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Office of Water
Office of Wastewater Enforcement and
Compliance (4204)

April 1994



Combined Sewer Overflows

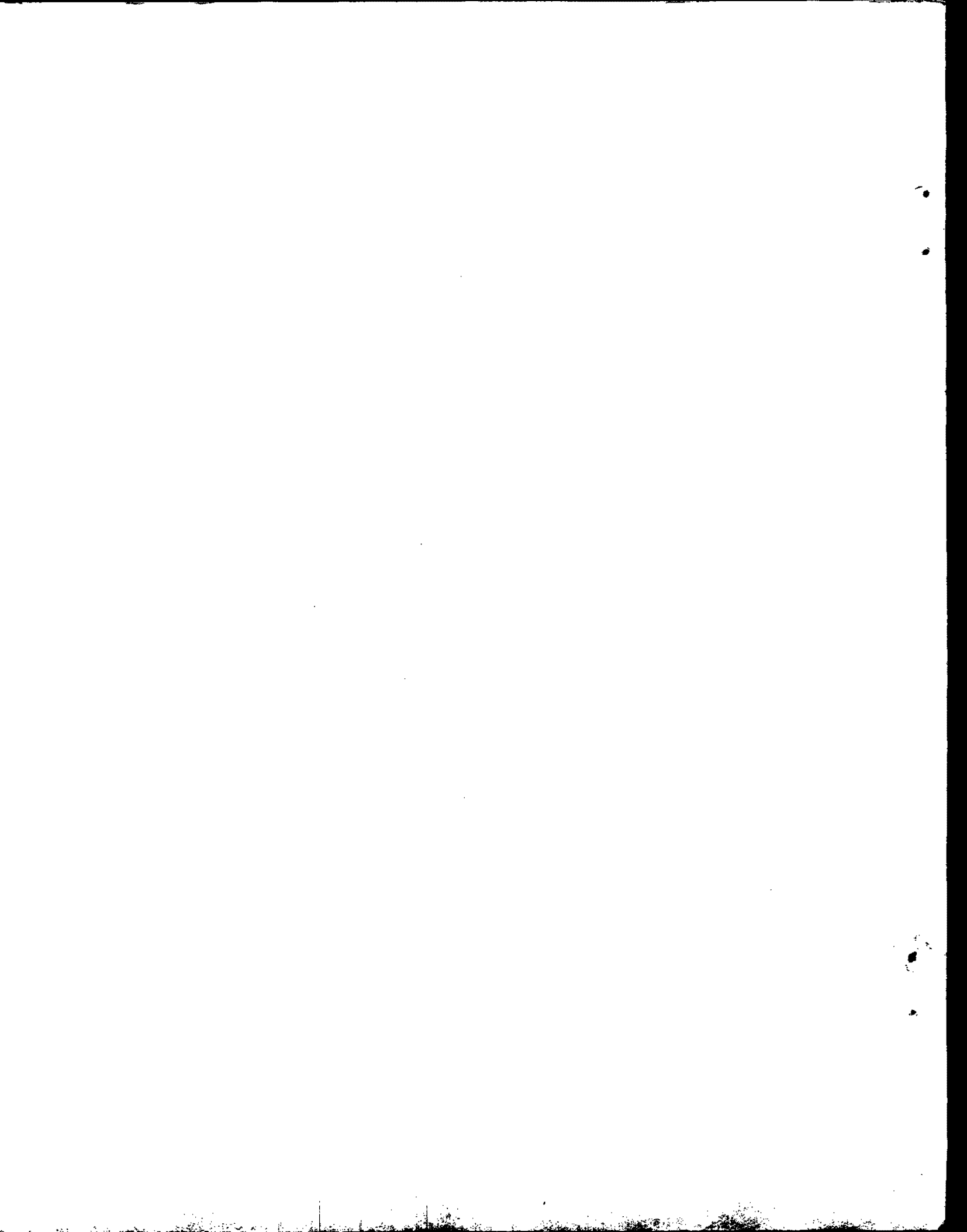
Guidance for Permit Writers



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C. 20460

OFFICE OF
WATER

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SUBJECT: Combined Sewer Overflows-Guidance for Permit Writers
FROM: Tony Smith/Civil Engineer/MC:4203 *Tony Smith*
TO: Interested Parties

On April 11, 1994, EPA issued the final Combined Sewer Overflow (CSO) Control Policy. The Policy establishes a consistent national approach for controlling discharges from combined sewer systems to the Nation's waters through the National Pollutant Discharge Elimination System (NPDES) permit program.

EPA's CSO Control Policy encourages municipalities, permitting authorities, water quality standards authorities, and the public to engage in a comprehensive and coordinated planning effort to achieve cost effective CSO controls that ultimately complies with the requirements of the Clean Water Act (CWA). The policy recognizes the site specific nature of CSO's and their impacts and provides the necessary flexibility to tailor controls to local situations. The Policy was, in large part, the product of negotiations with key CSO stakeholders including representatives from States, environmental groups, municipal organizations and others.

EPA is committed to aggressively implementing the Policy by providing the required tools for effective implementation. For example, EPA is currently planning and developing a series of workshops to be held late this summer at several strategic locations throughout the country. These workshops will be specifically designed to clarify and address CSO Policy and guidance issues. Another major tool to be provided are guidance manuals supporting the Policy.

The enclosed document, Combined Sewer Overflows-Guidance for Permit Writers, is submitted for your review and comment. Please note that this guidance is currently in draft form and should not be used as the Agency's final guidance. It is intended as guidance only and does not modify or supersede the CWA or Agency regulations. It is one of five draft guidance manuals that EPA has recently released for external review. These five documents were released simultaneously and were developed to supplement the 1994 Combined Sewer Overflow (CSO) Control Policy.

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We recognize that some reviewers may receive all five documents and may want to comment on all of them. Consequently, we are asking that comments on all five be submitted no later than July 6, 1994. These five documents are:

1. Combined Sewer Overflows-Guidance for Permit Writers
2. Combined Sewer Overflows-Guidance for Screening and Ranking
3. Combined Sewer Overflows-Guidance for Nine Minimum Control Measures
4. Combined Sewer Overflows-Guidance for Long-Term Control Plan
5. Combined Sewer Overflows-Guidance for Funding Options

Any and all comments on this draft guidance document would be appreciated. Your expeditious response would greatly facilitate the finalization of this guidance and the implementation of the Policy. Please send your comments on this manual to:

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We expect to issue these guidances in final form, based on comments received and feedback from the workshops in September 1994. If you have questions, you may call me on (202) 260-1017. Please understand that I cannot take detailed comments by phone.

DISCLAIMER

The policies set out in this document are not final Agency action, but are intended solely as guidance. They are not intended, nor can they be relied upon, to create any rights enforceable by any party in litigation with the United States. EPA officials may decide to follow the guidance provided in this manual, or to act at variance with the guidance, based on an analysis of specific site circumstances. The Agency also reserves the right to change this guidance at any time without public notice.

ACKNOWLEDGEMENTS

This guidance manual was prepared under the direction of Roberto A. Smith, Civil Engineer, Pretreatment Branch, Permits Division, Office of Wastewater Enforcement and Compliance, U.S. Environmental Protection Agency. Assistance was provided to EPA by Science Applications International Corporation (SAIC), under EPA Contract 68-C8-0066, Work Assignment C-5-101(P). Ms. Sara Gropen and Ms. Carol Winston were the SAIC Work Assignment Managers. Principal authors were Mssrs. Roberto A. Smith, Timothy Dwyer, and Jeffrey Lape of EPA and Ms. Sara Gropen, Ms. Carol Winston, Mr. Jim Parker, Ms. Mary Waldron, and Mr. Mark Ernstmann of SAIC.

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ABBREVIATIONS AND ACRONYMS

BAT/BCT	best available technology economically available/best conventional pollutant control technology
BMP	best management practice
BOD	biochemical oxygen demand
BPJ	best professional judgement
CFR	Code of Federal Regulations
CSO	combined sewer overflow
CSS	combined sewer system
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
LTCP	Long-Term Control Plan
MGD	million gallons per day
NMC	Nine Minimum Controls
NPDES	National Pollutant Discharge Elimination System
O&M	operation and maintenance
POTW	publicly owned treatment works
TMDL	total maximum daily load
TSS	total suspended solids
WLA	wasteload allocation
WQS	water quality standards

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Combined sewer systems (CSSs) are wastewater collection systems designed to carry sanitary sewage consisting of domestic, commercial, and industrial wastewater and surface drainage from rainfall or snowmelt in a single pipe. During dry weather, CSSs convey domestic, commercial, and industrial wastewater to a treatment facility. In periods of rainfall or snowmelt, total wastewater flows can exceed the capacity of the CSS and/or treatment facilities. When this occurs, the CSS overflows directly to surface water bodies, such as lakes, rivers, estuaries, or coastal waters. These overflows—called combined sewer overflows (CSOs)—are a major source of water pollution in communities served by CSSs. CSSs serve about 43 million people in approximately 1,100 communities nationwide. Most of these communities are located in the Northeast and Great Lakes regions.

Because CSOs comprise untreated domestic, commercial, industrial wastes and wet weather flows, many different types of contaminants are present. Contaminants include pathogens, oxygen-demanding pollutants, suspended solids, nutrients, toxics, and floatable matter. Because of these contaminants, CSO discharges can cause a variety of adverse impacts on the physical characteristics of surface waters and the viability of aquatic habitats. CSOs have been shown to be a major contributor to use impairment in many receiving waters and have contributed to shellfish harvesting restrictions, beach closures, and even occasional fish kills.

1.2 EVOLUTION/HISTORY OF THE CSO CONTROL POLICY

Historically, the control of CSOs has proven to be extremely complex. This complexity stems partly from the difficulty in quantitatively determining CSO impacts on receiving water quality and the site-specific variability in the volume, frequency, and characteristics of CSO discharges. In addition, the financial considerations for communities with CSOs can be significant. The U.S. Environmental Protection Agency's (EPA) 1992 NEEDS survey

1 estimates the CSO abatement costs for the 1,100 communities served by CSSs to be
2 approximately \$41.2 billion.

3
4 To address these challenges, EPA's Office of Water issued a National Combined Sewer
5 Overflow Control Strategy on August 10, 1989. The Strategy reaffirmed that CSOs are point
6 source discharges subject to National Pollutant Discharge Elimination System (NPDES)
7 permit requirements and to the Clean Water Act (CWA). The Strategy recommended that all
8 CSOs be identified and categorized according to their status of compliance with these
9 requirements. The Strategy set forth three objectives:

- 10
11 • Ensure that if CSOs occur, they are only as a result of wet weather
12
13 • Bring all wet weather CSO discharge points into compliance with the technology-
14 based and water quality-based requirements of the CWA
15
16 • Minimize the impacts on water quality, aquatic biota, and human health from CSOs.

17
18 In addition, the Strategy charged all States with producing, by January 16, 1990, state-wide
19 permitting strategies designed to reduce pollutant discharges from CSOs.

20
21 Although the Strategy was successful in focusing increased attention on CSOs, it fell
22 short in resolving many fundamental issues. In mid-1991, EPA initiated a process to
23 accelerate implementation of the Strategy that included negotiations with representatives for
24 the regulated communities, State regulatory agencies, and environmental groups. These
25 negotiations were conducted through the Office of Water's Management Advisory Group.
26 The initiative resulted in the development of a CSO Control Policy, which was published in
27 the *Federal Register* on [insert date] The intent of the Policy is to:

- 28
29 • Provide guidance to permittees with CSOs, NPDES permitting and enforcement
30 authorities, and State water quality standards (WQS) authorities
31
32 • Ensure coordination among the appropriate parties in planning, selecting, designing,
33 and implementing CSO management practices and controls to meet the requirements
34 of the CWA

- Ensure public involvement during the decision-making process.

The Policy contains provisions for developing appropriate, site-specific NPDES permit requirements for all CSSs that overflow due to wet weather events. The Policy also announces an enforcement initiative that requires the immediate elimination of overflows that occur during dry weather and ensures that the remaining CWA requirements are complied with as soon as possible.

1.3 KEY ELEMENTS OF THE CSO CONTROL POLICY

The Policy delineates clear expectations for permittees, NPDES permitting and enforcement authorities, and State WQS authorities. Key elements of the Policy include:

- Permittees should immediately implement the Nine Minimum Controls (NMC), which are technology-based actions or measures that can reduce CSOs and their effects on receiving water quality (no later than January 1, 1997).
- Permittees should give priority attention to environmentally sensitive areas.
- Permittees should develop Long-Term Control Plans (LTCPs) for controlling CSOs. CSO plans address one of two approaches: 1) CSO controls that are demonstrated to contribute to the achievement of WQS, or 2) CSO controls that include minimum treatment (e.g., primary clarification of at least 85 percent of the collected combined sewage flows) that are presumed to meet WQS.
- States should review and revise, as appropriate, State WQS during the CSO long-term planning process.
- NPDES authorities should consider the financial capability of permittees when developing CSO control plans.

The Policy also addresses important issues such as ongoing or completed projects, public participation, small communities, and watershed planning.

Exhibit 1-1 illustrates the CSO responsibilities of a permittee and permitting/enforcement authority, how they interact to implement the Policy, and the approximate timeframe required for implementing an LTCP for CSOs.

EXHIBIT 1-1. TIME SEQUENCE OF MUNICIPALITY AND PERMITTING/ENFORCEMENT AUTHORITY ACTIONS TO CONTROL CSOs			
Municipality Action	Approximate Timeframe	Permitting/Enforcement Authority Action	
Evaluate and eliminate dry weather overflows	1994 and ongoing 1994 - 95 ~ 1994 - 95	Take appropriate enforcement action against dry weather overflows Reassess/revise State CSO permitting strategies Incorporate requirement for minimum controls into an appropriate enforcement mechanism	
Investigate/evaluate minimum controls; initiate implementation	Immediately		
Complete implementation of minimum controls	Within 2 years of notice from permitting authority, but no later than January 1, 1997		
Submit documentation reflecting implementation of NMC to applicable NPDES permit-issuing agency	As soon as possible, but no later than January 1, 1997	Accept/approve documentation	
Comply with applicable narrative WQS limits	Immediately		
Initiate development of the LTCP	1994 +	Review/approve/accept scope of proposed plan; participate and review periodically throughout the planning process	
Formally adopt LTCP and submit to applicable regulatory agency	1997 +	Accept/approve plan Incorporate implementation schedules/facilities into an appropriate enforcement mechanism Issue/release NPDES permits, including water quality-based effluent limits monitoring program and, if appropriate, CSO bypass provisions	
Initiate implementation activities (e.g., arrange financing, begin design and construction); monitor as required	1997 +		
Complete construction; monitor quality of receiving waters	Per approved plan and implementation schedule	Reassess overflows to sensitive areas Evaluate compliance with WQS; reopen/modify permit if WQS or designated uses are not met Monitor compliance with Phase I and II permits; take appropriate enforcement action	
Perform compliance monitoring and reporting	Ongoing		

1.4 GUIDANCE TO SUPPORT IMPLEMENTATION OF THE CSO CONTROL POLICY

To help CSO permittees and NPDES permitting and WQS authorities successfully implement the provisions of the CSO Control Policy, several guidance documents have been developed to support the Policy. Exhibit 1-2 identifies each guidance document and its purpose.

EXHIBIT 1-2. CSO-RELATED GUIDANCE DOCUMENTS

Title	Purpose
<i>Combined Sewer Overflows—Guidance for Permit Writers</i>	Provides guidance on writing NPDES permits for CSO controls
<i>Combined Sewer Overflows—Guidance for Screening and Ranking</i>	Provides criteria for establishing priorities for CSO control
<i>Combined Sewer Overflows—Guidance for Nine Minimum Control Measures</i>	Provides guidance on implementing the nine minimum controls
<i>Combined Sewer Overflows—Guidance for Monitoring and Modeling</i>	Provides guidance on monitoring, modeling, and system characterization
<i>Combined Sewer Overflows—Guidance for Long-Term Control Plan</i>	Provides guidance on developing a long-term CSO control plan
<i>Combined Sewer Overflows—Guidance for Financial Capability Assessment</i>	Provides guidance on assessing the affordability of CSO controls
<i>Combined Sewer Overflows—Guidance for Funding Options</i>	Provides options for funding CSO controls

1.5 PURPOSE OF MANUAL AND TARGET AUDIENCE

This manual provides guidance to NPDES permitting authorities and permit writers to develop and issue NPDES permits to control CSOs in accordance with the expectations of the CSO Control Policy. It translates the CSO Control Policy into instructions, procedures, and example permit language that permit writers can use to develop defensible and enforceable NPDES permit requirements. Emphasis is placed on the role of the permit writer as the facilitator and coordinator of the CSO control program to achieve compliance with the CWA, including attainment of WQS. This guidance assumes the permit writer is responsible for

1 ensuring coordination and involvement with WQS authorities, enforcement authorities, the
2 public, and the permittee.

3
4 This manual is designed to be used by EPA and State NPDES permit writers who possess
5 a working knowledge of the CWA and NPDES permit regulations and requirements to
6 control point source discharges. Therefore, it provides guidance for developing CSO-related
7 permit conditions; it does not provide information available in other NPDES permit guidance
8 manuals, such as the training manual for NPDES permit writers. In addition, this manual
9 does not provide technical guidance on the operation of CSSs and the control of CSOs.
10 Information on these topics is contained in other CSO guidance manuals. It is recommended
11 that the permit writer obtain all of the CSO guidance manuals and use them in conjunction
12 with this manual during the development and issuance of permits.

13 14 **1.6 ORGANIZATION OF MANUAL**

15 Chapter 2 presents an overview of the approach to CSO permitting as envisioned by the
16 CSO Control Policy. The chapter explains the responsibilities of NPDES permitting
17 authorities, the setting of permitting priorities, and the various strategies available to EPA
18 Regions and States for ensuring that the CSO Control Policy objectives are met. Chapter 3
19 presents guidance on and example permit language for developing initial (Phase I) permit
20 requirements for establishing minimum technology-based control measures and initiating the
21 development of long-term plans for CSO controls. Chapter 4 provides the procedures,
22 requirements, and example permit language for the second round (Phase II) of CSO permits,
23 which implement the selected long-term CSO control measures. The manual concludes with
24 Chapter 5, which discusses the development of post-Phase II permit requirements, including
25 completion of the construction and implementation of the long-term CSO control measures,
26 as well as post-construction monitoring.

CHAPTER 2

INTRODUCTION TO CSO PERMITTING

2.1 INTRODUCTION

The CSO Control Policy provides a national strategy for the control of CSOs. This Policy presents a uniform, nationally consistent permitting approach that will, for the first time, result in the establishment of both technology-based and water quality-based requirements for all CSOs. Although the permitting approach envisioned for CSOs is similar to the permitting approach that most NPDES permit writers are familiar with and have routinely employed for other point source discharges, it is unlike the conventional NPDES permitting approach in many ways. This chapter, as well as the rest of the guidance manual, is designed to provide the permit writer with a clear understanding of the approach for CSOs, as envisioned by the CSO Control Policy. In addition, this guidance manual will provide the permit writer with an understanding of how to integrate CSO controls into the NPDES permitting process.

2.2 OVERVIEW OF CSO PERMITTING APPROACH

The CSO Control Policy envisions that CSO control requirements will be implemented through NPDES permits. The CWA requires that NPDES permits include both technology-based and water quality-based effluent limitations. In the absence of national effluent guidelines for CSOs, the CSO Control Policy envisions that technology-based controls will be established on a case-by-case basis using the permit writer's best professional judgement (BPJ) and be expressed in the form of best management practices (BMPs). These NMC, in most cases, will satisfy the technology-based requirements of the CWA. In addition, the CSO Control Policy envisions that water quality-based effluent limits will be expressed in the form of narrative requirements, performance-based standards for the CSS system, and, ultimately, where appropriate, as numeric effluent limits.

The CSO Control Policy expects that CSO controls through NPDES permits will occur in a two-phased process. During the first permit phase or the Phase I permit, the permittee will be required to implement and demonstrate the implementation of the NMC (technology-based

1 effluent limits on a BPJ basis) and to initiate development of an LTCP. It is expected that
2 immediate implementation of the NMC will achieve an interim level of CSO control during the
3 time period that the permittee is developing an LTCP. Once the permittee and NPDES
4 permitting authority have selected the CSO controls as part of the LTCP, the Phase II permit
5 will require their implementation. The Phase II permit will also require continued
6 implementation of the NMC as part of the LTCP. These actions will result in additional site-
7 specific technology-based controls, as well as water quality-based performance standards. The
8 second phase of CSO permitting may continue for several permit cycles until all of the selected
9 CSO controls identified in the LTCP have been constructed and implemented.

10
11 Although the two-phased approach may be appropriate if a permittee has not implemented
12 any CSO controls, in many instances, the separation between permit phases may not be distinct.
13 In these cases, permits may contain both Phase I and Phase II elements. For example, a
14 permittee may have already evaluated and selected CSO controls for a portion of its CSS but not
15 evaluated and implemented the appropriate NMC. Thus, the first permit subsequent to the CSO
16 Control Policy issuance may include the Phase I requirement to evaluate, implement, and
17 document the implementation of the NMC and may also include a Phase II requirement to
18 implement the selected CSO controls. The CSO Control Policy is designed to accommodate
19 these variations in the development and implementation of CSO control programs consistent with
20 the Policy.

21 22 **2.3 RESPONSIBILITY OF NPDES PERMITTING AUTHORITIES**

23 The permit writer's role in the CSO permitting process is extremely critical and is expected
24 to differ greatly from the NPDES permit writer's traditional role. The permit writer's role in
25 the CSO permitting process is particularly important because he/she is responsible for facilitating
26 the development of CSO permit requirements and the opportunity to develop a broad base of
27 support for the CSO planning process and proposed CSO controls. Not only will the permit
28 writer be involved in a permit priority setting process, the permit writer is expected to
29 coordinate with State and local agencies and interested citizens for all CSO-related permitting
30 issues. The permit writer's coordination role may be comparable to a team leader. The permit

1 writer will serve as the focal point for coordination with other State authorities, including the
2 WQS authority, the permittee, environmental groups, and other interested or CSO-affected
3 public and is expected to coordinate many different aspects of the permitting process. In
4 addition, because compliance schedules must be incorporated into an enforceable mechanism
5 when a permittee cannot immediately comply with technology- or water quality-based
6 requirements, the permit writer must also coordinate with enforcement staff.

7
8 The permit writer's role is also expected to differ from the traditional NPDES permitting role
9 in that it will be ongoing and continuous. Even after the issuance of the Phase I permit, the
10 permit writer will be continuously reviewing interim LTCP deliverables and other submissions,
11 participating in the ongoing consensus building process, and developing and preparing for the
12 issuance of subsequent Phase II permits.

13
14 Significant opportunities may also exist for the permit writer to assist communities in
15 coordinating aspects of their CSO control programs. In particular, this may be the case for
16 adjacent small communities discharging to the same receiving water. These communities may
17 save significant resources by coordinating the characterization of the sewer system and
18 monitoring the impacts on the receiving water quality rather than pursuing these activities
19 separately. The permit writer may encourage community coordination through several means.
20 For example, the permit writer can advise adjacent communities of their mutual interests and
21 opportunities for coordination. This coordination opportunity may also be considered during the
22 permitting prioritization process.

23 24 **2.4 CSO PERMITTING PRIORITIES AND WATERSHED CONSIDERATIONS**

25 In response to the 1989 CSO Strategy, 30 States developed CSO permitting strategies. These
26 strategies usually provided a priority setting plan for CSOs. EPA expects States to evaluate the
27 need to revise their CSO strategies for consistency with the new CSO Control Policy. This
28 represents an opportunity for permitting authorities to reconsider their CSO permitting priorities
29 in light of current or suspected environmental impacts, watershed permitting initiatives, and
30 other factors. States and EPA should review these strategies and establish appropriate permitting

1 priorities for implementation of the CSO Control Policy. In establishing CSO permitting
2 priorities, the NPDES permitting authority should consider the environmental impacts of CSOs,
3 such as beach closings, human health hazards, and the presence of endangered species. The
4 NPDES permitting authority should also consider requiring immediate action for CSOs that
5 discharge to "sensitive areas." The *Combined Sewer Overflows—Guidance for Screening and*
6 *Ranking* (EPA, 1994) can be used as a tool for establishing priorities consistent with the CSO
7 Control Policy.

8
9 To the greatest extent possible, NPDES permitting authorities are encouraged to evaluate
10 water pollution control needs on a watershed management basis and coordinate CSO control
11 efforts with other point and nonpoint source control activities. In certain cases, the permit writer
12 may want to approach CSO permitting on the basis of the overall protection of a watershed.
13 This would be particularly true in situations where non-CSO point source discharges and
14 nonpoint source discharges contribute to the adverse impacts on the receiving water quality.
15 EPA encourages the use of the watershed approach to concurrently control both point and
16 nonpoint sources of pollution within the same geographic area to contribute to the achievement
17 of WQS. A comprehensive watershed approach also allows the NPDES permitting authority to
18 make better use of limited resources in achieving WQS.

19 20 2.5 CSO PERMITTING APPROACHES

21 The CSO Control Policy envisions that, in most cases, CSO requirements and controls will
22 be incorporated into a municipality's existing NPDES permit for its discharge from the publicly
23 owned treatment works (POTW), much like the incorporation of pretreatment and sludge
24 requirements. CSO conditions may be incorporated into the NPDES permit in several ways:
25 1) by including the conditions in the permit during the next 5-year permit renewal cycle (permit
26 reissuance), 2) by modifying the permit for cause in accordance with the criteria in 40 CFR
27 Section 122.62(a) (incorporation of CSO conditions would represent a major permit
28 modification), or 3) by revoking and reissuing the permit for cause in accordance with the
29 criteria in 40 CFR Section 122.62(b) (permit revocation). Because it is unlikely the permit
30 writer will immediately incorporate CSO conditions into applicable NPDES permits, the

1 permitting authority is encouraged to inform affected parties of the impending changes and
2 encourage them to take steps to voluntarily implement the CSO Control Policy requirements,
3 especially the NMC. For illustrative purposes, this guidance document assumes that CSO
4 conditions will be incorporated into NPDES permits during the next 5-year permit renewal cycle
5 (permit reissuance). It is anticipated that most permit writers will choose permit reissuance as
6 the means to incorporate CSO conditions into NPDES permits.

8 **2.6 INTEGRATION OF CSO CONDITIONS INTO THE NPDES PERMIT**

9 It is recommended that the permit writer integrate CSO conditions into an existing NPDES
10 permit in one of two ways. The CSO conditions can be grouped together and contained in a
11 separate section of the NPDES permit the same way that sludge or pretreatment requirements
12 are often placed in a separate section. Alternatively, individual CSO conditions can be
13 integrated into separate subsections of the NPDES permit. For example, CSO conditions can
14 be integrated into the effluent limitations, monitoring requirements, and special conditions
15 sections of the permit, as appropriate. Numerous examples of permit language for CSO-related
16 requirements are given throughout this manual. These examples have been compiled in
17 Appendix A to illustrate how the CSO conditions can be grouped together in a separate section
18 of an NPDES permit.

19
20 This guidance document assumes that the CSO conditions will be grouped together in a
21 separate section of the permit (see Appendix A). If the NPDES permit is not the appropriate
22 mechanism to initiate or require CSO control, other tools are available to the NPDES permitting
23 authority. For example, the permitting authority may request information under Section 308 of
24 the CWA (or State equivalent) that includes information on a community's CSS. Much of the
25 example NPDES permit language can be used in a Section 308 information request. In addition,
26 the use of enforceable orders in conjunction with NPDES permits may be necessary when a
27 permittee cannot immediately comply with the terms of the NPDES permit and compliance dates
28 have passed.

2.7 COMPLEX COMBINED SEWER SYSTEMS

A single system-wide permit should be issued for all CSO outfalls from a single authority. For example, a municipality or a small sanitary authority with one POTW treatment plant should be issued one NPDES permit that addresses requirements for the POTW, as well as for CSOs, stormwater, sludge, and pretreatment control programs, as appropriate. This is the simplest and most common situation that the permit writer will encounter.

If a large municipality or authority has two or more POTW treatment plants served by CSSs and each has its own NPDES permit, the NPDES permits should require a comprehensive, system-wide approach to CSO control. This is similar to requirements for a system-wide pretreatment program, where one municipality owns several POTWs. To incorporate CSO conditions into each permit, the permits should be renewed, revoked, and reissued or modified to include CSO conditions. For example, if a city has three POTWs with individual permits that will be renewed in different years (e.g., POTW A's permit will be renewed in 1994, POTW B's permit will be renewed in 1995, and POTW C's permit will be renewed in 1996), conditions addressing all CSOs can be incorporated into each permit upon renewal. To begin the LTCP development process without having to wait for all of the permits to be reissued, POTW A's permit should address CSOs within the entire jurisdictional boundaries, including the areas discharging to POTWs B and C, and should require development of an LTCP for the entire system.

In some cases, different parts of a CSS, as well as the POTW, may be owned or operated by more than one authority. In this case, the permit writer may issue each authority its own permit, including CSO conditions. The permits will require coordinated preparation and implementation of CSO controls. The individual authorities should be responsible for their own discharges and should cooperate with the POTW permittee receiving the flows from the CSS. If a CSS is permitted separately from the POTW, both permits should be cross-referenced for informational purposes. Alternatively, the permit writer can issue a single permit to all users, incorporating CSO conditions unique to each CSS.

2.8 PREVIOUS OR ONGOING CSO CONTROL EFFORTS

Some permittees may have already completed portions of the CSO control planning and implementation process. The CSO Control Policy recognizes these ongoing CSO control efforts and does not expect duplication of effort. If the permittee has 1) completed or substantially completed construction of CSO control facilities that have been determined to contribute to the achievement of WQS, 2) already substantially developed or is implementing a CSO control program pursuant to an existing permit or enforcement order that is expected to be adequate to contribute to the achievement of WQS, or 3) has previously constructed CSO control facilities but has failed to comply with WQS, the permit writer should take these efforts into account in determining which of the LTCP elements are still appropriate and consistent with the goals of the CSO Control Policy. Section 3.5.3 presents additional discussion of ongoing efforts.

2.9 SMALL COMBINED SEWER SYSTEMS

The CSO Control Policy recognizes that the development and implementation of an LTCP may be difficult or inappropriate for some small municipalities. At the discretion of the permit writer, jurisdictions with total populations under 75,000 may not need to complete all of the formal steps involved in developing an LTCP. However, certain requirements of the CSO Control Policy may not be waived, such as implementation of the NMC, public participation during the LTCP, and sensitive area considerations. Although the CSO Control Policy is intended to provide some relief for small municipalities, the permit writer should discuss the scope of the LTCP with the permittee and the WQS authority to ensure that the LTCP includes sufficient information to select appropriate CSO controls. Section 3.5.3 discusses considerations for small systems in greater detail.

2.10 MEASURES OF SUCCESS

As communities, NPDES authorities, and the public embark on a coordinated effort to address CSOs, serious considerations should be given to "measures of success." For purposes of this discussion, "measures of success" are objective, measurable and quantifiable data and information that over time is able to show trends and results. For example, an individual about to commit to a routine of exercise might desire information on his health (e.g., weight, heart

1 rate, blood pressure, cholesterol levels) and endurance (miles jogged and elapsed time). Over
2 time, the individual can show trends and specifically quantify the benefits and results of the
3 investment.

4
5 Measures of success for environmental programs generally fall into four broad categories:
6 programmatic measures; environmental indicators; environmental measures; and ancillary
7 measures. Programmatic measures tend to measure programmatic and administrative activities
8 or expenditure. Environmental indicators are measures that suggest trends or improvements
9 (e.g., pollutant loadings reduced) but may fall short in demonstrating achievement of
10 environmental objectives. Environmental measures are direct measures of public health and the
11 environment. These measures are usually the best indicators of ultimate environmental success.
12 However, the collection of data and information (environmental measures) to demonstrate
13 progress are often the most expensive and difficult to obtain. Ancillary measures refer to
14 secondary benefits, results which are not directly intended, but nevertheless are of quantifiable
15 value or benefit to society. EPA's experience has shown that measures of success should include
16 a balanced mix of programmatic measures, environmental indicators and environmental
17 measures.

18
19 As communities begin to collect data and information on CSOs and CSO impacts, they have
20 an important opportunity to establish a solid understanding of the "baseline" conditions and
21 consider what information and data is necessary to evaluate and demonstrate the results of CSO
22 control. Communities and NPDES authorities should agree early in the planning stages on the
23 data and information that will comprise the measures of success.

24
25 Following are examples of potential measures of success for CSO control, organized by the
26 four categories discussed above:

- 27
28 • **Programmatic or implementation measures**—Information that demonstrates progress
29 on implementation of CSO Controls. For example:
30
31 - Number of NPDES permits issued requiring the nine minimum controls
32 - Number of NPDES permits issued requiring development of LTCPs

- Number of communities meeting technology-based requirements
- Number of communities meeting long-term control requirements and meeting water quality-based requirements
- Compliance rates with CSO requirements
- Dollars spent/committed for CSO control measures
- Nature and extent of CSO controls constructed/implemented
- **Environmental indicators**—Information that suggests that environmental improvements may be attained. These usually portray long-term trends. For example:
 - Number of dry weather overflows eliminated
 - Number of CSO discharge points eliminated
 - Reduction in frequency of overflow events
 - Volume of CSO untreated/treated discharges reduced
 - Pollutant loadings (conventional and toxics) reduced/eliminated
- **Environmental measures**—Information that clearly demonstrates human and ecosystem health. Examples may include:
 - Beach closures/shellfish closures/fish kills eliminated or reduced
 - Protected drinking water supplies
 - Biodiversity indices
 - Waters meeting designated uses
- **Ancillary benefits**—Information that shows the nature and extent of secondary benefits which are also achieved from the control of CSOs, such as:
 - Improved access to water resources (e.g., environmental equity)
 - Reduced flooding and drainage problems
 - Reduced costs and treatment of drinking water
 - Monetized benefits (e.g., value of increased tourism, value of shellfish harvested from beds previously closed, etc.)
 - Improved quality of life (nonmonetary) as evidenced by restored habitat.

When establishing CSO measures of success, communities and NPDES should consider a number of important factors:

- **Data quality and reproducibility**—Can consistent and comparable data be collected that allows for comparison over time (e.g., trend analysis) and from different sources (e.g., watershed analysis)? Do standard data collection procedures exist?
- **Costs**—What is the cost of collecting and analyzing the information?

- 1 • **Comprehensibility to the public**—Will the public understand and be able to relate to the
2 measures?
- 3
- 4 • **Availability**—Is it reasonably feasible for the data to be collected?
- 5
- 6 • **Objectivity**—Would different individuals evaluate the data or information in the same
7 way, free from bias or subjectivity?
- 8

9 Careful selection, collection, analysis and presentation of data and information related to
10 measures of success will ensure that communities, States and EPA will have the ability to
11 demonstrate the benefits and long-term successes of CSO control efforts. EPA is beginning an
12 effort to evaluate and develop national measures of success for CSOs which will facilitate EPA's
13 ability to provide meaningful guidance to communities and States. Notwithstanding this effort,
14 communities should identify appropriate measures, document the baseline conditions, and collect
15 appropriate information that demonstrates the cause and effect of CSO impacts and the benefits
16 and success of CSO control. It is important to note that environmental measures will most likely
17 vary from community to community and will be determined by the site specific environmental
18 impacts of their respective CSOs.

19

20 2.11 COORDINATION WITH STATE WATER QUALITY STANDARDS

21 A primary objective of the LTCP is to develop and evaluate a range of CSO control
22 options/strategies that will be sufficient to meet WQS by protecting designated uses of CSO
23 impacted receiving waters. To ensure that the LTCP will meet this objective, the WQS
24 authorities, in conjunction with NPDES permitting authorities and the permittee, should be
25 involved early in the plan preparation process. This will allow for everyone involved to have
26 an opportunity to assess the attainability of designated uses, and possibly determine other more
27 precise designated use classifications for the CSO impacted waters. Therefore, the WQS
28 authorities should also be involved in the decision process regarding the nature and extent of data
29 and information to be collected for developing the LTCP. This information can also be used
30 to review and possibly revise the current WQS (designated uses and criteria) to reflect the site-
31 specific wet weather impacts for CSO impacted receiving waters. The Policy recognizes that

1 the review and appropriate revision of WQS is an integral part for the development of the
2 LTCP.

3
4 Data needs, monitoring protocols and models to be used for system characterization and
5 compliance monitoring should also be agreed on early in the process. The water quality impacts
6 of the existing CSOs can then be evaluated to establish a baseline against which the effectiveness
7 of the selected CSO controls can be measured. These models and protocols can also be used
8 to determine if WQS will be met after the LTCP has been implemented. If they are not met,
9 this information can then be used to identify additional CSO control measures required to
10 achieve WQS. This can include another review of WQS for possible revision.

11
12 Opportunities exist for both the municipalities and States to share and coordinate this
13 information with other municipalities within the same watershed. This information, along with
14 stormwater and other point and non-point source data, will provide an opportunity for NPDES
15 authorities and permittees to implement a comprehensive watershed management approach. This
16 same information also provides an opportunity for municipalities to coordinate the development
17 and implementation of their individual LTCP with one another.

CHAPTER 3

PHASE I PERMITTING

This chapter provides the permit writer with guidance related to developing and issuing initial or Phase I NPDES permits for CSOs. This guidance includes developing permit conditions for implementation of the NMC and development of the LTCP to meet the technology- and water quality-based requirements of the CWA.

3.1 PHASE I PERMIT PROCESS

Consistent with the CSO Control Policy, the NPDES permitting authority and the individual permit writer should approach the CSO permitting process as a two-phased process (i.e., Phase I and Phase II). The Phase I permit should require the permittee to immediately implement the NMC, document implementation of the NMC, and initiate and complete development of the LTCP. The permit should also require the permittee to gather data to establish the baseline conditions against which CSO control actions will be measured.

3.2 INFORMATION REQUIREMENTS

In general, the permit writer may draft and issue a Phase I permit with a minimal amount of CSO information. The data needed for developing the Phase I permit are not extensive because the permit writer can require the implementation and documentation of the NMC and development of the LTCP in a generic manner without site-specific data. Much of the data collection will occur during implementation of the NMC and development of the LTCP. Thus, although the CSO information base may not be extensive at the outset of the Phase I permitting process, the information base will grow and evolve during the term of the Phase I permit.

The permit writer may use only a minimal amount of basic information to draft and issue a Phase I permit; however, the permit writer must have a clear understanding of the jurisdictional boundaries and responsibility for the CSS. This information is necessary to determine to which NPDES permittee the CSO-related permit conditions apply. In many cases where the CSS and POTW are operated by a single authority, the permit will be issued to a

1 single municipality. Frequently, however, the relationship may be more complicated; several
2 municipalities may own part of the CSS but discharge to a single POTW treatment plant. In this
3 case, the CSO-related permit conditions may be imposed on several different permittees.
4

5 In addition, the permit writer must have a thorough understanding of the permittee's past and
6 current progress toward controlling CSOs. First, the permit writer must know which, if any,
7 of the NMC have already been implemented because, in this case, the permit writer may
8 determine that site-specific rather than generic permit language is more appropriate. (See
9 Section 4.4.2 for a discussion of NMC site-specific permit language.) The permit writer must
10 also know if the permittee has substantially developed a CSO control plan or is implementing
11 a CSO control program, or if the permittee has substantially completed construction of CSO
12 control measures. Moreover, the permit writer should be aware that some municipalities may
13 be developing and implementing stormwater controls for separate municipal storm sewer
14 systems. If the permittee has completed efforts to control CSOs, the permit writer should take
15 this progress into account in drafting the Phase I permit. The permit writer should also know
16 the approximate population of the community served by the CSS. If the CSS is a "small
17 system," the permit writer has the discretion to give special consideration to the permittee in
18 developing the LTCP. (See Section 3.5.3 for further discussion regarding ongoing CSO control
19 efforts and small system considerations.)
20

21 In some instances, pertinent CSO information may be difficult to obtain. In any event, the
22 permit writer should develop permit conditions requiring the permittee to implement the NMC,
23 document implementation, and develop the LTCP as soon as practical using readily available
24 information.
25

26 Information may be available in the NPDES permit application or it may be obtained through
27 informal request by letter, telephone, or in-person visits. The permit writer may also use a more
28 formal mechanism, such as a CWA Section 308 information request or State Section 308
29 equivalent. The Section 308 information request is likely to be the most effective approach to
30 obtain information efficiently because failure to comply with this request can result in an

enforcement action. The permit writer should follow the EPA Regional or State-specific policies regarding such information requests.

3.3 IDENTIFICATION OF CSO OUTFALLS IN THE PERMIT

The permittee may not have identified the locations of all CSO outfalls prior to the issuance of the Phase I permit, although this is a desirable goal. To the extent that the CSO outfalls are known, the permit writer should list them in the permit. However, if the exact location and number of all outfalls are not known, the permit writer does not need to wait to issue the Phase I permit until this information is available but should include generic permit language to encompass all CSOs. All CSO outfalls should be identified as the municipality characterizes its system during LTCP development. Exhibit 3-1 provides example permit language for a CSS for which all CSO outfalls are not known prior to issuance of the Phase I permit.

EXHIBIT 3-1. EXAMPLE PERMIT LANGUAGE FOR IDENTIFYING CSO OUTFALLS IN THE PHASE I PERMIT

The permittee is authorized to discharge from the CSO outfalls listed below and additional CSO outfalls within the boundaries of the jurisdiction identified after the effective date of the permit. The permittee shall ensure that all CSOs from the CSS comply with the requirements of [insert appropriate permit section containing CSO requirements] and other pertinent portions of this permit.

<u>Overflow Number</u>	<u>Overflow Outfall Location</u>	<u>Receiving Water Body</u>
[insert number]	[insert latitude/longitude (street address optional)]	[insert receiving water body]

3.4 NINE MINIMUM CONTROLS

The Phase I permit should require all permittees to immediately implement technology-based requirements (best available technology economically achievable/best conventional pollutant control technology [BAT/BCT]), which, in most cases, are expected to be the NMC, as determined on a BPI basis by the NPDES permitting authority. NMC are control measures that can reduce CSOs and their effect on receiving water quality. They do not require significant engineering studies or major construction and can be implemented in a relatively short timeframe. The CWA requires compliance with technology-based requirements as of March 31,

1 1989. Thus, if immediate compliance with the NMC cannot be achieved, an enforceable
2 mechanism should accompany the permit. As stated in the CSO Control Policy, the enforcement
3 mechanism should require compliance with NMC requirements as soon as practicable, but no
4 later than January 1, 1997. (See Section 3.4.1 for more detail.) The Phase I permit should also
5 require the permittee to document the implementation of the NMC as soon as possible, but
6 within 2 years of issuance or modification of the permit.

7
8 The intent of the NMC is to provide technology-based controls, applied on a site-specific
9 basis, that will immediately reduce CSO impacts on water quality and that can be implemented
10 early in the control process without in-depth studies, such as those required for the LTCP.
11 Exhibit 3-2 briefly describes examples of each control measure. For further discussion on the
12 use of the NMC to satisfy the BAT/BCT requirement on a BPJ basis, see Section 3.6. The
13 *Combined Sewer Overflows—Guidance for Nine Minimum Control Measures* (EPA, 1994) serves
14 as a companion technical document to this manual and provides a detailed description of the
15 NMC, example control measures for each of them, and the advantages and limitations associated
16 with various control measures.

17
18 Implementation of the NMC involves the following distinct steps:

- 19
20 • Evaluating alternative control measures for implementing each of the NMC. The
21 permittee should be required to evaluate and select alternative control measures to meet
22 the NMC.
23
24 • Implementing the most appropriate control measures. The permittee should be required
25 to implement the control measures based on site-specific considerations. Immediate
26 implementation will enable the permittee to achieve an intermediate level of CSO control
27 while the LTCP is being developed. The control measures implemented during the
28 period of the Phase I permit will be re-evaluated and refined as appropriate during the
29 development of LTCP.
30
31 • Documenting implementation of the selected control measures. This documentation of
32 the selected control measures must be adequate to confirm their implementation. This
33 documentation will also be used to help establish the existing baseline conditions,
34 evaluate the efficacy of CSO controls, and determine the baseline conditions upon which
35 the LTCP will be based.
36

EXHIBIT 3-2. EXAMPLES OF THE NINE MINIMUM CONTROLS

Control Requirements/Purpose	Examples of Control Measures
<p>Control Requirement: Conduct proper operation and regular maintenance programs for the CSS and the CSO outfalls.</p> <p>Purpose: To reduce pollutant loading in CSOs and optimize the ability of the CSS to contain wet weather flows. The Operation and Maintenance (O&M) program should address the CSS, CSO outfalls, and any treatment facilities installed for CSO control.</p>	<p>Schedule and conduct routine inspections and maintenance/cleaning of sewer system and CSO controls; emphasize operations in areas of heavy use, high pollutant loads, and sensitive components.</p> <p>Flush or clean sewer during dry weather to eliminate solids carrying a high pollutant load from being discharged with the first flush. (This may not be practical for larger sewers.) An automatic flushing system is encouraged.</p> <p>Conduct regular inspections of and maintain regulators, tidegates and overflow devices, looking for damage, corrosion, and clogging.</p> <p>Budget for, schedule, and conduct repair activities to reduce or eliminate infiltration or maintain integrity of sewer structure.</p> <p>Develop an operation and maintenance reporting and recordkeeping system, which includes maintenance procedures and inspection reports.</p> <p>Identify and eliminate unauthorized connections.</p> <p>Train inspection and maintenance personnel.</p>
<p>Control Requirement: Maximize use of the collection system for storage.</p> <p>Purpose: To reduce the frequency and quantity of CSOs by storing wastewater in the existing conveyance system so it can be routed to the treatment plant for eventual treatment.</p>	<p>Store wet weather flow in the CSS or interceptors. (This measure may increase the possibility of flooding.)</p> <p>Clean out solids that have settled in the collection system to increase storage capacity.</p> <p>Construct detention basins, ditch drains, and street catch basins to increase storage.</p> <p>Disconnect roof leaders or reroute to splash pads with drainage to dry wells, manmade pervious areas, or street catch basins.</p> <p>Construct "speed humps" to direct street flow (overland flow) away from sensitive areas and into storage capture areas.</p>

EXHIBIT 3-2. EXAMPLES OF THE NINE MINIMUM CONTROLS (continued)

Control Requirements/Purpose	Examples of Control Measures
<p>Control Requirement: Review and modify pretreatment programs to ensure that CSO impacts are minimized.</p> <p>Purpose: To ensure CSO impacts from industrial discharges are minimized.</p>	<p>Identify and evaluate industrial user discharges to the same water body as the CSO outfalls.</p> <p>Review CSO monitoring results to identify and control industrial pollutants in CSOs.</p> <p>Restrict the addition of new or increased volumes of industrial process or high-strength wastewaters into the sewer system under circumstances where they could be discharged through a CSO point.</p> <p>Enact local sewer use ordinances or revise individual control mechanisms to control industrial discharges during wet weather.</p>
<p>Control Requirement: Maximize flow to the POTW for treatment.</p> <p>Purpose: To reduce the CSO volume and pollutant load by maximizing the volume of wet weather flows delivered to and treated in the wastewater treatment plant.</p>	<p>Review POTW design criteria and operating data to establish the maximum daily and monthly flow rates that can be treated without exceeding permit limits.</p> <p>Use regulators, such as gates, weirs, and siphons, to divert the maximum flow to the interceptors during wet weather.</p> <p>Conduct plant tests to demonstrate the ability to treat higher wet weather flows.</p> <p>Evaluate possible modifications to the POTW to increase treatment capacity during wet weather.</p> <p>Consider using abandoned units during wet weather.</p> <p>Regulate the amount of septage that can be accepted during wet weather periods.</p>
<p>Control Requirement: Prohibit CSOs during dry weather.</p> <p>Purpose: To ensure CSOs are prevented during dry weather through the use of maintenance and repair procedures and revisions to the CSS.</p>	<p>Identify dry weather overflow locations and determine the cause. Take immediate corrective action to eliminate overflows through maintenance and repair or other non-major construction.</p> <p>Develop and implement a plan to eliminate all dry weather overflows (may include relocation of outfalls or modification of overflow appurtenances).</p> <p>Promptly notify permitting authority of overflow.</p>
<p>Control Requirement: Control solid and floatable materials in CSOs.</p> <p>Purpose: To control the discharge of solids and floatable materials.</p>	<p>Attach nets at the end of pipes.</p> <p>Street sweeping.</p> <p>Install bar screens and booms at CSO outfalls.</p> <p>Recycling of materials.</p>

EXHIBIT 3-2. EXAMPLES OF THE NINE MINIMUM CONTROLS (continued)

Control Requirements/Purpose	Examples of Control Measures
<p>Control Requirement: Develop and implement pollution prevention programs that focus on contaminant reduction activities.</p> <p>Purpose: To focus on source control activities that reduce the amount of contaminants in CSOs.</p>	<p>Develop a public education program detailing recycle/reuse, water conservation practices, and ways to reduce the disposal of toxic contaminants from household sources.</p> <p>Develop used oil recycling program.</p> <p>Institute best management practices, such as increased or targeted street sweeping/cleaning, catch basin cleaning, and construction site erosion control.</p> <p>Promote an anti-litter campaign.</p> <p>Encourage the community to ban the sale of certain products.</p>
<p>Control Requirement: Notify the public.</p> <p>Purpose: To ensure that the public receives adequate notification of CSO occurrences and CSO impacts on receiving water bodies.</p>	<p>Install and maintain signs at CSO locations.</p> <p>Announce use restrictions on television and radio and in newspapers.</p>
<p>Control Requirement: Monitor to effectively characterize CSO impacts and the efficacy of CSO controls.</p> <p>Purpose: To provide the permittee and permit writer with data essential to establishing the baseline conditions needed to evaluate the efficacy (i.e., environmental effectiveness) of CSO controls and to develop the LTCP.</p> <p>(The permittee's monitoring program in response to this requirement could be integrated with the monitoring efforts to characterize its CSS in the development of the LTCP.)</p>	<p>Identify overflow locations, receiving water bodies, and use areas.</p> <p>Maintain records of the volume and duration of overflow occurrences, impacts, and characteristics, and the associated amount of rainfall.</p> <p>Monitor and report water quality impacts from CSOs on the receiving waters.</p> <p>Monitor and report beach and shellfish bed closures and swimming restrictions due to CSOs.</p>

- Reporting on implementation. Reporting will include the submission of appropriate documentation to illustrate implementation of the NMC.

3.4.1 Implementation Considerations

Because the compliance date contained in the CWA for technology-based requirements has passed, the permit writer should require the NMC to be implemented immediately. When the permittee cannot comply, the permit writer should coordinate with appropriate enforcement authority staff to prepare an enforcement order, including a fixed date compliance schedule. The CSO Control Policy requires implementation of the NMC as soon as practicable, but no later than January 1, 1997. Exhibit 3-3 provides example permit language for requiring implementation of the NMC. The permit writer should carefully evaluate this language to ensure that it is appropriate for the permittee. The permit writer must also prepare a fact sheet or statement of basis associated with the implementation of the NMC. The permit writer must show that the permittee's NMC satisfy the BAT/BCT requirements based on BPJ of the permit writer, in accordance with NPDES regulations. For additional details on the use of BPJ, refer to Section 4.4.2 of this manual and to the *Training Manual for NPDES Permit Writers* (EPA, 1993).

When the permittee is already implementing some or all of the NMC, the permit writer may want to customize the permit language to address site-specific conditions. For example, if the permittee is already implementing an O&M program, the permit writer might craft language that specifically addresses inspection frequency. If the permittee is already controlling solid and floatable materials, the permit writer may augment the example language to address the specific controls being implemented. Section 4.4.2 addresses site-specific guidance in greater detail. In any event, the permit writer should ensure that the permit language is consistent with the CSO Control Policy and is enforceable.

In the case where the permittee does not have an approved pretreatment program under 40 CFR Part 403, the permit writer should require the permittee to minimize discharges from nondomestic users within the CSS prior to CSOs. Alternative language for this option is presented in Exhibit 3-3.

EXHIBIT 3-3. EXAMPLE PERMIT LANGUAGE FOR
REQUIRING IMMEDIATE IMPLEMENTATION OF THE NINE MINIMUM CONTROLS

I. Effluent Limits

A. Technology-based requirements for CSOs. The permittee shall comply with the following technology-based effluent limits in the form of narrative controls:

1. The permittee shall implement proper operation and maintenance programs for the sewer system and all CSO outfalls, with consideration given to regular sewer inspections; sewer, catch basin, and regulator cleaning; equipment and sewer collection system repair or replacement, where necessary; and disconnection of illegal connections.
2. The permittee shall implement procedures that will maximize use of the collection system for wastewater storage.
3. The permittee shall review and modify, as appropriate, the existing Pretreatment Program to minimize the impact of nondomestic discharges from CSOs.

[Alternative language for permittees without an approved Pretreatment Program] The permittee shall take steps to minimize the impact of nondomestic discharges from CSOs.
4. The permittee shall operate the POTW treatment plant at maximum treatable flow during all wet weather flow conditions. The permittee shall deliver all flows to the treatment plant within the constraints of the treatment capacity of the POTW.
5. Dry weather overflows from CSO outfalls are prohibited. All dry weather overflows must be reported to the permitting authority as soon as the permittee becomes aware of the overflow. When the permittee detects a dry weather overflow, the permittee shall begin corrective action immediately. The permittee shall inspect the dry weather overflow each subsequent day until the overflow has been eliminated.
6. The permittee shall implement controls to remove solid and floatable materials in its CSOs.
7. The permittee shall implement a pollution prevention program focused on reducing the impact of CSOs on receiving waters.
8. The permittee shall implement a public notification process to inform citizens of when and where CSOs occur. The process must include (a) a mechanism to alert persons of the occurrence of CSOs and (b) a system to determine the nature and duration of conditions that are potentially harmful for users of receiving waters due to CSOs.
9. The permittee shall monitor CSO outfalls to effectively characterize CSO impacts and the efficacy of CSO controls. This information will be used to establish the existing baseline conditions, evaluate the efficacy of the CSO technology-based controls, and determine the baseline conditions upon which the long-term control plan will be based. These data shall include:
 - a. All CSO outfalls in the CSS
 - b. Total number of CSO events and the frequency, duration, volume, and pollutant loadings of CSOs during each event
 - c. Water quality data for receiving water bodies
 - d. Water quality impacts (e.g., beach closings, floatables wash-up episodes, fish kills).

Monitoring for duration, volume, and pollutant loadings during each overflow event shall occur at a representative number of CSOs.

1 **3.4.2 Documentation and Reporting**

2 The Phase I permit should contain requirements for the permittee to submit documentation
3 demonstrating the implementation of each NMC. The CSO Control Policy recommends this
4 documentation be submitted as soon as possible but no later than 2 years after the issuance of
5 the NPDES permit. The purpose of the documentation is to 1) verify that the permittee has
6 evaluated, selected, and implemented CSO controls for each NMC, 2) establish the existing
7 baseline conditions, evaluate the efficacy of the CSO technology-based controls, and determine
8 the baseline conditions upon which the LTCP will be based, and 3) evaluate the degree to which
9 the NMC achieve compliance with WQS.

10
11 The documentation of NMC implementation must be adequate to verify that the permittee
12 evaluated and selected the most appropriate control measure for each NMC. To determine
13 whether the permittee has properly conducted the evaluation and selection process, the permit
14 writer should require the submittal of certain documents, including the ones listed in Exhibit 3-4.
15 Exhibit 3-4 presents example permit language requiring documentation for each NMC.
16 *Combined Sewer Overflows—Guidance for Nine Minimum Control Measures* (EPA, 1994)
17 contains examples of the types of documentation for each NMC. The permit writer should note
18 that the documentation required in Exhibit 3-4 may come in a variety of forms. For example,
19 the permittee may submit reports and studies prepared for other purposes, such as operating or
20 facility plans, revised sewer use ordinances, sewer system inspection reports, technical studies,
21 and pollution prevention program plans; public notification plans; and contracts and schedules
22 for minor construction programs for improving the existing system's operation.

23
24 Another option for the permit writer is to require periodic reports on implementation of the
25 NMC throughout the term of the permit. For example, the permit writer may require updates
26 of any significant changes in NMC implementation by the permittee. In addition, the permit
27 writer may require the submission of monitoring data at a specified frequency throughout the
28 term of the Phase I permit.

**EXHIBIT 3-4. EXAMPLE PERMIT LANGUAGE FOR
REQUIRING DOCUMENTATION AND REPORTING OF THE NINE MINIMUM CONTROLS**

II. Reporting Requirements

- A. Nine minimum CSO control reporting. The permittee shall submit documentation that demonstrates implementation of each of the nine minimum CSO controls that includes the elements contained in Sections II.A.1 through II.A.9 below. The permittee shall submit this documentation to the permitting authority on or before [insert due date].
1. Proper operation and regular maintenance programs. The permittee shall submit:
 - a. Identification of CSS components requiring routine operation and maintenance
 - b. Evaluation of operation and maintenance procedures to include regular inspections; sewer, catch basin, and regulator cleaning; equipment and sewer collection system repair or replacement where necessary
 - c. Operation and maintenance manual and/or procedures for the CSS and CSO structures
 - d. Resources allocated (manpower, equipment, training) for maintenance of the CSS and CSO structures
 - e. Summary of inspections conducted and maintenance performed.
 2. Maximization of the sewer collection system storage. The permittee shall submit:
 - a. Analysis/study of procedures to maximize collection system storage
 - b. Description of procedures in place for maximizing collection system storage
 - c. Schedule for implementation of minor construction associated with maximization of collection system storage
 - d. Documentation of actions taken to maximize storage
 - e. Identification of any additional potential actions to increase storage in the existing collection system, but which require further analysis. Confirmation that they will be/were evaluated in hydraulic studies conducted as part of the long-term control plan.
 3. Review and modification of controls on nondomestic sources. The permittee shall submit:
 - a. Results of an inventory of nondomestic discharges and assessment of the impact of such discharges on CSOs
 - b. Identification and analysis of feasibility of modifications to nondomestic source controls to reduce the impact of such discharges on CSOs
 - c. Documentation of selected modifications.
 4. Maximization of flow to the POTW treatment plant for treatment. The permittee shall submit:
 - a. Study/analysis of existing conditions and a comparison with the design capacity of the overall facility
 - b. Results or status of any engineering studies to increase treatment of wet weather flows
 - c. Documentation of actions taken to maximize flow and the magnitude of increase obtained or projected.
 5. Elimination of CSOs during dry weather flow conditions. The permittee shall submit:
 - a. Summary of dry weather overflows that occurred
 - b. Description of procedures for notifying permitting authority of dry weather overflows
 - c. Summary of actions taken to identify dry weather overflows and progress toward eliminating dry weather overflows.

EXHIBIT 3-4. EXAMPLE PERMIT LANGUAGE FOR
REQUIRING DOCUMENTATION AND REPORTING OF THE NINE MINIMUM CONTROLS (continued)

6. Control of solid and floatable materials in CSOs. The permittee shall submit:
 - a. Engineering evaluation of procedures or technologies for controlling solids and floatable materials
 - b. Description of CSO controls in place for solids and floatable materials
 - c. Schedule for minor construction
 - d. Documentation of any additional controls to be installed or implemented.
7. Pollution prevention programs to reduce contaminants in CSOs. The permittee shall submit:
 - a. Evaluation of pollution prevention opportunities to include procedures to control solid and floatable materials
 - b. Description of selected pollution prevention opportunities to include resources allocated for implementation
 - c. Documentation of pollution prevention program or actions taken.
8. Public notification. The permittee shall submit:
 - a. Evaluation of public notification options to include description of proposed and/or existing public notification procedures
 - b. Description of selected public notification methods
 - c. Log of CSO occurrences and associated public notification.
9. Monitoring to characterize CSO impacts and efficacy of CSO controls. The permittee shall submit:
 - a. Identification of CSO outfalls in the CSS
 - b. Summary of CSO occurrences (total number of CSO events and frequency, duration, volume, and pollutant loadings of CSOs during events). Monitoring summary for duration, volume, and pollutant loadings during each overflow event may portray a representative number of CSOs.
 - c. Summary of water quality data for receiving water bodies
 - d. Summary of receiving water impacts (e.g., beach closings, floatables wash-up episodes, fish kills, etc.).

3.5 LONG-TERM CONTROL PLAN

The second major element of the Phase I permit is the requirement to develop an LTCP that will ultimately result in compliance with CWA requirements. The LTCP development process is a comprehensive planning effort designed to evaluate a range of CSO control alternatives and result in the selection of CSO controls that will contribute to the attainment of WQS.

The LTCP development process will be an incremental and, frequently, a sequential process. For example, a permittee must assess the impacts of CSOs on water quality prior to identifying a range of feasible CSO control alternatives. In establishing the requirements to develop an

1 LTCP, the permit writer should consider the particular situation for each permittee. In a limited
2 number of cases, the NMC may be sufficient to achieve WQS and the development of an LTCP
3 may not be necessary. In other cases, the municipality may have already begun the CSO
4 planning process and the requirement to develop an LTCP should be tailored to reflect ongoing
5 efforts.

6
7 This section provides guidance for the permit writer on how to require development of the
8 LTCP in accordance with the CSO Control Policy. Section 3.5.1 describes each element of the
9 LTCP; Section 3.5.2 presents schedules for development of the LTCP; and Section 3.5.3
10 discusses considerations for small systems and ongoing CSO control efforts. Permit writers
11 should refer to the *Combined Sewer Overflows—Guidance for Long-Term Control Plan* (EPA,
12 1994) for technical guidance on the development of LTCPs.

13 14 3.5.1 *Components of the Long-Term Control Plan*

15 The CSO Control Policy outlines the following LTCP components:

- 16
17 • Public participation
- 18
19 • Characterization, monitoring, and modeling of the CSS and receiving waters (including
20 consideration of sensitive areas)
- 21
22 • Evaluation and selection of alternatives
- 23
24 • Cost/performance considerations
- 25
26 • Operational plan
- 27
28 • Maximization of treatment at the POTW treatment plant
- 29
30 • Implementation schedule
- 31
32 • Post-construction compliance monitoring program.

33
34 In general, the permit conditions requiring LTCP development should guide the development
35 of the LTCP consistent with the CSO Control Policy, establish distinct incremental actions,

1 provide the permittee flexibility in conducting the planning process, and ensure enforceability
2 of subsequent permit conditions.
3

4 Exhibit 3-5 provides example permit language requiring the development of an LTCP. The
5 permit conditions in this exhibit include all the components of an LTCP outlined in the CSO
6 Control Policy. Specific LTCP components should be listed in the permit rather than simply
7 requiring the permittee to develop an LTCP consistent with the CSO Control Policy. A simple
8 permit condition such as, "The permittee shall complete and submit to the permitting authority
9 an LTCP by [date specified]" may result in a permittee meeting this permit condition by
10 submitting an incomplete or poorly developed plan. Listing the components of the plan in the
11 permit condition requires the permittee to consider all of the necessary components of an LTCP.
12

13 **Public Participation**

14 The CSO Control Policy states the permittee should employ a public participation process
15 that "actively involves the affected public in the decision-making to select the long-term CSO
16 control(s)." According to the CSO Control Policy, the affected public includes rate payers,
17 industrial users of the sewer system, persons located on water bodies affected by the CSOs, and
18 any other interested persons. Public participation is considered critical to the ultimate success
19 of the CSO controls selected by the permittee given the potential financial impact to the affected
20 public. Early and constant public participation during the development, evaluation, and selection
21 of CSO controls should reduce the potential for delays in the development of the plan, evaluation
22 of control alternatives, and implementation of selected CSO controls, as well as avoid the
23 unnecessary expenditure of resources by the permittee.
24

25 The permittee is responsible for preparing and implementing the public participation plan.
26 The permit writer has two options for requiring public participation as a part of LTCP
27 development:
28

**EXHIBIT 3-5. EXAMPLE PERMIT LANGUAGE FOR
REQUIRING THE DEVELOPMENT OF A LONG-TERM CONTROL PLAN**

III. Long-Term Control Plan

The permittee shall develop the long-term control plan that will include the elements contained in Sections III.A through III.D below and shall submit the plan elements in accordance with the schedule contained in Section III.E:

A. Public Participation

The permittee shall prepare and implement a public participation plan that outlines how the permittee will ensure participation of the public throughout the long-term control plan development process. For purposes of this permit, the public includes, but is not limited to, rate payers, industrial users of the sewer system, persons who reside near water bodies affected by the CSOs, people who use and enjoy these affected waters, and any other interested persons. In developing the plan, the permittee shall consider the use of mechanisms such as public meetings throughout the process of developing a long-term control plan, including the process of selecting the long-term CSO controls. The long-term control plan shall include a summary of each of the major public participation events.

B. CSS Characterization

The permittee shall develop and implement a plan that will result in a comprehensive characterization of the CSS developed through records review, monitoring, modeling, and other means as appropriate to establish the existing baseline conditions, evaluate the efficacy of the CSO technology-based controls, and determine the baseline conditions upon which the long-term control plan will be based. The characterization shall adequately address the response of the CSS to various precipitation events; identify the number, location, frequency, and characteristics of all CSOs; and identify water quality impacts that result from all CSOs.

To complete the characterization, the permittee shall employ the following methods:

1. Rainfall Records Review. The permittee shall examine the complete rainfall records for the geographic areas of the CSS and evaluate the flow variations in the receiving water body to correlate between the CSOs and receiving water conditions.
2. CSS Records Review. The permittee shall review and evaluate all available CSS records and undertake field inspections and other necessary activities to identify the number, location, and frequency of CSOs and their location relative to sensitive areas (as identified in III.B.4) and to pollution sources, such as significant industrial users, in the collection system.
3. CSO Monitoring. The permittee shall develop and submit a monitoring program that measures the frequency, duration, flow rate, volume, and pollutant concentration of CSOs and assesses the impact of the CSOs on receiving waters. Monitoring shall be performed at a representative number of CSOs for the following parameters: [insert pollutants of concern (e.g., biochemical oxygen demand, total suspended solids)]. The monitoring program shall include CSOs and ambient receiving water body monitoring and, where appropriate, other monitoring protocols, such as biological assessments, toxicity testing, and sediment sampling.

EXHIBIT 3-5. EXAMPLE PERMIT LANGUAGE FOR
REQUIRING THE DEVELOPMENT OF A LONG-TERM CONTROL PLAN (continued)

4. Identification of Sensitive Areas. The permittee shall identify sensitive areas to which its CSOs discharge. These areas shall include outstanding national resource waters, National Marine Sanctuaries, waters with threatened or endangered species and their designated critical habitat, waters designated for primary contact recreational use, public drinking water intakes or their designated protection areas, shellfish beds, and any other areas identified by the permittee or permitting authority, in coordination with appropriate State or Federal agencies.
5. Modeling. The permittee may [shall] employ models, which include appropriate calibration and verification with field measurements, to aid in the characterization. If models are used, they shall be identified by the permittee along with an explanation of why the model was selected and used in the characterization.

C. CSO Control Alternatives

1. Development of CSO Control Alternatives. The permittee shall develop a range of CSO control alternatives that would be necessary to achieve [insert levels of control, such as zero overflow events per year, an average of 1 to 3, 4 to 7, and 8 to 12 overflow events per year]. The permittee shall also consider expansion of the POTW treatment plant secondary and primary capacity as an alternative.

Alternatives presented must give the highest priority to controlling CSOs to the following sensitive areas, identified in III.B.4. For such areas, the alternatives included in the plan must (1) prohibit new or significantly increased CSOs, (2) eliminate or relocate CSOs from such areas wherever physically and economically achievable, except where elimination or relocation would provide less environmental protection than additional treatment, (3) where elimination or relocation is not physically or economically achievable or would provide less environmental protection than additional treatment, provide the level of treatment for remaining CSOs deemed necessary to meet water quality standards for full protection of existing and designated uses.

2. Evaluation of CSO Control Alternatives. The permittee shall evaluate each of the alternatives developed in accordance with III.C.1 to select the CSO controls that will ensure compliance with CWA requirements.
3. Cost/Performance Considerations. The permittee shall develop and submit cost/performance curves that demonstrate the relationship among and the cost effectiveness of the CSO control alternatives.

D. Selected CSO Controls

Once the permittee has selected the CSO controls in consultation with the permitting authority, the permittee shall submit the following:

1. Implementation Schedule. The permittee shall submit a construction schedule and financing plan for the selected CSO controls as part of the implementation schedule. Such schedules may be phased based on the relative importance of the adverse impacts on water quality standards and on the permittee's financial capability.

EXHIBIT 3-5. EXAMPLE PERMIT LANGUAGE FOR
REQUIRING THE DEVELOPMENT OF A LONG-TERM CONTROL PLAN (continued)

2. Operational Plan. The permittee shall submit a revised operation and maintenance plan that addresses implementation of the selected CSO controls. The revised operation and maintenance plan shall maximize the removal of pollutants during and after each precipitation event using all available facilities within the collection and treatment system.
3. Post-Construction Compliance Monitoring Program. The permittee shall develop and submit a post-construction monitoring program that (a) is adequate to ascertain the effectiveness of the CSO controls and (b) can be used to verify compliance with water quality standards. The program shall include a plan that details the monitoring protocols to be followed, including effluent and ambient monitoring and, where appropriate, other monitoring protocols, such as biological assessments, whole effluent toxicity testing, and sediment sampling.

E. Schedule and Interim Deliverables

The following reports shall be developed in accordance with the requirements specified in Sections III.A through III.D and submitted to the permitting authority by the dates specified below:

1. Public Participation Plan, as required in Section III.A, shall be submitted on or before [insert due date].
2. CSS Characterization Monitoring and Modeling Plan, as required in Section III.B, shall be submitted on or before [insert due date].
3. CSS Characterization Monitoring and Modeling Results, including identification of sensitive areas, as required in Section III.B, shall be submitted on or before [insert due date].
4. CSO Control Alternatives Identification, as required in Section III.C.1, shall be submitted on or before [insert due date].
5. CSO Controls Evaluation and Cost Performance Curves for the selected CSO controls, as required in Sections III.C.2 and 3, shall be submitted on or before [insert due date].
6. Implementation Schedule, as required in Section III.D.1, including the affordability analysis, shall be submitted on or before [insert due date].
7. Operational Plan revised to reflect selected CSO control alternatives, as required in Section III.D.2, shall be submitted on or before [insert due date].
8. Post-Construction Compliance Monitoring Program, as required in Section III.D.3, shall be submitted on or before [insert due date].

- Requiring the development of a public participation plan at the beginning of the planning process that describes how the public will be involved throughout the process of developing the LTCP. In this case, the permit writer should require the plan to be submitted to the permitting authority for review. This approach is recommended; example permit language is provided in Exhibit 3-5.
- Generally requiring public participation and periodic reporting of the actual public involvement activities. Alternatively, the permit writer may require reporting at the end of the planning process when the permittee submits its final LTCP.

Regardless of the option selected, the permit writer may want to specify the type of documentation that should be maintained on public involvement. For example, acceptable documentation might cover public meetings (recording the date, time, location, approximate number of people attending, and key issues). Acceptable documentation may also include summaries of all public comments received, but not transcripts of all meetings.

Characterization, Monitoring, and Modeling of the CSS and Receiving Waters

Characterization, monitoring, and modeling activities provide the basis for the permittee to choose and design effective CSO controls. According to the CSO Control Policy, the major elements include:

- Examination of rainfall records
- Characterization of the CSS
- Monitoring of CSOs and receiving water quality
- Identification of sensitive areas
- Modeling of the CSS and the receiving water.

As discussed in Section 3.7, the permittee will be collecting initial characterization and monitoring data as part of the requirement to implement the NMC (i.e., monitor to effectively characterize CSO impacts and efficacy of CSO controls). If the permittee has already characterized its CSS, CSOs, and impacts on receiving waters, permit requirements for further characterization may not be necessary. If the permittee has not sufficiently characterized the system, the permit writer should determine any further efforts needed and establish permit

1 conditions that specify the monitoring activities the permittee should conduct to adequately
2 complete this component of the LTCP. The permit writer should refer to the *Combined Sewer*
3 *Overflow Modeling and Monitoring Guidance* (EPA, 1994) and the *Combined Sewer Overflows—*
4 *Guidance for Long-Term Control Plan* (EPA, 1994) for technical guidance related to proper CSS
5 characterization.

6
7 It is recommended that the permit writer require the permittee to develop a characterization
8 and monitoring plan that includes the monitoring protocols and procedures that will be used to
9 characterize the CSS. Submission of the plan by the permittee prior to implementation, and
10 subsequent review and concurrence by the permit writer, will assist in ensuring that adequate
11 characterization data are collected by the permittee.

12 13 **Identification of Sensitive Areas**

14 The identification of sensitive areas should be commenced as part of the CSS characterization
15 as soon as the locations of all CSOs are known. The CSO Control Policy identifies the type of
16 sensitive areas that should be given priority during LTCP development. Exhibit 3-6 lists these
17 sensitive areas.

18
19 The determination of sensitive areas should be made by the permittee in consultation with
20 the NPDES permitting authority and may require coordination with local, State, and Federal
21 agencies involved in the protection of such areas. For example, the permittee and permit writer
22 should coordinate with the U.S. Fish and Wildlife Service to determine whether CSOs discharge
23 to waters with threatened or endangered species. The permittee should also coordinate with the
24 local public water utility to ensure the designation of drinking water sources as sensitive areas.
25 The permittee should evaluate the designated uses of each CSO receiving water because the
26 designations indicate a receiving water is sensitive (e.g., when receiving waters are designated
27 for primary contact recreation protection).

EXHIBIT 3-6. SENSITIVE AREAS IDENTIFIED IN THE CSO CONTROL POLICY

- Outstanding National Resource Waters
- National Marine Sanctuaries
- Waters with threatened or endangered species and their designated critical habitat
- Waters designated for primary contact recreational use (such as swimming)
- Public drinking water intakes or their designated protection areas
- Shellfish beds

Evaluation of Alternatives

The intent of the LTCP is to evaluate CSO control alternatives that will enable the permittee, in consultation with the NPDES permitting authority, WQS authority, and the public, to select CSO controls that will meet CWA requirements. To ensure that the most cost-effective and protective CSO controls are selected, the permit writer should require the permittee to consider a reasonable range of CSO control alternatives. The CSO Control Policy encourages the permittee to evaluate CSO control alternatives that provide varying levels of controls. The CSO Control Policy suggests the permittee evaluate CSO control alternatives that would be necessary to achieve, for example, the following levels of control:

- Zero overflow events per year (e.g., total elimination of CSOs via storage and/or sewer separation)
- An average of 1 to 3 overflow events per year
- An average of 4 to 7 overflow events per year
- An average of 8 to 12 overflow events per year.

The CSO control alternatives to be considered should provide the required level of control to achieve WQS. For example, the CSO control alternatives could include total sewer separation or retention of all combined sewer flows for subsequent treatment during dry weather. Or, the CSO control alternatives could include a combination of controls for an entire system (e.g.,

1 partial sewer separation and retention). In addition, the permittee should consider, among its
2 CSO control alternatives, expanding POTW treatment plant secondary and primary capacity and
3 associated appurtenances to enable additional treatment of combined sewer flows. Thus, the
4 Phase I permit should require the permittee to evaluate the maximization of treatment at the
5 POTW treatment plant among its CSO control alternatives, including the feasibility of expanding
6 either primary treatment capacity or both primary and secondary treatment capacity.
7

8 In accordance with the CSO Control Policy, the permittee should ultimately select CSO
9 controls, in consultation with the NPDES permitting authority, WQS authority, and the public,
10 that, when implemented, will comply with CWA requirements either through the "presumption
11 approach" or the "demonstration approach." It is unlikely that a permittee or a permit writer
12 will be able to determine the level of control necessary to meet WQS requirements prior to the
13 initiation of the LTCP planning process. Likewise, a permittee will not be able to specifically
14 adopt either the "presumption" or "demonstration" approach until after the initial planning
15 process has begun and more is known about its CSS and CSOs. The two evaluation approaches
16 contained in the CSO Control Policy (i.e., presumption and demonstration) are described in the
17 following discussion. The permit writer should also refer to the *Combined Sewer*
18 *Overflows—Guidance for Long-Term Control Plan* (EPA, 1994) for additional technical guidance
19 on evaluating CSO control alternatives.
20

21 Presumption Approach

22 The underlying assumption of the presumption approach is that if the planned CSO controls
23 meet certain performance criteria, there is a reasonable likelihood of achieving WQS. The
24 consideration of the presumption approach is acceptable where the level of control needed to
25 attain WQS is unknown and no data suggest the approach will not meet WQS. This approach
26 is based on the permittee meeting one of the following criteria presented in the CSO Control
27 Policy:
28
29

- No more than an average of four overflow events per year, provided that the permitting authority may allow up to two additional overflow events per year. Thus, the permit writer may allow an average of four, five, or six overflow events per year. For the purpose of this criterion, the CSO Control Policy defines an overflow event as "one or more overflows from a combined sewer system as the result of a precipitation event that does not receive the minimum treatment specified."
- The elimination or capture for treatment of no less than 85 percent by volume of the combined sewage collected in the combined sewer system during precipitation events on a system-wide annual average basis. To properly implement this provision, the permittee must calculate the total volume entering the combined sewer during precipitation events on a system-wide annual average basis to determine the volume of combined sewage that must be captured or eliminated.
- The elimination or reduction of no less than the mass of pollutants identified as causing WQS violations through the sewer system characterization, monitoring, and modeling effort for the volume(s) that would be eliminated or captured for treatment, as described under the previous bullet. Again, the permittee will be responsible for determining the appropriate volume of combined sewage that must be treated. In addition, the permittee, in consultation with the permit writer, must determine the specific pollutants and their masses that will result in WQS violations.

All combined sewer flows in the CSS remaining after implementation of the NMC and within the first two criteria specified above should be required to receive the following treatment:

- Primary clarification for the removal of floatables and settleable solids
- Solids and floatables disposal
- Disinfection of effluent, if necessary, to meet WQS and protect human health, including removal of harmful disinfection chemical residuals, where necessary.

For example, if the permittee chooses to capture 85 percent by volume of the combined sewage collected on a system-wide annual basis during precipitation events, these flows must receive the above treatment. The remaining 15 percent by volume should receive treatment to the greatest extent practicable.

1 In all cases, the selected CSO control program should be designed to allow for cost-effective
2 expansion or cost-effective retrofitting if additional controls are subsequently determined to be
3 necessary to meet WQS.
4

5 The example permit language provided for the presumption approach in Exhibit 3-5 is based
6 on the language provided in the CSO Control Policy. However, the example permit language,
7 in addressing disinfection requirements, specifically requires reduction of a pathogen indicator
8 (e.g., *E. coli*) to levels that will achieve WQS. This example language assumes such a standard
9 exists. In addition, the example permit language assumes the control of harmful disinfection
10 products (e.g., chlorine) is unnecessary. In both cases, the permit writer should customize the
11 disinfection requirements to appropriately comply with State WQS.
12

13 Demonstration Approach

14 As an alternative to the presumption approach, the permittee may choose to demonstrate that
15 the selected CSO controls, when implemented, will be adequate to achieve compliance with
16 CWA requirements. As presented in the CSO Control Policy, an adequate demonstration must
17 include each of the following:
18

- 19 • The planned control program is adequate to meet WQS unless WQS cannot be met as a
20 result of natural background conditions or pollution sources other than CSOs. The permit
21 writer will need to coordinate with the permittee to determine the natural background
22 conditions and other pollution sources.
23
- 24 • The CSOs remaining after implementation of the planned control program will not
25 preclude the attainment of WQS. If WQS are not met in part because of natural
26 background conditions or pollution sources other than CSOs, a total maximum daily load
27 (TMDL), including a wasteload allocation (WLA) and a load allocation, or other means,
28 should be used by the permitting authority to apportion pollutant loads to all source
29 discharges.
30
- 31 • The planned control program will provide the maximum pollution reduction benefits
32 reasonably attainable including the cost/performance considerations below.
33
- 34 • The planned control program is designed to allow cost-effective expansion or cost-
35 effective retrofitting if additional controls are subsequently determined to be necessary to
36 meet WQS.

1 To help ensure that the demonstration by the permittee will be adequate, the permit writer
2 should consider defining an adequate demonstration. If the NPDES permitting authority has
3 particular policies or procedures for evaluating water quality impacts, then the permit writer
4 should place these requirements in the permit. For example, if State WQS include criteria for
5 the protection of wildlife, aquatic life, and human health, then the permit writer should require
6 an evaluation for compliance with all three criteria, assuming they all apply to the CSO receiving
7 water. If natural background conditions or pollution sources other than CSOs are contributing
8 to exceedances of WQS, then the permitting authority would be responsible for the development
9 of a TMDL and the WLA for any CSOs. The permittee must then demonstrate compliance with
10 the WLA established by the permitting authority. In the absence of a TMDL for a pollutant or
11 pollutants, the permit writer should coordinate with appropriate State water quality personnel to
12 determine how a permittee will demonstrate compliance with WQS in light of the other source
13 of pollutants. The permit writer also should clearly specify what will constitute a reasonable
14 effort by the permittee to demonstrate the maximum pollution reduction benefits reasonably
15 attainable. The term "reasonably attainable" generally refers to the cost to implement the
16 planned control program in relation to the pollution reduction benefit of the control program.
17 For further guidance, the permit writer should refer to the discussion on cost-performance
18 considerations below and to the *Combined Sewer Overflows—Guidance for Long-Term Control*
19 *Plan* (EPA, 1994).

21 **Cost/Performance Considerations**

22 For the CSO control alternatives being evaluated, the permit writer should require the
23 permittee to develop and submit with the LTCP appropriate cost/performance curves for each
24 of the alternatives. The purpose of developing these curves is for the permittee to demonstrate
25 the relationship between the effectiveness of CSO control alternatives being considered and the
26 cost associated with each. Consistent with the CSO Control Policy, the permittee should be
27 required to include an analysis discussing the point at which the increment of pollution reduction
28 achieved in the receiving water diminishes compared to increased costs. These analyses will
29 ultimately help guide the selection of CSO controls by the permittee, NPDES permitting
30 authority, WQS authority, and the public. For detailed guidance related to the development and

1 review of cost/performance curves, the permit writer should refer to *Combined Sewer*
2 *Overflows—Guidance for Long-Term Control Plan* (EPA, 1994).

3 4 **Operational Plan**

5 The Phase I permit should include a requirement that, once the appropriate CSO controls are
6 selected, the permittee will revise the O&M plan developed as part of the NMC to include the
7 selected CSO controls. As described in the CSO Control Policy, the operational plan should be
8 designed to maximize the removal of pollutants during and after each precipitation event using
9 all available facilities within the collection and treatment system. The operational plan should
10 also specify methods to ensure that any flows in excess of the volumes prescribed under the
11 presumption approach (i.e., flows in excess of 85 percent by volume of the combined sewage
12 collected in the CSS during precipitation events on a system-wide annual average basis) receive
13 treatment to the greatest extent practicable. The permit writer should refer to *Combined Sewer*
14 *Overflows—Guidance for Long-Term Control Plan* (EPA, 1994) for further information on
15 technical considerations for permittees to use when revising their O&M program to account for
16 selected CSO controls.

17 18 **Maximization of Treatment at the POTW Treatment Plant**

19 As discussed in evaluation alternatives, the permittee should evaluate the maximization of
20 treatment at the POTW treatment plant as part of the LTCP. This includes evaluating the
21 feasibility of expanding either primary treatment capacity or both primary and secondary
22 treatment capacities. This component of the LTCP is distinguished from **maximization of flow**
23 **to the POTW for treatment**, one of the NMC. The NMC control measure is focused on flow
24 to the treatment plant rather than flow at the treatment plant and is envisioned to include the use
25 of excess wet weather flow capacity, rather than the construction of additional treatment
26 capacity.

27 28 **Implementation Schedule**

29 The permit should require the permittee to develop and submit a schedule for the
30 implementation of the selected CSO controls. In particular, the permit writer should require the

1 permittee to develop construction schedules and financing plans that will ensure timely
2 implementation of the selected CSO controls. These schedules may be phased depending on the
3 permittee's financial capability and the relative importance of adverse impacts on WQS.
4

5 The proposed CSO implementation schedule, including construction schedules and financing
6 plans, should reflect:

- 7 • Elimination of CSOs to sensitive areas as the highest priorities
- 8 • Receiving water use impairment
- 9 • Permittee's financial capability, including consideration of such factors as:
 - 10 - Median household income
 - 11 - Total annual wastewater and CSO control costs per household as a percent of median
 - 12 household income
 - 13 - Overall net debt as a percent of full market property value
 - 14 - Property tax revenues as a percent of full market property value
 - 15 - Property tax collection rate
 - 16 - Unemployment
 - 17 - Bond rating
- 18 • Grant and loan availability
- 19 • Previous and current residential, commercial, and industrial sewer user fees and rate
- 20 structures
- 21 • Other viable funding mechanisms and sources of financing.

22
23
24
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28
29
30 For guidance related to scheduling and financial capability, the permit writer should refer
31 to the *Combined Sewer Overflow Long Term Control Plan and Financial Capability Assessment*
32 *Guidances* (EPA, 1994).
33

34 **Post-Construction Compliance Monitoring Program**

35 The post-construction compliance monitoring plan should be submitted by the permittee as
36 part of the LTCP and reviewed by the permit writer (see Section 4.5.2). The permit writer
37 should require that this plan detail the monitoring protocols to be followed, including the

1 necessary effluent and ambient monitoring and, where appropriate, other monitoring protocols,
2 such as biological assessments, whole effluent toxicity testing, and sediment sampling.

3
4 The monitoring plan should provide for ambient receiving water pollutant monitoring at
5 locations appropriate to determine receiving water background concentrations and CSO
6 contributions. The types of pollutants and parameters to be analyzed, which will depend on the
7 WQS in the receiving water body, may include chemical (e.g., biochemical oxygen demand,
8 total suspended solids, metals, oil and grease, herbicides, and pesticides), and biological (e.g.,
9 fish, benthic invertebrates, and zooplankton) parameters.

10
11 It should be noted that construction of the selected CSO controls by some permittees may
12 extend over several permit terms. It may be appropriate to defer all or some portions of the
13 post-construction monitoring plan development requirements to later permits when construction
14 of the CSO controls is complete.

15
16 ***3.5.2 Schedule for Development of the Long-Term Control Plan***

17 The permit writer should establish a deadline in the permit for completing and submitting
18 the LTCP. According to the CSO Control Policy, this deadline should be within 2 years of the
19 effective date of the Phase I permit or other implementation mechanism. As stated in the Policy,
20 the permit writer may extend the deadline beyond 2 years for the submission of the plan on a
21 case-by-case basis to account for site-specific factors that may complicate the planning process
22 on the part of the permittee. This deadline or a schedule should be included in an enforcement
23 mechanism or in a permit enforceable under the CWA.

24
25 The permit writer should also consider establishing a periodic reporting schedule that
26 requires the permittee to report on progress related to LTCP development. These progress
27 reports should require a narrative description of progress made to date on each of the primary
28 LTCP components, identification of problems that may affect completion of the LTCP, and a
29 description of remedial measures to be taken when necessary. Depending on the specific
30 circumstances and complexity of the CSS, a permit writer may require submission of progress

1 reports on a regular basis (e.g., monthly, biannual), customize the schedule to track critical path
2 components (e.g., to ensure public participation occurs early in the process or that CSS
3 characterization is proceeding), and/or require the submission of progress reports at the
4 completion of each component of the LTCP.

5
6 In addition, the permit writer should consider establishing interim deadlines and deliverables
7 for various components of the LTCP to ensure adequate progress is being made by the permittee
8 during the term of the permit. Example permit language requiring the submission of interim
9 deliverables is provided in Exhibit 3-5, presented earlier. The submission of interim deliverables
10 prior to completion of the LTCP allows the permit writer an opportunity to review critical
11 components of the LTCP early in the planning process and avoids delay in issuing the
12 subsequent Phase II permit due to the submission of inadequate information or analyses. It is
13 recommended that the permit writer require the submission of the following interim deliverables:

- 14
15 • Public participation plan
16 • CSS characterization monitoring and modeling plan
17 • CSS characterization monitoring and modeling results (including identification of
18 sensitive areas)
19 • Identification of CSO control alternatives
20 • Evaluation of CSO control alternatives and cost/performance curves
21 • Operational plan
22 • Proposed implementation schedule, including affordability analyses
23 • Post-construction compliance monitoring plan.

24
25 Upon receipt of an interim deliverable, the permit writer will be responsible for its review
26 and for working closely with the permittee to ensure that any inadequacies, problems, or issues
27 are addressed prior to submittal of the final LTCP and issuance of the Phase II permit. Further
28 guidance related to the responsibilities of the permit writer while reviewing interim deliverables
29 is provided in Section 3.10.
30

1 The specific deadlines specified in the permit will depend on the circumstances of the CSS
2 being permitted. For example, if a permit writer requires the development of a public
3 participation plan, a corresponding deadline should be included in the permit to complete the
4 plan, as well as to implement the plan, after review by the permitting authority. In other cases,
5 the information, such as that needed to identify sensitive areas (i.e., CSS characterization data),
6 may not be available prior to issuance of the Phase I permit. Due to the importance of
7 protecting sensitive areas, the permit writer should establish a deadline for the submission of
8 information on sensitive areas early in the LTCP development process.

9
10 ***3.5.3 Considerations for Previous or Ongoing CSO Control Efforts and Small Combined***
11 ***Sewer Systems***

12 Generally, two special factors should be considered by the permit writer when establishing
13 the requirements to develop the LTCP—the permittee's previous efforts to control CSOs and the
14 limited resources of small communities.

15
16 **Recognition of Previous or Ongoing Efforts at Controlling CSOs**

17 There may be instances when the permit writer will find that municipalities are at different
18 stages of CSO characterization and CSO control implementation. Some municipalities have
19 already begun planning, monitoring, and implementing CSO controls in response to EPA's 1989
20 CSO Permitting Strategy and other initiatives. For example, a municipality may have already
21 characterized its CSOs and evaluated water quality impacts and is in the process of constructing
22 CSO controls.

23
24 The following types of efforts that a permittee may have undertaken prior to Phase I
25 permitting may require special consideration by the permit writer on a case-by-case basis: 1)
26 substantial completion of construction of CSO controls that appear to meet WQS, 2) CSO control
27 programs substantially developed or implemented pursuant to existing permits or enforcement
28 orders, and 3) completion of construction of CSO control facilities designed to comply with
29 WQS but that have failed to meet WQS.

1 If the permit writer has determined that the permittee has "substantially completed"
2 construction of projects designed to meet WQS, the permit conditions for LTCP development
3 may be modified to reflect these previous efforts. The permit writer may not wish to require
4 the initial planning and construction provisions of the LTCP. The permittee, however, should
5 be required to complete the components of the LTCP that may not have been addressed by the
6 permittee's previous efforts, that are still relevant, including the O&M program development and
7 the post-construction monitoring plan. If subsequent monitoring shows that the WQS are not
8 being met, then the permittee should be required to submit a revised CSO control plan in an
9 enforceable order and the permit modified accordingly.

10
11 If the permittee has substantially developed or is implementing a CSO control program but
12 has not yet substantially completed construction of the selected CSO controls and the control
13 program is expected to meet WQS and is consistent with the objectives of the CSO Control
14 Policy, the permit condition for LTCP development should be modified. In this case, the permit
15 writer may not want to require the permittee to conduct further planning except for evaluation
16 of sensitive areas and financial capabilities and development of a post-construction monitoring
17 plan.

18
19 If the permittee has previously constructed CSO facilities in an effort to comply with WQS
20 but has failed to meet the applicable standards because remaining CSOs were not addressed, the
21 permit writer may consider these previous efforts when determining further CSO control
22 planning activities. The previous construction of CSO control facilities, although not achieving
23 WQS, may mitigate the need to develop a complete LTCP. In other cases, a permit writer may
24 need to require the development of a complete, although abbreviated, LTCP (e.g., further CSS
25 characterization may be needed or other alternative CSO controls identified and costs and
26 funding mechanisms developed).

27 28 **Small System Considerations**

29 The CSO Control Policy acknowledges that portions of the LTCP may prove to be difficult
30 to implement for small municipalities. Particularly, the CSO Control Policy recommends that

1 for CSSs in jurisdictions with populations under 75,000, the permit requirement to develop the
2 LTCP should reflect the capabilities of such "small" jurisdictions in preparing their plans. With
3 limited resources, dollars spent on system characterization, modeling and monitoring, and
4 evaluation of alternatives may be better spent on financing the implementation of CSO controls.
5 The permit writer will, however, need to ensure that the permittee has gathered enough
6 information to implement effective CSO controls. The permit requirements for developing a
7 plan should include consideration of sensitive areas, public participation in the selection of the
8 CSO controls, and a post-construction compliance monitoring program sufficient to determine
9 whether WQS are attained. However, the permit writer should be aware that smaller systems
10 may not be able to afford extensive monitoring requirements. In these cases, the permit writer
11 should be prepared to accept a less extensive monitoring program from a small municipality.
12

13 3.6 EFFLUENT LIMITATIONS

14 The CWA requires that both technology- and water quality-based effluent limitations be
15 established for all point source discharges. In general, the CSO Control Policy relies on the
16 implementation of various control practices as the means to regulate CSOs. At least during the
17 early stages of Phase I permitting, therefore, the permit writer will establish technology- and
18 water quality-based requirements in the form of narrative requirements. This recognizes that
19 the permit writer will not have sufficient data or information to establish numeric effluent
20 limitations. During subsequent CSO permitting phases as data and information related to the
21 CSOs and controls implemented by permittees improve, the permit writer should consider
22 developing numeric effluent limitations.
23

24 3.6.1 Technology-Based Requirements

25 Section 301 of the CWA requires that technology-based effluent limitations be established
26 for all discharges of pollutants. For existing nonmunicipal dischargers, these technology-based
27 effluent limitations must reflect the BAT/BCT for conventional, toxic, and nonconventional
28 pollutants.
29

1 NPDES permit provisions at 40 CFR Section 122.44(a) require the establishment of
2 technology-based effluent limitations for all pollutants discharged by nonmunicipal point sources
3 that will be regulated under an NPDES permit. Because CSSs are not considered POTWs, they
4 are not subject to secondary treatment standards. According to 40 CFR Section 125.3(c), in the
5 absence of national effluent guidelines and standards for nonmunicipal discharges, technology-
6 based effluent limitations are to be established on a case-by-case basis using the permit writer's
7 BPJ.

8
9 The CSO Control Policy recommends the use of a variety of controls (i.e., the NMC) in the
10 form of BMPs to regulate CSOs. The use of BMPs in lieu of numeric technology-based effluent
11 limitations is allowed under 40 CFR Section 122.44(k)(2) where it is infeasible to calculate a
12 numeric limit. BMPs are considered particularly applicable for CSOs due to the general
13 unpredictability of a precipitation event's driven discharges in terms of the types, concentrations,
14 and quantities of pollutants expected.

15
16 As stated in the CSO Control Policy, Phase I permits should at least require that the
17 permittee "immediately implement BAT/BCT, which includes the nine minimum controls, as
18 determined on a BPJ basis by the permitting authority." Thus, where the permit writer
19 determines on a BPJ basis that the implementation of the NMC in Phase I and Phase II permits
20 meets the technology-based requirements, he/she should not need to develop numeric technology-
21 based effluent limitations. Exhibit 3-3, presented previously, provides example permit language
22 requiring implementation of the NMC.

23
24 If, at a later date, numeric technology-based effluent limitations are warranted for CSOs, it
25 is recommended that the permit writer refer to the *EPA Training Manual for NPDES Permit*
26 *Writers* (EPA, 1993) for guidance on developing limits on a case-by-case basis using BPJ.

27 28 **3.6.2 Water Quality-Based Requirements**

29 Section 301(b)(1)(C) of the CWA requires that water quality-based effluent limitations be
30 established for all point source discharges that will affect receiving water quality after

1 implementation of technology-based requirements. Pursuant to the CWA, the NPDES permit
2 regulations at 40 CFR Section 122.44(d) require the establishment of water quality-based effluent
3 limitations in NPDES permits for all discharges that cause, contribute, or have the potential to
4 cause an exceedance of a numeric or narrative water quality standard.

5
6 The proper characterization of CSOs to determine whether numeric water quality-based
7 effluent limitations are necessary is expected to be extremely difficult for the permit writer in
8 the early stages of permitting CSOs. This difficulty stems from a variety of reasons, including
9 the lack of data (both point source and ambient) for all pollutants of concern (e.g.,
10 conventionals, toxics, and nonconventionals).

11
12 As described in the CSO Control Policy, Phase I permits should at least require that the
13 permittee "immediately comply with applicable WQS expressed in the form of a narrative
14 limitation." As previously described, a narrative requirement to comply with WQS is justified
15 for CSOs due to the general lack of data and the dependence on the LTCP to provide the data
16 necessary to evaluate the need for numeric water quality-based effluent limits.

17
18 Exhibit 3-7 gives example permit language requiring CSOs to comply with narrative WQS.
19 The specific narrative standards a permit writer should include as a permit condition will depend
20 on, and should be consistent with, standards specified in the State WQS. Although State
21 narrative standards can be incorporated into the permit by reference, it is recommended that the
22 permit writer include the specific narrative language in the permit to ensure that the permittee
23 understands exactly what standards it must meet.

24 25 **3.7 MONITORING**

26 The Phase I permit should require that monitoring activities be initiated so basic system
27 characterization information can be established. In addition, the permit writer should establish
28 standard monitoring conditions for determining the compliance of CSOs with WQS. The
29 information collected during Phase I will ultimately be used as a foundation to develop the more
30 comprehensive monitoring program associated with the LTCP and the Phase II permit. During

the Phase I permit term, the permittee should monitor the following pollutants to facilitate the establishment of baseline conditions: pH, total suspended solids, biochemical oxygen demand, fecal coliform, and oil and grease. For detailed information on monitoring activities, the permit writer is referred to the *Combined Sewer Overflow Monitoring and Modeling Guidance* (EPA, 1994).

**EXHIBIT 3-7. EXAMPLE PERMIT LANGUAGE FOR
REQUIRING COMPLIANCE WITH NARRATIVE WATER QUALITY STANDARDS**

I. Effluent Limits

B. Water quality-based requirements for CSOs. The permittee shall not discharge any pollutant at a level that could cause or contribute to a violation of [insert applicable State narrative standards] water quality standards.

Site-Specific Language:

All discharges covered by this permit shall be free from the following pollutants at levels that cause or contribute to a violation of water quality standards:

- 1. Floating debris, oil, grease, scum, foam, or other materials on the water surface that may create a nuisance condition, or that may in any way interfere with attainment and maintenance of designated uses of the water*
- 2. Settleable solids, sediments, sludge deposits, or suspended particles that may coat or cover submerged surfaces and create a nuisance condition, or that may in any way interfere with attainment and maintenance of designated uses of the water*
- 3. Any pollutants, including those of a thermal, toxic, corrosive, bacteriological, radiological, or other nature, that may interfere with attainment and maintenance of designated uses of the water; may impart undesirable odors, tastes, or colors to the water or to aquatic life found therein; may endanger public health; or may result in dominance of nuisance species.*

Phase I permit monitoring requirements are driven by several different objectives. The CSO Control Policy requires specific monitoring to characterize CSO impacts and to determine the efficacy of CSO controls as part of the NMC. The CSO Control Policy also requires monitoring as part of the LTCP development to comprehensively characterize the CSS. In addition, the permit writer should establish monitoring requirements that will aid in establishing baseline conditions prior to and subsequent to implementation of the NMC. Where these monitoring objectives overlap, the permit writer should coordinate the requirements into a comprehensive permit condition. Example permit language associated with the NMC monitoring requirements

1 is presented in Exhibits 3-3 and 3-4 given previously. Example permit language associated with
2 the monitoring required to characterize the CSS was provided in Exhibit 3-5 also given earlier.

3
4 In most cases, implementation of monitoring associated with the NMC and the LTCP is
5 sufficient for Phase I permits. In some cases, however, the permit writer may want to require
6 special characterization studies (e.g., if site-specific information implies that CSOs are causing
7 substantial water quality impacts). These studies may include the following:

- 8
9
 - Sediment studies
 - 10 • Toxicity testing
 - 11 • Biological assessment.

12

13 This type of monitoring can be required as a short-term study special condition. Typically,
14 such a study is required in response to specific information indicating water quality is being
15 affected. The permit writer may want to develop permit conditions that require 1) a separate
16 monitoring plan to be developed for each special study, 2) the plan be submitted for review prior
17 to performing the monitoring, and 3) the submission of a final report to the permitting authority
18 within a specified time after the study's completion.

19
20 The permit writer should review the monitoring plans carefully to ensure the design assures
21 that CSO information is correlated with water quality impacts; otherwise, the results of the
22 studies may not provide conclusive evidence of the cause of impact. In addition, other studies
23 may be needed in conjunction with these special studies. For example, sediment studies may
24 not be meaningful without a contaminant transport modeling study, and a bioassay performed
25 without toxicity data and CSO data may not provide meaningful results.

26
27 **3.8 REPORTING**

28 The major categories of reporting requirements related to CSO controls that should be
29 included in the Phase I permit are associated with: 1) documentation of the NMC
30 implementation and 2) LTCP development. Section 3.4.2 provides example permit language and

1 a detailed discussion of the reporting requirements associated with the NMC. Section 3.5
2 discusses the recommended LTCP interim deliverables, the requirement to submit the completed
3 LTCP, and associated example permit language.

4
5 In addition to the CSO control-related reporting discussed above, permittees should be
6 required to periodically report the results from any special monitoring studies and/or from
7 monitoring requirements established in the permit.

8 9 **3.9 SPECIAL CONDITIONS**

10 This section discusses two special conditions. The first, CSO-related bypass, should be used
11 in certain limited circumstances to authorize bypasses under Section 122.41(m). The second
12 special condition, a reopener clause, should appear in every permit covering CSOs.

13 14 **3.9.1 CSO-Related Bypass**

15 Some POTW treatment plants may have primary treatment capacity that significantly exceeds
16 secondary treatment. The CSO Control Policy recognizes that 40 CFR Section 122.41(m) can
17 be interpreted to allow an advance authorization of a CSO-related bypass in the NPDES permit
18 to take advantage of the opportunity to provide at least primary treatment of wet weather flows.
19 The CSO Control Policy envisions that the permittee would evaluate the feasibility of this as part
20 of the LTCP. As such, this special condition is only likely to occur in the Phase II permit, if
21 at all. If the permit writer believes that a CSO-related bypass may be an effective CSO control
22 available for use in the Phase I permit, however, he/she should require the permittee to submit
23 the necessary information as part of the permit application. The permit writer should refer to
24 Section 4.9.1 for a detailed discussion of the CSO-related bypass.

25 26 **3.9.2 Permit Reopener Clause**

27 As with any NPDES permit, the permit writer should include an appropriate reopener clause.
28 The permit writer may find that the generic reopener clause used in other NPDES permits is
29 sufficiently broad to address CSOs. Exhibit 3-8 provides a typical reopener clause appropriate
30 for a Phase I permit. The permit writer may also consider including reopener language that

allows the permit to be modified or revoked and reissued to incorporate requirements to implement selected CSO controls in the LTCP (Phase II) in advance of the normal permit reissuance. This will assist the permit writer in accelerating the implementation of selected CSO controls.

EXHIBIT 3-8. EXAMPLE PERMIT LANGUAGE FOR A PHASE I REOPENER CLAUSE

This permit may be modified or revoked and reissued to comply with any State or Federal law or regulation that addresses CSOs and that is promulgated subsequent to the effective date of the permit, or if additional information indicates CSO controls fail to meet State water quality standards.

Upon satisfactory completion of the long-term control plan, the permit may be modified or revoked and reissued to require implementation of the selected CSO controls.

In addition, this permit may be modified or revoked and reissued for any other valid reason pursuant to 40 CFR §122.62.

3.10 ADDITIONAL ACTIVITIES DURING PHASE I PERMITTING

The permit writer is responsible for ensuring the receipt and coordinating the review of the NMC documentation and all interim CSO-related documents submitted as part of the LTCP development. The primary purpose of the review of NMC documentation and LTCP interim deliverables is for the permit writer to begin evaluating the progress made by the permittee in implementing the NMC and developing its LTCP. The early review during Phase I will assist the permit writer in identifying and resolving issues prior to the development of the Phase II permit. If the review of progress made by the permittee during the Phase I permit term is not performed until just prior to the development of the Phase II permit, significant delays may occur, particularly if a permit writer finds extensive deficiencies in the progress made by the permittee.

To ensure that the NMC documentation and all LTCP interim deliverables are properly reviewed and to facilitate the expeditious review of these submissions, the permit writer should coordinate among appropriate NPDES permitting authority representatives. As part of the coordination process, the permit writer should decide who should review the NMC documenta-

tion and LTCP interim deliverables. In most cases, the review team should include NPDES permitting and enforcement representatives and WQS authority representatives (see Section 4.5.1). The permit writer should also contact the appropriate individuals to be part of the review team, disseminate information, coordinate the review of materials and meetings, and receive and integrate comments. The review team may also be useful in assisting the permit writer in developing permit conditions.

3.11 DEFINITIONS

Note to Reader: These definitions are currently under development. EPA is especially interested in soliciting comments on this section of the guidance document.

As CSO-related permit conditions are incorporated into the permit, it also may be appropriate to expand the definitions section of the permit. A list of terms that may be appropriate to include in either the Phase I or Phase II permit (depending on where they are used as part of the permit language) and their suggested definitions are listed below:

- **Average Number of Overflow Events Per Year**—The total number of combined sewer overflow events that occurred during the term of the permit divided by the permit term in years.
- **Combined Sewer Overflow**—The discharge from a designated outfall location of a combined sewer system to the receiving water prior to reaching the publicly owned treatment works treatment plant.
- **Combined Sewer Overflow Event**—One or more combined sewer overflow from a combined sewer system as the result of a precipitation event. A separate combined sewer overflow event will have occurred where the discharge is interrupted for [insert appropriate duration] or more hours.
- **Combined Sewer System**—A wastewater collection system owned by a State or municipality (as defined by Section 502(4) of the Clean Water Act) that conveys sanitary wastewaters (domestic, commercial, and industrial wastewaters) and storm water through a single-pipe system to a publicly owned treatment works treatment plant (as defined in 40 CFR 403.3(p)).

- 1 • **Dry Weather Flow Conditions**—Hydraulic flow conditions within the combined sewer
2 system resulting from the flows of domestic sewage, groundwater infiltration,
3 commercial and industrial wastewaters, and any other non-precipitation event related
4 flows (e.g., tidal infiltration).
5
- 6 • **Dry Weather Overflow**—A combined sewer overflow that occurs during dry weather
7 flow conditions.
8
- 9 • **Precipitation Event**—An occurrence of rain, snow, sleet, hail, or other generally
10 recognized form of precipitation. Precipitation events are characterized by parameters
11 of duration (time) and intensity (inches or millimeters of precipitation). For the purposes
12 of this permit, a precipitation event is defined as [0.25] or [insert appropriate measure]
13 inches or more of precipitation in the form of rain or [3] or [insert appropriate
14 measure] inches or more of precipitation in the form of sleet or snow, reported during
15 the preceding 24-hour period at the [insert location of official precipitation gaging
16 station(s)].
17
- 18 • **Primary Clarification or Equivalent**—The level of treatment that would typically be
19 provided by a municipal wastewater treatment plant under peak wet weather flow
20 conditions. The equivalent to primary clarification includes systems that achieve the
21 following: 35 percent removal of influent total suspended solids (TSS), and 15 percent
22 removal of influent 5-day biochemical oxygen demand (BOD₅).
23
- 24 • **Sensitive Areas**—Areas of particular environmental significance or sensitivity that could
25 be adversely affected by a combined sewer overflow including, but not limited to,
26 Outstanding National Resource Waters, National Marine Sanctuaries, water with
27 threatened or endangered species and their critical habitat, waters designated for primary
28 contact recreational use, public drinking water intakes or their designated protection
29 areas, shellfish beds, and other areas identified by the permittee or permitting authority,
30 in coordination with the appropriate State or Federal agencies.
31
- 32 • **Solid and Floatable Materials**—Solid or semi-solid material suspended or present in the
33 water column that will not pass freely through a screen or mesh with openings of [insert
34 appropriate mesh size] inches.
35
- 36 • **Wet Weather Flow Conditions**—Hydraulic flow conditions within the combined sewer
37 system resulting from a precipitation event.
38
39

CHAPTER 4

PHASE II PERMITTING

This chapter provides the permit writer with guidance related to developing and issuing the Phase II permit. It also discusses the review and evaluation of documentation required by the Phase I permit associated with implementation of the NMC and development of the LTCP.

4.1 PHASE II PERMIT PROCESS

The primary objective of the Phase II permit is to require the permittee to implement the selected CSO controls in the LTCP that will meet CWA requirements. After the permittee has completed the development of the LTCP and has discussed and coordinated the selection of the necessary CSO controls with the permit writer, the State WQS authority, and the public, the permit writer can proceed to embody the selected CSO controls into the Phase II permit.

To be consistent with the CSO Control Policy, the Phase II permit should contain provisions that:

- Require the permittee to continue implementing the NMC
- Direct the permittee to implement and properly operate and maintain the selected CSO controls from the LTCP
- Require the permittee to implement a post-construction water quality monitoring program
- Require the permittee to reassess overflows to sensitive areas where elimination or relocation was not feasible
- Authorize the permitting authority to reopen and modify the permit when the CSO controls do not result in attainment of WQS.

The permit writer should coordinate the development of the Phase II permit with the permittee and the State WQS authority to ensure that statutory and regulatory requirements are met. The permit writer should also ensure that the general public is involved in the decision-making process leading to finalization of the Phase II permit conditions through the public notice

provisions of the NPDES permit regulations or the equivalent provision in approved NPDES State permit issuance programs.

In drafting the Phase II permit, the permit writer should work closely with the permittee and the State WQS authority in reviewing the CSO control alternatives presented in the LTCP. The permit writer should ensure that the permittee has shown, using either the presumption or demonstration approach, that the selected CSO controls will meet WQS in the receiving water body.

For the technology-based requirements in the Phase II permit, the permit writer should require continued implementation of the NMC. The permittee's documentation may be used to show that the NMC continue to satisfy BAT/BCT requirements on the basis of the permit writer's BPJ. The permit writer may choose to modify any or all of the NMC from the Phase I permit to be more site-specific, based on the documentation submitted by the permittee. For the water quality-based requirements in the Phase II permit, the permit writer should require implementation of the selected CSO controls the permittee has demonstrated or presumed will achieve WQS. The permit writer must document in the fact sheet or statement of basis that the Phase II permit meets the technology-based and water quality-based requirements of the CWA.

4.2 INFORMATION REQUIREMENTS

Existing NPDES application forms do not typically require the permittee to submit sufficient information and data to enable the permit writer to develop a Phase II permit. The permit writer must rely on information and data that the permittee has submitted in response to Phase I permit requirements. This includes 1) the documentation showing the permittee's implementation of the NMC, 2) the LTCP, including any interim deliverables submitted during the LTCP development, and 3) any other information required by the Phase I permit. The permit writer will need this information, at a minimum, to develop an effective Phase II permit. If this information is not adequate, the permit writer should request additional information from the permittee. The permit writer should refer to Section 3.2 for available mechanisms for obtaining additional information and data.

4.3 IDENTIFICATION OF CSO OUTFALLS IN THE PERMIT

Prior to issuance of the Phase II permit, the locations of all CSO outfalls should be known. Therefore, the permit writer should specifically identify CSO outfalls in the Phase II permit. Exhibit 4-1 provides example permit language for authorization to discharge from CSO outfalls.

EXHIBIT 4-1. EXAMPLE PERMIT LANGUAGE FOR IDENTIFYING CSO OUTFALLS IN A PHASE II PERMIT

The permittee is authorized to discharge from the outfalls listed below in accordance with the requirements of [insert appropriate CSO section references] and other pertinent provisions of this permit.

<u>Overflow Number</u>	<u>Overflow Outfall Location</u>	<u>Receiving Water Body</u>
[insert number]	[insert latitude/longitude (street address optional)]	[insert receiving water body]

4.4 NINE MINIMUM CONTROLS

The permit writer should determine whether the actions taken by the permittee to implement the NMC during the Phase I permit are adequate. This can be accomplished by reviewing the information provided by the permittee during the Phase I permit term (i.e., NMC documentation and the LTCP). Evaluation criteria are discussed in Section 4.4.1. The Phase II permit should require continued implementation of the NMC. When preparing the Phase II permit, therefore, the permit writer should develop site-specific permit language requiring the continued implementation of the NMC and its associated documentation. Section 4.4.2 provides site-specific permit language.

4.4.1 Review of Permittee's Implementation of the Nine Minimum Controls

As discussed in Section 3.10, the permit writer, in conjunction with other appropriate personnel, should have reviewed the NMC documentation for completeness and compliance with Phase I permit requirements. The documentation serves as the basis for the development of technology-based requirements in the Phase II permit, on a BPJ basis reflecting site-specific considerations.

1 The permit writer should evaluate whether the actions already taken or being taken by the
2 permittee are adequate to meet the NMC requirements. This section provides general criteria
3 for the permit writer to use to evaluate the adequacy of the permittee's NMC. Because of the
4 site-specific nature of the control measures, these criteria are not all inclusive but provide a basis
5 for the evaluation that should be conducted by the permit writer. It should be noted that a single
6 control measure can be used to comply with more than one of the NMC. For additional detail
7 on the NMC control measures, see *Combined Sewer Overflows—Guidance for Nine Minimum*
8 *Control Measures* (EPA, 1994).

9
10 As discussed, upon receipt of the NMC documentation, the permit writer must first
11 determine whether the documentation complies with the requirements set forth in the permit.
12 After initial review of the documentation, if a permit writer determines that certain components
13 or subcomponents are incomplete or not properly addressed by the permittee, then the permit
14 writer should follow up with the permittee in one of two ways. If the permit writer believes that
15 missing or incomplete components are relatively significant and that the permittee has not acted
16 in good faith to submit the documentation, then the permit writer may initiate an enforcement
17 action for noncompliance with a Phase I permit condition. Any possible enforcement actions
18 should be coordinated with the appropriate enforcement personnel. Alternatively, if only minor
19 components are unclear or incomplete, the permit writer may simply want to request the missing
20 or incomplete data from the permittee in accordance with the policies and procedures of the
21 NPDES permitting authority (e.g., informal telephone call request or formal request letter).

22
23 Once the complete NMC documentation has been received, the permit writer should review
24 it using the criteria provided in the following paragraphs. These evaluation criteria are also
25 provided in checklist form in Appendix C.

26 27 **Proper Operation and Regular Maintenance Programs for the CSS and CSO Outfalls**

28 When evaluating the permittee's O&M program, the permit writer should consider whether
29 the program:

- Describes the system, identifying and addressing CSOs by including an inventory of all CSO structures, equipment, and treatment facilities. Provides procedures for keeping this inventory current.
- Will be effective in reducing the number, frequency, and pollutant loading due to CSOs.
- Provides operating procedures and specifications for all equipment, structures, facilities, CSO outfalls, and off-line storage structures. Includes the hydraulic capacities of the collection and treatment systems, the storage capacities of the collection and treatment systems, and off-line storage capacity. Operating procedures should reflect the best use of the system's flow and routing controls to minimize CSOs. Procedures should address the identification and correction of CSS and CSO problems.
- Includes routine inspection, maintenance, and repair schedules for all CSO outfalls, interceptors, pumping stations, and equipment. Schedules and inspection frequencies should be appropriate for the system.
- Involves maintenance procedures, including routine inspections, schedules for collection system preventative maintenance, schedules for cleaning and flushing of system and equipment, and response procedures for repairs.
- Requires logs or other documentation of completed activities. Logs should also include documentation of sewerage blockages.
- Addresses the location of overflows where O&M is hindered (i.e., devices are under major thoroughfares, railroad yards, or other difficult to reach or safety hazard areas).
- Allocates resources for O&M program implementation, including staffing level and funding, equipment, and training.

The permit writer should note that in addition to the O&M program submitted as part of the NMC documentation, the permittee will be submitting an operational plan as part of the LTCP. (The operational plan will revise the O&M program to include the permittee's selected CSO controls.) Both of these submissions can be reviewed using the previously-listed factors. These two submissions will be used to develop the Phase II permit requirement for an O&M program.

Maximum Use of the Collection System for Storage

In evaluating the permittee's control measure, the permit writer should consider whether the permittee has:

- Identified portions of the CSS usable for storage and determined the CSS storage capacity, including configuration, size, and pump station capacity
- Identified appropriate minor modifications to increase storage (e.g., raised existing weirs)
- Identified potential off-line storage at existing facilities
- Implemented procedures for maximizing CSS storage capacity.

The permit writer should note that this control measure may increase the possibility of flooding (e.g., basement) and that the potential for a permittee to increase collection system storage varies. Increased sedimentation in the collection system, more frequent cleaning, odor potential, and other factors should be considered in evaluating the potential for collection system storage.

Review and Modification of Pretreatment Programs

Reviewing and modifying pretreatment programs applies primarily to permittees with approved pretreatment programs. If the permittee does not have an approved pretreatment program, however, it should attempt to minimize CSO impacts from any nondomestic discharges to the collection system. In evaluating the permittee's control measure, the permit writer should consider whether the permittee has:

- Determined if the CSS receives nondomestic wastewater discharges.
- Prepared an inventory of nondomestic users who may discharge to the same receiving water body as the CSOs. Evaluated the discharge constituents and suspected impacts from such users.
- Evaluated the potential for regulating either the volume or pollutant loadings from nondomestic users to CSOs during wet weather flow conditions. The evaluation should include a discussion of whether the modifications are feasible or of practical value for CSO control. For example, whether the permittee has considered requiring industrial users with appropriate storage capacity to temporarily hold wastewater during precipitation events or when notified by the permittee, or has considered prohibiting new users from discharging stormwater or uncontaminated water, such as non-contact cooling water, to the collection system.

- Modified the pretreatment program or, for permittees without approved pretreatment programs, taken actions to control nondomestic users.

Maximization of Flow to POTW Treatment Plant

In evaluating the permittee's control measure, the permit writer should consider whether the permittee has:

- Identified actions that could be taken to increase flows to the POTW treatment plant during wet weather flow conditions without significantly affecting treatment performance or contributing to performance problems
- Conducted plant tests to determine the plant capability to treat higher flows during wet weather flow conditions or determined the maximum flow that can be treated, using available historical data
- Developed, implemented, and documented implementation of a flow maximization plan during wet weather flow conditions.

Prohibition of CSOs During Dry Weather Flow Conditions

In evaluating the permittee's control measure, the permit writer should consider whether the permittee has:

- Developed adequate procedures to identify and document where and when dry weather overflows occur
- Developed and instituted procedures to eliminate dry weather overflows.

Control of Solid and Floatable Materials

In evaluating the permittee's control measure, the permit writer should consider whether the permittee has:

- Evaluated the following technologies for the removal of solids and floatables: screening materials using baffles, screens, and netting; skimming from water body surface with booms at outfalls in confined areas; and source control, which may be addressed under the pollution prevention program for CSO outfalls (see Pollution Prevention Program below)

- Identified and addressed problems that may be created by the installation of the control technology
- Implemented the appropriate control technology, considered and provided justification that the technology is appropriate for the site conditions, and is conducting associated inspections and regular maintenance.

Pollution Prevention Program

In evaluating the permittee's control measure, the permit writer should consider whether the permittee has:

- Evaluated both government agency (e.g., street cleaning, banning, or substitution of products, such as plastic food containers; controlled use of pesticides, fertilizers, and other hazardous substances at public facilities) and public (e.g., used oil recycling, household hazardous waste collection) source control measures
- Addressed pollutants found in CSOs during the evaluation of the control measures
- Included a wide reaching public education program
- Evaluated mechanisms to encourage water conservation (e.g., public outreach, structuring of water/sewer service charges, local ordinance provisions)
- Allocated adequate resources to conduct pollution prevention program activities
- Implemented and maintained detailed records of pollution prevention activities
- Promoted the use of industrial/construction BMPs for stormwater.

Public Notification

In evaluating the permittee's control measure, the permit writer should consider whether the permittee has:

- Evaluated options for public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts
- Implemented procedures that safeguard the public health through public notification of the presence of contaminants at critical levels in the receiving water bodies due to CSOs

- Implemented procedures that notify persons reasonably expected to be affected by the CSO and reach the affected public
- Documented CSO occurrences and associated notifications
- Installed identification signs at each CSO outfall.

Monitoring to Effectively Characterize CSO Impacts and Efficacy of CSO Controls

The permittee is likely to have conducted monitoring required for this minimum control in conjunction with CSS characterization associated with the LTCP development. Thus, the permit writer should review the permittee's monitoring efforts as a whole and assemble all applicable monitoring data prior to the evaluation. In evaluating the permittee's monitoring data, the permit writer should consider whether the permittee has:

- Characterized the CSS to identify all CSO locations and receiving water bodies
- Collected data on the total number of overflow events and the frequency, duration, volume, and pollutant loadings of CSOs
- Collected water quality data and information on water quality impacts (e.g., beach closings, floatables, wash-up episodes, fish kills)
- Conducted monitoring to determine baseline data prior to implementation of the NMC
- Conducted monitoring to determine baseline conditions subsequent to implementation of the NMC, which may be used in LTCP development.

4.4.2 Permit Conditions

Once the permit writer has evaluated the permittee's NMC implementation and documentation efforts, he/she should develop Phase II permit language that requires the continued implementation of the NMC. The permit language should be tailored to the permittee's specific circumstances and should incorporate both site-specific implementation and recordkeeping requirements. The permit writer may need to coordinate the development of this permit language with the LTCP implementation language because it is possible that some of the NMC control measures will be incorporated into the LTCP as selected CSO controls.

1 The permit writer should establish technology-based requirements in the Phase II permit
2 based on the permittee's documentation of the NMC and any alterations made in the LTCP.
3 Example permit language is provided in Exhibit 4-2 for each NMC. A portion of this language
4 is applicable to all permittees implementing the particular minimum CSO control. Additional
5 site-specific language, which is tailored to the specific control measures implemented by the
6 permittee, is given in italics. Although the site-specific language is not applicable to all
7 permittees, it is provided as an example of the type of language and detail appropriate for
8 requiring the NMC in the Phase II permit. The permit writer may be able to select language
9 directly from the permittee's NMC documentation or LTCP and incorporate it into the permit.

10
11 The permit writer should note that no site-specific permit language was provided for the
12 monitoring to effectively characterize CSO impacts and efficacy of CSO controls. This
13 monitoring must be integrated with the monitoring requirement to be placed in the Phase II
14 permit associated with implementation of the LTCP. For developing permit language for these
15 monitoring requirements, see Section 4.7.

16 17 **Documentation for Fact Sheet/Statement of Basis**

18 As required in 40 CFR Section 124.8, a fact sheet (or a statement of basis for minor
19 discharges) must be prepared for every NPDES permit. The purpose of the fact sheet is to set
20 forth the principal technical facts and the significant factual, legal, methodological, and policy
21 questions considered in preparing an NPDES permit. Although 40 CFR Section 124.8
22 establishes the minimum requirements for a fact sheet, each permit writer will probably prepare
23 a fact sheet in accordance with the format used by the permitting authority.

24
25 For Phase II permits that are requiring the implementation of the NMC, the permit writer
26 must discuss in the fact sheet the basis for the NMC requirements. The permit writer should
27 use the permittee's NMC documentation to record in the fact sheet the justification for
28 implementation of the specific minimum controls chosen by the permittee. Further, the permit
29 writer must discuss the fact that the NMC are being used, on a case-by-case basis, to comply
30 with the technology-based requirements of the CWA in lieu of numeric effluent limitations (see

EXHIBIT 4-2. EXAMPLE PERMIT LANGUAGE FOR
CONTINUED IMPLEMENTATION OF THE NINE MINIMUM CONTROLS

I. Effluent Limits

A. Technology-based requirements for CSOs. The permittee shall comply with the following technology-based effluent limits in the form of narrative controls:

1. Conduct proper operations and regular maintenance programs. The permittee shall implement the Operation and Maintenance Plan for the combined sewer system that will include the elements listed below. The permittee also shall update the plan to incorporate any changes to the system and shall operate and maintain the system according to the plan. The permittee shall keep records to document the implementation of the plan.

Site-Specific Language:

Designation of a Manager for Combined Sewer Overflows. The permittee shall designate a person to be responsible for the wastewater collection system and serve as the contact person regarding combined sewer overflows. The permittee shall notify the permitting authority within [specify number of days] of designation of a new contact person.

Inspection and Maintenance of CSS. The permittee shall inspect and maintain all CSO structures, regulators, pumping stations, and tidegates to ensure that they are in good working condition and adjusted to minimize CSOs and prevent tidal inflow. The permittee shall inspect, or cause to be inspected, each CSO outfall at least [specify frequency for inspection]. The inspection shall include, but is not limited to, entering the regulator structure if accessible, determining the extent of debris and grit build-up, and removing any debris that may constrict flow, cause blockage, and result in a dry weather overflow. The permittee shall record in a maintenance log book the results of the inspections. For CSO outfalls that are inaccessible, the permittee may perform a visual check of the overflow pipe to determine whether or not the CSO is occurring during dry weather flow conditions.

Provision for Trained Staff. The permittee shall provide an adequate number of full-time equivalents to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. Each member of the staff shall receive appropriate training.

Prioritization Maintenance Needs. The permittee shall develop a prioritized list of maintenance needs and a proposed implementation schedule. The permittee shall submit this list to the permitting authority within [insert number] months of the effective date of the permit.

Allocation of Funds for Operation and Maintenance. The permittee shall allocate adequate funds specifically for operation and maintenance activities. The permittee shall submit a certification of assurance from the affected local government entities that the necessary funds, equipment, and personnel have been or will be committed to carry out the O&M plan.

EXHIBIT 4-2. EXAMPLE PERMIT LANGUAGE FOR
CONTINUED IMPLEMENTATION OF THE NINE MINIMUM CONTROLS (continued)

2. Maximize use of the collection system for storage. The permittee shall maximize the in-line storage capacity. The permittee shall keep records to document implementation.

Site-specific language:

The permittee shall 1) maintain all dams at diversion structures at their current heights (as of the date of permit issuance) or greater, 2) minimize discharges from the CSO outfall locations designated as [insert appropriate designation] until the entire available capacity of the [named] Combined Sewer Retention Basin is used to store the overflow for later treatment at the plant, and 3) keep records of the flow entering and leaving the [named] Combined Sewer Retention Basin.

3. Review and modify pretreatment program. The permittee shall continue to implement selected CSO controls to minimize the impact of nondomestic discharges from CSOs. The permittee shall re-evaluate [specify frequency] whether additional modifications to its pretreatment program are feasible or of practical value. The permittee shall keep records to document this evaluation and implementation of the selected CSO controls to minimize nondomestic discharges from CSOs.

Site-specific language:

The permittee shall prohibit the addition of new or increased volumes of industrial process or high-strength wastewaters into the sewer system under circumstances where they could be discharged through a CSO outfall.

[Alternative language for permittee without an approved Pretreatment Program.]

Actions to minimize impact of nondomestic discharges from CSOs. The permittee shall continue to implement selected CSO controls to minimize the impact of nondomestic discharges from CSOs.

4. Maximize flow to POTW treatment plant. The permittee shall operate the POTW treatment plant at maximum treatable flow of at least [insert appropriate number] MGD during wet weather flow conditions/events and deliver all flows to the treatment plant within the constraints of the capacity of the treatment plant. The permittee shall keep records to document these actions.

5. Prohibit combined sewer overflows during dry weather. Dry weather overflows from CSO outfalls are prohibited. All dry weather overflows must be reported to the permitting authority within [insert appropriate number of days] of when the permittee becomes aware of a dry weather overflow. When the permittee detects a dry weather overflow, the permittee shall begin corrective action immediately. The permittee shall inspect the dry weather overflow each subsequent day until the overflow has been eliminated. The permittee shall record in the inspection log book dry weather overflows, as well as the cause, corrective measures taken, and the dates of beginning and cessation of overflow.

EXHIBIT 4-2. EXAMPLE PERMIT LANGUAGE FOR
CONTINUED IMPLEMENTATION OF THE NINE MINIMUM CONTROLS (continued)

6. Control solid and floatable materials in CSOs. The permittee shall implement measures to control solid and floatable materials in its CSOs.

Site-specific language:

These control measures shall include:

- (i) *Ensure that all overflows from the diversion structures are baffled or that other means are used to reduce the volume of floatables.*
- (ii) *Inspect and maintain the sewer system so that solids or floatable material greater than [insert size] are not present in CSOs.*
- (iii) *Remove solid or floatable materials captured by a [insert appropriate number]-inch screen and dispose of this material in an acceptable manner prior to discharge to the receiving water. Overflows containing solid or floatable materials that may be captured by a [insert appropriate number]-inch screen are prohibited.*

7. Develop and implement pollution prevention program. The permittee shall implement a pollution prevention program focused on reducing the impact of CSOs on receiving waters. The permittee shall keep records to document pollution prevention implementation activities.

Site-specific language:

This program shall include:

- (i) *Conducting street sweeping and catch basin modification or cleaning at a frequency that will prevent large accumulations of pollutants and debris, but no less than [specify a minimum frequency]*
- (ii) *Conducting a public education program that informs the public of the permittee's local laws that prohibit littering and the use of phosphate-containing detergents and pesticides*
- (iii) *Instituting an oil recycling program.*

8. Notify the public of CSOs. The permittee shall continue to implement a public notification plan to inform citizens of when and where CSOs occur. The process must include:

- a. A mechanism to alert persons using all receiving water bodies affected by CSOs
- b. A system to determine the nature and duration of conditions that are potentially harmful to users of these receiving water bodies due to CSOs.

The permittee shall keep records documenting public notification.

EXHIBIT 4-2. EXAMPLE PERMIT LANGUAGE FOR
CONTINUED IMPLEMENTATION OF THE NINE MINIMUM CONTROLS (continued)

Site-specific language:

Within 3 months of the effective date of this permit, the permittee shall install and maintain identification signs at all CSO outfalls owned and operated by the permittee. The permittee must place the signs at or near the CSO outfalls and ensure that the signs are easily readable by the public. The signs shall be a minimum of 12 by 18 inches in size, shall be metal, and shall contain the following information: 1) permittee name; 2) wet weather sewage discharge; 3) outfall (discharge serial number); and 4) telephone number and contact.

9. Monitor to effectively characterize CSO impacts and the efficacy of CSO controls. The permittee shall regularly monitor CSO outfalls to effectively characterize CSO impacts and efficacy of CSO controls.

Site-specific language:

[For example language, see page 4-31.]

Section 3.6.1). For further guidance related to preparing a fact sheet or statement of basis, the permit writer should refer to *Training Manual for NPDES Permit Writers* (EPA, 1993).

4.5 LONG-TERM CONTROL PLAN

Upon receipt of interim deliverables (see Section 3.5), the permit writer will be responsible for their review and for working closely with the permittee to ensure that any inadequacies, problems, or issues are addressed in a timely fashion prior to submission of the completed LTCP and the development and issuance of the Phase II permit.

In preparing for the development and issuance of a Phase II permit, the permit writer must review the LTCP submitted by the permittee. Subsequent to the review of the LTCP, the permit writer must require implementation of the selected CSO controls identified in the LTCP. The primary responsibility of the permit writer in developing Phase II permits is to ensure that the CSO controls proposed by the permittee comply with the requirements of the CWA, achieve State WQS, and are consistent with the intent of the CSO Control Policy. The requirement to implement these controls must be appropriately reflected as enforceable NPDES permit

conditions. This section provides guidance for the permit writer in reviewing the LTCP and developing permit conditions to implement the LTCP.

4.5.1 Coordination of the Review and Evaluation

The permit writer will need to coordinate the input from a variety of agencies to ensure that CSOs comply with the CWA, including attainment of WQS. Therefore, the permit writer should form and coordinate a review team that will be responsible for reviewing the LTCP. An appropriate review team should include the following types of personnel:

- WQS personnel to assist in evaluating proposed CSO controls and to review and revise State WQS, as appropriate. WQS personnel can also assist in evaluating any ambient or special monitoring conditions (e.g., toxicity testing) that may be required during the Phase II permit to monitor the effectiveness of the selected CSO controls.
- Enforcement personnel to assist in ensuring that permit language is enforceable. Enforcement personnel can also provide input on the use of enforcement mechanisms (e.g., administrative orders) to require implementation of the selected CSO controls. This will be particularly important if extensive time is required by the permittee to comply with Phase II permit requirements.
- Field personnel (e.g., EPA's Environmental Services Division personnel) to help review monitoring plans and the development of CSO monitoring requirements
- Stormwater and nonpoint source pollution personnel for watershed issues.

4.5.2 Review of Long-Term Control Plan

As discussed in Section 3.5.2, the permittee is likely to be submitting parts of the LTCP as interim deliverables during the Phase I permit term. The permit writer and other members of the review team should be reviewing these deliverables, as well as the completed LTCP detailing the permittee's selected CSO controls, as soon as they are submitted.

Upon submission and receipt of the LTCP, the permit writer should first determine whether the LTCP complies with the requirements set forth in the Phase I permit. After initial review of the LTCP, if a permit writer determines that certain components or subcomponents are

1 incomplete or not properly addressed by the permittee, the permit writer should follow up with
2 the permittee. For information on followup procedures, see Section 4.4.1.

3
4 The permit writer, with support from the review team, should review the LTCP to ensure
5 consistency with the CSO Control Policy and to ensure that the selected CSO controls are
6 reasonable and will result in compliance with CWA requirements. Of the various CSO control
7 alternatives considered by the permittee during the Phase I permit term, one or a combination
8 of alternatives will be selected for implementation by the permittee. The LTCP should discuss
9 all of the alternatives and, more importantly, why the selected CSO controls were chosen.
10 There should also be a discussion related to the selected CSO controls, including maximization
11 of treatment at the POTW treatment plant; the operational plan; integration of the NMC;
12 monitoring; costs of the selected CSO controls and financing; and the implementation schedule,
13 possibly including identification of milestones where re-evaluation and modifications would
14 occur. All other parts of the LTCP, including the CSS and water quality characterization
15 monitoring and modeling used during the development process, the other alternatives and costs,
16 and public participation, ultimately become "historical" material that will not be addressed in
17 the Phase II permit, because they are not part of the selected CSO controls. However, this
18 information is critical for appropriate review of the LTCP.

19
20 The remainder of this section presents questions the permit writer should consider while
21 reviewing the LTCP. These evaluation criteria are also provided in a checklist in Appendix D.
22 These review questions are based on the requirements of the CSO Control Policy and the
23 guidance provided in the *Combined Sewer Overflows—Guidance for Long-Term Control Plan*
24 (EPA, 1994). Although the permit writer may use these questions as the basis for review, the
25 permit writer may need to supplement them to reflect the site-specific Phase I permit conditions
26 established for a particular permittee. For example, if a permit specifically required monitoring
27 and evaluation of certain pollutants of concern, then a permit writer should ensure that the
28 permittee has addressed these pollutants in its monitoring plan.

1 In reviewing the LTCP using the following questions, the permit writer should remember
2 that the level of detail in the LTCP can vary significantly depending on the permittee and its
3 CSS. The overall intent of the review is to ensure that the LTCP is a coherent, organized
4 document and that the permit writer can follow a logical step-by-step analysis justifies how the
5 selected CSO controls were chosen.

6 7 **Public Participation**

8 When the permittee submits its proposed public participation plan as an interim deliverable
9 of the LTCP development, the permit writer should review it with other appropriate staff from
10 the review team. When evaluating the public participation element of the LTCP, the permit
11 writer should consider the following evaluation questions to ensure the proposed plan, once
12 implemented, results in an effective public participation program:

- 13
14 • Does the public participation process seek to actively involve rate payers, industrial users
15 of the CSS, persons near the impacted waters, and persons who use the impacted waters?
16
- 17 • Does the public participation plan document how the public was notified of public
18 participation events?
19
- 20 • Does the public participation plan include a record of the public participation events,
21 including the number of people attending and a record or summary of comments?
22
- 23 • Does the public participation plan contain a summary of comments and the changes or
24 decisions made in response to public comments?

25 26 **CSS Characterization, Monitoring, and Modeling**

27 When the permittee submits a proposed monitoring plan as an interim deliverable of the
28 LTCP development, the permit writer should review it with other appropriate staff from the
29 review team. When evaluating this element of the LTCP, the permit writer should consider the
30 following questions to ensure the proposed plan, once implemented, will be an effective
31 monitoring program that provides the necessary data:

- 32
33 • Is there a general description of the CSS that includes the geographical area and
34 population served?
35

- Is there a map of the CSS depicting the location of all CSO outfalls and receiving water bodies?
- Is there information on the volume, flow rate, and frequency of CSOs and the pollutants discharged?
- Is the description of how the CSS responds to rainfall events sufficient enough to determine which rainfall events trigger CSOs?
- Have sensitive areas and all outfalls discharging to these areas been identified?
- Is there information on the CSO pollutant loadings and their impact on receiving waters?
- Is there information on designated water uses and whether designated uses are being met?
- Does the CSS and CSO characterization provide information on the known effects of the CSOs on water quality during precipitation events, as well as provide the level of detail needed to model or project both the operation of the system and the impacts of various overflow scenarios on the receiving waters?
- Is monitoring sufficient to document baseline conditions to allow the permittee to demonstrate the long-term benefits of CSO controls?
- If modeling was conducted, is the model identified and described, and are the results provided?

Appendix B contains additional information on reviewing monitoring plans.

CSO Alternatives

When evaluating this element of the LTCP, the permit writer should consider the following questions:

- Did the permittee develop a comprehensive list of CSO control alternatives? Did this list include alternatives from each of the four general categories—source controls, collection system controls, storage, and treatment technologies (described in *Combined Sewer Overflows—Guidance for Long-Term Control Plan* [EPA, 1994])?
- Are the CSO control alternatives that were considered described?
- Do CSO control alternatives achieve WQS?

- Did the plan describe the approach used to screen the list of CSO control alternatives, including the screening criteria? Did the screening criteria include performance factors, implementation and operation factors, and environmental factors (described in *Combined Sewer Overflows—Guidance for Long-Term Control Plan* [EPA, 1994])?
- Did the plan describe the process by which the CSO control alternatives were developed?
- Is cost/performance information (including curves) for each of the CSO control alternatives provided? Did the cost/performance analyses evaluate the alternatives for the capability to achieve zero overflow events per year, and averages of 1 to 3, 4 to 7, and 8 to 12 overflow events per year?

Selected CSO Controls

When evaluating this element of the LTCP, the permit writer should consider the following questions:

- Which CSO control approach is selected?
- Is the selected CSO control approach a presumption or demonstration approach?
- Does the plan identify the CSO controls that will be implemented and reasons for rejecting others?
- Have the NMC been integrated into the permittee's description of its selected CSO controls?
- Will the selected CSO controls eliminate all CSO points to sensitive areas? If not, do the data support the permittee's conclusion that elimination is not physically or economically feasible?
- If CSO outfalls to sensitive areas will remain:
 - Will these CSOs receive treatment?
 - Will the CSO controls be sufficient to protect WQS?
- Will the CSO controls provide treatment or removal of floatables and settleable solids equivalent to that achieved by primary clarification? Is the mechanism for solids and floatables disposal described?

- Will the disinfection of effluent be necessary? Is disinfection proposed as part of the CSO controls? If not, does the information support the conclusion that disinfection is not necessary? If disinfection is proposed, will removal of harmful disinfection chemical residuals be necessary?
- Based on the cost/performance information, do the selected CSO controls provide the maximum pollution reduction benefits reasonably attainable?
- Based on the information, will the selected CSO controls protect WQS? If WQS cannot be met because of sources other than CSOs, has the permittee provided information on the other sources and natural background conditions?
- Are the selected CSO controls designed to allow cost-effective expansion or cost-effective retrofitting if additional controls are determined necessary to meet WQS?

Implementation Schedule

In reviewing the implementation schedule, the permit writer should use both the data and information supporting the prioritization of the CSO projects on the basis of their environmental impacts, as well as the analysis of financial capability. The permit writer should refer to the *Combined Sewer Overflow—Long-Term Control Plan* (EPA, 1994) and *Combined Sewer Overflow—Financial Capability Assessment* (EPA, 1994) guidance documents for criteria to evaluate the reasonableness of the implementation plan, including any construction schedules and financing plans. He/she should refer to the following questions when reviewing this component:

- Do any phased construction schedules include an analysis of financial capability? Did the permittee evaluate the following factors:
 - Median household income
 - Total annual wastewater and CSO control costs per household as a percent of median household income
 - Overall net debt as a percent of full market property value
 - Property tax revenues as a percent of full market property value
 - Property tax collection rate
 - Unemployment
 - Bond rating
 - Grant and loan availability
 - Previous and current residential, commercial, and industrial sewer user fees and rate structures
 - Other viable funding mechanisms and sources of financing
 - Debt indicators (e.g., overall net debt as a percent of full market property value)?

- Does the schedule include milestones for all major implementation activities, including environmental reviews, siting of facilities, site acquisition, Army Corps of Engineers permitting, etc.?

The permit writer should review the financing plan to see if it provides the funds necessary to construct CSO controls and assess whether water quality considerations demand a shorter timeframe than the proposed implementation schedule. If so, the permit writer may consider requiring specific CSO controls to be implemented on a shorter but still reasonable timeframe.

Operational Plan

In evaluating this element of the LTCP, the permit writer should consider whether the permittee's O&M program addresses the selected CSO controls and other evaluation criteria proposed in Section 4.4.1.

Post-Construction Compliance Monitoring

The permit writer should review the monitoring plan with appropriate staff (i.e., staff knowledgeable in monitoring program design and implementation) from the review team. When evaluating this element of the LTCP, the permit writer should consider the following questions:

- Does the monitoring program include monitoring of representative CSOs?
- Does the monitoring program include ambient receiving water body monitoring at representative CSOs, as well as monitoring prior to CSO impacts?
- Does the monitoring program include any biological parameters (e.g., fish, zooplankton)?
- Does the monitoring program address all applicable WQS?

Appendix B contains additional information on the review of a monitoring plan.

4.5.3 Implementation of the Long-Term Control Plan

As described in the CSO Control Policy, Phase II permits should contain "narrative requirements that ensure the selected CSO controls are implemented, operated, and maintained as described in the long-term CSO control plan." Because the selection of the CSO controls will

1 be made on a site-specific basis, the conditions in the Phase II permit requiring the
2 implementation of the selected CSO controls should be tailored to the site-specific conditions.

3
4 The permit writer should not simply develop a generic permit condition that requires the
5 permittee to implement the LTCP as developed, incorporating the LTCP into the NPDES permit
6 by reference. It is recommended that the permit writer develop specific permit conditions that
7 directly address the selected CSO controls. Permit conditions should be developed that require
8 implementation of the selected CSO controls, the proposed O&M program requirements, and
9 the proposed post-construction compliance monitoring program. A brief discussion for each of
10 these portions of the LTCP is provided below.

11 12 **Selected CSO Controls**

13 To ensure that a permittee will implement its selected CSO controls, the permit writer must
14 develop permit requirements that specifically require the implementation of the selected CSO
15 controls. As discussed above, due to the differences among CSSs, it is expected that selected
16 CSO controls identified in LTCPs will vary from system to system. In many cases, the
17 permittee's selected CSO controls will require major construction and implementation activities;
18 these activities may require many years to complete over several NPDES 5-year permit cycles.
19 The CSO Control Policy recommends that the permittee include in the LTCP the information
20 and data necessary to develop the fixed-date schedules for funding and implementing the CSO
21 control program. In the LTCP, the permittee should prioritize the individual projects within the
22 overall control program on the basis of environmental impacts and available funding. See
23 Section 3.5.1 for additional discussions on the permittee's development of implementation
24 schedules.

25
26 When the implementation schedules for the selected CSO controls are established, the permit
27 writer should determine the appropriate mechanism for imposing the schedule on the permittee.
28 The permit writer will require in the Phase II permit that the permittee, immediately upon
29 issuance of the permit, comply with applicable WQS, as well as BAT/BCT requirements. In
30 nearly all cases, the permittee will be unable to do so. Therefore, the permit writer should

1 include a fixed-date implementation schedule either in the Phase II permit or in an enforcement
2 mechanism issued with the Phase II permit. Where lawful under the CWA and allowed by State
3 WQS, the permit writer may use the Phase II permit as the enforceable mechanism.

4
5 A permit writer in a State that does not allow fixed-date implementation schedules in NPDES
6 permits and an EPA permit writer must use an appropriate enforcement mechanism issued in
7 conjunction with the Phase II permit. Appropriate enforcement mechanisms may include
8 administrative orders or judicial orders. The permit writer should discuss with the appropriate
9 enforcement authority the choice of the mechanism to use in each individual situation.

10
11 Exhibit 4-3 provides example language requiring compliance with a LTCP implementation
12 schedule for the selected CSO controls. The example provided in this exhibit assumes that the
13 permittee has successfully implemented the NMC, and the schedule is to implement the selected
14 CSO controls identified in the LTCP. In this permit requirement, the permit writer should list
15 specific activities for the permittee's selected controls. For example, if one of the selected CSO
16 controls is construction of a retention basin, the permit writer should include specific language
17 for the various activities necessary to complete the construction, as shown in the italicized site-
18 specific language in Exhibit 4-3. These activities and the corresponding completion dates should
19 be taken directly from the LTCP whenever possible. In many instances, the permittee may have
20 a combination of selected CSO controls in its LTCP, such as building additional retention basins,
21 separating portions of the CSS, and maximizing flow receiving primary treatment at the POTW
22 treatment plant. In these cases, the permit writer should include activities with corresponding
23 completion dates for implementing each of the selected CSO controls. It should be noted that
24 in addition to identifying compliance dates within the implementation schedule, the permit writer
25 should also require periodic reporting (i.e., progress reports) to demonstrate compliance with
26 the various compliance dates. Section 4.8 provides additional guidance related to reporting
27 requirements for the Phase II permit.

Operational Plan

As described in Section 4.4.2, permittees will be required to develop an O&M program as part of the NMC. Once the selected CSO controls have been chosen by the permittee as part of its LTCP, the permittee should revise the O&M plan developed and implemented as part of the NMC to include the selected CSO controls. The permit requirements for the implementation of the O&M program are contained in Section 4.4.2.

EXHIBIT 4-3. EXAMPLE PERMIT LANGUAGE FOR IMPLEMENTING SELECTED CSO CONTROLS

II. Long-Term Control Plan

The permittee shall implement and effectively operate and maintain the selected CSO controls in the long-term control plan. The implementation schedule for this program shall be as follows:

Activity

Completion Date

[insert name of activity]

[insert date]

Site-specific language:

1. Retention basin

- a. Complete design of [named] retention basin.
- b. Submit construction drawings for [named] retention basin.
- c. Initiate construction of [named] retention basin.
- d. Complete construction of [named] retention basin.

2. Main street sewer separation

- a. Complete design.
- b. Solicit bids.
- c. Award contracts.

NOTE: A compliance schedule exceeding the term of the permit may only be included in the permit if allowed by State WQS.

1 **Post-Construction Compliance Monitoring**

2 Requiring implementation of the post-construction compliance monitoring program proposed
3 by the permittee as part of its LTCP is important for determining the overall effectiveness of the
4 selected CSO control(s) in achieving compliance with CWA. It may not be appropriate to
5 require the implementation of a post-construction monitoring program until construction is well
6 underway or completed. The permit writer should refer to Section 4.7 for further guidance
7 regarding Phase II permit monitoring requirements.
8

9 **Documentation for Fact Sheet/Statement of Basis**

10 As discussed previously, the permit writer must prepare a fact sheet or statement of basis
11 that justifies any NPDES permit conditions established for a permittee. For Phase II CSO
12 permits that require the implementation of an LTCP, the permit writer should use the
13 information from the LTCP to record in the fact sheet or statement of basis the justification for
14 implementation of the specific CSO controls chosen by the permittee.
15

16 **4.6 EFFLUENT LIMITATIONS**

17 Similar to the Phase I permit, 40 CFR Section 122.44 (NPDES requirements) requires that
18 both technology- and water quality-based effluent limitations be included in the Phase II permit.
19 However, these two permit phases differ from each other with respect to effluent limitations in
20 the type of effluent limitation each permit phase requires. Phase I allows for the establishment
21 of narrative effluent water quality limitations; Phase II allows water quality limitations in the
22 form of numeric performance standards (i.e., number of overflow events per year) for the
23 selected CSO controls. When sufficient CSO-related information and data are available for the
24 permit writer to develop numeric water quality-based effluent limitations, the permit writer
25 should do so. However, this information is not likely to be available for inclusion in the Phase
26 II permit.
27

28 **4.6.1 Technology-Based Requirements**

29 Phase II permits should require that CSO permittees continue to implement technology-based
30 controls. These technology-based controls include the NMC on a BPJ basis, but may also

1 include components of the selected CSO controls from the LTCP. The permit writer should re-
2 evaluate and incorporate appropriate NMC requirements in the Phase II permit, as discussed in
3 Section 4.4. The discussion of the technology-based requirements of CSOs with respect to the
4 CWA and NPDES permitting requirements that appears in Section 3.6.1 is also applicable to
5 Phase II permits.

6 7 *4.6.2 Water Quality-Based Requirements*

8 Based on the review of NMC documentation submitted by the permittee, a permit writer may
9 also decide that implementation of certain components of the LTCP may also be necessary to
10 achieve the BAT/BCT requirements of the CWA. This situation would occur, for example, if
11 a permit writer determines that the NMC for one permittee are not resulting in the same level
12 of pollutant reductions being achieved by the NMC implemented by another permittee. As a
13 result, the permit writer should consider whether BAT/BCT levels would be better achieved
14 through the implementation of a combination of the NMC and LTCP components.

15
16 As described in Section IV.B.2 of the CSO Control Policy, Phase II permits should contain
17 "water quality-based effluent limits required under 40 CFR Sections 122.44(d)(1) and 122.44(k),
18 requiring compliance with, no later than the date allowed under the State's WQS, numeric
19 performance standards for the selected CSO controls,...." The CSO Control Policy assumes
20 that adequate data will not be available at the beginning of the Phase II permitting process for
21 the permit writer to fully and accurately assess the need for numeric water quality-based effluent
22 limits. Consequently, the CSO Control Policy depends on compliance with the performance
23 standards of the selected CSO controls for water quality protection. The performance standards
24 to be applied to a permittee will depend on the CSO control approach selected by the permittee.
25 The CSO Control Policy specifies the performance standards for the presumption approach.
26 Conversely, to satisfy the demonstration approach, the permit writer must establish performance
27 standards for the selected CSO controls that will contribute to the attainment of WQS. The
28 water quality-related considerations for each approach are discussed in greater detail below.

1 In addition to performance standards designed to meet WQS, the permit writer should include
2 narrative permit language requiring compliance with WQS. In certain circumstances, sufficient
3 data may exist (e.g., the permittee has substantially completed construction of selected CSO
4 controls) for the permit writer to develop numeric water quality-based effluent limits. In these
5 cases, the permit writer should refer to the *Technical Support Document for Water Quality-based*
6 *Toxics Control* (EPA, 1991) for guidance on determining the need for water quality-based
7 effluent limitations.

8 9 Presumption Approach

10 Under the presumption approach, permittees are required to meet numeric performance
11 standards (e.g., certain number of overflow events per year). These criteria were established
12 in the CSO Control Policy because "data and modeling of wet weather events often do not give
13 a clear picture of the level of CSO controls necessary to protect WQS." Therefore, it is
14 presumed that compliance with these numeric performance standards will be sufficient to meet
15 WQS. The permit writer will be responsible, however, for ensuring that this presumption is
16 reasonable for the CSOs to be permitted. To determine if the presumption approach is
17 reasonable, the permit writer must review the data generated and analysis conducted to
18 characterize, monitor, and model the CSS and review the consideration of sensitive areas by the
19 permittee.

20
21 As stated in the CSO Control Policy and discussed previously, the permit writer must also
22 reflect the selected evaluation approach in the form of performance standards in the Phase II
23 permit to fulfill the water quality-based effluent limitation requirements of the CWA and NPDES
24 program requirements. Exhibit 4-4 provides example permit language for a permittee that used
25 the presumption approach.

26
27 The permit writer will be responsible for eventually reviewing the permittee's evaluation of
28 CSO controls and determining whether water quality will be adequately protected. It is likely
29 that an adequate demonstration and review for compliance with WQS will not be possible until
30 the permittee has implemented its selected CSO controls. Therefore, a complete evaluation by

the permit writer, including considering the development of numeric water quality-based effluent limitations, may not occur until the post-Phase II CSO permitting.

**EXHIBIT 4-4. EXAMPLE PERMIT LANGUAGE FOR
PERFORMANCE STANDARDS FOR THE PRESUMPTION APPROACH**

I. Effluent Limitations

B. Water quality-based requirements for CSOs

The permittee shall not discharge any pollutant at a level that would cause or contribute to a violation of [insert name of State] water quality standards.

The permittee shall comply with the following performance standards. These standards shall apply during [insert average design conditions under which controls are based upon].

1. [The permit writer should select the appropriate standard below.]

The permittee shall discharge no more than an average of [insert appropriate number: 4, 5, or 6] overflow events per year not receiving the equivalent of primary clarification.

or

The permittee shall capture for treatment, or storage and subsequent treatment, at least 85 percent of the system-wide combined sewage volume collected in the combined sewage system during precipitation events under design conditions. Captured combined sewage shall be directed either to the [insert name of treatment plant(s)] or to the CSO storage tanks located at [insert location of storage tanks].

or

The permittee shall reduce the mass of the following pollutants [insert pollutants] that have been identified as causing water quality standard violations for at least 85 percent of the system-wide combined sewage volume collected in the combined sewage system during precipitation events under design conditions.

[Insert the following language only if the first or second alternative is chosen above.]

Any combined sewage captured shall receive a minimum of the following treatment:

- (i) Primary clarification or equivalent.
- (ii) Disinfection. Fecal coliform counts shall be maintained below [insert applicable level]. [Insert appropriate dechlorination requirements if applicable based on State water quality standards.]

1 **Demonstration Approach**

2 Under the demonstration approach, permittees are required to show that the selected CSO
3 controls will not cause or contribute to the exceedance of WQS. Permit writers will be
4 responsible for ensuring that the permittee adequately proves that the selected CSO controls are
5 adequate to meet WQS. The specific performance standards that should be included in a permit
6 will depend on the selected CSO controls. Example permit language has not been provided
7 because it will be site-specific and based on the permittee's demonstration. However, the permit
8 writer should attempt to draft permit language in terms of performance standards or other clear
9 specific standards. It should be noted that not all selected CSO controls will lend themselves
10 to specific numeric performance standards (e.g., extensive use of BMPs). However, the permit
11 writer should still attempt to develop permit conditions that will hold the permittee accountable
12 for implementing CSO controls as planned (e.g., specifying frequency and/or constant evaluation
13 of BMPs).

14
15 **4.7 MONITORING**

16 During Phase II, monitoring is necessary to 1) evaluate the water quality impacts from CSOs
17 on receiving waters and the effectiveness of CSO controls and 2) determine compliance with
18 permit conditions and ultimately WQS. The first type of monitoring should be conducted during
19 the Phase II permit term and should be sufficient to evaluate water quality impacts of CSOs on
20 the receiving water bodies and to evaluate the effectiveness of CSO controls (i.e., trends,
21 improvements, elimination of CSOs) during the construction/implementation period. The latter
22 type of monitoring should be conducted after construction of selected CSO controls has been
23 completed (i.e., post-construction compliance monitoring).

24
25 The proposed post-construction compliance monitoring plan should be submitted as part of
26 the LTCP. The requirements for conducting the post-construction monitoring program should
27 be included in either the last Phase II or the first post-Phase II permit (see Chapter 5). This
28 program will include ambient receiving water body pollutant monitoring both at the CSO outfall
29 and prior to the CSO impact. The types of pollutants and parameters to be included in either
30 of these monitoring programs will depend on the WQS in the receiving water body and may

1 include chemical (e.g., BOD, TSS, metals, oil and grease, herbicides, pesticides), and biological
2 (e.g., fish, benthic invertebrates, zooplankton) parameters.
3

4 Monitoring condition permit language should be both clear and concise, while maintaining
5 flexibility to account for site-specific factors. The permit writer is strongly encouraged to
6 develop permit conditions that incorporate specific elements of the submitted plan with specific
7 rather than general requirements so the conditions are enforceable. The permit writer may copy
8 specific portions of the proposed plans into the permit. An example of site-specific permit
9 language is shown in Exhibit 4-5. This exhibit is merely an example of site-specific language
10 and is not applicable to all CSOs.
11

12 Alternatively, the permit writer can require implementation of the monitoring plan submitted
13 by the permittee. The permit writer is cautioned against the use of this approach because
14 conditions that only refer to the monitoring plan may not be enforceable because of ambiguous
15 language.
16

17 If CSOs are causing substantial water quality impacts, the permit writer may want to require
18 special characterization studies, including the following:
19

- 20 • Sediment studies
- 21 • Whole effluent toxicity testing
- 22 • Biological assessments.
23

24 For additional information on these types of testing, the permit writer is referred to the
25 *Combined Sewer Overflow—Modeling and Monitoring Guidance* (EPA, 1994).
26

27 **4.8 REPORTING**

28 Four types of reporting requirements relating to CSO controls should be included in the
29 Phase II permit: 1) re-evaluations associated with and reports/recordkeeping to document
30
31

**EXHIBIT 4-5. EXAMPLE PERMIT LANGUAGE
FOR SITE-SPECIFIC MONITORING ACTIVITIES**

Site-specific language:

The permittee shall monitor CSOs and report results to the permitting authority in accordance with the following:

Characteristic			Monitoring Requirements	
Reporting Code	Units	Parameter	Measurement Frequency	Sample Type
		Ammonia		Grab
		Ammonia		Composite
		BOD ₅		Grab
		BOD ₅		Composite
		Phosphorus		Composite
		Total Suspended Solids		Grab
		Total Suspended Solids		Composite
		Fecal Coliform Bacteria		Grab

- 1. The grab sample shall be collected within the first 30 minutes of the CSO event at the following CSO outfalls [insert appropriate identification]. The grab sample shall be collected six times per year, three times each during May - October and November - April.*
- 2. The composite sample shall be collected from the start of the CSO until the overflow stops, with the sample period not to exceed 24 hours at the following CSO outfalls [insert appropriate identification]. The composite sample shall be collected twice per year, once during the period from May - October and once during the period from November - April. The permittee shall submit the results in November and May, respectively.*

continued implementation of the NMC, 2) progress reports associated with implementation of CSO controls included in the LTCP, 3) monitoring data, and 4) other pertinent information (e.g., sensitive area reassessment).

1 The recordkeeping requirements associated with the ongoing implementation of the NMC
2 have been incorporated into the example permit language associated with minimum control
3 implementation (see Section 4.3.2). The permit writer may choose to require reporting of any
4 of this information. In addition, if the permit writer chooses to require any re-evaluations
5 associated with any of the minimum controls, such as a reassessment of the pretreatment
6 program or additional revisions to the municipal ordinance, these reports may be required. In
7 addition, any reassessments required by the CSO Control Policy, such as the reassessment of
8 CSOs to sensitive areas, should also be submitted to the permitting authority. Permit language
9 associated with the submission of this re-evaluation is included as a special condition in Section
10 4.9.2.

11
12 Because the implementation of the LTCP may be phased, the permit writer may require
13 progress reports associated with the implementation of CSO control. Exhibit 4-6 presents
14 example permit language for requiring the submission of progress reports.

15
16 **EXHIBIT 4-6. EXAMPLE PERMIT LANGUAGE FOR**
17 **REQUIRING SUBMISSION OF PROGRESS REPORTS**

18 Within 14 days of each completion date specified in [insert appropriate section] of this permit,
19 the permittee shall submit a written progress report to the permitting authority stating whether or
20 not the particular activity was completed. If the activity was not completed, the report shall also
21 include (1) an explanation of the failure to accomplish the activity, (2) actions taken by the
22 permittee to correct the situation, and (3) an estimate of when the activity will be completed.
23

24 The permit writer should also require the permittee to submit monitoring data that focus on
25 protecting the public while CSO controls are being implemented. Section 4.7 provides permit
26 language that includes reporting requirements for Phase II monitoring. The permit writer should
27 consider whether all applicable reporting requirements have been included in the Phase II permit.
28 Depending on whether the permittee has chosen to implement the presumption or the
29 demonstration approach, for example, it may be appropriate to require the permittee to report
30 the number of overflow events or document other performance standards. The permit writer
31 may also require that the permittee provide other environmental effectiveness data not otherwise
32 reported as part of the monitoring data, such as a reduction in the number of overflow events,

1 reduction in number of CSO outfalls, volume of CSO untreated/treated discharges, or other
2 improvements in receiving water quality.

4 4.9 SPECIAL CONDITIONS

5 This section discusses three special conditions: 1) CSO-related bypasses, 2) sensitive area
6 reassessment, and 3) reopener clauses. The sensitive area reassessment special condition should
7 appear in any CSO permit where a CSO discharges to a sensitive area and the permittee is not
8 planning to eliminate or relocate the CSO outfalls from that area. The reopener clause should
9 appear in all Phase II permits.

11 4.9.1 CSO-Related Bypass

12 Some POTW treatment plants may have significant primary treatment capacity in excess of
13 their secondary treatment capacity. During development of the LTCP, a community may
14 consider, as a CSO control alternative, using this excess primary treatment capacity rather than
15 constructing satellite primary clarification or its equivalent in the upper reaches of the CSS. The
16 CSO Policy outlines a process whereby, under certain circumstances, the permit writer can allow
17 wet weather flows to receive primary clarification at the POTW treatment plant without these
18 flows being subject to secondary treatment requirements.

19
20 According to the CSO Control Policy, the bypass requirements at 40 CFR Section 122.41(m)
21 may be interpreted to authorize a generic bypass of the secondary treatment portion of the
22 POTW treatment plant for CSOs in certain limited circumstances. For permittees with excess
23 primary capacity at the POTW treatment plant, the permit writer may consider including a CSO-
24 related bypass provision in the permit. It should be noted, however, that the burden of proof
25 rests with the permittee (i.e., the permittee should provide the information and justification for
26 the bypass as part of their LTCP). The CSO Control Policy recommends that the permittee"
27 . . . provide justification for the cut-off point at which the flow will be diverted from the
28 secondary portion of the treatment plant, and provide an economic benefit analysis demonstrating
29 that conveyance of wet weather flow to the POTW for primary treatment is more beneficial than

1 other CSO abatement alternatives such as storage and pump back for secondary treatment, sewer
2 separation, or satellite treatment."

3
4 Based on the technical justification developed and submitted by the permittee, the permit
5 writer may include in the permit the conditions under which a CSO-related bypass would be
6 approved, as well as specify any appropriate treatment, monitoring, or effluent limitations
7 requirements related to the bypass event. All wet weather flows passing the headworks of the
8 POTW should receive at least primary clarification, solids and floatables removal and disposal,
9 disinfection, where necessary, and any other treatment that can reasonably be provided. The
10 permit writer should specify monitoring requirements to determine whether a substantial increase
11 in the volume or character of pollutants introduced to the POTW occurs. The permit writer may
12 also consider applying effluent limitations to flows that bypass the secondary treatment portion
13 of the treatment. If the POTW is required to disinfect bypassed flows, then, assuming chlorine
14 is used to disinfect, the permit writer may apply effluent limitations for total residual chlorine
15 to ensure protection of receiving water quality and compliance with water quality standards.
16

17 Due to the potential impact of bypasses, the permit writer should compile sufficient data and
18 information in the administrative record and in the permit fact sheet or statement of basis
19 supporting all the requirements in 40 CFR Section 122.41(m)(4) for approval of an anticipated
20 bypass. Under the regulation, the permittee must show that the bypass was unavoidable to
21 prevent loss of life, personal injury, or severe property damage; that there was no feasible
22 alternative to the bypass; and that the permittee submitted the required notices. In addition,
23 according to the regulation, a bypass can only be approved after consideration of adverse effects.
24

25 For purposes of applying the 40 CFR Section 122.41(m) requirements to CSO discharges,
26 "severe property damage" could include situations where flows above a certain level could wash
27 out the POTW's secondary treatment system. The feasible alternative requirements of the
28 regulation can be met if the records demonstrate that the secondary treatment system is properly
29 operated and maintained, that the system has been designed to meet secondary limits for flows
30 greater than the peak dry weather flow plus an appropriate quantity of wet weather flow, and

that it is either technically or financially infeasible to provide secondary treatment for greater amounts of wet weather flow. The feasible alternative analysis should include, for example, consideration of enhanced primary treatment and nonbiological secondary treatment. Other bases supporting a finding of no feasible alternative may also be available on a case-by-case basis. As part of its consideration of possible adverse effects resulting from the bypass, the permit writer should also ensure that the bypass will not cause exceedances of WQS.

The permittee must provide adequate justification for the CSO-related bypass and should clearly define the wet weather flow conditions and flow rate at which secondary treatment capacity is exceeded. In addition, the permittee must demonstrate that bypassing secondary treatment is the most beneficial option, in light of the relative cost to implement. This information should then be used by the permit writer to clearly define a site-specific CSO-related bypass provision that includes the flow rate at which the CSO-related bypass will be allowed and any treatment, monitoring, or effluent limitations or other CSO-related bypass requirements. The permit language should indicate that CSO-related bypasses that occur under the flow upon which the CSO-related bypass was authorized are subject to the NPDES bypass provision at 40 CFR 122.41(m). The permit writer should also include supporting information in the permit fact sheet or statement of basis. Exhibit 4-7 presents an example of permit language for the CSO-related bypass requirement.

EXHIBIT 4-7. EXAMPLE PERMIT LANGUAGE FOR A CSO-RELATED BYPASS

A CSO-related bypass of the secondary treatment portion of the POTW treatment plant is authorized when the flow rate to the POTW treatment plant as a result of a precipitation event exceeds [insert flow rate in MGD]. The permittee must minimize pollutants discharged to the environment and all CSO-related bypass flows must receive primary clarification, solids and floatable removal, and disinfection. The permittee shall report any substantial changes in the volume or character of pollutants being introduced into the POTW. This provision may be modified or terminated when there is a substantial change in the volume or character of pollutants being introduced to the POTW.

4.9.2 *Reassessment of Sensitive Areas*

The CSO Control Policy states the permittee's LTCP should give the highest priority to controlling CSOs to sensitive areas, as defined by the NPDES permitting authority in conjunction with other Federal and State agencies. The goal for controlling CSOs to these areas is to eliminate the CSOs or relocate them whenever it is physically and economically possible. If it is not possible, then the permittee must treat the overflows that are not eliminated or relocated to the degree necessary to meet WQS.

For overflows to sensitive areas that were not eliminated or relocated, the permit writer should include in the initial Phase II permit, and in subsequent permits, a special condition requiring the permittee to reassess the feasibility of doing so. The permit writer should require the permittee to develop and submit a report on this reassessment. The permit writer should require the permittee to evaluate the availability of new technologies that may be useful in eliminating or relocating these CSOs and any changes in the permittee's economic situation that would enable the permittee to fund the required projects for eliminating or relocating the CSOs from sensitive areas.

Exhibit 4-8 provides example permit language for reassessment of sensitive areas for use in Phase II and subsequent permits.

**EXHIBIT 4-8. EXAMPLE PERMIT LANGUAGE FOR
SENSITIVE AREA REASSESSMENT**

For CSSs with CSOs to sensitive areas that were not eliminated or relocated:

The permittee shall reassess the feasibility of eliminating or relocating CSO outfall numbers [insert outfall identification numbers for CSOs to sensitive areas] discharging to [insert name of receiving water body or bodies corresponding to each outfall identified]. The permittee shall address the economic and technical feasibility of eliminating or relocating these CSO outfalls. The permittee shall prepare and submit to the NPDES permitting authority a report that presents the results of this reassessment, including the permittee's recommendations regarding the elimination or relocation of these outfalls. The permittee shall submit such report no later than [insert date].

1 **4.9.3 Permit Reopener Clause**

2 As with any NPDES permit, the Phase II NPDES permit should include a reopener clause
3 that authorizes the NPDES permitting authority to modify or revoke and re-issue the Phase II
4 permit for cause. Potential CSO-related causes for exercising the reopener authority during the
5 Phase II permit term include a determination that the selected CSO controls fail to meet WQS
6 or the State WQS authority revises WQS or develops new WQS to address wet weather
7 conditions on the basis of a use attainability analysis.

8
9 The permit writer should coordinate with the appropriate NPDES enforcement authority
10 when a Phase II permit is reopened. Modifying the Phase II permit will require the modification
11 of any enforcement mechanism issued with the Phase II permit for consistency with the modified
12 or re-issued Phase II permit.

13
14 Before exercising any reopener provision, the permit writer should consider the timing of
15 the scheduled permit re-issuance. If it is late in the 5-year permit cycle (i.e., the last 2 years),
16 the permit writer may address the changes in the context of normal permit re-issuance process.
17 The NPDES permitting authority may have standard procedures that govern the use of reopener
18 clauses. The permit writer should follow these procedures when it is appropriate.

19
20 It is possible that the generic reopener clause used in other NPDES permits is sufficiently
21 broad to address CSOs. Alternatively, the permit writer may revise the generic reopener clause
22 to specifically include the CSO-related causes for which the Phase II permit may be reopened,
23 or the permit writer may include a separate reopener clause that only identifies the CSO-related
24 causes for which the Phase II permit may be reopened. Example language for the latter case
25 is presented in Exhibit 4-9. For additional information on the use of standard reopener clauses
26 in NPDES permits, the permit writer should refer to the *Training Manual for NPDES Permit*
27 *Writers* (EPA, 1993).

28
29 **4.10 DEFINITIONS**

30 See Section 3.11 for a list of terms that may be appropriate to include in the permit.

EXHIBIT 4-9. EXAMPLE PERMIT LANGUAGE FOR REOPENER CLAUSES

This permit may be modified or revoked and re-issued (1) to comply with any State or Federal law or regulation that addresses CSOs that is promulgated subsequent to the effective date of the permit, (2) when additional information indicates the CSO controls fail to meet State water quality standards, (3) when the facility or CSO controls are substantially modified, or (4) for any other valid reason pursuant to 40 CFR §122.62.

CHAPTER 5

POST-PHASE II PERMITTING

5.1 CONTINUATION OF PHASE II

The permit writer's responsibilities continue even after issuance of the first Phase II permit requiring implementation of the selected CSO controls from the LTCP. Phase II, in many cases, may extend through numerous 5-year NPDES permit cycles. The number of additional cycles will depend on the length of time the permit writer, in conjunction with the permittee, determines is necessary to complete construction of the selected CSO controls. In cases where construction will take more than 5 years, the permit writer must coordinate with the enforcement authority to determine the appropriate enforcement mechanism.

The permit writer should continue to include in subsequent Phase II permits any conditions that require the permittee to implement the selected CSO controls, continue implementation of NMC, and require reassessment of overflows to sensitive areas. The requirement to implement the post-construction compliance monitoring program should be included in a Phase II permit (because some CSO controls have been completed) or in the first post-Phase II permit). Chapter 4 provides specific information on these Phase II permit conditions.

The permit writer should continue to work closely with the permittee during these subsequent permit cycles. The permit writer should continue to require the permittee to periodically report the status of implementation of the selected CSO controls (see Section 4.8). Continued involvement by the permit writer is critical to the development of the NPDES permit following implementation of the selected CSO controls.

5.2 SUBSEQUENT CSO PERMITTING

Prior to issuing the NPDES permit for the period in which the permittee's implementation of selected CSO controls is expected to be completed, the permit writer should reach an agreement with the permittee on the implementation of a post-construction compliance monitoring program (prepared during development of the LTCP) that will generate information

1 and data necessary to determine whether the selected CSO controls are achieving compliance
2 with applicable State WQS. The permit writer will incorporate the requirement to conduct this
3 post-construction monitoring program into the first NPDES permit issued following completed
4 construction of the selected CSO controls. Additionally, when enough water quality data have
5 been generated, the permit writer will use the data to develop numeric water quality-based
6 effluent limits for inclusion in subsequent NPDES permits.

7
8 When using the data and information generated by the permittee under the Phase II permit(s)
9 to develop numeric water quality-based effluent limits, the permit writer should consider the
10 following questions:

- 11
- 12 • Were CSO frequency and volumes estimated or measured?
 - 13
 - 14 • Were all pollutants of concern identified, including toxics, and were overflow
 - 15 concentrations/loadings for each pollutant estimated or measured?
 - 16
 - 17 • Did the permittee consider the applicable State WQS?
 - 18
 - 19 • Were ambient background concentrations of pollutants of concern considered?
 - 20
 - 21 • Were appropriate receiving water flow values used? Many State WQS specify the flows
 - 22 under which water quality criteria must be achieved.
 - 23
 - 24 • If applicable, were mixing zones calculated in accordance with State standards or
 - 25 policies?
 - 26
 - 27 • Was the cumulative impact of multiple CSOs to the same receiving water body
 - 28 considered?
- 29

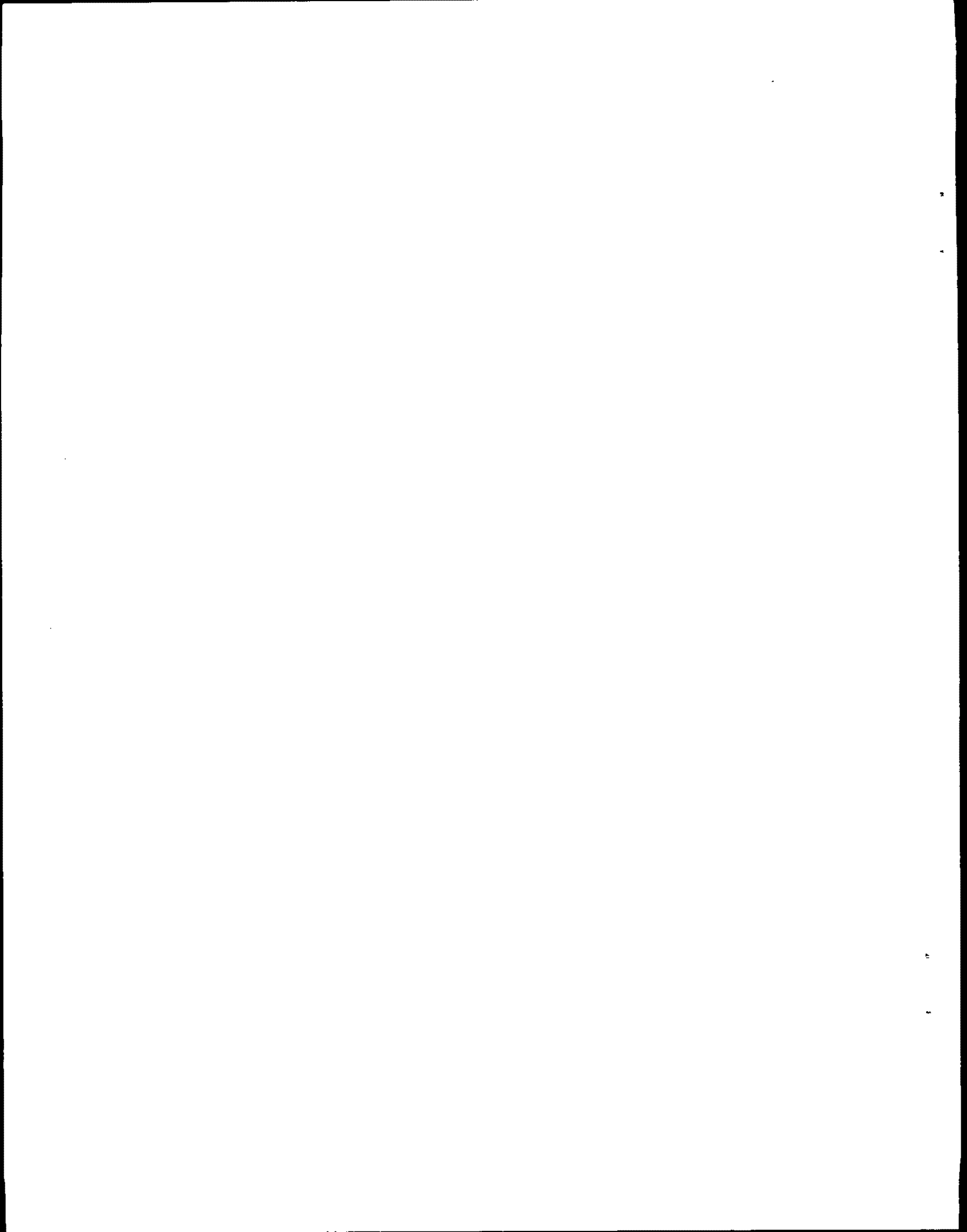
30 The permit writer may have additional information and data needs depending on the policies
31 and procedures used by the NPDES permitting authority to evaluate water quality impacts and
32 develop numeric water quality-based effluent limits. It should be noted that the
33 scientific/technical issues related to determining the need for water quality-based effluent limits
34 for CSOs may be different than those commonly used by permit writers for continuous
35 wastewater discharges from other point source categories. For example, use of chronic criteria
36 designed for a particular low flow scenario may not apply during wet weather flow conditions

1 when CSOs are likely to occur. In addition, State WQS may have been revised to better reflect
2 receiving water body uses during wet weather conditions.

3
4 Therefore, it is strongly recommended that the permit writer involve appropriate WQS
5 authorities in evaluating whether CSOs will achieve WQS and developing numeric water quality-
6 based effluent limits. The permit writer should also refer to the *Technical Support Document*
7 *for Water Quality-based Toxics Control* (EPA, 1991) for guidance in developing water quality-
8 based effluent limitations.

9
10 Due to the possible combined effect of pollutant sources (e.g., other point and nonpoint
11 sources) or the existing receiving water body condition, chemical-specific water quality-based
12 effluent limits established specifically for CSOs may not result in compliance with WQS for a
13 particular receiving water body. In these cases, the permitting authority should include in the
14 permit a total maximum daily load (TMDL) for the receiving water body for pollutants in CSOs
15 exceeding WQS. If a TMDL is established for a receiving water body to control all pollutant
16 sources, the permit writer should base the numeric water quality-based effluent limits for a CSO
17 on the wasteload allocation established for each pollutant of concern.

18
19 After the permittee has completed construction of the selected CSO controls, the permit
20 writer can consider for use in the last Phase II permit or in the first post-Phase II permit the use
21 of biocriteria, sediment criteria, and whole effluent toxicity testing to evaluate the overall effect
22 of CSOs on receiving water bodies. Use of these requirements will depend on the need to 1)
23 assess toxicity in the receiving water body, (2) prevent future impacts, or (3) remediate existing
24 receiving water body degradation. Again, the permit writer should consult with the appropriate
25 State WQS authorities and enforcement staff to determine whether such requirements in the
26 permit are warranted and to establish the specific requirements for the CSOs of concern.



APPENDIX A
EXAMPLE CSO PERMIT

PHASE I PERMIT

The permittee is authorized to discharge from the CSO outfalls listed below and additional CSO outfalls within the boundaries of the jurisdiction identified after the effective date of the permit. The permittee shall ensure that all CSOs from the CSS comply with the requirements of **[insert appropriate permit section containing CSO requirements]** and other pertinent portions of this permit.

<u>Overflow Number</u>	<u>Overflow Outfall Location</u>	<u>Receiving Water Body</u>
[insert number]	[insert latitude/longitude (street address optional)]	[insert receiving water body]

I. Effluent Limits

A. Technology-based requirements for CSOs

The permittee shall comply with the following technology-based effluent limits in the form of narrative controls:

1. The permittee shall implement proper operation and maintenance programs for the sewer system and all CSO outfalls, with consideration given to regular sewer inspections; sewer, catch basin, and regulator cleaning; equipment and sewer collection system repair or replacement, where necessary; and disconnection of illegal connections.
2. The permittee shall implement procedures that will maximize use of the collection system for wastewater storage.
3. The permittee shall review and modify, as appropriate, the existing Pretreatment Program to minimize the impact of nondomestic discharges from CSOs.

[Alternative language for permittees without an approved Pretreatment Program.]

The permittee shall take steps to minimize the impact of nondomestic discharges from CSOs.

4. The permittee shall operate the POTW treatment plant at maximum treatable flow during all wet weather flow conditions. The permittee shall deliver all flows to the treatment plant within the constraints of the treatment capacity of the POTW.

5. Dry weather overflows from CSO outfalls are prohibited. All dry weather overflows must be reported to the permitting authority as soon as the permittee becomes aware of the overflow. When the permittee detects a dry weather overflow, the permittee shall begin corrective action immediately. The permittee shall inspect the dry weather overflow each subsequent day until the overflow has been eliminated.
6. The permittee shall implement controls to remove solid and floatable materials in its CSOs.
7. The permittee shall implement a pollution prevention program focused on reducing the impact of CSOs on receiving waters.
8. The permittee shall implement a public notification process to inform citizens of when and where CSOs occur. The process must include (a) a mechanism to alert persons of the occurrence of CSOs and (b) a system to determine the nature and duration of conditions that are potentially harmful for users of receiving waters due to CSOs.
9. The permittee shall monitor CSO outfalls to effectively characterize CSO impacts and the efficacy of CSO controls. This information will be used to establish the existing baseline conditions, evaluate the efficacy of the CSO technology-based controls, and determine the baseline conditions upon which the long-term control plan will be based. These data shall include:
 - a. All CSO outfalls in the CSS
 - b. Total number of CSO events and the frequency, duration, volume, and pollutant loadings of CSOs during each event
 - c. Water quality data for receiving water bodies
 - d. Water quality impacts (e.g., beach closings, floatables wash-up episodes, fish kills).

Monitoring for duration, volume, and pollutant loadings during each overflow event shall occur at a representative number of CSOs.

B. Water quality-based requirements for CSOs

The permittee shall not discharge any pollutant at a level that could cause or contribute to a violation of [insert applicable State narrative standards] water quality standards.

Site-Specific Language:

All discharges covered by this permit shall be free from the following pollutants at levels that cause or contribute to a violation of water quality standards:

1. *Floating debris, oil, grease, scum, foam, or other materials on the water surface that may create a nuisance condition, or that may in any way interfere with attainment and maintenance of designated uses of the water*

2. *Settleable solids, sediments, sludge deposits, or suspended particles that may coat or cover submerged surfaces and create a nuisance condition, or that may in any way interfere with attainment and maintenance of designated uses of the water*
3. *Any pollutants, including those of a thermal, toxic, corrosive, bacteriological, radiological, or other nature, that may interfere with attainment and maintenance of designated uses of the water; may impart undesirable odors, tastes, or colors to the water or to aquatic life found therein; may endanger public health; or may result in dominance of nuisance species.*

II. Reporting Requirements

A. Nine minimum CSO control reporting

The permittee shall submit documentation that demonstrates implementation of each of the nine minimum CSO controls that includes the elements contained in Sections II.A.1 through II.A.9 below. The permittee shall submit this documentation to the permitting authority on or before [insert due date].

1. Proper operation and regular maintenance programs. The permittee shall submit:
 - a. Identification of CSS components requiring routine operation and maintenance
 - b. Evaluation of operation and maintenance procedures to include regular inspections; sewer, catch basin, and regulator cleaning; equipment and sewer collection system repair or replacement where necessary
 - c. Operation and maintenance manual and/or procedures for the CSS and CSO structures
 - d. Resources allocated (manpower, equipment, training) for maintenance of the CSS and CSO structures
 - e. Summary of inspections conducted and maintenance performed.
2. Maximization of the sewer collection system storage. The permittee shall submit:
 - a. Analysis/study of procedures to maximize collection system storage
 - b. Description of procedures in place for maximizing collection system storage
 - c. Schedule for implementation of minor construction associated with maximization of collection system storage
 - d. Documentation of actions taken to maximize storage
 - e. Identification of any additional potential actions to increase storage in the existing collection system, but which require further analysis. Confirmation that they will be/were evaluated in hydraulic studies conducted as part of the long-term control plan.

3. Review and modification of controls on nondomestic sources. The permittee shall submit:
 - a. Results of an inventory of nondomestic discharges and assessment of the impact of such discharges on CSOs
 - b. Identification and analysis of feasibility of modifications to nondomestic source controls to reduce the impact of such discharges on CSOs
 - c. Documentation of selected modifications.
4. Maximization of flow to the POTW treatment plant for treatment. The permittee shall submit:
 - a. Study/analysis of existing conditions and a comparison with the design capacity of the overall facility
 - b. Results or status of any engineering studies to increase treatment of wet weather flows
 - c. Documentation of actions taken to maximize flow and the magnitude of increase obtained or projected.
5. Elimination of CSOs during dry weather flow conditions. The permittee shall submit:
 - a. Summary of dry weather overflows that occurred
 - b. Description of procedures for notifying permitting authority of dry weather overflows
 - c. Summary of actions taken to identify dry weather overflows and progress toward eliminating dry weather overflows.
6. Control of solid and floatable materials in CSOs. The permittee shall submit:
 - a. Engineering evaluation of procedures or technologies for controlling solids and floatable materials
 - b. Description of CSO controls in place for solids and floatable materials
 - c. Schedule for minor construction
 - d. Documentation of any additional controls to be installed or implemented.
7. Pollution prevention programs to reduce contaminants in CSOs. The permittee shall submit:
 - a. Evaluation of pollution prevention opportunities to include procedures to control solid and floatable materials
 - b. Description of selected pollution prevention opportunities to include resources allocated for implementation
 - c. Documentation of pollution prevention program or actions taken.

8. Public notification. The permittee shall submit:
 - a. Evaluation of public notification options to include description of proposed and/or existing public notification procedures
 - b. Description of selected public notification methods
 - c. Log of CSO occurrences and associated public notification.
9. Monitoring to characterize CSO impacts and efficacy of CSO controls. The permittee shall submit:
 - a. Identification of CSO outfalls in the CSS
 - b. Summary of CSO occurrences (total number of CSO events and frequency, duration, volume, and pollutant loadings of CSOs during events). Monitoring summary for duration, volume, and pollutant loadings during each overflow event may portray a representative number of CSOs.
 - c. Summary of water quality data for receiving water bodies
 - d. Summary of receiving water impacts (e.g., beach closings, floatables wash-up episodes, fish kills, etc.).

III. Special Conditions

The permittee shall develop the long-term CSO control plan that will include the elements contained in Sections III.A through III.D below and shall submit the plan elements in accordance with the schedule contained in Section III.E:

A. Public Participation

The permittee shall prepare and implement a public participation plan that outlines how the permittee will ensure participation of the public throughout the long-term CSO control plan development process. For purposes of this permit, the public includes, but is not limited to, rate payers, industrial users of the sewer system, persons who reside near water bodies affected by the CSOs, people who use and enjoy these affected waters, and any other interested persons. In developing the plan, the permittee shall consider the use of mechanisms such as public meetings throughout the process of developing a long-term CSO control plan, including the process of selecting the long-term CSO controls. The long-term control plan shall include a summary of each of the major public participation events.

B. CSS Characterization

The permittee shall develop and implement a plan that will result in a comprehensive characterization of the CSS developed through records review, monitoring, modeling, and other means as appropriate to establish the existing baseline conditions, evaluate the efficacy of the CSO technology-based controls, and determine the baseline conditions upon which the long-term control plan will be based. The characterization shall adequately address the response of the

CSS to various precipitation events; identify the number, location, frequency, and characteristics of all CSOs; and identify water quality impacts that result from all CSOs.

To complete the characterization, the permittee shall employ the following methods:

1. **Rainfall Records Review.** The permittee shall examine the complete rainfall records for the geographic areas of the CSS and evaluate the flow variations in the receiving water body to correlate between the CSOs and receiving water conditions.
2. **CSS Records Review.** The permittee shall review and evaluate all available CSS records and undertake field inspections and other necessary activities to identify the number, location, and frequency of CSOs and their location relative to sensitive areas (as identified in III.B.4) and to pollution sources, such as significant industrial users, in the collection system.
3. **CSO Monitoring.** The permittee shall develop and submit a monitoring program that measures the frequency, duration, flow rate, volume, and pollutant concentration of CSOs and assesses the impact of the CSOs on receiving waters. Monitoring shall be performed at a representative number of CSOs for the following parameters: **[insert pollutants of concern (e.g., biochemical oxygen demand, total suspended solids)]**. The monitoring program shall include CSOs and ambient receiving water body monitoring and, where appropriate, other monitoring protocols, such as biological assessments, toxicity testing, and sediment sampling.
4. **Identification of Sensitive Areas.** The permittee shall identify sensitive areas to which its CSOs discharge. These areas shall include outstanding national resource waters, National Marine Sanctuaries, waters with threatened or endangered species and their designated critical habitat, waters designated for primary contact recreational use, public drinking water intakes or their designated protection areas, shellfish beds, and any other areas identified by the permittee or the permitting authority.
5. **Modeling.** The permittee may [shall] employ models, which include appropriate calibration and verification with field measurements, to aid in the characterization. If models are used, they shall be identified by the permittee along with an explanation of why the model was selected and used in the characterization.

C. CSO Control Alternatives

1. **Development of CSO Control Alternatives.** The permittee shall develop a range of CSO control alternatives that would be necessary to achieve **[insert levels of control, such as zero overflow events per year, an average of 1 to 3, 4 to 7, and 8 to 12 overflow events per year]**. The permittee shall also consider expansion of the POTW treatment plant secondary and primary capacity as an alternative.

Alternatives presented must give the highest priority to controlling CSOs to the following sensitive areas, identified in III.B.4. For such areas, the alternatives included in the plan must (1) prohibit new or significantly increased CSOs, (2) eliminate or relocate CSOs from such areas wherever physically and economically achievable, except where elimination or relocation would provide less environmental protection than additional treatment, (3) where elimination or relocation is not physically or economically achievable or would provide less environmental protection than additional treatment, provide the level of treatment for remaining CSOs deemed necessary to meet water quality standards for full protection of existing and designated uses.

2. Evaluation of CSO Control Alternatives. The permittee shall evaluate each of the alternatives developed in accordance with III.C.1 to select the CSO controls that will ensure compliance with CWA requirements.
3. Cost/Performance Considerations. The permittee shall develop and submit cost/performance curves that demonstrate the relationship among and the cost effectiveness of the CSO control alternatives.

D. Selected CSO Controls

Once the permittee has selected the CSO controls in consultation with the permitting authority, the permittee shall submit the following:

1. Implementation Schedule. The permittee shall submit a construction schedule and financing plan for the selected CSO controls as part of the implementation schedule. Such schedules may be phased based on the relative importance of the adverse impacts on water quality standards and on the permittee's financial capability.
2. Operation and Maintenance Plan. The permittee shall submit a revised operation and maintenance plan that addresses implementation of the selected CSO controls. The revised operation and maintenance plan shall maximize the removal of pollutants during and after each precipitation event using all available facilities within the collection and treatment system.
3. Post-Construction Compliance Monitoring Program. The permittee shall develop and submit a post-construction monitoring program that (a) is adequate to ascertain the effectiveness of the CSO controls and (b) can be used to verify compliance with water quality standards. The program shall include a plan that details the monitoring protocols to be followed, including effluent and ambient monitoring and, where appropriate, other monitoring protocols, such as biological assessments, whole effluent toxicity testing, and sediment sampling.

E. Schedule and Interim Deliverables

The following reports shall be developed in accordance with the requirements specified in Sections III.A through III.D and submitted to the permitting authority by the dates specified below:

1. Public Participation Plan, as required in Section III.A, shall be submitted on or before [insert due date].
2. CSS Characterization Monitoring and Modeling Plan, as required in Section III.B, shall be submitted on or before [insert due date].
3. CSS Characterization Monitoring and Modeling Results, including identification of sensitive areas, as required in Section III.B, shall be submitted on or before [insert due date].
4. CSO Control Alternatives Identification, as required in Section III.C.1, shall be submitted on or before [insert due date].
5. CSO Controls Evaluation and Cost Performance Curves for the selected CSO controls, as required in Sections III.C.2 and 3, shall be submitted on or before [insert due date].
6. Implementation Schedule, as required in Section III.D.1, including the affordability analysis, shall be submitted on or before [insert due date].
7. Operational Plan revised to reflect selected CSO control alternatives, as required in Section III.D.2, shall be submitted on or before [insert due date].
8. Post-Construction Compliance Monitoring Program, as required in Section III.D.3, shall be submitted on or before [insert due date].

Reopener Provision

This permit may be modified or revoked and reissued to comply with any State or Federal law or regulation that addresses CSOs and that is promulgated subsequent to the effective date of the permit, or if additional information indicates CSO controls fail to contribute to the attainment of State water quality standards. In addition, upon satisfactory completion of the LTCP, the permit may be modified or revoked and reissued to require implementation of the selected CSO controls.

PHASE II PERMIT

The permittee is authorized to discharge from the CSO outfalls listed below in accordance with the requirements of [insert appropriate CSO section references] and other pertinent provisions of this permit.

<u>Overflow Number</u>	<u>Overflow Outfall Location</u>	<u>Receiving Water Body</u>
[insert number]	[insert latitude/longitude (street address optional)]	[insert receiving water body]

I. Effluent Limits

A. Technology-based requirements for CSOs

The permittee shall comply with the following technology-based effluent limits in the form of narrative controls:

1. Conduct proper operations and regular maintenance programs. The permittee shall implement the Operation and Maintenance Plan for the combined sewer system that will include the elements listed below. The permittee also shall update the plan to incorporate any changes to the system and shall operate and maintain the system according to the plan. The permittee shall keep records to document the implementation of the plan.

Site-Specific Language:

Designation of a Manager for Combined Sewer Overflows. The permittee shall designate a person to be responsible for the wastewater collection system and serve as the contact person regarding combined sewer overflows. The permittee shall notify the permitting authority within [specify number of days] of designation of a new contact person.

Inspection and Maintenance of CSS. The permittee shall inspect and maintain all CSO structures, regulators, pumping stations, and tidegates to ensure that they are in good working condition and adjusted to minimize CSOs and prevent tidal inflow. The permittee shall inspect, or cause to be inspected, each CSO outfall at least [specify frequency for inspection]. The inspection shall include, but is not limited to, entering the regulator structure if accessible, determining the extent of debris and grit build-up, and removing any debris that may constrict flow, cause blockage, and result in a dry weather overflow. The permittee shall record in a maintenance log book the results of the inspections. For CSO outfalls that are inaccessible, the permittee may perform a visual check of the overflow pipe to determine whether or not the CSO is occurring during dry weather flow conditions.

Provision for Trained Staff. The permittee shall provide an adequate number of full-time equivalents to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. Each member of the staff shall receive appropriate training.

Prioritization Maintenance Needs. The permittee shall develop a prioritized list of maintenance needs and a proposed implementation schedule. The permittee shall submit this list to the permitting authority within [insert number] months of the effective date of the permit.

Allocation of Funds for Operation and Maintenance. The permittee shall allocate adequate funds specifically for operation and maintenance activities. The permittee shall submit a certification of assurance from the affected local government entities that the necessary funds, equipment, and personnel have been or will be committed to carry out the O&M plan.

2. Maximize use of the collection system for storage. The permittee shall maximize the in-line storage capacity. The permittee shall keep records to document implementation.

Site-specific language:

The permittee shall 1) maintain all dams at diversion structures at their current heights (as of the date of permit issuance) or greater, 2) minimize discharges from the CSO outfall locations designated as [insert appropriate designation] until the entire available capacity of the [named] Combined Sewer Retention Basin is used to store the overflow for later treatment at the plant, and 3) keep records of the flow entering and leaving the [named] Combined Sewer Retention Basin.

3. Review and modify pretreatment program. The permittee shall continue to implement selected CSO controls to minimize the impact of nondomestic discharges from CSOs. The permittee shall re-evaluate [specify frequency] whether additional modifications to its pretreatment program are feasible or of practical value. The permittee shall keep records to document this evaluation and implementation of the selected CSO controls to minimize nondomestic discharges from CSOs.

Site-specific language:

The permittee shall prohibit the addition of new or increased volumes of industrial process or high-strength wastewaters into the sewer system under circumstances where they could be discharged through a CSO outfall.

Alternative language for permittee without an approved pretreatment program.

Actions to minimize impact of nondomestic discharges from CSOs. The permittee shall continue to implement selected CSO controls to minimize the impact of nondomestic discharges from CSOs.

4. Maximize flow to POTW treatment plant. The permittee shall operate the POTW treatment plant at maximum treatable flow of at least [insert appropriate number] MGD during wet weather flow conditions/events and deliver all flows to the treatment plant within the constraints of the capacity of the treatment plant. The permittee shall keep records to document these actions.
5. Prohibit combined sewer overflows during dry weather. Dry weather overflows from CSO outfalls are prohibited. All dry weather overflows must be reported to the permitting authority within [insert appropriate number of days] of when the permittee becomes aware of a dry weather overflow. When the permittee detects a dry weather overflow, the permittee shall begin corrective action immediately. The permittee shall inspect the dry weather overflow each subsequent day until the overflow has been eliminated. The permittee shall record in the inspection log book dry weather overflows, as well as the cause, corrective measures taken, and the dates of beginning and cessation of overflow.
6. Control solid and floatable materials in CSOs. The permittee shall implement measures to control solid and floatable materials in its CSOs.

Site-specific language:

These measures shall include:

- (i) *Ensure that all overflows from the diversion structures are baffled or that other means are used to reduce the volume of floatables.*
 - (ii) *Inspect and maintain the sewer system so that solids or floatable material greater than [insert size] are not present in CSOs.*
 - (iii) *Remove solid or floatable materials captured by a [insert appropriate number]-inch screen and dispose of this material in an acceptable manner prior to discharge to the receiving water. Overflows containing solid or floatable materials that may be captured by a [insert appropriate number]-inch screen are prohibited.*
7. Develop and implement pollution prevention program. The permittee shall implement a pollution prevention program focused on reducing the impact of CSOs on receiving waters. The permittee shall keep records to document pollution prevention implementation activities.

Site-specific language:

This program shall include:

- (i) *Conducting street sweeping and catch basin modification or cleaning at a frequency that will prevent large accumulations of pollutants and debris, but no less than [specify a minimum frequency]*
 - (ii) *Conducting a public education program that informs the public of the permittee's local laws that prohibit littering and the use of phosphate-containing detergents and pesticides*
 - (iii) *Instituting an oil recycling program.*
8. Notify the public of CSOs. The permittee shall continue to implement a public notification plan to inform citizens of when and where CSOs occur. The process must include:
- a. A mechanism to alert persons using all receiving water bodies affected by CSOs
 - b. A system to determine the nature and duration of conditions that are potentially harmful to users of these receiving water bodies due to CSOs.

The permittee shall keep records documenting public notification.

Site-specific language:

Within 3 months of the effective date of this permit, the permittee shall install and maintain identification signs at all CSO outfalls owned and operated by the permittee. The permittee must place the signs at or near the CSO outfalls and ensure that the signs are easily readable by the public. The signs shall be a minimum of 12 by 18 inches in size, shall be metal, and shall contain the following information: 1) permittee name; 2) wet weather sewage discharge; 3) outfall (discharge serial number); and 4) telephone number and contact.

9. Monitor to effectively characterize CSO impacts and the efficacy of CSO controls. The permittee shall regularly monitor CSO outfalls to effectively characterize CSO impacts and efficacy of CSO controls.

Site-specific language:

[For example language, see Section II]

B. Water quality-based requirements for CSOs

The permittee shall comply with the following performance standards. These standards shall apply during [insert average design conditions under which controls are based upon].

1. [The permit writer should select the appropriate standard below.]

The permittee shall discharge no more than an average of **[insert appropriate number: 4, 5, or 6]** overflow events per year not receiving the equivalent of primary clarification.

or

The permittee shall capture for treatment, or storage and subsequent treatment, at least 85 percent of the system-wide combined sewage volume collected in the combined sewage system during precipitation events under design conditions. Captured combined sewage shall be directed either to the **[insert name of treatment plant(s)]** or to the CSO storage tanks located at **[insert location of storage tanks]**.

or

The permittee shall reduce the mass of the following pollutants **[insert pollutants]** that have been identified as causing water quality standard violations for at least 85 percent of the system-wide combined sewage volume collected in the combined sewage system during precipitation events under design conditions.

[Insert the following language only if the first or second alternative is chosen above.]

Any combined sewage captured shall receive a minimum of the following treatment:

- (i) Primary clarification or equivalent.
- (ii) Disinfection. Fecal coliform counts shall be maintained below **[insert applicable level]**. **[Insert appropriate dechlorination requirements if applicable based on State water quality standards.]**

II. Monitoring and Reporting

Site-specific language:

The permittee shall monitor CSOs and report results to the permitting authority in accordance with the following:

Characteristic			Monitoring Requirements	
Reporting Code	Units	Parameter	Measurement Frequency	Sample Type
		Ammonia		Grab
		Ammonia		Composite
		BOD ₅		Grab
		BOD ₅		Composite
		Phosphorus		Composite
		Total Suspended Solids		Grab
		Total Suspended Solids		Composite
		Fecal Coliform Bacteria		Grab

- 1. The grab sample shall be collected within the first 30 minutes of the CSO event at the following CSO outfalls [insert appropriate identification]. The grab sample shall be collected six times per year, three times each during May - October and November - April.*
- 2. The composite sample shall be collected from the start of the CSO until the overflow stops, with the sample period not to exceed 24 hours at the following CSO outfalls [insert appropriate identification]. The composite sample shall be collected twice per year, once during the period from May - October and once during the period from November - April. The permittee shall submit the results in November and May, respectively.*

III. Special Conditions

A. Long-Term Control Plan

The permittee shall implement and effectively operate and maintain the selected CSO controls in the long-term control plan. The implementation schedule for this program shall be as follows:

Activity

Completion Date

[insert name of activity]

[insert date]

Site-specific language:

1. Retention basin

- a. Complete design of [named] retention basin.*
- b. Submit construction drawings for [named] retention basin.*
- c. Initiate construction of [named] retention basin.*
- d. Complete construction of [named] retention basin.*

2. Main street sewer separation

- a. Complete design.*
- b. Solicit bids.*
- c. Award contracts.*

NOTE: A compliance schedule exceeding the term of the permit may only be included in the permit if allowed by State WQS.

Within 14 days of each completion date specified in **[insert appropriate section]** of this permit, the permittee shall submit a written progress report to the permitting authority stating whether or not the particular activity was completed. If the activity was not completed, the report shall also include (1) an explanation of the failure to accomplish the activity, (2) actions taken by the permittee to correct the situation, and (3) an estimate of when the activity will be completed.

B. CSO-Related Bypass

A CSO-related bypass of the secondary treatment portion of the POTW treatment plant is authorized when the flow rate to the POTW treatment plant as a result of a precipitation event exceeds **[insert flow rate in MGD]**. The permittee must minimize pollutants discharged to the environment and all CSO-related bypass flows must receive primary clarification, solids and floatable removal, and disinfection. The permittee shall report any substantial changes in the volume or character of pollutants being introduced into the POTW. This provision may be modified or terminated when there is a substantial change in the volume or character of pollutants being introduced to the POTW.

C. Reassessment of CSOs to Sensitive Areas

For CSSs with CSOs to sensitive areas that were not eliminated or relocated:

The permittee shall reassess the feasibility of eliminating or relocating CSO outfall numbers **[insert outfall identification numbers for CSOs to sensitive areas]** discharging to **[insert name of receiving water body or bodies corresponding to each outfall identified]**. The permittee shall address the economic and technical feasibility of eliminating or relocating

these CSO outfalls. The permittee shall prepare and submit to the NPDES permitting authority a report that presents the results of this reassessment, including the permittee's recommendations regarding the elimination or relocation of these outfalls. The permittee shall submit such report no later than [insert date].

Reopener Provision

This permit may be modified or revoked and re-issued (1) to comply with any State or Federal law or regulation that addresses CSOs that is promulgated subsequent to the effective date of the permit, (2) when additional information indicates the CSO controls fail to meet State water quality standards, (3) when the facility or CSO controls are substantially modified, or (4) for any other valid reason pursuant to 40 CFR §122.62.

APPENDIX B

DEVELOPMENT AND REVIEW OF MONITORING PLAN

The permit writer may require the permittee to develop a monitoring plan. This may be required during the application process prior to the development of the permit or as a permit condition. If, during the review of the plan, the permit writer determines the plan is lacking information or the scope of the plan is inappropriate, the permit writer should note the deficiencies and require the plan to be modified and resubmitted. Modification may require an iterative approach to match data and informational needs with available resources.

Exhibit B-1 outlines the major elements the monitoring plan should contain. The permit writer should consider requesting that the permittee submit the monitoring plan in a specific format so that critical information can be taken from the plan and incorporated into the permit as requirements. Extensive information on the development of a monitoring plan is contained in the *Combined Sewer Overflows—Monitoring and Modeling Manual* (EPA, 1994).

The monitoring plan should balance the costs of monitoring against the information needed to develop, implement, and verify the effectiveness of CSO control. The size and type of the monitoring program should be indicative of the size of the CSS in conjunction with the impacts caused by the CSOs. The permit writer should remember this when reviewing any proposed monitoring program. Flexibility should be provided to allow for scheduling and budget constraints. The permit writer should not accept an inadequate monitoring plan, however. A review team that has members knowledgeable in developing and implementing monitoring programs should be convened to review a proposed monitoring plan. If the proposed monitoring plan does not meet the established goals, the permit writer should raise these issues and work with the permittee to develop a more reasonable monitoring plan that meets the established objectives. In addition, in some instances, the permit writer and/or the permittee may need to establish priorities to perform the most critical data collection first and schedule additional monitoring requirements within a reasonable timeframe.

EXHIBIT B-1. OUTLINE OF MAJOR MONITORING PLAN ELEMENTS

A. Identification of Monitoring Goals and Objectives

1. Data and information collection goals and objectives (e.g., water quality impacts, characterization, modeling)
2. System components or parameters for which monitoring data are needed
3. Kinds of data needed to meet goals and objectives
4. Quality of data needed to meet goals and objectives
5. Limits of variability in system conditions to be characterized

B. Existing Characterization Data and Information

1. Summary of existing data and information
2. Determination of how existing data address goals and objectives
3. Identification of data gaps

C. Sampling Program

1. Sampling locations
2. Sampling period
3. Frequency of sampling and/or number of precipitation events to be sampled
4. Flow measurement protocols (estimated or measured)
5. Criteria for when the samples will be taken (e.g., greater than x days between precipitation events)
6. Sampling protocols (e.g., type of samples, chain of custody)
7. Pollutants or parameters to be analyzed and/or recorded
8. Analytical methodologies and detection limits

D. Analytical Tools

1. Statistical methods for data analyses
2. Models used, input, calibration and validation

E. Implementation of Monitoring Plan

1. Scheduling
2. Funding resources

When reviewing a monitoring plan and developing permit monitoring requirements, the permit writer should consider sampling locations, pollutants to be monitored, frequencies, periods of rainfall or other seasonal issues, sample types, and analytical methods, among other factors. These factors are described in the following discussion using examples. The specific

sampling details are important because the permit writer may want to incorporate them into the permit:

- **Sampling Location.** When monitoring CSOs or receiving waters, a defined percentage of the total outfalls in the system should be sampled. The specific number of outfalls to be monitored should be based on the size of the collection system, the total number of overflow locations, the number of different receiving water bodies, and potential and known impacts. In large systems, a percentage of overflow points may be monitored (e.g., approximately 10 to 25 percent). If only selected locations are sampled, they should represent the system as a whole or represent the worst-case scenario. For example, if all CSOs are not monitored, selected locations could be chosen that represent overflows that occur most frequently, are the largest in pollutant loading or flow/volume, or discharge to sensitive areas.
- **Pollutants.** The five pollutants or class of pollutants recommended for monitoring in most cases include BOD, TSS, nutrients, toxic pollutants reasonably expected to be present, and bacteriological indicators. In some cases, specific pollutants should be measured; in other cases, surrogates of a pollutant class may be used. For example, heavy metals may be addressed by only monitoring copper, lead, and zinc because these are the metals most commonly found in CSOs. If WQS for mercury and arsenic are being exceeded, however, then they should be monitored. The selection of pollutants to be monitored should also be based on the characteristics of the nondomestic discharges to the collection system or watershed.
- **Frequency of Monitoring.** Frequency of monitoring should reflect the type and amount of data needed to achieve the goals. Monitoring programs may include:
 - Sampling a certain size precipitation event (e.g., 24-hour, 2-year storm)
 - Sampling all precipitation events that result in overflows
 - Sampling a certain number of precipitation events per period of time
 - Sampling on a periodic basis.

The precipitation events to be sampled should be separated by an adequate duration so that a sample of worst-case conditions is collected. The NPDES Storm Water Program uses the criterion that the duration between the precipitation event sampled and the end of the previous measurable precipitation event be at least 72 hours.

An assessment of the monitoring frequency should include consideration of the following criteria:

- **Frequency of rainfall/discharge.** Facilities located in areas where rainfall is more frequent will have more frequent CSOs.

- Relative risk of CSO impacts. If facilities discharge to sensitive areas or high quality waters, more frequent monitoring may be necessary. For example, in an area where human contact occurs through swimming, boating, and other recreational activities, the monitoring frequency should be increased.
 - Compliance history. If facilities have a history of noncompliance with NPDES permit conditions, more frequent monitoring may be necessary. If the facility is always in compliance, monitoring frequency can be reduced.
 - Variability of discharge. CSOs with variable characteristics should be monitored more frequently than CSOs with relatively consistent characteristics.
- Duration of Monitoring Program. The sampling period should be based on the amount of information needed and time it takes to collect the information. The sampling period for flow and occurrence monitoring may extend for the duration of the permit; the sampling period for instream monitoring or other special studies may be relatively short. When feasible, permit writers should coordinate monitoring requirements if the data will be used for the same purpose (e.g., compliance with WQS or calculation of a wasteload allocation).
 - Sample Type. The sample type may be composite or grab, depending on the intended use of the data. To determine the average loadings of pollutants to the receiving stream, it may be most appropriate to collect flow-weighted composites. Because CSOs may be intermittent and the volume dependent upon precipitation events, however, it may not be appropriate to collect 24-hour composite samples, which are used for continuous nondomestic and municipal wastewater discharges. Instead it may be more appropriate to collect a composite over the duration of the entire discharge. The permit writer must require sample types that will adequately characterize CSOs. However, the permit writer should be aware that the composite samples are more resource intensive than grab samples. Grab samples may be appropriate if only approximate levels of pollutants are needed or if the most important concern is the impact of worst-case conditions (i.e., first 15 or 30 minutes of overflow).
 - Analytical Methods. Analytical methods should be selected pursuant to 40 CFR Part 136, which references one or more of the following:
 - Test methods in Appendix A to 40 CFR Part 136
 - *Standard Methods for the Analysis of Water and Wastewater* (Edition Referenced)
 - *Methods for the Chemical Analysis of Water and Wastes*
 - *Test Methods: Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater*.

The analytical methods contained in 40 CFR Part 136 are test methods designed only for chemical-specific pollutants. For other parameters, it may be necessary to specify the analytical methods required. For example, 40 CFR Part 136 does not contain biomonitoring test procedures; therefore, the permit writer will need to specify the methods. EPA has published recommended toxicity test protocols in three manuals:

Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Short-Term Methods for Estimating the Chronic Toxicity of Effluents, and Receiving Waters to Marine and Estuarine Organisms. EPA is revising methods for chronic toxicity testing and amending the regulations at 40 CFR Part 136 to add the whole effluent toxicity procedures to the already promulgated analytical test methods.

The permit writer should also determine whether models or data analysis methodologies specified in the monitoring are appropriate for the CSS and the type of data being collected. If the monitoring objectives include informational needs; modeling; or statistical, graphical, or other data analyses, techniques should be specified so reliable and consistent information is obtained. This will ensure that data collection efforts meet the needs of the analyses methods. Review by the appropriate members of the review team (i.e., statisticians or other experts in monitoring program development and implementation) will ensure that the proposed data collection and analytical methodologies will meet the stated objectives of the monitoring program.

Each plan will need to be evaluated on a case-by-case basis. The permit writer may enlist the EPA Regional Environmental Sciences Division staff in reviewing the monitoring plans submitted by the permittee. If the review team determines that the proposed monitoring program is inadequate, then the permit writer should work with the permittee to revise the program to address its deficiencies.

APPENDIX C

NINE MINIMUM CONTROLS EVALUATION CHECKLIST

Nine Minimum Controls Evaluation Checklist				
Evaluation Criteria	Yes	No	N/A	Remarks
Proper Operation and Regular Maintenance Programs for the CSS and CSO Outfalls				
Does the O&M program describe the system, identifying and addressing CSOs by including an inventory of all CSO structures, equipment, and treatment facilities and provide procedures for keeping this inventory current?				
Will the program be effective in reducing the number, frequency, and pollutant loading due to CSOs?				
Does the program provide operating procedures and specifications for all equipment, structures, facilities, CSO outfalls, and off-line storage structures, including the hydraulic capacities of the collection and treatment systems, the storage capacities of the collection and treatment systems, and off-line storage capacity?				
Does the program include routine inspection, maintenance, and repair schedules for all CSO outfalls, interceptors, pumping stations, and equipment and are they appropriate for the system?				
Does the program involve maintenance procedures, including routine inspections, schedules for collection system preventative maintenance, schedules for cleaning and flushing of system and equipment, and response procedures for repairs?				
Does the program require logs or other documentation of completed activities?				
Does the program address the location of overflows where O&M is hindered (i.e., devices are under major thoroughfares, railroad yards, or other difficult to reach or safety hazard areas)?				

Nine Minimum Controls Evaluation Checklist				
Evaluation Criteria	Yes	No	N/A	Remarks
Does the program allocate resources for O&M program implementation, including staffing level and funding, equipment, and training?				
Evaluation Result (circle one)	Adequate	Inadequate	Other	
Maximum Use of the Collection System for Storage				
Has the permittee identify portions of the CSS usable for storage and determined the CSS storage capability, including configuration, size, and pump station capacity?				
Identify appropriate minor modifications to increase storage (e.g., raised existing weirs)?				
Identify potential off-line storage at existing facilities?				
Implemented procedures for maximizing CSS storage capacity?				
Evaluation Result (circle one)	Adequate	Inadequate	Other	
Review and Modification of Pretreatment Programs				
Has the permittee determined if the CSS receives nondomestic wastewater discharges?				
Prepared an inventory of nondomestic users who may discharge to the same receiving water body as the CSOs and evaluated the discharge constituents and suspected impacts from such users?				
Evaluated the potential for regulating either the volume or pollutant loadings from nondomestic users to CSOs during wet weather flow conditions?				

Nine Minimum Controls Evaluation Checklist				
Evaluation Criteria	Yes	No	N/A	Remarks
Has the permittee evaluated the following technologies for the removal of solid and floatable material:				
Screening materials using baffles, screens, and netting?				
Skimming from water body surface with booms at outfalls in confined areas?				
Source control, which may be addressed under the pollution prevention program for CSO outfalls?				
Identified and addressed problems that may be created by the installation of the control technology?				
Implemented the appropriate control technology, considered and provided justification that the technology is appropriate for the site conditions, and is conducting associated inspections and regular maintenance?				
Evaluation Result (circle one)	Adequate	Inadequate	Other	
Pollution Prevention Program				
Has the permittee evaluated both government agency (e.g., street cleaning, banning, or substitution of products, such as plastic food containers; controlled use of pesticides, fertilizers, and other hazardous substances at public facilities) and public (e.g., used oil recycling, household hazardous waste collection) source control measures?				
Addressed pollutants found in CSOs during the evaluation of the control measures?				
Included a wide reaching public education program?				

Nine Minimum Controls Evaluation Checklist				
Evaluation Criteria	Yes	No	N/A	Remarks
Evaluated mechanisms to encourage water conservation (e.g., public outreach, structuring of water/sewer service charges, local ordinance provisions)?				
Allocated adequate resources to conduct pollution prevention program activities?				
Implemented and maintained detailed records of pollution prevention activities?				
Promoted the use of industrial/construction BMPs for stormwater?				
Evaluation Result (circle one)	Adequate	Inadequate	Other	
Public Notification				
Has the permittee evaluated options for public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts?				
Implemented procedures that safeguard the public health through public notification of the presence of contaminants at critical levels in the receiving water bodies due to CSOs?				
Implemented procedures that notify persons reasonably expected to be affected by the CSO and reach the affected public?				
Documented CSO occurrences and associated notifications?				
Installed identification signs at each CSO outfall?				
Evaluation Result (circle one)	Adequate	Inadequate	Other	

Nine Minimum Controls Evaluation Checklist				
Evaluation Criteria	Yes	No	N/A	Remarks
Monitoring to Effectively Characterize CSO Impacts and Efficacy of CSO Controls				
Has the permittee characterized the CSS to identify all CSO locations and receiving water bodies?				
Collected data on the total number of overflow events and the frequency, duration, volume, and pollutant loadings of CSOs?				
Collected water quality data and information on water quality impacts (e.g., beach closings, floatables, wash-up episodes, fish kills)?				
Conducted monitoring to determine baseline data prior to implementation of the NMC?				
Conducted monitoring to determine baseline conditions subsequent to implementation of the NMC, which may be used in LTCP development?				
Evaluation Result (circle one)	Adequate	Inadequate	Other	
Comprehensive Evaluation Result (circle one)	Adequate	Inadequate	Other	

APPENDIX D

LONG-TERM CONTROL PLAN EVALUATION CHECKLIST

LONG-TERM CONTROL PLAN EVALUATION CHECKLIST				
Evaluation Criteria	Yes	No	N/A	Remarks
Public Participation				
Does the public participation process seek to actively involve rate payers, industrial users of the CSS, persons near the impacted waters, and persons who use the impacted waters?				
Does the public participation plan document how the public was notified of public participation events?				
Does the public participation plan include a record of the public participation events, including the number of people attending and a record or summary of comments?				
Does the public participation plan contain a summary of comments and the changes or decisions made in response to public comments?				
Evaluation Result (circle one)	Adequate	Inadequate	Other	
CSS Characterization, Monitoring, and Modeling				
Is there a general description of the CSS that includes the geographical area and population served?				
Is there a map of the CSS depicting the location of all CSO outfalls and receiving water bodies?				
Is there information on the volume, flow rate, and frequency of CSOs and the pollutants discharged?				

LONG-TERM CONTROL PLAN EVALUATION CHECKLIST				
Evaluation Criteria	Yes	No	N/A	Remarks
Is the description of how the CSS responds to rainfall events sufficient enough to determine which rainfall events trigger CSOs?				
Have sensitive areas and all outfalls discharging to these areas been identified?				
Is there information on the CSO pollutant loadings and their impact on receiving waters?				
Is there information on designated water uses and whether designated uses are being met?				
Does the CSS and CSO characterization provide information on the known effects of the CSOs on water quality during precipitation events, as well as provide the level of detail needed to model or project both the operation of the system and the impacts of various overflow scenarios on the receiving waters?				
Is monitoring sufficient to document baseline conditions to allow the permittee to demonstrate the long-term benefits of CSO controls?				
If modeling was conducted, is the model identified and described and are the results provided?				
Evaluation Result (circle one)	Adequate	Inadequate	Other	
CSO Alternatives				
Did the permittee develop a comprehensive list of CSO control alternatives?				

LONG-TERM CONTROL PLAN EVALUATION CHECKLIST				
Evaluation Criteria	Yes	No	N/A	Remarks
Did this list include alternatives from each of the four general categories—source controls, collection system controls, storage, and treatment technologies (described in <i>Combined Sewer Overflows—Guidance for Long-Term Control Plan</i> [EPA, 1994])?				
Are the CSO control alternatives that were considered described?				
Do CSO control alternatives achieve WQS?				
Did the plan describe the approach used to screen the list of CSO control alternatives, including the screening criteria?				
Did the screening criteria include performance factors, implementation and operation factors, and environmental factors (described in <i>Combined Sewer Overflows—Guidance for Long-Term Control Plan</i> [EPA, 1994])?				
Did the plan describe the process by which the CSO control alternatives were developed?				
Is cost/performance information (including curves) for each of the CSO control alternatives provided?				
Did the cost/performance analyses evaluate the alternatives for the capability to achieve zero overflow events per year, and averages of 1 to 3, 4 to 7, and 8 to 12 overflow events per year?				
Evaluation Result (circle one)	Adequate	Inadequate	Other	

LONG-TERM CONTROL PLAN EVALUATION CHECKLIST				
Evaluation Criteria	Yes	No	N/A	Remarks
Selected CSO Controls				
Which CSO control approach is selected?				
Is the selected CSO control approach a presumption or demonstration approach?				
Does the plan identify the CSO controls that will be implemented and reasons for rejecting others?				
Have the NMC been integrated into the permittee's description of its selected CSO controls?				
Will the selected CSO controls eliminate all CSO points to sensitive areas?				
If not, do the data support the permittee's conclusion that elimination is not physically or economically feasible?				
If CSO outfalls to sensitive areas will remain:				
Will these CSOs receive treatment?				
Will the CSO controls be sufficient to protect WQS?				
Will the CSO controls provide treatment or removal of floatables and settleable solids equivalent to that achieved by primary clarification?				
Is the mechanism for solids and floatables disposal described?				
Will the disinfection of effluent be necessary?				

LONG-TERM CONTROL PLAN EVALUATION CHECKLIST				
Evaluation Criteria	Yes	No	N/A	Remarks
Is disinfection proposed as part of the CSO controls?				
If no, does the information support the conclusion that disinfection is not necessary?				
If yes, will removal of harmful disinfection chemical residuals be necessary?				
Based on the cost/performance information, do the selected CSO controls provide the maximum pollution reduction benefits reasonably attainable?				
Based on the information, will the selected CSO controls protect WQS?				
If WQS cannot be met because of sources other than CSOs, has the permittee provided information on the other sources and natural background conditions?				
Are the selected CSO controls designed to allow cost-effective expansion or cost-effective retrofitting if additional controls are determined necessary to meet WQS?				
Evaluation Result (circle one)	Adequate	Inadequate	Other	
Implementation Schedule				
Do any phased construction schedules include an analysis of financial capability?				

LONG-TERM CONTROL PLAN EVALUATION CHECKLIST				
Evaluation Criteria	Yes	No	N/A	Remarks
Did the permittee evaluate the following factors:				
Median household income?				
Total annual wastewater and CSO control costs per household as a percent of median household income?				
Overall net debt as a percent of full market property value?				
Property tax revenues as a percent of full market property value?				
Property tax collection rate?				
Unemployment?				
Bond rating?				
Grant and loan availability?				
Previous and current residential, commercial, and industrial sewer user fees and rate structures?				
Other viable funding mechanisms and sources of financing?				
Debt indicators (e.g., overall net debt as a percent of full market property value)?				
Does the schedule include milestones for all major implementation activities, including environmental reviews, siting of facilities, site acquisition, Army Corps of Engineers permitting, etc.?				

LONG-TERM CONTROL PLAN EVALUATION CHECKLIST				
Evaluation Criteria	Yes	No	N/A	Remarks
Post-Construction Compliance Monitoring				
Does the monitoring program include monitoring of representative CSOs?				
Does the monitoring program include ambient receiving water body monitoring at representative CSOs, as well as monitoring prior to CSO impacts?				
Does the monitoring program include any biological parameters (e.g., fish, zooplankton)?				
Does the monitoring program address all applicable WQS?				
Evaluation Result (circle one)	Adequate	Inadequate	Other	
Comprehensive Evaluation Result (circle one)	Adequate	Inadequate	Other	

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