 | and U.S. EPA Region 8 999 18th St., Suite 500 Denver, CO 80202-2405 (303) 293-1588 Attn: Water Management Division Compliance Branch (8WM-C) |
| Tennessee | Department of Public Health Division of Water Quality Control TERRA Building, 2nd floor 150 9th Ave., N. Nashville, TN 37219-5405 (615) 741-7883 | |
| Texas | Texas Water Commission P.O. Box 13087 Capitol Station Austin, TX 78711-3087 (512) 463-8028 Texas Railroad Commission P.O. Drawer 12967 Austin, TX 78711 (512) 463-8028 | and U.S. EPA Region 6 Water Management Division Permits Branch, 6W-P, 1445 Ross Avenue, Dallas, TX 75202-2733 (214) 655-7100 |
| Utah | Department of Health Bureau of Water Pollution Control 288 N. 1460 W. P.O. Box 16690 Salt Lake City, UT 84116-0690 (801) 538-6146 | |
| Vermont | Permit and Compliance Protection Division and Environmental Engineering Agency of Environmental Conservation Building 89 South 103 S. Main Street Waterbury, VT 05676 (802) 244-5674 | |
| Virginia | State Water Control Board 211 N. Hamilton Street P.O. Box 11143 Richmond, VA 23230 (804) 257-0056 | |

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|----------------------|---|
| Washington | <p>Washington Dept. of Ecology Office of Water Programs Mail Stop PV/11 Olympia, WA 98504 (206) 459-6000</p> <p>Environmental Permit Information Center Department of Ecology Headquarter's Office, PV-11 St. Martin's College Campus-Lacey Olympia, WA 98504</p> |
| West Virginia | <p>Department of Natural Resources Division of Water Resources 1800 Washington Street, East Charleston, WV 25305 (304) 348-2107</p> |
| Wisconsin | <p>Department of Natural Resources Division of Environmental Standards Bureau of Water Resources and Management P.O. Box 7921 Madison, WI 53707 (608) 266-2121</p> |
| Wyoming | <p>Department of Environmental Quality Water Quality Division Herschler Building 122 West 25th Street Cheyenne, WY 82002 (307) 777-7781</p> |
| Virgin Islands | <p>Division of Environmental Protection Virgin Islands Dept. of Planning and Natural Resources Nisky Center, Suite 231 No. USA, Estate Nisky Charlotte Awalie, St. Thomas V.I. 00802</p> |
| Guam | US EPA, Region IX |
| American Samoa | US EPA, Region IX |
| Northern Marianas | US EPA, Region IX |

ADDRESSES AND TELEPHONE NUMBERS OF EPA REGIONAL OFFICES
AND STATES WITHIN THE REGIONAL OFFICE JURISDICTION

REGION I

Permit Contact, NPDES Program Operations Section,
U.S. Environmental Protection Agency, John F. Kennedy Building,
WCP-510, Boston, Massachusetts 02203, (617) 565-3525,
FTS 835-3525.
Connecticut, Maine, Massachusetts, New Hampshire,
Rhode Island, and Vermont.

REGION II

Permit Contact, Permits Administration Branch, Room 505,
U.S. Environmental Protection Agency, 26 Federal Plaza,
New York, New York 10278, (212) 264-9880, FTS 264-9880.
New Jersey, New York, Virgin Islands, and Puerto Rico.

REGION III

Permit Contact, Water Management Division, 5-WM-53,
U.S. Environmental Protection Agency, 841 Chestnut Building,
Philadelphia, Pennsylvania 19107, (215) 597-1651, FTS 597-1651.
Delaware, District of Columbia, Maryland, Pennsylvania,
Virginia, and West Virginia.

REGION IV

Permit Contact, Water Management Division, Permits Section,
U.S. Environmental Protection Agency,
345 Courtland Street, N.E., Atlanta, Georgia 30365,
(404) 347-3012, FTS 257-3012.
Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.

REGION V

Permit Contact, Water Management Division,
U.S. Environmental Protection Agency, 230 South Dearborn Street,
Chicago, Illinois 60604, (312) 353-2105, FTS 353-2105.
Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

REGION VI

NPDES Permits, Water Management Division, 6W-P,
U.S. Environmental Protection Agency, First Interstate Bank Tower at Fountain Place,
1445 Ross Avenue, 12th Floor, Suite 1200,
Dallas, Texas 75202, (214) 655-7190, FTS 255-7190.
Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

REGION VII

Permit Contact, Permits Branch, U.S. Environmental Protection Agency,
726 Minnesota Avenue, Kansas City, Kansas 66101,
(816) 758-5955, FTS 758-5955.
Iowa, Kansas, Missouri, and Nebraska.

REGION VIII

Permit Contact, Water Management Division, Compliance Branch (8WM-C),
U.S. Environmental Protection Agency, 999 18th Street,
Denver, Colorado 80202-2405, (303) 293-1588, FTS 330-1588.
Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

REGION IX

NPDES Permits, Water Management Division, Permits Issuance Section (W-5-1),
U.S. Environmental Protection Agency, 75 Hawthorne Street,
San Francisco, California 94105, (415) 744-1906, FTS 484-1906.
Arizona, California, Hawaii, Nevada, Guam, American Samoa, and Trust Territories.

REGION X

Permit Contact, Water Management Division,
U.S. Environmental Protection Agency, 1200 Sixth Avenue,
Seattle, Washington 98101, (206) 442-8399, FTS 399-8399
Alaska, Idaho, Oregon, and Washington.

APPENDIX B
FINAL NPDES STORMWATER REGULATIONS FOR PARTS
1 AND 2 OF THE PERMIT APPLICATION

certify, pursuant to 5 U.S.C. 605(b), that these amendments do not, have a significant impact on a substantial number of small entities.

List of Subjects in 40 CFR Parts 122, 123, and 124

Administrative practice and procedure, Environmental protection, Reporting and recordkeeping requirements, Water pollution control.

Authority: Clean Water Act, 33 U.S.C. 1251 *et seq.*

Dated: October 31, 1990.

William K. Reilly,

Administrator.

For the reasons stated in the preamble, parts 122, 123, and 124 of title 40 of the Code of Federal Regulations are amended as follows:

PART 122—EPA ADMINISTERED PERMIT PROGRAMS; THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Subpart B—Permit Application and Special NPDES Program Requirements

1. The authority citation for part 122 continues to read as follows:

Authority: Clean Water Act, 33 U.S.C. 1251 *et seq.*

2. Section 122.1 is amended by revising paragraph (b)(2)(iv) to read as follows:

§ 122.1 Purpose and scope.

- (b) * * *
- (2) * * *
- (iv) Discharges of storm water as set forth in § 122.26; and

3. Section 122.21 is amended by revising paragraph (c)(1), by removing the last sentence of paragraph (f)(7), by removing paragraph (f)(9), by adding two sentences at the end of paragraph (g)(3), by revising paragraph (g)(7) introductory text, by removing and reserving paragraph (g)(10) and by revising the introductory text of paragraph (k) to read as follows:

§ 122.21 Application for a permit (applicable to State programs, see § 123.25).

(c) *Time to apply.* (1) Any person proposing a new discharge, shall submit an application at least 180 days before the date on which the discharge is to commence, unless permission for a later date has been granted by the Director. Facilities proposing a new discharge of storm water associated with industrial activity shall submit an application 180 days before that facility commences

industrial activity which may result in a discharge of storm water associated with that industrial activity. Facilities described under § 122.26(b)(14)(x) shall submit applications at least 90 days before the date on which construction is to commence. Different submittal dates may be required under the terms of applicable general permits. Persons proposing a new discharge are encouraged to submit their applications well in advance of the 90 or 180 day requirements to avoid delay. See also paragraph (k) of this section and § 122.26 (c)(1)(i)(G) and (c)(1)(ii).

(g) * * *

(3) * * * The average flow of point sources composed of storm water may be estimated. The basis for the rainfall event and the method of estimation must be indicated.

(7) *Effluent characteristics.* Information on the discharge of pollutants specified in this paragraph (except information on storm water discharges which is to be provided as specified in § 122.26). When "quantitative data" for a pollutant are required, the applicant must collect a sample of effluent and analyze it for the pollutant in accordance with analytical methods approved under 40 CFR part 136. When no analytical method is approved the applicant may use any suitable method but must provide a description of the method. When an applicant has two or more outfalls with substantially identical effluents, the Director may allow the applicant to test only one outfall and report that the quantitative data also apply to the substantially identical outfalls. The requirements in paragraphs (g)(7) (iii) and (iv) of this section that an applicant must provide quantitative data for certain pollutants known or believed to be present do not apply to pollutants present in a discharge solely as the result of their presence in intake water; however, an applicant must report such pollutants as present. Grab samples must be used for pH, temperature, cyanide, total phenols, residual chlorine, oil and grease, fecal coliform and fecal streptococcus. For all other pollutants, 24-hour composite samples must be used. However, a minimum of one grab sample may be taken for effluents from holding ponds or other impoundments with a retention period greater than 24 hours. In addition, for discharges other than storm water discharges, the Director may waive composite sampling for any outfall for which the applicant demonstrates that the use of an automatic sampler is infeasible and that

the minimum of four (4) grab samples will be a representative sample of the effluent being discharged. For storm water discharges, all samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inch and at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where feasible, the variance in the duration of the event and the total rainfall of the event should not exceed 50 percent from the average or median rainfall event in that area. For all applicants, a flow-weighted composite shall be taken for either the entire discharge or for the first three hours of the discharge. The flow-weighted composite sample for a storm water discharge may be taken with a continuous sampler or as a combination of a minimum of three sample aliquots taken in each hour of discharge for the entire discharge or for the first three hours of the discharge, with each aliquot being separated by a minimum period of fifteen minutes (applicants submitting permit applications for storm water discharges under § 122.26(d) may collect flow weighted composite samples using different protocols with respect to the time duration between the collection of sample aliquots, subject to the approval of the Director). However, a minimum of one grab sample may be taken for storm water discharges from holding ponds or other impoundments with a retention period greater than 24 hours. For a flow-weighted composite sample, only one analysis of the composite of aliquots is required. For storm water discharge samples taken from discharges associated with industrial activities, quantitative data must be reported for the grab sample taken during the first thirty minutes (or as soon thereafter as practicable) of the discharge for all pollutants specified in § 122.26(c)(1). For all storm water permit applicants taking flow-weighted composites, quantitative data must be reported for all pollutants specified in § 122.26 except pH, temperature, cyanide, total phenols, residual chlorine, oil and grease, fecal coliform, and fecal streptococcus. The Director may allow or establish appropriate site-specific sampling procedures or requirements, including sampling locations, the season in which the sampling takes place, the minimum duration between the previous measurable storm event and the storm event sampled, the minimum or maximum level of precipitation required for an appropriate storm event, the form of precipitation sampled (snow melt or rain fall), protocols for collecting samples under 40 CFR part 136, and additional time for submitting data on a

case-by-case basis. An applicant is expected to "know or have reason to believe" that a pollutant is present in an effluent based on an evaluation of the expected use, production, or storage of the pollutant, or on any previous analyses for the pollutant. (For example, any pesticide manufactured by a facility may be expected to be present in contaminated storm water runoff from the facility.)

(k) *Application requirements for new sources and new discharges.* New manufacturing, commercial, mining and silvicultural dischargers applying for NPDES permits (except for new discharges of facilities subject to the requirements of paragraph (h) of this section or new discharges of storm water associated with industrial activity which are subject to the requirements of § 122.26(c)(1) and this section (except as provided by § 122.26(c)(1)(ii)) shall provide the following information to the Director, using the application forms provided by the Director:

4. Section 122.22(b) introductory text is revised to read as follows:

§ 122.22 Signatories to permit applications and reports (applicable to State programs, see § 123.25).

(b) All reports required by permits, and other information requested by the Director shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

5. Section 122.26 is revised to read as follows:

§ 122.26 Storm water discharges (applicable to State NPDES programs, see § 123.25).

(a) *Permit requirement.* (1) Prior to October 1, 1992, discharges composed entirely of storm water shall not be required to obtain a NPDES permit except:

- (i) A discharge with respect to which a permit has been issued prior to February 4, 1987;
- (ii) A discharge associated with industrial activity (see § 122.26(a)(4));
- (iii) A discharge from a large municipal separate storm sewer system;
- (iv) A discharge from a medium municipal separate storm sewer system;
- (v) A discharge which the Director, or in States with approved NPDES programs, either the Director or the EPA Regional Administrator, determines to contribute to a violation of a water

quality standard or is a significant contributor of pollutants to waters of the United States. This designation may include a discharge from any conveyance or system of conveyances used for collecting and conveying storm water runoff or a system of discharges from municipal separate storm sewers, except for those discharges from conveyances which do not require a permit under paragraph (a)(2) of this section or agricultural storm water runoff which is exempted from the definition of point source at § 122.2.

The Director may designate discharges from municipal separate storm sewers on a system-wide or jurisdiction-wide basis. In making this determination the Director may consider the following factors:

(A) The location of the discharge with respect to waters of the United States as defined at 40 CFR 122.2.

(B) The size of the discharge;

(C) The quantity and nature of the pollutants discharged to waters of the United States; and

(D) Other relevant factors.

(2) The Director may not require a permit for discharges of storm water runoff from mining operations or oil and gas exploration, production, processing or treatment operations or transmission facilities, composed entirely of flows which are from conveyances or systems of conveyances (including but not limited to pipes, conduits, ditches, and channels) used for collecting and conveying precipitation runoff and which are not contaminated by contact with or that has not come into contact with, any overburden, raw material, intermediate products, finished product, byproduct or waste products located on the site of such operations.

(3) *Large and medium municipal separate storm sewer systems.* (i) Permits must be obtained for all discharges from large and medium municipal separate storm sewer systems.

(ii) The Director may either issue one system-wide permit covering all discharges from municipal separate storm sewers within a large or medium municipal storm sewer system or issue distinct permits for appropriate categories of discharges within a large or medium municipal separate storm sewer system including, but not limited to: all discharges owned or operated by the same municipality; located within the same jurisdiction; all discharges within a system that discharge to the same watershed; discharges within a system that are similar in nature; or for individual discharges from municipal separate storm sewers within the system.

(iii) The operator of a discharge from a municipal separate storm sewer which is part of a large or medium municipal separate storm sewer system must either:

(A) Participate in a permit application (to be a permittee or a co-permittee) with one or more other operators of discharges from the large or medium municipal storm sewer system which covers all, or a portion of all, discharges from the municipal separate storm sewer system;

(B) Submit a distinct permit application which only covers discharges from the municipal separate storm sewers for which the operator is responsible; or

(C) A regional authority may be responsible for submitting a permit application under the following guidelines:

(1) The regional authority together with co-applicants shall have authority over a storm water management program that is in existence, or shall be in existence at the time part 1 of the application is due;

(2) The permit applicant or co-applicants shall establish their ability to make a timely submission of part 1 and part 2 of the municipal application;

(3) Each of the operators of municipal separate storm sewers within the systems described in paragraphs (b)(4) (i), (ii), and (iii) or (b)(7) (i), (ii), and (iii) of this section, that are under the purview of the designated regional authority, shall comply with the application requirements of paragraph (d) of this section.

(iv) One permit application may be submitted for all or a portion of all municipal separate storm sewers within adjacent or interconnected large or medium municipal separate storm sewer systems. The Director may issue one system-wide permit covering all, or a portion of all municipal separate storm sewers in adjacent or interconnected large or medium municipal separate storm sewer systems.

(v) Permits for all or a portion of all discharges from large or medium municipal separate storm sewer systems that are issued on a system-wide, jurisdiction-wide, watershed or other basis may specify different conditions relating to different discharges covered by the permit, including different management programs for different drainage areas which contribute storm water to the system.

(vi) Co-permittees need only comply with permit conditions relating to discharges from the municipal separate storm sewers for which they are operators.

(4) *Discharges through large and medium municipal separate storm sewer systems.* In addition to meeting the requirements of paragraph (c) of this section, an operator of a storm water discharge associated with industrial activity which discharges through a large or medium municipal separate storm sewer system shall submit, to the operator of the municipal separate storm sewer system receiving the discharge no later than May 15, 1991, or 180 days prior to commencing such discharge: the name of the facility; a contact person and phone number; the location of the discharge; a description, including Standard Industrial Classification, which best reflects the principal products or services provided by each facility; and any existing NPDES permit number.

(5) *Other municipal separate storm sewers.* The Director may issue permits for municipal separate storm sewers that are designated under paragraph (a)(1)(v) of this section on a system-wide basis, jurisdiction-wide basis, watershed basis or other appropriate basis, or may issue permits for individual discharges.

(6) *Non-municipal separate storm sewers.* For storm water discharges associated with industrial activity from point sources which discharge through a non-municipal or non-publicly owned separate storm sewer system, the Director, in his discretion, may issue: a single NPDES permit, with each discharger a co-permittee to a permit issued to the operator of the portion of the system that discharges into waters of the United States; or, individual permits to each discharger of storm water associated with industrial activity through the non-municipal conveyance system.

(i) All storm water discharges associated with industrial activity that discharge through a storm water discharge system that is not a municipal separate storm sewer must be covered by an individual permit, or a permit issued to the operator of the portion of the system that discharges to waters of the United States, with each discharger to the non-municipal conveyance a co-permittee to that permit.

(ii) Where there is more than one operator of a single system of such conveyances, all operators of storm water discharges associated with industrial activity must submit applications.

(iii) Any permit covering more than one operator shall identify the effluent limitations, or other permit conditions, if any, that apply to each operator.

(7) *Combined sewer systems.* Conveyances that discharge storm

water runoff combined with municipal sewage are point sources that must obtain NPDES permits in accordance with the procedures of § 122.21 and are not subject to the provisions of this section.

(8) Whether a discharge from a municipal separate storm sewer is or is not subject to regulation under this section shall have no bearing on whether the owner or operator of the discharge is eligible for funding under title II, title III or title VI of the Clean Water Act. See 40 CFR part 35, subpart I, appendix A(b)H.2.j.

(b) *Definitions.* (1) *Co-permittee* means a permittee to a NPDES permit that is only responsible for permit conditions relating to the discharge for which it is operator.

(2) *Illicit discharge* means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities.

(3) *Incorporated place* means the District of Columbia, or a city, town, township, or village that is incorporated under the laws of the State in which it is located.

(4) *Large municipal separate storm sewer system* means all municipal separate storm sewers that are either:

(i) Located in an incorporated place with a population of 250,000 or more as determined by the latest Decennial Census by the Bureau of Census (appendix F); or

(ii) Located in the counties listed in appendix H, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties; or

(iii) Owned or operated by a municipality other than those described in paragraph (b)(4) (i) or (ii) of this section and that are designated by the Director as part of the large or medium municipal separate storm sewer system due to the interrelationship between the discharges of the designated storm sewer and the discharges from municipal separate storm sewers described under paragraph (b)(4) (i) or (ii) of this section. In making this determination the Director may consider the following factors:

(A) Physical interconnections between the municipal separate storm sewers;

(B) The location of discharges from the designated municipal separate storm sewer relative to discharges from municipal separate storm sewers

described in paragraph (b)(4)(i) of this section;

(C) The quantity and nature of pollutants discharged to waters of the United States;

(D) The nature of the receiving waters, and

(E) Other relevant factors; or

(iv) The Director may, upon petition, designate as a large municipal separate storm sewer system, municipal separate storm sewers located within the boundaries of a region defined by a storm water management regional authority based on a jurisdictional, watershed, or other appropriate basis that includes one or more of the systems described in paragraph (b)(4) (i), (ii), (iii) of this section.

(5) *Major municipal separate storm sewer outfall* (or "major outfall") means a municipal separate storm sewer outfall that discharges from a single pipe with an inside diameter of 36 inches or more or its equivalent (discharge from a single conveyance other than circular pipe which is associated with a drainage area of more than 50 acres); or for municipal separate storm sewers that receive storm water from lands zoned for industrial activity (based on comprehensive zoning plans or the equivalent), an outfall that discharges from a single pipe with an inside diameter of 12 inches or more or from its equivalent (discharge from other than a circular pipe associated with a drainage area of 2 acres or more).

(6) *Major outfall* means a major municipal separate storm sewer outfall

(7) *Medium municipal separate storm sewer system* means all municipal separate storm sewers that are either:

(i) Located in an incorporated place with a population of 100,000 or more but less than 250,000, as determined by the latest Decennial Census by the Bureau of Census (appendix G); or

(ii) Located in the counties listed in appendix I, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties; or

(iii) Owned or operated by a municipality other than those described in paragraph (b)(4) (i) or (ii) of this section and that are designated by the Director as part of the large or medium municipal separate storm sewer system due to the interrelationship between the discharges of the designated storm sewer and the discharges from municipal separate storm sewers described under paragraph (b)(4) (i) or (ii) of this section. In making this determination the Director may consider the following factors:

(A) Physical interconnections between the municipal separate storm sewers;

(B) The location of discharges from the designated municipal separate storm sewer relative to discharges from municipal separate storm sewers described in paragraph (b)(7)(i) of this section;

(C) The quantity and nature of pollutants discharged to waters of the United States;

(D) The nature of the receiving waters; or

(E) Other relevant factors; or

(iv) The Director may, upon petition, designate as a medium municipal separate storm sewer system, municipal separate storm sewers located within the boundaries of a region defined by a storm water management regional authority based on a jurisdictional, watershed, or other appropriate basis that includes one or more of the systems described in paragraphs (b)(7) (i), (ii), (iii) of this section.

(8) *Municipal separate storm sewer* means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) Designed or used for collecting or conveying storm water;

(iii) Which is not a combined sewer; and

(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

(9) *Outfall* means a *point source* as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.

(10) *Overburden* means any material of any nature, consolidated or unconsolidated, that overlies a mineral deposit, excluding topsoil or similar

naturally-occurring surface materials that are not disturbed by mining operations.

(11) *Runoff coefficient* means the fraction of total rainfall that will appear at a conveyance as runoff.

(12) *Significant materials* includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

(13) *Storm water* means storm water runoff, snow melt runoff, and surface runoff and drainage.

(14) *Storm water discharge associated with industrial activity* means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program under 40 CFR part 122. For the categories of industries identified in paragraphs (b)(14) (i) through (x) of this section, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at 40 CFR part 401); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the categories of industries identified in paragraph (b)(14)(xi) of this section, the term includes only storm water discharges from all the areas (except access roads and rail lines) that are listed in the previous sentence where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to

storm water. For the purposes of this paragraph, material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally, State, or municipally owned or operated that meet the description of the facilities listed in this paragraph (b)(14)(i)-(xi) of this section) include those facilities designated under the provisions of paragraph (a)(1)(v) of this section. The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection:

(i) Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR subchapter N (except facilities with toxic pollutant effluent standards which are exempted under category (xi) in paragraph (b)(14) of this section);

(ii) Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283), 29, 31, 32 (except 323), 33, 34, 35, 373;

(iii) Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under 40 CFR 434.11(1) because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas of non-coal mining operations which have been released from applicable State or Federal reclamation requirements after December 17, 1990) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations (inactive mining operations are mining sites that are not being actively mined, but which have an identifiable owner, operator; inactive mining sites do not include sites where mining claims are being maintained prior to disturbance associated with the extraction, beneficiation, or processing of minerals).

materials, nor sites where minimal activities are undertaken for the sole purpose of maintaining a mining claim):

(iv) Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under subtitle C of RCRA;

(v) Landfills, land application sites, and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under subtitle D of RCRA;

(vi) Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;

(vii) Steam electric power generating facilities, including coal handling sites;

(viii) Transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25), 43, 44, 45, and 5171 which have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or which are otherwise identified under paragraphs (b)(14) (i)-(vii) or (ix)-(xi) of this section are associated with industrial activity;

(ix) Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR part 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with section 405 of the CWA;

(x) Construction activity including clearing, grading and excavation activities except: operations that result in the disturbance of less than five acres of total land area which are not part of a larger common plan of development or sale;

(xi) Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36,

37 (except 373), 38, 39, 4221-25, (and which are not otherwise included within categories (ii)-(x));

(c) *Application requirements for storm water discharges associated with industrial activity*—(1) *Individual application.* Dischargers of storm water associated with industrial activity are required to apply for an individual permit, apply for a permit through a group application, or seek coverage under a promulgated storm water general permit. Facilities that are required to obtain an individual permit, or any discharge of storm water which the Director is evaluating for designation (see 40 CFR 124.52(c)) under paragraph (a)(1)(v) of this section and is not a municipal separate storm sewer, and which is not part of a group application described under paragraph (c)(2) of this section, shall submit an NPDES application in accordance with the requirements of § 122.21 as modified and supplemented by the provisions of the remainder of this paragraph. Applicants for discharges composed entirely of storm water shall submit Form 1 and Form 2F. Applicants for discharges composed of storm water and non-storm water shall submit Form 1, Form 2C, and Form 2F. Applicants for new sources or new discharges (as defined in § 122.2 of this part) composed of storm water and non-storm water shall submit Form 1, Form 2D, and Form 2F.

(i) Except as provided in § 122.26(c)(1) (ii)-(iv), the operator of a storm water discharge associated with industrial activity subject to this section shall provide:

(A) A site map showing topography (or indicating the outline of drainage areas served by the outfall(s) covered in the application if a topographic map is unavailable) of the facility including: each of its drainage and discharge structures; the drainage area of each storm water outfall; paved areas and buildings within the drainage area of each storm water outfall, each past or present area used for outdoor storage or disposal of significant materials, each existing structural control measure to reduce pollutants in storm water runoff, materials loading and access areas, areas where pesticides, herbicides, soil conditioners and fertilizers are applied, each of its hazardous waste treatment, storage or disposal facilities (including each area not required to have a RCRA permit which is used for accumulating hazardous waste under 40 CFR 262.34); each well where fluids from the facility are injected underground, springs, and other surface water bodies which receive storm water discharges from the facility;

(B) An estimate of the area of impervious surfaces (including paved areas and building roofs) and the total area drained by each outfall (within a mile radius of the facility) and a narrative description of the following: Significant materials that in the three years prior to the submittal of this application have been treated, stored or disposed in a manner to allow exposure to storm water; method of treatment, storage or disposal of such materials; materials management practices employed, in the three years prior to the submittal of this application, to minimize contact by these materials with storm water runoff; materials loading and access areas; the location, manner and frequency in which pesticides, herbicides, soil conditioners and fertilizers are applied; the location and a description of existing structural and non-structural control measures to reduce pollutants in storm water runoff, and a description of the treatment the storm water receives, including the ultimate disposal of any solid or fluid wastes other than by discharge;

(C) A certification that all outfalls that should contain storm water discharges associated with industrial activity have been tested or evaluated for the presence of non-storm water discharges which are not covered by a NPDES permit; tests for such non-storm water discharges may include smoke tests, fluorometric dye tests, analysis of accurate schematics, as well as other appropriate tests. The certification shall include a description of the method used, the date of any testing, and the on-site drainage points that were directly observed during a test;

(D) Existing information regarding significant leaks or spills of toxic or hazardous pollutants at the facility that have taken place within the three years prior to the submittal of this application;

(E) Quantitative data based on samples collected during storm events and collected in accordance with § 122.21 of this part from all outfalls containing a storm water discharge associated with industrial activity for the following parameters:

(1) Any pollutant limited in an effluent guideline to which the facility is subject.

(2) Any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit).

(3) Oil and grease, pH, BOD₅, COD, TSS, total phosphorus, total Kjeldahl nitrogen, and nitrate plus nitrite nitrogen;

(4) Any information on the discharge required under paragraph § 122.21(g)(7) (iii) and (iv) of this part;

(5) Flow measurements or estimates of the flow rate, and the total amount of discharge for the storm event(s) sampled, and the method of flow measurement or estimation; and

(6) The date and duration (in hours) of the storm event(s) sampled, rainfall measurements or estimates of the storm event (in inches) which generated the sampled runoff and the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event (in hours);

(F) Operators of a discharge which is composed entirely of storm water are exempt from the requirements of § 122.21 (g)(2), (g)(3), (g)(4), (g)(5), (g)(7)(i), (g)(7)(ii), and (g)(7)(v); and

(G) Operators of new sources or new discharges (as defined in § 122.2 of this part) which are composed in part or entirely of storm water must include estimates for the pollutants or parameters listed in paragraph (c)(1)(i)(E) of this section instead of actual sampling data, along with the source of each estimate. Operators of new sources or new discharges composed in part or entirely of storm water must provide quantitative data for the parameters listed in paragraph (c)(1)(i)(E) of this section within two years after commencement of discharge, unless such data has already been reported under the monitoring requirements of the NPDES permit for the discharge. Operators of a new source or new discharge which is composed entirely of storm water are exempt from the requirements of § 122.21 (k)(3)(ii), (k)(3)(iii), and (k)(5).

(ii) The operator of an existing or new storm water discharge that is associated with industrial activity solely under paragraph (b)(14)(x) of this section, is exempt from the requirements of § 122.21(g) and paragraph (c)(1)(i) of this section. Such operator shall provide a narrative description of:

(A) The location (including a map) and the nature of the construction activity;

(B) The total area of the site and the area of the site that is expected to undergo excavation during the life of the permit;

(C) Proposed measures, including best management practices, to control pollutants in storm water discharges during construction, including a brief description of applicable State and local erosion and sediment control requirements;

(D) Proposed measures to control pollutants in storm water discharges that will occur after construction operations have been completed, including a brief description of

applicable State or local erosion and sediment control requirements;

(E) An estimate of the runoff coefficient of the site and the increase in impervious area after the construction addressed in the permit application is completed, the nature of fill material and existing data describing the soil or the quality of the discharge; and

(F) The name of the receiving water.

(iii) The operator of an existing or new discharge composed entirely of storm water from an oil or gas exploration, production, processing, or treatment operation, or transmission facility is not required to submit a permit application in accordance with paragraph (c)(1)(i) of this section, unless the facility:

(A) Has had a discharge of storm water resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 117.21 or 40 CFR 302.6 at anytime since November 16, 1987; or

(B) Has had a discharge of storm water resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 110.6 at any time since November 16, 1987; or

(C) Contributes to a violation of a water quality standard.

(iv) The operator of an existing or new discharge composed entirely of storm water from a mining operation is not required to submit a permit application unless the discharge has come into contact with, any overburden, raw material, intermediate products, finished product, byproduct or waste products located on the site of such operations.

(v) Applicants shall provide such other information the Director may reasonably require under § 122.21(g)(13) of this part to determine whether to issue a permit and may require any facility subject to paragraph (c)(1)(ii) of this section to comply with paragraph (c)(1)(i) of this section.

(2) *Group application for discharges associated with industrial activity.* In lieu of individual applications or notice of intent to be covered by a general permit for storm water discharges associated with industrial activity, a group application may be filed by an entity representing a group of applicants (except facilities that have existing individual NPDES permits for storm water) that are part of the same subcategory (see 40 CFR subchapter N, part 405 to 471) or, where such grouping is inapplicable, are sufficiently similar as to be appropriate for general permit coverage under § 122.28 of this part. The part 1 application shall be submitted to the Office of Water Enforcement and Permits, U.S. EPA, 401 M Street, SW., Washington, DC 20460 (EN-336) for

approval. Once a part 1 application is approved, group applicants are to submit Part 2 of the group application to the Office of Water Enforcement and Permits. A group application shall consist of:

(i) *Part 1.* Part 1 of a group application shall:

(A) Identify the participants in the group application by name and location. Facilities participating in the group application shall be listed in nine subdivisions, based on the facility location relative to the nine precipitation zones indicated in appendix E to this part.

(B) Include a narrative description summarizing the industrial activities of participants of the group application and explaining why the participants, as a whole, are sufficiently similar to be a covered by a general permit;

(C) Include a list of significant materials stored exposed to precipitation by participants in the group application and materials management practices employed to diminish contact by these materials with precipitation and storm water runoff;

(D) Identify ten percent of the dischargers participating in the group application (with a minimum of 10 dischargers, and either a minimum of two dischargers from each precipitation zone indicated in appendix E of this part in which ten or more members of the group are located, or one discharger from each precipitation zone indicated in appendix E of this part in which nine or fewer members of the group are located) from which quantitative data will be submitted in part 2. If more than 1,000 facilities are identified in a group application, no more than 100 dischargers must submit quantitative data in Part 2. Groups of between four and ten dischargers may be formed. However, in groups of between four and ten, at least half the facilities must submit quantitative data, and at least one facility in each precipitation zone in which members of the group are located must submit data. A description of why the facilities selected to perform sampling and analysis are representative of the group as a whole in terms of the information provided in paragraph (c)(1)(i)(B) and (i)(C) of this section, shall accompany this section. Different factors impacting the nature of the storm water discharges, such as processes used and material management, shall be represented, to the extent feasible, in a manner roughly equivalent to their proportion in the group.

(ii) *Part 2.* Part 2 of a group application shall contain quantitative

data (NPDES Form 2F), as modified by paragraph (c)(1) of this section, so that when part 1 and part 2 of the group application are taken together, a complete NPDES application (Form 1, Form 2C, and Form 2F) can be evaluated for each discharger identified in paragraph (c)(2)(i)(D) of this section.

(d) *Application requirements for large and medium municipal separate storm sewer discharges.* The operator of a discharge from a large or medium municipal separate storm sewer or a municipal separate storm sewer that is designated by the Director under paragraph (a)(1)(v) of this section, may submit a jurisdiction-wide or system-wide permit application. Where more than one public entity owns or operates a municipal separate storm sewer within a geographic area (including adjacent or interconnected municipal separate storm sewer systems), such operators may be a coapplicant to the same application. Permit applications for discharges from large and medium municipal storm sewers or municipal storm sewers designated under paragraph (a)(1)(v) of this section shall include:

(1) *Part 1.* Part 1 of the application shall consist of:

(i) *General information.* The applicants' name, address, telephone number of contact person, ownership status and status as a State or local government entity.

(ii) *Legal authority.* A description of existing legal authority to control discharges to the municipal separate storm sewer system. When existing legal authority is not sufficient to meet the criteria provided in paragraph (d)(2)(i) of this section, the description shall list additional authorities as will be necessary to meet the criteria and shall include a schedule and commitment to seek such additional authority that will be needed to meet the criteria.

(iii) *Source identification.* (A) A description of the historic use of ordinances, guidance or other controls which limited the discharge of non-storm water discharges to any Publicly Owned Treatment Works serving the same area as the municipal separate storm sewer system.

(B) A USGS 7.5 minute topographic map (or equivalent topographic map with a scale between 1:10,000 and 1:24,000 if cost effective) extending one mile beyond the service boundaries of the municipal storm sewer system covered by the permit application. The following information shall be provided:

(1) The location of known municipal storm sewer system outfalls discharging to waters of the United States;

(2) A description of the land use activities (e.g. divisions indicating undeveloped, residential, commercial, agricultural and industrial uses) accompanied with estimates of population densities and projected growth for a ten year period within the drainage area served by the separate storm sewer. For each land use type, an estimate of an average runoff coefficient shall be provided;

(3) The location and a description of the activities of the facility of each currently operating or closed municipal landfill or other treatment, storage or disposal facility for municipal waste;

(4) The location and the permit number of any known discharge to the municipal storm sewer that has been issued a NPDES permit;

(5) The location of major structural controls for storm water discharge (retention basins, detention basins, major infiltration devices, etc.); and

(6) The identification of publicly owned parks, recreational areas, and other open lands.

(iv) *Discharge characterization.* (A) Monthly mean rain and snow fall estimates (or summary of weather bureau data) and the monthly average number of storm events.

(B) Existing quantitative data describing the volume and quality of discharges from the municipal storm sewer, including a description of the outfalls sampled, sampling procedures and analytical methods used.

(C) A list of water bodies that receive discharges from the municipal separate storm sewer system, including downstream segments, lakes and estuaries, where pollutants from the system discharges may accumulate and cause water degradation and a brief description of known water quality impacts. At a minimum, the description of impacts shall include a description of whether the water bodies receiving such discharges have been:

(1) Assessed and reported in section 305(b) reports submitted by the State, the basis for the assessment (evaluated or monitored), a summary of designated use support and attainment of Clean Water Act (CWA) goals (fishable and swimmable waters), and causes of nonsupport of designated uses;

(2) Listed under section 304(l)(1)(A)(i), section 304(l)(1)(A)(ii), or section 304(l)(1)(B) of the CWA that is not expected to meet water quality standards or water quality goals;

(3) Listed in State Nonpoint Source Assessments required by section 319(a) of the CWA that, without additional action to control nonpoint sources of pollution, cannot reasonably be expected to attain or maintain water

quality standards due to storm sewers, construction, highway maintenance and runoff from municipal landfills and municipal sludge adding significant pollution (or contributing to a violation of water quality standards);

(4) Identified and classified according to eutrophic condition of publicly owned lakes listed in State reports required under section 314(a) of the CWA (include the following: A description of those publicly owned lakes for which uses are known to be impaired; a description of procedures, processes and methods to control the discharge of pollutants from municipal separate storm sewers into such lakes; and a description of methods and procedures to restore the quality of such lakes);

(5) Areas of concern of the Great Lakes identified by the International Joint Commission;

(6) Designated estuaries under the National Estuary Program under section 320 of the CWA;

(7) Recognized by the applicant as highly valued or sensitive waters;

(8) Defined by the State or U.S. Fish and Wildlife Services's National Wetlands Inventory as wetlands; and

(9) Found to have pollutants in bottom sediments, fish tissue or biosurvey data.

(D) *Field screening.* Results of a field screening analysis for illicit connections and illegal dumping for either selected field screening points or major outfalls covered in the permit application. At a minimum, a screening analysis shall include a narrative description, for either each field screening point or major outfall, of visual observations made during dry weather periods. If any flow is observed, two grab samples shall be collected during a 24 hour period with a minimum period of four hours between samples. For all such samples, a narrative description of the color, odor, turbidity, the presence of an oil sheen or surface scum as well as any other relevant observations regarding the potential presence of non-storm water discharges or illegal dumping shall be provided. In addition, a narrative description of the results of a field analysis using suitable methods to estimate pH, total chlorine, total copper, total phenol, and detergents (or surfactants) shall be provided along with a description of the flow rate. Where the field analysis does not involve analytical methods approved under 40 CFR part 136, the applicant shall provide a description of the method used including the name of the manufacturer of the test method along with the range and accuracy of the test. Field screening points shall be either major outfalls or other outfall points (or

any other point of access such as manholes) randomly located throughout the storm sewer system by placing a grid over a drainage system map and identifying those cells of the grid which contain a segment of the storm sewer system or major outfall. The field screening points shall be established using the following guidelines and criteria:

(1) A grid system consisting of perpendicular north-south and east-west lines spaced $\frac{1}{4}$ mile apart shall be overlaid on a map of the municipal storm sewer system, creating a series of cells;

(2) All cells that contain a segment of the storm sewer system shall be identified; one field screening point shall be selected in each cell; major outfalls may be used as field screening points;

(3) Field screening points should be located downstream of any sources of suspected illegal or illicit activity;

(4) Field screening points shall be located to the degree practicable at the farthest manhole or other accessible location downstream in the system, within each cell; however, safety of personnel and accessibility of the location should be considered in making this determination;

(5) Hydrological conditions; total drainage area of the site; population density of the site; traffic density; age of the structures or buildings in the area; history of the area; and land use types;

(6) For medium municipal separate storm sewer systems, no more than 250 cells need to have identified field screening points; in large municipal separate storm sewer systems, no more than 500 cells need to have identified field screening points; cells established by the grid that contain no storm sewer segments will be eliminated from consideration; if fewer than 250 cells in medium municipal sewers are created, and fewer than 500 in large systems are created by the overlay on the municipal sewer map, then all those cells which contain a segment of the sewer system shall be subject to field screening (unless access to the separate storm sewer system is impossible); and

(7) Large or medium municipal separate storm sewer systems which are unable to utilize the procedures described in paragraphs (d)(1)(iv)(D) (1) through (6) of this section, because a sufficiently detailed map of the separate storm sewer systems is unavailable, shall field screen no more than 500 or 250 major outfalls respectively (or all major outfalls in the system, if less); in such circumstances, the applicant shall establish a grid system consisting of north-south and east-west lines spaced $\frac{1}{4}$ mile apart as an overlay to the

boundaries of the municipal storm sewer system, thereby creating a series of cells; the applicant will then select major outfalls in as many cells as possible until at least 500 major outfalls (large municipalities) or 250 major outfalls (medium municipalities) are selected; a field screening analysis shall be undertaken at these major outfalls.

(E) *Characterization plan.* Information and a proposed program to meet the requirements of paragraph (d)(2)(iii) of this section. Such description shall include: the location of outfalls or field screening points appropriate for representative data collection under paragraph (d)(2)(iii)(A) of this section, a description of why the outfall or field screening point is representative, the seasons during which sampling is intended, a description of the sampling equipment. The proposed location of outfalls or field screening points for such sampling should reflect water quality concerns (see paragraph (d)(1)(iv)(C) of this section) to the extent practicable.

(v) *Management programs.* (A) A description of the existing management programs to control pollutants from the municipal separate storm sewer system. The description shall provide information on existing structural and source controls, including operation and maintenance measures for structural controls, that are currently being implemented. Such controls may include, but are not limited to: Procedures to control pollution resulting from construction activities; floodplain management controls; wetland protection measures; best management practices for new subdivisions; and emergency spill response programs. The description may address controls established under State law as well as local requirements.

(B) A description of the existing program to identify illicit connections to the municipal storm sewer system. The description should include inspection procedures and methods for detecting and preventing illicit discharges, and describe areas where this program has been implemented.

(vi) *Fiscal resources.* (A) A description of the financial resources currently available to the municipality to complete part 2 of the permit application. A description of the municipality's budget for existing storm water programs, including an overview of the municipality's financial resources and budget, including overall indebtedness and assets, and sources of funds for storm water programs.

(2) *Part 2.* Part 2 of the application shall consist of:

(i) *Adequate legal authority.* A demonstration that the applicant can

operate pursuant to legal authority established by statute, ordinance or series of contracts which authorizes or enables the applicant at a minimum to:

(A) Control through ordinance, permit, contract, order or similar means, the contribution of pollutants to the municipal storm sewer by storm water discharges associated with industrial activity and the quality of storm water discharged from sites of industrial activity;

(B) Prohibit through ordinance, order or similar means, illicit discharges to the municipal separate storm sewer;

(C) Control through ordinance, order or similar means the discharge to a municipal separate storm sewer of spills, dumping or disposal of materials other than storm water;

(D) Control through interagency agreements among coapplicants the contribution of pollutants from one portion of the municipal system to another portion of the municipal system;

(E) Require compliance with conditions in ordinances, permits, contracts or orders; and

(F) Carry out all inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions including the prohibition on illicit discharges to the municipal separate storm sewer.

(ii) *Source identification.* The location of any major outfall that discharges to waters of the United States that was not reported under paragraph (d)(1)(iii)(B)(1) of this section. Provide an inventory, organized by watershed of the name and address, and a description (such as SIC codes) which best reflects the principal products or services provided by each facility which may discharge, to the municipal separate storm sewer, storm water associated with industrial activity;

(iii) *Characterization data.* When "quantitative data" for a pollutant are required under paragraph (d)(a)(iii)(A)(3) of this paragraph, the applicant must collect a sample of effluent in accordance with 40 CFR 122.21(g)(7) and analyze it for the pollutant in accordance with analytical methods approved under 40 CFR part 136. When no analytical method is approved the applicant may use any suitable method but must provide a description of the method. The applicant must provide information characterizing the quality and quantity of discharges covered in the permit application, including:

(A) Quantitative data from representative outfalls designated by the Director (based on information received

in part 1 of the application, the Director shall designate between five and ten outfalls or field screening points as representative of the commercial, residential and industrial land use activities of the drainage area contributing to the system or, where there are less than five outfalls covered in the application, the Director shall designate all outfalls) developed as follows:

(1) For each outfall or field screening point designated under this subparagraph, samples shall be collected of storm water discharges from three storm events occurring at least one month apart in accordance with the requirements at § 122.21(g)(7) (the Director may allow exemptions to sampling three storm events when climatic conditions create good cause for such exemptions);

(2) A narrative description shall be provided of the date and duration of the storm event(s) sampled, rainfall estimates of the storm event which generated the sampled discharge and the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event;

(3) For samples collected and described under paragraphs (d)(2)(iii)(A)(1) and (A)(2) of this section, quantitative data shall be provided for: the organic pollutants listed in Table II; the pollutants listed in Table III (toxic metals, cyanide, and total phenols) of appendix D of 40 CFR part 122, and for the following pollutants:

Total suspended solids (TSS)
Total dissolved solids (TDS)
COD
BOD₅
Oil and grease
Fecal coliform
Fecal streptococcus
pH
Total Kjeldahl nitrogen
Nitrate plus nitrite
Dissolved phosphorus
Total ammonia plus organic nitrogen
Total phosphorus

(4) Additional limited quantitative data required by the Director for determining permit conditions (the Director may require that quantitative data shall be provided for additional parameters, and may establish sampling conditions such as the location, season of sample collection, form of precipitation (snow melt, rainfall) and other parameters necessary to insure representativeness);

(B) Estimates of the annual pollutant load of the cumulative discharges to waters of the United States from all identified municipal outfalls and the event mean concentration of the

cumulative discharges to waters of the United States from all identified municipal outfalls during a storm event (as described under § 122.21(c)(7)) for BOD₅, COD, TSS, dissolved solids, total nitrogen, total ammonia plus organic nitrogen, total phosphorus, dissolved phosphorus, cadmium, copper, lead, and zinc. Estimates shall be accompanied by a description of the procedures for estimating constituent loads and concentrations, including any modelling, data analysis, and calculation methods;

(C) A proposed schedule to provide estimates for each major outfall identified in either paragraph (d)(2)(ii) or (d)(1)(iii)(B)(1) of this section of the seasonal pollutant load and of the event mean concentration of a representative storm for any constituent detected in any sample required under paragraph (d)(2)(iii)(A) of this section; and

(D) A proposed monitoring program for representative data collection for the term of the permit that describes the location of outfalls or field screening points to be sampled (or the location of instream stations), why the location is representative, the frequency of sampling, parameters to be sampled, and a description of sampling equipment.

(iv) *Proposed management program.* A proposed management program covers the duration of the permit. It shall include a comprehensive planning process which involves public participation and where necessary intergovernmental coordination, to reduce the discharge of pollutants to the maximum extent practicable using management practices, control techniques and system, design and engineering methods, and such other provisions which are appropriate. The program shall also include a description of staff and equipment available to implement the program. Separate proposed programs may be submitted by each coapplicant. Proposed programs may impose controls on a systemwide basis, a watershed basis, a jurisdiction basis, or on individual outfalls. Proposed programs will be considered by the Director when developing permit conditions to reduce pollutants in discharges to the maximum extent practicable. Proposed management programs shall describe priorities for implementing controls. Such programs shall be based on:

(A) A description of structural and source control measures to reduce pollutants from runoff from commercial and residential areas that are discharged from the municipal storm sewer system that are to be implemented during the life of the permit, accompanied with an estimate of

the expected reduction of pollutant loads and a proposed schedule for implementing such controls. At a minimum, the description shall include:

(1) A description of maintenance activities and a maintenance schedule for structural controls to reduce pollutants (including floatables) in discharges from municipal separate storm sewers;

(2) A description of planning procedures including a comprehensive master plan to develop, implement and enforce controls to reduce the discharge of pollutants from municipal separate storm sewers which receive discharges from areas of new development and significant redevelopment. Such plan shall address controls to reduce pollutants in discharges from municipal separate storm sewers after construction is completed. (Controls to reduce pollutants in discharges from municipal separate storm sewers containing construction site runoff are addressed in paragraph (d)(2)(iv)(D) of this section;

(3) A description of practices for operating and maintaining public streets, roads and highways and procedures for reducing the impact on receiving waters of discharges from municipal storm sewer systems, including pollutants discharged as a result of deicing activities;

(4) A description of procedures to assure that flood management projects assess the impacts on the water quality of receiving water bodies and that existing structural flood control devices have been evaluated to determine if retrofitting the device to provide additional pollutant removal from storm water is feasible;

(5) A description of a program to monitor pollutants in runoff from operating or closed municipal landfills or other treatment, storage or disposal facilities for municipal waste, which shall identify priorities and procedures for inspections and establishing and implementing control measures for such discharges (this program can be coordinated with the program developed under paragraph (d)(2)(iv)(C) of this section); and

(6) A description of a program to reduce to the maximum extent practicable, pollutants in discharges from municipal separate storm sewers associated with the application of pesticides, herbicides and fertilizer which will include, as appropriate, controls such as educational activities, permits, certifications and other measures for commercial applicators and distributors, and controls for application in public right-of-ways and at municipal facilities.

(B) A description of a program, including a schedule, to detect and remove (or require the discharger to the municipal separate storm sewer to obtain a separate NPDES permit for) illicit discharges and improper disposal into the storm sewer. The proposed program shall include:

(1) A description of a program, including inspections, to implement and enforce an ordinance, orders or similar means to prevent illicit discharges to the municipal separate storm sewer system; this program description shall address all types of illicit discharges, however the following category of non-storm water discharges or flows shall be addressed where such discharges are identified by the municipality as sources of pollutants to waters of the United States: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)) to separate storm sewers, uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water (program descriptions shall address discharges or flows from fire fighting only where such discharges or flows are identified as significant sources of pollutants to waters of the United States);

(2) A description of procedures to conduct on-going field screening activities during the life of the permit, including areas or locations that will be evaluated by such field screens;

(3) A description of procedures to be followed to investigate portions of the separate storm sewer system that, based on the results of the field screen, or other appropriate information, indicate a reasonable potential of containing illicit discharges or other sources of non-storm water (such procedures may include: sampling procedures for constituents such as fecal coliform, fecal streptococcus, surfactants (MBAS), residual chlorine, fluorides and potassium; testing with fluorometric dyes; or conducting in storm sewer inspections where safety and other considerations allow. Such description shall include the location of storm sewers that have been identified for such evaluation);

(4) A description of procedures to prevent, contain, and respond to spills that may discharge into the municipal separate storm sewer;

(5) A description of a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges or water quality impacts associated with discharges from municipal separate storm sewers;

(6) A description of educational activities, public information activities, and other appropriate activities to facilitate the proper management and disposal of used oil and toxic materials; and

(7) A description of controls to limit infiltration of seepage from municipal sanitary sewers to municipal separate storm sewer systems where necessary;

(C) A description of a program to monitor and control pollutants in storm water discharges to municipal systems from municipal landfills, hazardous waste treatment, disposal and recovery facilities, industrial facilities that are subject to section 313 of title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), and industrial facilities that the municipal permit applicant determines are contributing a substantial pollutant loading to the municipal storm sewer system. The program shall:

(1) Identify priorities and procedures for inspections and establishing and implementing control measures for such discharges;

(2) Describe a monitoring program for storm water discharges associated with the industrial facilities identified in paragraph (d)(2)(iv)(C) of this section, to be implemented during the term of the permit, including the submission of quantitative data on the following constituents: any pollutants limited in effluent guidelines subcategories, where applicable; any pollutant listed in an existing NPDES permit for a facility: oil and grease, COD, pH, BOD₅, TSS, total phosphorus, total Kjeldahl nitrogen, nitrate plus nitrite nitrogen, and any information on discharges required under 40 CFR 122.21(g)(7) (iii) and (iv).

(D) A description of a program to implement and maintain structural and non-structural best management practices to reduce pollutants in storm water runoff from construction sites to the municipal storm sewer system, which shall include:

(1) A description of procedures for site planning which incorporate consideration of potential water quality impacts;

(2) A description of requirements for nonstructural and structural best management practices;

(3) A description of procedures for identifying priorities for inspecting sites and enforcing control measures which consider the nature of the construction activity, topography, and the

characteristics of soils and receiving water quality; and

(4) A description of appropriate educational and training measures for construction site operators.

(v) *Assessment of controls.* Estimated reductions in loadings of pollutants from discharges of municipal storm sewer constituents from municipal storm sewer systems expected as the result of the municipal storm water quality management program. The assessment shall also identify known impacts of storm water controls on ground water.

(vi) *Fiscal analysis.* For each fiscal year to be covered by the permit, a fiscal analysis of the necessary capital and operation and maintenance expenditures necessary to accomplish the activities of the programs under paragraphs (d)(2) (iii) and (iv) of this section. Such analysis shall include a description of the source of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds.

(vii) Where more than one legal entity submits an application, the application shall contain a description of the roles and responsibilities of each legal entity and procedures to ensure effective coordination.

(viii) Where requirements under paragraph (d)(1)(iv)(E), (d)(2)(ii), (d)(2)(iii)(B) and (d)(2)(iv) of this section are not practicable or are not applicable, the Director may exclude any operator of a discharge from a municipal separate storm sewer which is designated under paragraph (a)(1)(v), (b)(4)(ii) or (b)(7)(ii) of this section from such requirements. The Director shall not exclude the operator of a discharge from a municipal separate storm sewer identified in appendix F, G, H or I of part 122, from any of the permit application requirements under this paragraph except where authorized under this section.

(e) *Application deadlines.* Any operator of a point source required to obtain a permit under paragraph (a)(1) of this section that does not have an effective NPDES permit covering its storm water outfalls shall submit an application in accordance with the following deadlines:

(1) For any storm water discharge associated with industrial activity identified in paragraph (b)(14) (i)-(xi) of this section, that is not part of a group application as described in paragraph (c)(2) of this section or which is not covered under a promulgated storm water general permit, a permit application made pursuant to paragraph (c) of this section shall be submitted to the Director by November 18, 1991

(2) For any group application submitted in accordance with paragraph (c)(2) of this section:

(i) Part 1 of the application shall be submitted to the Director, Office of Water Enforcement and Permits by March 18, 1991;

(ii) Based on information in the part 1 application, the Director will approve or deny the members in the group application within 60 days after receiving part 1 of the group application.

(iii) Part 2 of the application shall be submitted to the Director, Office of Water Enforcement and Permits no later than 12 months after the date of approval of the part 1 application.

(iv) Facilities that are rejected as members of a group by the permitting authority shall have 12 months to file an individual permit application from the date they receive notification of their rejection.

(v) A facility listed under paragraph (b)(14) (i)-(xi) of this section may add on to a group application submitted in accordance with paragraph (e)(2)(i) of this section at the discretion of the Office of Water Enforcement and Permits, and only upon a showing of good cause by the facility and the group applicant; the request for the addition of the facility shall be made no later than February 18, 1992; the addition of the facility shall not cause the percentage of the facilities that are required to submit quantitative data to be less than 10%, unless there are over 100 facilities in the group that are submitting quantitative data; approval to become part of group application must be obtained from the group or the trade association representing the individual facilities.

(3) For any discharge from a large municipal separate storm sewer system:

(i) Part 1 of the application shall be submitted to the Director by November 18, 1991;

(ii) Based on information received in the part 1 application the Director will approve or deny a sampling plan under paragraph (d)(1)(iv)(E) of this section within 90 days after receiving the part 1 application;

(iii) Part 2 of the application shall be submitted to the Director by November 16, 1992.

(4) For any discharge from a medium municipal separate storm sewer system:

(i) Part 1 of the application shall be submitted to the Director by May 18, 1992.

(ii) Based on information received in the part 1 application the Director will approve or deny a sampling plan under paragraph (d)(1)(iv)(E) of this section within 90 days after receiving the part 1 application.

(iii) Part 2 of the application shall be submitted to the Director by May 17, 1993.

(5) A permit application shall be submitted to the Director within 60 days of notice, unless permission for a later date is granted by the Director (see 40 CFR 124.52(c)), for:

(i) A storm water discharge which the Director, or in States with approved NPDES programs, either the Director or the EPA Regional Administrator, determines that the discharge contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States (see paragraph (a)(1)(v) of this section);

(ii) A storm water discharge subject to paragraph (c)(1)(v) of this section.

(6) Facilities with existing NPDES permits for storm water discharges associated with industrial activity shall maintain existing permits. New applications shall be submitted in accordance with the requirements of 40 CFR 122.21 and 40 CFR 122.26(c) 180 days before the expiration of such permits. Facilities with expired permits or permits due to expire before May 18, 1992, shall submit applications in accordance with the deadline set forth under paragraph (e)(1) of this section.

(f) *Petitions.* (1) Any operator of a municipal separate storm sewer system may petition the Director to require a separate NPDES permit (or a permit issued under an approved NPDES State program) for any discharge into the municipal separate storm sewer system.

(2) Any person may petition the Director to require a NPDES permit for a discharge which is composed entirely of storm water which contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States.

(3) The owner or operator of a municipal separate storm sewer system may petition the Director to reduce the Census estimates of the population served by such separate system to account for storm water discharged to combined sewers as defined by 40 CFR 35.2005(b)(11) that is treated in a publicly owned treatment works. In municipalities in which combined sewers are operated, the Census estimates of population may be reduced proportional to the fraction, based on estimated lengths, of the length of combined sewers over the sum of the length of combined sewers and municipal separate storm sewers where an applicant has submitted the NPDES permit number associated with each discharge point and a map indicating areas served by combined sewers and

the location of any combined sewer overflow discharge point.

(4) Any person may petition the Director for the designation of a large or medium municipal separate storm sewer system as defined by paragraphs (b)(4)(iv) or (b)(7)(iv) of this section.

(5) The Director shall make a final determination on any petition received under this section within 90 days after receiving the petition.

6. Section 122.28(b)(2)(i) is revised to read as follows:

§ 122.28 General permits (applicable to State NPDES programs, see § 123.25).

* * *

(b) * * *

(2) *Requiring an individual permit.* (i) The Director may require any discharger authorized by a general permit to apply for and obtain an individual NPDES permit. Any interested person may petition the Director to take action under this paragraph. Cases where an individual NPDES permit may be required include the following:

(A) The discharger or "treatment works treating domestic sewage" is not in compliance with the conditions of the general NPDES permit;

(B) A change has occurred in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the point source or treatment works treating domestic sewage;

(C) Effluent limitation guidelines are promulgated for point sources covered by the general NPDES permit;

(D) A Water Quality Management plan containing requirements applicable to such point sources is approved;

(E) Circumstances have changed since the time of the request to be covered so that the discharger is no longer appropriately controlled under the general permit, or either a temporary or permanent reduction or elimination of the authorized discharge is necessary.

(F) Standards for sewage sludge use or disposal have been promulgated for the sludge use and disposal practice covered by the general NPDES permit, or

(G) The discharge(s) is a significant contributor of pollutants. In making this determination, the Director may consider the following factors:

(1) The location of the discharge with respect to waters of the United States.

(2) The size of the discharge;

(3) The quantity and nature of the pollutants discharged to waters of the United States; and

(4) Other relevant factors:

* * *

7. Section 122.42 is amended by adding paragraph (c) to read as follows:

§ 122.42 Additional conditions applicable to specified categories of NPDES permits (applicable to State NPDES programs, see § 123.25).

(c) *Municipal separate storm sewer systems.* The operator of a large or medium municipal separate storm sewer system or a municipal separate storm sewer that has been designated by the Director under § 122.26(a)(1)(v) of this part must submit an annual report by

the anniversary of the date of the issuance of the permit for such system. The report shall include:

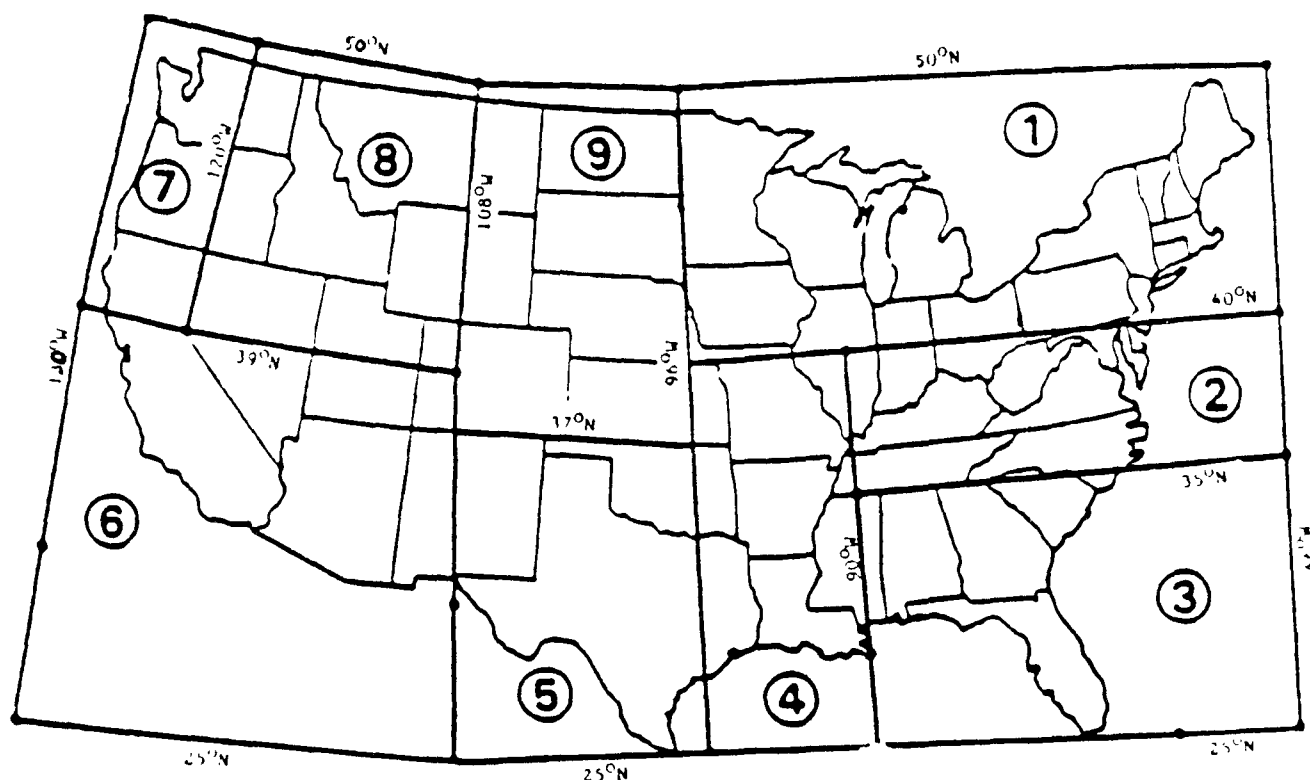
- (1) The status of implementing the components of the storm water management program that are established as permit conditions;
- (2) Proposed changes to the storm water management programs that are established as permit condition. Such proposed changes shall be consistent with § 122.26(d)(2)(iii) of this part; and
- (3) Revisions, if necessary, to the assessment of controls and the fiscal analysis reported in the permit

application under § 122.26(d)(2)(iv) and (d)(2)(v) of this part:

- (4) A summary of data, including monitoring data, that is accumulated throughout the reporting year;
- (5) Annual expenditures and budget for year following each annual report;
- (6) A summary describing the number and nature of enforcement actions, inspections, and public education programs;
- (7) Identification of water quality improvements or degradation;

7a. Part 122 is amended by adding appendices E through I as follows:

Appendix E to Part 122—Rainfall Zones of the United States



Not Shown: Alaska (Zone 7); Hawaii (Zone 7); Northern Mariana Islands (Zone 7); Guam (Zone 7); American Samoa (Zone 7); Trust Territory of the Pacific Islands (Zone 7); Puerto Rico (Zone 3); Virgin Islands (Zone 3).

Source: Methodology for Analysis of Detention Basins for Control of Urban Runoff Quality, prepared for U.S. Environmental Protection Agency, Office of Water, Nonpoint Source Division, Washington, DC, 1986.

Appendix F to Part 122—Incorporated Places With Populations Greater Than 250,000 According to Latest Decennial Census by Bureau of Census.

| State | Incorporated place |
|------------|--------------------|
| Alabama | Birmingham. |
| Arizona | Phoenix. |
| | Tucson. |
| California | Long Beach. |
| | Los Angeles. |
| | Oakland. |
| | Sacramento. |
| | San Diego. |
| | San Francisco. |
| | San Jose. |

| State | Incorporated place |
|----------------------|--------------------|
| Colorado | Denver |
| District of Columbia | |
| Florida | Jacksonville. |
| | Miami. |
| | Tampa. |
| Georgia | Atlanta. |
| Illinois | Chicago. |
| Indiana | Indianapolis. |
| Kansas | Wichita. |
| Kentucky | Louisville. |
| Louisiana | New Orleans. |
| Maryland | Baltimore. |
| Massachusetts | Boston. |
| Michigan | Detroit. |
| Minnesota | Minneapolis. |
| | St. Paul. |

| State | Incorporated place |
|----------------------|-----------------------|
| Missouri | Kansas City |
| Nebraska | St. Louis |
| New Jersey | Omaha |
| New Mexico | Newark |
| New York | Albuquerque |
| | Buffalo |
| | Bronx Borough |
| | Brooklyn Borough |
| | Manhattan Borough |
| | Queens Borough |
| | Staten Island Borough |
| North Carolina | Charlotte |
| Ohio | Cincinnati |
| | Cleveland |
| | Columbus |
| | Toledo |
| Oklahoma | Oklahoma City |
| | Tulsa |
| Oregon | Portland |
| Pennsylvania | Philadelphia |
| | Pittsburgh |
| Tennessee | Memphis |
| | Nashville/Davidson |
| Texas | Austin |
| | Dallas |
| | El Paso |
| | Fort Worth |
| | Houston |
| | San Antonio |
| Virginia | Norfolk |
| | Virginia Beach |
| Washington | Seattle |
| Wisconsin | Milwaukee |

Appendix G to Part 122—Incorporated Places With Populations Greater Than 100,000 and Less Than 250,000 According to Latest Decennial Census by Bureau of Census

| State | Incorporated place |
|-------------------|--------------------|
| Alabama | Huntsville |
| | Mobile |
| Alaska | Montgomery |
| Arizona | Anchorage |
| | Mesa |
| | Tempe |
| Arkansas | Little Rock |
| California | Anaheim |
| | Bakersfield |
| | Berkeley |
| | Concord |
| | Fremont |
| | Fresno |
| | Fullerton |
| | Garden Grove |
| | Glendale |
| | Huntington Beach |
| | Modesto |
| | Oxnard |
| | Pasadena |
| | Riverside |
| | San Bernardino |
| | Santa Ana |
| | Stockton |
| | Sunnyvale |
| | Torrance |
| Colorado | Aurora |
| | Colorado Springs |
| | Lakewood |
| | Pueblo |
| Connecticut | Bridgeport |
| | Hartford |
| | New Haven |
| | Stamford |
| | Waterbury |
| Florida | Fort Lauderdale |

| State | Incorporated place |
|----------------------|--------------------|
| Georgia | Hialeah |
| | Hollywood |
| | Orlando |
| | St. Petersburg |
| | Columbus |
| | Macon |
| | Savannah |
| | Boise City |
| Idaho | Peoria |
| Illinois | Rockford |
| | Evansville |
| Indiana | Fort Wayne |
| | Gary |
| | South Bend |
| Iowa | Cedar Rapids |
| | Davenport |
| | Des Moines |
| Kansas | Kansas City |
| | Topeka |
| Kentucky | Lexington-Fayette |
| Louisiana | Baton Rouge |
| | Shreveport |
| Massachusetts | Springfield |
| | Worcester |
| Michigan | Ann Arbor |
| | Flint |
| | Grand Rapids |
| | Lansing |
| | Livonia |
| | Sterling Heights |
| | Warren |
| Mississippi | Jackson |
| Missouri | Independence |
| | Springfield |
| Nebraska | Lincoln |
| Nevada | Las Vegas |
| | Reno |
| New Jersey | Elizabeth |
| | Jersey City |
| | Paterson |
| New York | Albany |
| | Rochester |
| | Syracuse |
| | Yonkers |
| North Carolina | Durham |
| | Greensboro |
| | Raleigh |
| | Winston-Salem |
| Ohio | Akron |
| | Dayton |
| | Youngstown |
| Oregon | Eugene |
| Pennsylvania | Allentown |
| | Erie |
| Rhode Island | Providence |
| South Carolina | Columbia |
| Tennessee | Chattanooga |
| | Knoxville |
| Texas | Amarillo |
| | Arlington |
| | Beaumont |
| | Corpus Christi |
| | Garland |
| | Irving |
| | Lubbock |
| | Pasadena |
| | Waco |
| Utah | Salt Lake City |
| Virginia | Alexandria |
| | Chesapeake |
| | Hampton |
| | Newport News |
| | Portsmouth |
| | Richmond |
| | Roanoke |
| Washington | Spokane |
| | Tacoma |
| Wisconsin | Madison |

Appendix H to Part 122—Counties with Unincorporated Urbanized Areas With a Population of 250,000 or More According to the Latest Decennial Census by the Bureau of Census

| State | County | Unincorporated urbanized population |
|------------------|-----------------------|-------------------------------------|
| California | Los Angeles | 912,664 |
| | Sacramento | 449,056 |
| | San Diego | 304,758 |
| Delaware | New Castle | 257,184 |
| Florida | Dade | 781,949 |
| Georgia | DeKalb | 386,379 |
| Hawaii | Honolulu | 688,178 |
| Maryland | Anne Arundel | 271,453 |
| | Baltimore | 601,308 |
| | Montgomery | 447,997 |
| | Prince George's | 450,188 |
| Texas | Harris | 409,601 |
| Utah | Salt Lake | 304,652 |
| Virginia | Fairfax | 527,178 |
| Washington | King | 336,800 |

Appendix I to Part 122—Counties With Unincorporated Urbanized Areas Greater Than 100,000, But Less Than 250,000 According to the Latest Decennial Census by the Bureau of Census

| State | County | Unincorporated urbanized population |
|----------------------|----------------------|-------------------------------------|
| Alabama | Jefferson | 102,917 |
| Arizona | Pima | 111,479 |
| California | Alameda | 187,474 |
| | Contra Costa | 158,452 |
| | Kern | 117,231 |
| | Orange | 210,693 |
| | Riverside | 115,719 |
| | San Bernardino | 148,644 |
| Florida | Broward | 159,370 |
| | Escambia | 147,892 |
| | Hillsborough | 238,292 |
| | Orange | 245,325 |
| | Palm Beach | 167,089 |
| | Pinellas | 194,389 |
| | Polk | 104,150 |
| | Sarasota | 110,009 |
| Georgia | Clayton | 100,742 |
| | Cobb | 204,121 |
| | Richmond | 118,529 |
| Kentucky | Jefferson | 224,958 |
| Louisiana | Jefferson | 140,806 |
| North Carolina | Cumberland | 142,727 |
| Nevada | Clark | 201,775 |
| Oregon | Multnomah | 141,100 |
| | Washington | 109,348 |
| South Carolina | Greenville | 135,398 |
| | Richland | 124,684 |
| Virginia | Arlington | 152,599 |
| | Henrico | 161,204 |
| | Chesterfield | 108,348 |
| Washington | Snohomish | 103,433 |
| | Pierce | 196,113 |

PART 123—STATE PROGRAM REQUIREMENTS

8. The authority citation for part 123 continues to read as follows:

Authority: Clean Water Act, 33 U.S.C. 1251 *et seq.*

9. Section 123.25 is amended by revising paragraph (a)(9) to read as follows:

§ 123.25 Requirements for permitting.

(a) . . .

(9) § 122.26—(Storm water discharges);

PART 124—PROCEDURES FOR DECISIONMAKING

10. The authority citation for part 124 continues to read as follows:

Authority: Resource Conservation and Recovery Act, 42 U.S.C. 6901 *et seq.*; Safe Drinking Water Act, 42 U.S.C. 300f *et seq.*; Clean Water Act, 33 U.S.C. 1251 *et seq.*; and Clean Air Act, 42 U.S.C. 1857 *et seq.*

11. Section 124.52 is revised to read as follows:

§ 124.52 Permits required on a case-by-case basis.

(a) Various sections of part 122, subpart B allow the Director to

determine, on a case-by-case basis, that certain concentrated animal feeding operations (§ 122.23), concentrated aquatic animal production facilities (§ 122.24), storm water discharges (§ 122.26), and certain other facilities covered by general permits (§ 122.28) that do not generally require an individual permit may be required to obtain an individual permit because of their contributions to water pollution.

(b) Whenever the Regional Administrator decides that an individual permit is required under this section, except as provided in paragraph (c) of this section, the Regional Administrator shall notify the discharger in writing of that decision and the reasons for it, and shall send an application form with the notice. The discharger must apply for a permit under § 122.21 within 60 days of notice, unless permission for a later date is granted by the Regional Administrator. The question whether the designation was proper will remain open for consideration during the public comment period under § 124.11 or § 124.118 and in any subsequent hearing.

(c) Prior to a case-by-case determination that an individual permit is required for a storm water discharge under this section (see 40 CFR 122.26 (a)(1)(v) and (c)(1)(v)), the Regional Administrator may require the discharger to submit a permit application or other information regarding the discharge under section 308 of the CWA. In requiring such information, the Regional Administrator shall notify the discharger in writing and shall send an application form with the notice. The discharger must apply for a permit under § 122.26 within 60 days of notice, unless permission for a later date is granted by the Regional Administrator. The question whether the initial designation was proper will remain open for consideration during the public comment period under § 124.11 or § 124.118 and in any subsequent hearing.

Note: The following form will not appear in the Code of Federal Regulations.

BILLING CODE 6560-50-M

APPENDIX C

DEFINITIONS OF FREQUENTLY USED TERMS IN THE REGULATIONS
AND IN STORM WATER POLLUTION CONTROL

The following are definitions of terms found in the NPDES storm water regulations (40 CFR) and terms commonly used in relation to storm water discharge.

Act

Clean Water Act (33 U.S.C. 1251 et seq.), including amendments resulting from the Water Quality Act of 1987.

Administrator

Administrator of the U.S. Environmental Protection Agency, or an authorized representative.

Agency

U.S. Environmental Protection Agency.

Applicable Standards and Limitations

All State, interstate, and Federal standards and limitations to which a "discharge" a "sewage sludge use or disposal practice," or a related activity is subject under the Clean Water Act (CWA), including "effluent limitations," "water quality standards," "standards of performance," "toxic effluent standards or prohibitions," "best management practices," "pretreatment standards," and "standards for sewage sludge use or disposal" under sections 301, 302, 303, 304, 306, 307, 308, 403 and 405 of CWA.

Application

EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in "approved States" including any approved modifications or revisions.

BAT

Best Available Technology Economically Achievable (Treatment Standard for Toxic and Nonconventional Pollutants).

BCT

Best Conventional Pollution Control Technology (Treatment Standard for Conventional Pollutants).

Best Management Practices (BMPs)

Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Biochemical Oxygen Demand (BOD)

The amount of oxygen required by bacteria while stabilizing decomposable organic matter under aerobic conditions. A BOD test is widely used to determine the pollutorial strength of wastewater (i.e., how much oxygen will be required for the pollutants to be broken down).

Chemical Oxygen Demand (COD)

The measurement of the total quantity of oxygen required to oxidize organic pollutants to carbon dioxide in water.

City

Those places that have been incorporated as cities, boroughs, towns, and villages under the laws of their respective State with the following exceptions: the towns in the New England States, New York, and Wisconsin, and the boroughs of Alaska and New York.

CMP

Corrugated Metal Pipe.

Coastal Zone Management

A program administered by the National Oceanic and Atmospheric Administration (NOAA), Department of Commerce, to manage and protect the natural resources of coastal states. Participating states must prepare and adopt a management plan (see Coastal Zone Management Act, 16 U.S.C. 1451 et seq.).

Code of Federal Regulations (CFR)

A compilation of all Federal regulations implementing the various Federal acts.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. 9601 et seq.)

Also known as Superfund. Amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

Co-permittee

A permittee to a NPDES permit that is only responsible for permit conditions relating to the discharge for which it is operator.

County

Counties and county equivalents are the primary divisions of States. In Louisiana, these divisions are known as parishes. In Alaska, the county equivalents are the organized boroughs together with the census areas that were developed for general statistical purposes by the State of Alaska and the Census Bureau. Four States--Maryland, Missouri, Nevada, and Virginia--have one or more incorporated places that are legally independent of any county and thus constitute primary divisions of their States. Similarly, the portion of Yellowstone National Park in Montana is treated as a county equivalent. The District of Columbia has no primary divisions; the entire area is considered equivalent to a county for census purposes. The 133 areas classified as county equivalents for the 1980 census include 11 organized boroughs and 12 census areas in Alaska; the District of Columbia; 64 parishes in Louisiana; Baltimore City, Maryland; St. Louis City, Missouri; the part of Yellowstone National Park in Montana; Carson City, Nevada; and 41 independent cities in Virginia.

Director

The EPA Regional Administrator or the State Director, as the context requires, or an authorized representative. (When there is an approved State program, "Director" normally refers to the State Director.)

Effluent Limitation

Any restriction imposed by the Director on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean.

EPA

Environmental Protection Agency.

Effluent Limitations Guidelines

A regulation published by the Administrator under section 304(b) of CWA to adopt or revise "effluent limitations."

Federal Register

A daily publication of the U.S. Government that provides a uniform system for making available to the public regulations and legal notices issued by Federal Agencies.

FIFRA

Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.).

HSWA

Hazardous and Solid Waste Act of 1984 (P.L. 98-616).

Illicit Discharge

Any discharge to a municipal separate storm sewer that is not composed entirely of storm water, except discharges pursuant to a National Pollutant Discharge Elimination System (NPDES) permit.

Incorporated Place

A city, town, or village that is incorporated under the laws of the state or territory in which it is located including the District of Columbia.

Large and Medium Municipal Separate Storm Sewer System

Large and medium municipal separate storm sewer system means all municipal separate storm sewers that are either:

- (i) located in an incorporated place with a population of over 100,000 or more as determined by the latest Bureau of Census estimates; or
- (ii) are located in the counties listed in Table 4-1 of this guidance, except municipal separate storm sewer systems that are located in the incorporated places, townships or towns within such counties; or
- (iii) are owned or operated by a municipality other than those described in paragraph (i) or (ii) that are designated by the Director as part of the large or medium municipal separate storm sewer system due to the interrelationship between the discharges of the designated storm sewer and the discharges from municipal separate storm sewers described under paragraphs (i) or (ii). In making this determination the Director may consider the following factors:
 - (A) physical interconnections between the municipal separate storm sewers;
 - (B) the location of discharges from the designated municipal separate storm sewer relative to discharges from municipal separate storm sewers described in subparagraph (i);
 - (C) the quantity and nature of pollutants discharged to waters of the United States;
 - (D) the nature of the receiving waters; or
 - (E) other relevant factors; or
- (iv) in lieu of defining a large system as described in paragraphs (i), (ii), or (iii), the Director may designate as a system, a storm water management regional authority based on a jurisdictional, watershed, or other appropriate basis that includes one or more of the systems described in paragraphs (i), (ii), (iii). The regional authority shall be responsible for submitting a permit application under the following guidelines:
 - (A) the designated regional authority shall have authority over a storm water management program that is in existence, or shall be in existence at the time Part 1 of the application is due;
 - (B) the permit applicant or co-applicants shall establish their ability to make a timely submission of Part 1 and 2 of the municipal application;
 - (C) each of the systems described in paragraphs (i), (ii), and (iii), that are under the purview

of the designated regional authority, shall comply with the application requirements of section 122.26(d).

Limited Co-Permittee

A permittee to a National Pollutant Discharge Elimination System (NPDES) permit that is only responsible for permit conditions relating to the discharge for which it is owner or operator.

Major Municipal Separate Storm Sewer Outfall

Municipal separate storm sewer outfall that discharges from a circular pipe with a diameter of more than 36 inches or its equivalent. Equivalency may be based on a drainage area of 50 or more acres associated with a discharge from other than a circular pipe or the trapezoidal, rectangular, and triangular equivalent size open channels as shown in Figure 4-1. For municipal separate storm sewers that receive storm water from lands zoned for industrial activity (based on comprehensive zoning plans or the equivalent), an outfall that discharges from a pipe with a diameter of greater than 12 inches or its equivalent is a major outfall. Equivalency may be based on drainage area of 2 or more acres or trapezoidal, rectangular, and triangular equivalent size open channel, as shown in Figure 4-1.

MBAS

Methylene blue active substances.

Medium Municipal Separate Storm Sewer System

See "Large and Medium Municipal Separate Storm Sewer System".

MEP

Maximum extent practicable (treatment standards for municipal separate storm sewer point sources).

Municipal Separate Storm Sewer

Conveyance or system of conveyances (including public conveyances and public roads with drainage systems) that is owned or operated by a city, town, borough, county, parish, district, association, or other public body created by or pursuant to State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the Clean Water Act (CWA) that discharges to waters of the United States and that is designed solely for collecting or conveying storm water that is not part of a publicly owned treatment works (POTW) as defined by 40 CFR 122.2.

Municipality

A primarily urban political unit having corporate status and usually powers of self-government.

National Pollutant Discharge Elimination System (NPDES)

The national program for controlling discharges from point source discharges directly into waters of the U.S. under the Clean Water Act.

National Urban Runoff Program (NURP)

A research and development/pilot program conducted between 1978 and 1983 by approximately 28 communities that characterized the composition of urban runoff and potential solutions and control techniques.

NRC

National Response Center (800) 424-8802

Outfall

A "point source" as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include any open conveyances connecting two municipal separate storm sewers, or pipes, tunnels, or other conveyances which are in the middle of a stream or other waters of the United

States and are used to convey waters of the United States.

OWEP

Office of Water Enforcement and Permits, EPA Headquarters, Washington, D.C.

Operator

The operator of any facility or activity subject to regulation under the National Pollutant Discharge Elimination System (NPDES) program.

pH

The negative log of a hydrogen ion concentration, commonly used parameter to measure acidity.

Point Source

Any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agricultural storm water runoff.

Process Wastewater

Any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly Owned Treatment Works (POTW)

Any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a "State" or "municipality." This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

RCRA

Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.).

Runoff Coefficient

The fraction of total rainfall that will appear at a conveyance as runoff.

SCS

Soil Conservation Service.

Significant Materials

Includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101[14] of CERCLA; any chemical the facility is required to report pursuant to section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

SPCC

Spill Prevention Control and Countermeasure plan under section 311 of the Clean Water Act.

Standard Industrial Classification (SIC)

A method used by the Office of Management and Budget to classify industries according to type and method of production. Each industry is assigned a 4-digit code. The major industrial categories are indicated by the first two digits. Table 4-2, of this guidance provides a list of codes.

Storm Water

Storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm Water Discharge Associated with Industrial Activity

The discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program under 40 CFR Part 122. For the categories of industries identified in subparagraphs (i) through (x) of this subsection, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at 40 CFR 401); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the categories of industries identified in subparagraph (xi), the term includes only storm water discharges from all the areas (except access roads and rail lines) that are listed in the previous sentence where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water. For the purposes of this paragraph, material handling activities include the: storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally, State, or municipally owned or operated that meet the description of the facilities listed in this paragraph (i)-(xi)) include those facilities designated under the provisions of 122.26(a)(1)(v). The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection:

(i) Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR Subchapter N (except facilities with toxic pollutant effluent standards which are exempted under category (xi) of this paragraph);

(ii) Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283) 29, 311, 32 (except 323), 33, 3441, 373;

(iii) Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under 40 CFR 434.11(l) because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas of non-coal mining operations which have been released from applicable State or Federal reclamation requirements after December 17, 1990) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; (inactive mining operations are mining sites that are not being actively mined, but which have an identifiable owner/operator; inactive mining sites do not include sites where mining claims are being maintained prior to disturbances associated with the extraction, beneficiation, or processing of mined materials, nor sites where minimal activities are undertaken for the sole purpose of maintaining a mining claim);

(iv) Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA;

(v) Landfills, land application sites, and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under Subtitle D of RCRA;

(vi) Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;

(vii) Steam electric power generating facilities, including coal handling sites;

(viii) Transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25), 43, 44, 45, and 5171 which have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle

rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or which are otherwise identified under paragraphs (i)-(vii) or (ix)-(xi) of this subsection are associated with industrial activity;

(ix) Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with Section 405 of the CWA;

(x) Construction activity including clearing, grading and excavation activities except: operations that result in the disturbance of less than five acres of total land area which are not part of a larger common plan of development or sale;

(xi) Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and which are not otherwise included within categories (ii)-(x))

TOC

Total organic carbon.

TSS

Total suspended solids.

USGS

United States Geological Survey.

Waters of the United States or waters of the U.S.

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate "wetlands;"

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect interstate or foreign commerce, including any such waters:

(1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;

(2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (f) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the Clean Water Act (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

APPENDIX D
SAMPLE CHARACTERIZATION PLAN

CHARACTERIZATION PLAN

Submitted as Part of Part 1 of NPDES

Stormwater Permit Application for the
City of _____

January, 1991

D-1

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REPRESENTATIVE STORMWATER SAMPLING PROGRAM

1.1 PROGRAM OBJECTIVES

The Representative Storm water Monitoring Program is intended to satisfy the requirements of Part 2 of the municipal storm water permit application. This Characterization Plan was written to satisfy the requirements of Part 1 of the application.

1.2 SAMPLING LOCATIONS**1.2.1 Selection Criteria**

Criteria used to select specific monitoring sites were hydraulic factors, accessibility and safety. Hydraulic factors are an important consideration in the selection of sampling stations. For open-channel stations, it is necessary that each be located at a site with an existing stage-discharge rating or at a site where adequate stage-discharge ratings can be established. Similarly, it is essential that manhole stations have suitable hydraulic characteristics for installation (and calibration) of the weirs or flumes. Thus, the following hydraulic factors are important considerations in the site selection process:

- Location at a site with an existing stage-discharge rating or at a site having a suitable control where a reliable rating curve can be developed.
- Uniform and stable channel conditions for a distance equal to at least six channel widths upstream of the station.

- Lack of tidal influence or backwater effects caused by downstream conditions.
- No evidence of surcharging or submergence over the normal range of precipitation (manhole installations).
- Adequate distance from major tributaries in order to allow for complete mixing.

Safety and accessibility are important considerations, primarily to avoid accidents and injury, but also to ensure that field crews feel sufficiently safe so that they exercise due care in conducting the field effort. Considerations include avoiding heavily trafficked areas or areas where light and/or visibility create conditions conducive to an accident with passing cars or trucks.

1.2.2 Selected Stations

City X's land use is composed of approximately 60% developed land and 40% undeveloped. Of the developed land approximately 40% is residential, 10% commercial, 20% industrial and 30% public facilities, road and streets. Three stations were chosen for representative sampling (the regulations require five to ten stations), one representing residential land use, one representing commercial land use, and one representing light industrial land use. Areas and land uses attributed to the watersheds associated with these outfalls are approximate.

Station R1 is representative of light industrial land use in City X. The station is located in a manhole approximately 400 feet upstream of the discharge on the south side of American Avenue. The discharge drains the Crocker (North) Industrial Park, an area of approximately 75 acres containing a small amount of retail commercial area, wholesale commercial areas, and relatively recently developed light industry. The industries are

primarily light manufacturing, warehousing and distribution, and offices. A large percentage of the area is comprised of parking lots. This is typical of the industry in City X.

Station R2 drains a 100 acre indoor shopping mall, one of the major commercial areas of City X. This watershed also contains a small amount of residential area in the northwest corner. Total area drained by R2 is approximately 100 acres. Station R2 is located in a manhole along Hesperian Boulevard. Hesperian Boulevard is a main thoroughfare in the western portion of City X.

The last representative sampling station, R3, is located along West Street approximately 400 feet east of the intersection of West Street and Mohr Drive. The watershed is approximately 80 acres in size and comprised of mainly residential and open space. The open space is owned by City X Community College District and is part of the campus of City X College. It is expected that most of the runoff discharging from outfall R3 will be from the residential areas.

1.3 SAMPLING PERIOD AND FREQUENCY

City X has distinct wet and dry seasons. The wet season extends from October through April with over 90% of the rainfall occurring during this time. It is anticipated that the program will continue for one full wet-season. Samples will be collected for a minimum of 3 storm events (if possible), approximately 1 month apart. Storm events will only be monitored if preceded by 72 hours of dry weather (less than 0.1 inches of rainfall).

1.4 SAMPLING PARAMETERS

A flow-weighted composite sample will be collected for the duration of the storm event. The sample will be analyzed for 25 parameters, including BNAs, pesticides, PCBs, TDS,

TSS, BOD, COD, total antimony, total arsenic, total beryllium, total cadmium, total chromium, hexavalent chromium, total copper, total lead, total mercury, total nickel, total selenium, total silver, total thallium, total zinc, total phosphorous, dissolved phosphorous, total nitrogen, and total ammonia plus organic nitrogen. The parameters are listed in Table 1. The sample will be collected in the field and transported to the laboratory for analysis.

1.5 SAMPLING METHODS

Composite samples will be collected using an automatic composite sampler (described in Attachment A). The automatic sampler is designed to collect subsamples (e.g., 500 mls) at variable time intervals corresponding to a specific volume of water flowing by the monitoring station. Both volumes are user-specific and will be chosen such that 10 liters of sample water will be collected over the duration of the storm.

The flow-weighted composite sample will be collected in a single container. Borosilicate glass provides the best alternative for collection of water to be submitted for metals and organics. Thus, 10-liter borosilicate media bottles with Teflon-lined polyethylene caps will be used for the composite sample. No preservatives will be added to the sample container. The laboratory will subdivide the sample water into aliquots for individual analyses and add the appropriate preservatives.

SOP

A detailed set of Standard Operating Procedures (SOP) will be developed for all phases of the field monitoring program. The SOP will contain the following procedural instructions:

- Standard observations
- Initial setup of the composite sampler
- Storm monitoring station software initiation

Table 1. PARAMETERS FOR REPRESENTATIVE STORMWATER SAMPLING

Representative Stormwater
Flow-Weighted Sample

Organics

Base/Neutral-Acid
Extractable Oil and Grease
Pesticides/Polychlorinated
Biphenyls (PCB)

Metals

Antimony
Arsenic
Beryllium
Cadmium
Chromium (total)
Chromium (hexavalent)
Copper
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc

Physical

Total Dissolved Solids (TDS)
Total Suspended Solids (TSS)
Biochemical Oxygen Demand (BOD₅)
Chemical Oxygen Demand (COD)

Other

Phosphorous (total)
Phosphorous (dissolved)
Nitrogen (total)
Total ammonia and organic nitrogen

- Battery replacement
- Data retrieval
- Sample removal and handling
- Grab sampling
- Sample transfer and tracking

Field training sessions will be held prior to sampling for personnel expected to participate in monitoring. The training sessions will involve review of the SOP and hands-on experience in interrogating a model monitoring station.

1.6 SAMPLE HANDLING PROCEDURES

All water samples collected will be stored in an ice chest immediately after collection. The ice will be stored in separate plastic bags. The samples will be delivered to the analyzing laboratory soon enough to allow analyses within the required holding times.

The samples will be handled under chain-of-custody procedures. A Chain-of-Custody Record (Figure 1) will accompany each ice chest used to store sample containers. The original Record will be sealed inside a plastic, ziplock-type bag and attached to the cooler. A copy will be retained by the field sampler.

When transferring possession of the samples, the individuals relinquishing and receiving will sign, date, and note the time on the Chain-of-Custody Record. This Record will document transfer of custody of the samples from the sampler to the laboratory.

The Chain-of-Custody Record will include a Sample Analysis Request section (Figure 1). This section will identify the parameters that are to be analyzed, which sample containers have been designated for each requested parameter, and any preservatives used.

Figure 1. SAMPLE CHAIN-OF-CUSTODY RECORD

[illegible]

ANALYTICAL METHODS AND QUALITY ASSURANCE/QUALITY CONTROL

2.1 ANALYTICAL METHODS

Analytical methods referenced in 40 CFR Part 136 will be used for the Representative Sampling Program laboratory analyses.

2.2 QUALITY ASSURANCE/QUALITY CONTROL

2.2.1 Objectives

The overall objective of the Quality Assurance/Quality Control (QA/QC) Plan is to ensure data of known high quality. The specific objectives are to:

- Provide a mechanism for ongoing control and evaluation of measurement data quality throughout the course of the program;
- Define data quality for the various measurement parameters in terms of precision and accuracy.

Analysis of QC data will be used to estimate the degree to which the objectives are achieved.

2.2.2 Sampling Quality Control

All instruments used in the field to measure a quantity, or which have an expected performance level, will be calibrated prior to use. Calibration will be performed by field

personnel using reference standards, or by calibration agencies or equipment manufacturers. Calibration records, including type and brand of instrument, date of calibration, method of calibration, and instrument response will be maintained.

2.2.3 Analytical Quality Control

QC samples will be periodically prepared or collected and submitted for laboratory analysis with the water samples. QC samples will consist of field QC samples or laboratory QC samples.

Field QC Samples. Field QC samples will be submitted from the field for laboratory analysis and will consist of the following types of samples: travel blanks, field blanks, and field replicates.

Travel blanks will be used to assess potential sample contamination occurring during shipment and storage of the samples, and during laboratory handling and analysis. The travel blanks will be filled at the laboratory with reagent-grade deionized water, transported to the sampling site, and returned to the laboratory for analysis. Travel blanks for each sample container type will be included and will be prepared and analyzed at a minimum frequency of 5 percent of water samples collected annually.

Field blanks will be used to assess potential sample contamination occurring during field collection, handling, shipment and storage of the samples, and during laboratory handling and analysis. The field blanks will be obtained by filling sample containers with reagent-grade distilled water in the field and handling them with identical procedures used for handling water samples. The sample containers will be given fictitious sample designations and returned to the laboratory for analysis. Field blanks for each container type will be prepared and analyzed at a minimum frequency of 5 percent of water samples collected annually.

Field replicates will be used to assess natural sample variability, or variability attributable to field collection, sample handling, shipment and storage methods, and to

laboratory handling and analysis. The field replicates will be obtained by filling grab sample containers at the same sampling location at the same time. Replicate samples will not be collected from composite samples. One of the replicate samples will be given a fictitious sample designation and returned to the laboratory for analysis. Replicate samples for each container type will be prepared and analyzed at a minimum frequency of 5 percent of water samples collected annually.

Laboratory QC Samples. Laboratory QC samples will be prepared and analyzed by the laboratory and will consist of the following types of samples: method blanks, matrix spiked samples, and duplicate matrix spiked samples.

Method blanks will be used to assess potential sample contamination attributable to laboratory analysis procedures. Method blanks will be tested daily at the beginning of each analytical sequence and are then analyzed at a frequency of one per ten samples per day.

Matrix spiked samples will be used to estimate matrix recovery and laboratory accuracy. A duplicate matrix spiked sample will be analyzed each time that a matrix spiked sample is analyzed to provide an estimate of laboratory precision. The samples should be spiked prior to any extractions performed as part of the analysis. One matrix spiked sample and one duplicate matrix spiked samples will be analyzed at a frequency of one per ten samples analyzed per day.

DATA REDUCTION, VALIDATION AND REPORTING

3.1 QUALITY ASSURANCE EVALUATION

Overall data quality will be assessed based on sampling and analytical conditions, adherence to QC procedures, and results of accuracy and precision checks.

Precision is the measure of the variability of individual sample measurements. Precision will be assessed from analyses of replicate samples and from the use of duplicate matrix spiked samples. Precision will be measured as the percent difference in the duplicate measurements, using the following equation:

$$P_i = (Y_i - X_i)/(0.5[Y_i + X_i]) \times 100$$

P_i = precision of duplicate pair i

Y_i = concentration for primary sample i

X_i = concentration for duplicate sample i

Average precision and its standard deviation for the concentration data will be provided.

The average precision for field replicates and matrix spiked duplicate samples will be calculated independently for each measurement parameter.

Accuracy is a measure of the system bias, or the difference between the mean of the true sample values and the mean of the measured values. Accuracy will be assessed using matrix spiked samples in conjunction with travel blanks, field blanks, and method blanks. Matrix spiked samples measure the bias in laboratory procedures. Travel

blanks measure the bias introduced by sample handling and shipping, and laboratory procedures. Field blanks measure the bias introduced by contaminated sampling equipment, sample handling and shipping, and laboratory procedures. Method blanks measure the bias introduced by laboratory procedures.

The following equation will be used to measure accuracy:

$$A_i = (Y_i/X_i) \times 100$$

A_i = accuracy of compound i

Y_i = measured spike concentration in sample i

X_i = known spike concentration of sample i

Average accuracy and its standard deviation for the concentration data will be provided.

Laboratory data will be reviewed to check that all analyses were performed using approved methods. The data will also be reviewed to check that the analyses were performed within the specified holding times. Results from matrix spiked samples and duplicate matrix spiked samples will be compared with QC target criteria. An explanation for analysis data not meeting these target criteria will be provided.

Detection limits will be reported with the analytical results and if detection limits exceed target detection limits values will be flagged and any interferences or dilution effects noted.

3.2 DATA REPORTING

All field and laboratory data collected for the Representative Sampling Program, including QC data, will be tabulated and reported at the end of the wet-season monitoring. Any data outside QC target limits will be flagged and an explanation provided.

REFERENCES

American Public Health Association. 1985. Standard Methods for the Examination of Water and Wastewater. 16th Edition. Washington, D.C.

United States Environmental Protection Agency. 1983. Methods for Chemical Analysis of Water and Wastes, EPA-600/4-83-020.

United States Environmental Protection Agency. 1986. Test Methods for Evaluating Solid Waste. Physical/Chemical Methods, SW-846.

ATTACHMENT A

STATION DESIGN FOR AUTOMATIC SAMPLERS

The field study for wet-weather sampling is designed to collect accurate hydrological information to quantify discharges and to collect flow-weighted composite samples. Samples will be collected using an automatic sampler. Monitoring of stage (water depth) will be performed continuously during storms.

The following design considerations will be used to establish the monitoring station:

- Intake for the automatic sampler must be protected from large objects transported by the stormwater runoff.
- Intake must be located in a well-mixed area not subject to burial or submergence.
- Water velocity in the intake hose during sampling must be maximized to maintain particulate material in suspension.
- Intake hose material must be appropriate to avoid metals and organic contamination of samples.
- Sample container material must be compatible with holding samples to be analyzed for both trace metals and organic compounds.
- The peristaltic pump for the automatic sampler must be capable of delivering consistent sample volumes, regardless of intake hose length

and changes in head associated with the rise and fall of stage in the water body being sampled.

- The automatic sampler should not exceed a head difference of 20 feet above the water in order to avoid low water velocities within the intake hose and decreasing precision in sample volume.

The intake will be placed in a cage constructed of quarter-inch stainless rod. The cage is designed to deflect moderate-sized objects around the intake and the pressure sensor. Coarse stainless-steel intake screens will be used to reduce the likelihood of blockage within the sample tubing.

Experience has indicated that intakes should be positioned between 2 and 4 inches above the bottom. This range is believed to be a reasonable compromise between avoidance of bedload transport and keeping the intake submerged.

A 3/8-inch (inner-diameter) intake hose constructed of polyethylene on the outside and Teflon on the inside will be used for sample collection. The polyethylene provides the required physical strength while the Teflon provides a suitable material for handling samples which would be analyzed for either metals or organic compounds. The bore diameter of the intake hose is selected to maximize the velocity of flow within the hose (in order to prevent settling of suspended solids). An inner-diameter of 3/8 inch is necessary to maintain velocities of 1 to 2 fps at head differences of up to 20 feet.

A stage-discharge relationship will be developed at each station. Weirs and flumes will be used to measure flow when appropriate (e.g., approach velocities are small, good upstream conditions).

APPENDIX E GUIDANCE MATERIALS

SELECTED REFERENCES AND SOURCES OF INFORMATION

1. Adams, L.W., Dove, L.E., Leedy, D.L., and Franklin, T., Urban Methods for Stormwater Control and Wildlife Enhancement: Analysis and Evaluation (Urban Wildlife Research Center, Columbia, MD, 1983), 200 pp.
2. American Public Works Association, "Urban Stormwater Management," Special Report No. 49 (Chicago, IL, 1981).
3. American Society of Landscape Architects Foundation, "Handbook of Landscape Architectural Construction" (McLean, VA, 1973).
4. California State University, Sacramento, Department of Engineering, "Operation and Maintenance of Wastewater Collection Systems: A Field Study Program" (for EPA, Office of Water Program Operations), 1983.
5. Mancini, J.L., "Development of Methods to Define Water Quality Effects of Urban Runoff," Report No. EPA 600/2-83-125 (Municipal Environmental Research Laboratory, U.S. EPA Office of Research and Development, 1983).
6. Marsh, William M., "Environmental Analysis: For Land Use and Site Planning" (McGraw-Hill, Inc., 1978).
7. Metropolitan Washington Council of Governments, "Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs" (1987).
8. Northern Virginia Planning District Commission, "Guidebook for Screening Urban Nonpoint Source Pollution Management Strategies" (prepared for Metropolitan Washington Council of Governments) (1980).
9. Novotny, V. and Chesters, G., "Handbook of Nonpoint Source Pollution: Sources and Management" (Van Nostrand Reinhold Company, New York, NY, 1981), 545 pp.
10. Omernik, James, "Nonpoint Source -- Stream Nutrient Level Relationships" A Nationwide Study," Report No. EPA-600/3-77-105 (Special Studies Branch, Corvallis Environmental Research Laboratory, U.S. EPA).
11. Pennsylvania Department of Environmental Resources, "Guidelines for the Development and Implementation of Preparedness, Prevention and Contingency (PPC) Plans" (1983).
12. Porter, Douglas, Len, Ben, and Peiser, Richard, "Special Districts" A Useful Technique for Financing Infrastructure," Report No. 536 (Urban Land Institute, Washington, DC, 1987), 58 pp.
13. Robinson, G. (ed.), "Hazardous Chemicals, Spill Cleanup" (1979).

14. Snyder, Thomas and Stegman, Michael, "Paying for Growth: Using Development Fees to Finance Infrastructure," Report No. P40 (Urban Land Institute, Washington, DC, 1987).
 15. Terrien, Ernest, "Hazardous Material and Natural Disaster, Emergencies, Incident Action Guidebook" (Technomic Publishing Co., 1984).
 16. Thronson, Robert, "Nonpoint Source Pollution Control Guidance Construction Activities," (U.S. EPA, Washington, DC, 1976).
 17. Thurow, Charles, Toner, W., and Erley, D., "Performance Controls for Sensitive Lands: A Practical Guide for Local Administrators, Parts 1 and 2 (American Society of Planning Officials, 1975) (author affiliation - Office of Research and Development, U.S. EPA).
 18. Tourbier, Joachim and Westmacott, R., "Water Resources Protection Measures in Land Development: A Handbook" (Water Resources Center, University of Delaware, Newark, DE, 1974).
 19. Tourbier, J. Toby and Westmacott, Richard, "Water Resources Protection Technology" (Urban Land Institute, Washington, DC, 1981), pp. 178.
 20. The Urban Institute, American Society of Civil Engineers, and the National Association of Home Builders, "Residential Storm Water Management: Objectives, Principles and Design Considerations" (Washington, DC, March 1979), pp. 64.
 21. U.S. Environmental Protection Agency, Region X, Emergency Response Team, "Oil and Hazardous Substances Response Manual."
 22. U.S. Environmental Protection Agency, "Handbook for Sewer System Evaluation and Rehabilitation, MCD-19," Report No. EPA-430/9-15-02 (1975).
 23. U.S. Environmental Protection Agency, "Best Management Practices Guidance Document," Report No. EPA-600/9-79-045 (Hydroscience, Inc., Washington, DC, 1979).
 24. U.S. Environmental Protection Agency, "Hazardous Material Spills and Responses for Municipalities," Report No. EPA-600/2-80-108 (1980).
 25. U.S. Environmental Protection Agency, "Handbook for Sampling and Sample Preservation of Water and Wastewater," Report No. EPA-600/4-82-029 (1982).
 26. U.S. Environmental Protection Agency, "Methodology for Analysis of Detention Basins for Control of Urban Runoff Quality" (Nonpoint Source Division, Office of Water, U.S. EPA, 1986).
 27. Weiss, G. (ed.), "Hazardous Chemical Data Book" (1980).
- Note: Within parentheses you find either (publisher, place, date) or (author affiliation, source, place, date).