controls selected. This manual does not provide example permit language for the demonstration approach because such language will be site-specific and based on the permittee's demonstration. However, the permit writer should attempt to draft permit language in terms of performance standards or other clear specific standards similar in type to the examples provided in Exhibit 4-4 for the presumption approach. Not all selected CSO controls (e.g., extensive use of BMPs) lend themselves to specific numeric performance standards. However, the permit writer should still attempt to develop permit conditions that will hold the permittee accountable for implementing CSO controls as planned (e.g., specifying implementation and scheduled evaluation of BMPs).

4.7 MONITORING

Monitoring is generally necessary to 1) evaluate the water quality impacts from CSOs on receiving waters and the effectiveness of CSO controls and 2) determine compliance with permit conditions and ultimately the attainment of WQS. The first type of monitoring should be conducted during the Phase II permit term and should be sufficient to evaluate water quality impacts of CSOs on the receiving water bodies and to evaluate the effectiveness of CSO controls during the construction/implementation period. The latter type of monitoring should be conducted after construction of selected CSO controls has been completed and should be required in the first post-Phase II permit (see Chapter 5).

The proposed post-construction compliance monitoring plan should be submitted as part of the LTCP. The plan should describe a monitoring program that includes receiving water monitoring at the CSO outfall and outside the area of CSO impact. The types of pollutants and parameters to be included in either of these monitoring programs depend on the WQS in the receiving water body and might include chemical (e.g., biochemical oxygen demand, total suspended solids, metals, oil and grease, herbicides, pesticides), microbiological (e.g., fecal coliform), and biological (e.g., fish, benthic invertebrates, zooplankton) parameters. It is critical that the receiving water monitoring be coordinated with ongoing or planned State programs and monitoring efforts of other permittees within the same watershed to ensure effective use of resources by all parties.

Permit monitoring conditions should be clear and concise, maintaining flexibility to account for site-specific factors. Where possible, to ensure that the conditions are enforceable, the permit writer should develop permit conditions that incorporate specific elements of the submitted plan rather than general requirements. The permit writer may copy specific portions of the proposed plans into the permit.

Exhibit 4-5 presents an example of site-specific permit language. (The pollutants listed in Exhibit 4-5 are included as an example only and are not intended as a mandatory list of required monitoring parameters. Permit language and the list of pollutants to be monitored should be developed to reflect the permittee's site-specific characteristics.) In addition, the permit writer should require the permittee to monitor appropriate measures of success, developed as part of the LTCP.

EPA cautions the permit writer against requiring implementation of the monitoring plan by reference. This approach might be more difficult to enforce because of the possible ambiguity of such language.

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

- Sediment studies
- Whole effluent toxicity testing
- Biological assessments.

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

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 **[insert appropriate number]** minutes of the discharge at the following CSO outfalls **[insert appropriate identification]**. The grab sample shall be collected **[insert appropriate number]** times per year.*

2. *The composite sample shall be collected from the start of the discharge until it stops, with the sample period not to exceed 24 hours at the following CSO outfalls **[insert appropriate identification]**. The composite sample shall be collected **[insert appropriate number]** times per year, **[insert appropriate number]** times during the period from May - October and **[insert appropriate number]** times during the period from November - April. The permittee shall submit the results no later than November 30th and May 31st, respectively.*

***Parameters listed in this exhibit are examples only. The list of parameters to monitor must be developed on a site-specific basis.**

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

For additional information on these types of testing, the permit writer is referred to the *Combined Sewer Overflows—Guidance for Monitoring and Modeling* (EPA, 1995d).

4.8 REPORTING

Four types of reporting requirements relating to CSO controls should be included in the Phase II permit: 1) re-evaluations associated with and reports/recordkeeping to document continued implementation of the NMC, 2) progress reports associated with implementation of long-term CSO controls, 3) monitoring data, and 4) other pertinent information (e.g., sensitive area reassessment):

- **NMC Implementation**—Examples of recordkeeping requirements associated with the ongoing implementation of the NMC have been incorporated into the example permit language associated with NMC implementation (see Section 4.3.2). The permit writer may choose to require reporting of any of this information. In addition, if the permit writer chooses to require any re-evaluations associated with any of the minimum controls, such as a reassessment of the pretreatment program or additional revisions to the municipal ordinance, the permit writer may require reporting of these re-evaluations.

- **LTCP Implementation - Progress Reports**—Because the implementation of the LTCP may be phased, the permit writer may require progress reports associated with the implementation of CSO controls. Exhibit 4-6 presents example permit language for requiring the submission of progress reports.

Exhibit 4-6. Example Permit Language for Requiring Submission of Progress Reports

> 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.

- **Monitoring Data**—Monitoring data collected during Phase II should be submitted to the NPDES permitting authority on a scheduled basis. Exhibit 4-5 provides example permit language that includes reporting requirements for Phase II monitoring.

- **Other Information**—The permit writer should consider other applicable reporting requirements. Depending on whether the permittee has chosen to implement the presumption or the demonstration approach, for example, it might be appropriate to require the permittee to report the number of overflow events or document other

performance standards. The permit writer may also require the permittee to provide "measures of success" data not otherwise reported as part of the monitoring data. Such data might include a reduction in the number of overflow events, reduction in number of CSO outfalls, volume of untreated/treated CSOs, or other improvements in receiving water quality. Section 2.9 discusses the different types of measures of success for the CSO program. In addition, any reassessments recommended by the CSO Control Policy, such as the reassessment of CSOs to sensitive areas, should also be submitted to the NPDES permitting authority. Section 4.9.2 discusses special conditions regarding sensitive areas.

4.9 SPECIAL CONDITIONS

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

4.9.1 CSO-Related Bypass

Some POTW treatment plants might have significant primary treatment capacity in excess of their secondary treatment capacity. During development of the LTCP, a community might want to consider using this excess primary treatment capacity as one CSO control alternative, which may be used in conjunction with other CSO control alternatives to ensure compliance with CWA requirements. The CSO Control Policy outlines a process for "CSO-related bypass" whereby, under certain circumstances, the permit writer may allow wet weather flows to receive primary clarification at the POTW treatment plant and then be discharged, without these flows being subject to secondary treatment requirements.

"Bypass," the intentional diversion of waste streams from any portion of a treatment facility, is prohibited by NPDES regulations unless the requirements of 40 CFR 122.41(m) are met. Under the regulations, to take advantage of the bypass provisions, the permittee must show that the bypass was unavoidable to prevent loss of life, personal injury, or severe property damage, that there was no feasible alternative to the bypass, and that the permittee submitted the

required notices. After considering "its adverse effects," the NPDES permitting authority may approve an anticipated bypass if the permittee has met these three conditions.

The permittee is normally responsible for documenting compliance with 40 CFR 122.41(m) on a case-by-case basis. In the CSO Control Policy, EPA interpreted these regulations to allow authorization, by permit condition, of a CSO-related bypass of the secondary treatment portion of the POTW treatment plant in specific limited circumstances. For permittees with excess primary capacity at the POTW treatment plant, the permit writer may consider including a CSO-related bypass provision in the permit. When considering whether such a condition is appropriate, the permit writer should consult the information and justification for the bypass submitted in the permittee's LTCP. In addition to presenting information in the LTCP documenting compliance with the baseline requirements of 40 CFR 122.41(m), the CSO Control Policy states that, at a minimum, the LTCP "should provide justification for the cut-off point at which the flow will be diverted from the secondary treatment portion of the treatment plant, and provide a benefit-cost analysis demonstrating that conveyance of wet weather flow to the POTW for primary treatment is more beneficial than other CSO abatement alternatives such as storage and pump back for secondary treatment, sewer separation, or satellite treatment."

For purposes of applying the bypass regulation to CSOs, "severe property damage" could include situations where flows above a certain level could wash out the POTW's secondary treatment system. The "no feasible alternative" requirement of the regulation can be met if the record demonstrates that the secondary treatment system is properly operated and maintained, that the system has been designed to meet secondary limits for flows 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. This analysis should include, for example, consideration of enhanced primary treatment and non-biological secondary treatment, as well as additional construction to increase plant capacity. The NPDES permitting authority may grant interim authorization to bypass that results from wet weather flows, which, in the absence of implementation of the nine minimum controls, would be untreated from a CSO without consideration of the feasibility of additional construction.

Where such interim authorization is granted, however, the permit must specify that the permittee is required, as part of its LTCP, to implement all feasible alternatives to bypass, including additional construction at the facility or other controls within the collection system. Other bases supporting a finding of no feasible alternative might also be available on a case-by-case basis. As part of the consideration of possible adverse effects resulting from the bypass, the permit writer must determine that the bypass will not cause exceedances of WQS.

Based on the technical justification developed and submitted by the permittee, the permit writer should include in the permit the conditions under which a CSO-related bypass would be authorized, as well as specify any required treatment, monitoring, or effluent limitations related to the bypass event. The permit writer should also include requirements for appropriate notification of the CSO-related bypass to the NPDES permitting authority. The CSO Control Policy recommends that the permit require all wet weather flows passing the headworks of the POTW treatment plant to receive at least primary clarification, solids and floatables removal and disposal, disinfection (where necessary), and any other treatment that can reasonably be provided. The permit writer may specify monitoring requirements to determine whether a substantial increase in the volume or character of pollutants introduced to the POTW occurs. If the POTW is required to disinfect bypassed flows, and if chlorine is used to disinfect, the permit writer may apply effluent limitations for total residual chlorine to ensure protection of receiving water quality and attainment of WQS.

As stated previously, the CSO Control Policy recommends that the LTCP provide adequate justification for the CSO-related bypass and clearly define the wet weather flow conditions and flow rate at which secondary treatment capacity is exceeded. In addition, the CSO Control Policy recommends that the permittee demonstrate that conveying combined sewage to the POTW treatment plant for primary treatment is more beneficial than other options, based on a cost/performance analysis. The permit writer should use this information to draft a site-specific CSO-related bypass provision that specifies the flow rate at which the CSO-related bypass will be allowed; any appropriate treatment, monitoring, or effluent limitations; or other CSO-related bypass requirements. The permit language should indicate that bypasses that occur

when the flow at the time of the bypass is under the specified flow rate are not authorized by the CSO-related bypass condition. The permit writer should compile sufficient data and information in the administrative record and in the permit fact sheet or statement of basis supporting all the requirements in 40 CFR 122.41(m)(4) for approval of an anticipated bypass. Exhibit 4-7 presents an example of permit language for a CSO-related bypass. The permit writer should evaluate this language carefully to ensure that is appropriate for the permittee.

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].** Bypasses that occur when the flow at the time of the bypass is under the specified flow rate are not authorized under this condition and are subject to the bypass provision at 40 CFR 122.41(m). In the event of a CSO-related bypass authorized under this condition, the permittee shall minimize the discharge of pollutants to the environment. At a minimum, CSO-related bypass flows must receive primary clarification, solids and floatables removal, and disinfection. The permittee shall report any substantial changes in the volume or character of pollutants being introduced into the POTW. Authorization of CSO-related bypasses under 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. The permittee shall provide notice to the permitting authority of bypasses authorized under this provision with 24 hours of occurrence of the bypass.

4.9.2 Reassessment of Sensitive Areas

Under the CSO Control Policy, the permittee's LTCP should give the highest priority to controlling CSOs to sensitive areas, as defined by the NPDES permitting authority. The goal for controlling CSOs to these areas is to eliminate the CSOs or relocate them whenever it is physically possible and economically achievable. If it is not possible, then the permittee should be required to treat the CSOs that are not eliminated or relocated to the degree necessary to provide for the attainment of WQS.

For CSOs 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 might 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. The permit writer should evaluate this language carefully to ensure that it is appropriate for the permittee.

Exhibit 4-8. Example Permit Language for Sensitive Area Reassessment

[This permit condition is only appropriate for CSSs with CSOs to sensitive areas that have not been eliminated or relocated.]

The permittee shall reassess the feasibility of eliminating or relocating CSO outfalls **[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 consider new or improved techniques to eliminate or relocate overflows or changed circumstances that influence economic achievability. The permittee shall prepare and submit to the 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]**.

4.9.3 Permit Reopener Clause

As with any NPDES permit, the Phase II permit should include a reopener clause that authorizes the NPDES permitting authority to modify or revoke and reissue the Phase II permit for cause. Such cause could include a determination that the selected CSO controls fail to provide for the attainment of WQS or WQS are revised to address wet weather conditions on the basis of a use attainability analysis.

Modifying the Phase II permit will require the modification of any enforcement mechanism issued with the Phase II permit to maintain consistency with the modified or reissued Phase II permit. For this reason, the permit writer should coordinate with the appropriate NPDES enforcement authority when a Phase II permit is reopened.

Before exercising any reopener provision, the permit writer should consider the timing of the scheduled permit reissuance. If it is late in the five-year permit cycle, the permit writer may want to address the changes in the context of the normal permit reissuance process. The

NPDES permitting authority might have standard procedures that govern the use of reopener clauses, and the permit writer should follow these procedures when appropriate.

It is possible that a generic reopener clause used in other NPDES permits is sufficiently broad to address CSOs. Alternatively, the permit writer may revise the generic reopener clause to specifically include the CSO-related causes for which the Phase II permit may be reopened, or the permit writer may include a separate reopener clause that only identifies the CSO-related causes for which the Phase II permit may be reopened. Exhibit 4-9 presents example language for the latter case. The permit writer should evaluate this language carefully to ensure that it is appropriate for the permittee. EPA's *Training Manual for NPDES Permit Writers* presents additional information on the use of standard reopener clauses in NPDES permits (EPA, 1993).

Exhibit 4-9. Example Permit Language for Reopener Clauses

This permit may be modified or revoked and reissued, as provided pursuant to 40 CFR 122.62 and 124.5, for the following reasons:

- To include new or revised conditions developed to comply with any State or Federal law or regulation that addresses CSOs that is adopted or promulgated subsequent to the effective date of this permit
- To include new or revised conditions if new information, not available at the time of permit issuance, indicates that CSO controls imposed under the permit have failed to ensure the attainment of State WQSs
- To include new or revised conditions based on new information resulting from implementation of the long-term control plan.

In addition, this permit may be modified or revoked and reissued for any reason specified in 40 CFR 122.62.