CHAPTER 3

THE RANKING PROCESS

CSSs that are identified in the screening process as most likely to cause significant adverse impacts should be ranked through a seven-criterion process using site-specific information. Information needed for ranking may be available from many sources, including NPDES permits, NPDES permit applications, 305(b) reports, and compliance and enforcement reports. When adequate information cannot be obtained from these sources, new information can be obtained from site visits or from other outside sources (e.g., consultant reports and data from other agencies, such as USGS), as noted in more detail below. Information from outside sources on the CSSs and CSOs under evaluation can be invaluable during the ranking process. The NPDES permitting authority should make every reasonable effort to obtain the information necessary to give each CSS a score under each ranking criterion. If a particular criterion does not apply to a community (e.g., if a community has no dry weather overflows under Criterion 2), it should receive a score of zero.

In ranking individual CSOs, each individual score should be used. In ranking each CSS, the CSSs that receive the highest point totals from the ranking process should be judged as likely to cause the greatest impacts and should, in most cases, be the highest priority for NPDES permitting. Clearly, this represents a simplistic approach to the ranking of CSSs for NPDES permitting. EPA expects that additional analysis may be necessary and that in some cases it may be desirable to compare systems using "second tier" scores to reflect additional impacts.

3.1 Criterion 1

If any CSOs within the CSS pose a direct risk to public health or contribute to the non-attainment of designated uses on an ongoing basis, or if the potential impacts from CSOs are significant to areas designated under Federal or State law as sensitive or protected resources, assign points as listed below:

- **Discharges to waters experiencing beach closings or where there is a significant risk to public health from direct contact with pollutants in CSOs: Score 250 points.**

- **Discharges to Outstanding National Resource Waters, National Marine Sanctuaries, or waters with threatened and endangered species and their habitat; public drinking water intakes or their designated protection areas; or shellfish beds: Score 200 points.**

Rationale: The primary purpose of this criterion is to identify CSSs with CSOs that endanger public health and affect water quality. This criterion is assigned a high point total because it addresses observed impacts often associated with CSOs. The high point score for the first category in this criterion is consistent with the risks that the pollutants in CSOs pose to public health. Potential impacts to the sensitive areas listed under the second category are included because, as identified in the CSO Control Policy, they generally need the highest levels of protection.

Information required to determine the score for this criterion is often available from State and local public health officials, the NPDES permit, the NPDES permit application, and the 305(b) report. NPDES permit applications and permits contain the specific locations of CSO outfalls. Commonly, 305(b) reports identify whether the use of a water body is impaired and whether municipal sources are responsible; these reports may not give a specific location or specifically identify CSOs as a contributing or primary cause of the impairment. However, if the 305(b) report does not provide adequate information, an appropriate State agency often can help in completing evaluations under this criterion. Local offices of State and Federal natural resource management agencies (e.g., fish and game agencies or the U.S. Fish and Wildlife Service) can provide information on sensitive resources.

3.2 Criterion 2

If dry weather overflows (DWOs) occur within the CSS, score the following points depending on the frequency of the DWOs:

- **Chronic DWOs (i.e., they occur on a regular basis and are not caused by an occasional blockage of a regulator by debris):**
  Score 150 points.

- **Infrequent DWOs caused by infrequent maintenance:**
  Score 75 points.

Rationale: Dry weather flows include sanitary flows, industrial flows, and infiltration from ground water. DWOs result when dry weather flow is discharged from a CSO outfall. Many CSSs continue to have DWOs for a variety of reasons, including illegal connections to the CSS causing flows that exceed the system's design capacities, plugging of underflow (dry weather) screens, tidal or high stream flow intrusions, damaged or poorly designed flow-regulating equipment, undersized interceptor sewers, and insufficient plant capacities. Ground water may infiltrate into old, poorly designed, or poorly maintained CSSs, causing their design capacities to be exceeded. Because DWOs are not diluted by storm water, they can cause significant impacts in receiving waters.

NPDES regulations prohibit DWOs, and both the 1989 National CSO Control Strategy and the 1994 CSO Control Policy target the expeditious elimination of all DWOs. Both documents recommend that NPDES authorities take appropriate enforcement actions to eliminate all such discharges and to ensure that all CSOs comply with technology-based and water quality-based requirements of the CWA. This criterion has a relatively high maximum score (150 points) because DWOs are undiluted by storm water and, thus, are likely to cause impacts and because DWOs are prohibited.

A CSS would automatically receive a score of 150 points if the DWOs are occurring because of structural problems such as an undersized pipe. The score of 75 points addresses infrequent DWOs that result from inadequate operation and maintenance programs and

procedures. The owner/operator of the CSS should be able to mitigate or eliminate these DWOs by implementing a more aggressive operation and maintenance program.

In many cases, the municipal and State personnel will know the dry weather status of a system. In some cases, however, the CSS may not have been studied and may not be well characterized. In these cases, the permittee will generally need to evaluate dry weather flows, which can often be accomplished by relatively simple observations.

3.3 Criterion 3

Depending on the type of water body receiving the CSO, as well as the body's turbulence and mixing characteristics (energy), score points according to the following table:

Water Body Type	Low Energy	Medium Energy	High Energy
Estuarine and Wetland	100 points	N/A	N/A
Near-Shore Oceanic	60 points	40 points	20 points
Offshore Oceanic	30 points	15 points	10 points
Lakes and Ponds	100 points	N/A	N/A
River	40 points	20 points	10 points
Streams	60 points	40 points	20 points

N/A = Not applicable

Rationale: Investigations done in North America and Europe provide information on the relative susceptibility of various water body types to CSO and storm water impacts. Using this information, water bodies most likely to suffer impacts from CSOs can be identified and categorized based on two factors: type of water body (e.g., estuary, river) and its relative energy (i.e., low, medium, or high). Water body energy describes the degree of turbulence and mixing in the receiving water body. Water bodies that flow rapidly and have noticeable turbulence will mix and flush more quickly than standing water systems and, therefore, are more likely to disperse any pollutant loadings from CSOs before they cause substantial impacts. Thus,

flowing water systems with high energy receive proportionally lower scores than low energy flowing systems and standing water systems. This criterion assumes that lakes and ponds are always considered low energy due to minimal mixing.

Similarly, potential impacts to flowing waters are stratified because smaller flowing systems (i.e., streams) may not as readily or rapidly flush themselves of accumulated sediments and associated pollutants as would larger systems (i.e., rivers). Because systems with greater sediment accumulation rates are more prone to environmental or human health impacts, they are given more points than waters relatively less prone to sediment accumulation. This criterion can contribute a maximum of 100 points to a system's total score, substantially lower than that possible in each of the first two criteria. This is because the emphasis of this guidance is first on *actual* or *highly probable* impacts to receiving water bodies, which are emphasized under the first two ranking criteria, and then on *potential* impacts having a lesser degree of certainty, which are evaluated under this and the next three criteria. If a CSS has CSOs occurring to more than one type of water body with various energy levels, then scores for each receiving water body are not combined. Rather, the CSS is assigned the score based on the receiving water body and energy level with the highest point value.

Because of Regional differences relevant to the meanings of *streams* and *rivers,* etc., this document does not define these terms. Instead, the NPDES permitting authority should provide clear and appropriate definitions of all terms when using this guidance.

Information necessary for this criterion is generally contained in the NPDES permit. If NPDES permits are not available or if additional information on the characterization of a receiving water body is needed, information can generally be obtained from in-state offices of the USGS or State water resources offices.

3.4 Criterion 4

If the measured or estimated proportion of the flow rate(s) of all CSO outfalls to the receiving water flow rate (including CSO flow) in streams or rivers is:

- **More than 50 percent:**
  Score 50 points.

- **Twenty-five to 50 percent:**
  Score 30 points.

- **Less than 25 percent:**
  Score 10 points.

Note that since the proportion of CSO flow rate(s) to receiving water flow rate cannot be calculated for lakes and estuaries, they should automatically receive 30 points.

Rationale: This criterion continues the projection of probable impacts from CSOs to water bodies begun in Criterion 3. It is based on the assumption that impacts increase as the proportion of CSO flow increases relative to receiving water flow. It might be difficult to evaluate the CSS under this criterion if flow information is lacking.

Authorized States and/or EPA Regional offices maintain enforcement or compliance records for many CSOs. These records can provide information on CSO occurrences, volumes, durations, and frequencies. When data are not available, Section 308 information requests or new or revised permit requirements can, as appropriate, require monitoring programs to gather needed information. Alternatively, the CSO flow can be estimated using one of several available modeling approaches. A model can predict peak runoff flow rates resulting from recurring precipitation rates for the watershed drained by the CSO. The approximate flow volume discharged from the CSO outfall is then computed by subtracting the treatment capacity (i.e., flow conveyed to the POTW treatment plant) of the CSS from the sum of the projected peak runoff and dry weather flow volumes predicted by the model.

Useful stream and river flow information may be available from the USGS network of stream and river gage stations.

3.5 Criterion 5

If a drinking water intake is within 10 miles (downstream in flowing water systems) of any CSO outfall in the CSS, score the following points:

- **Within 5 miles:**
  Score 100 points.

- **Between 5 and 10 miles:**
  Score 50 points.

Rationale: CSOs might contaminate drinking water supply systems and cause widespread human health problems associated with pathogens or toxic materials. Most drinking water treatment facilities with intakes located near CSO outfalls have developed various operational and treatment strategies to avoid such problems. But unforeseen problems, including illegal new connections or discharges of toxic wastes to the CSS, might occur, or new drinking water intakes might be constructed. While routine treatment of drinking water supplies is likely to protect public drinking water supplies from CSOs in most cases, impacts may still occur. Thus, while the association between CSOs and impacts to drinking water sources may be rare, the consequences may be rather severe. Therefore, this criterion yields a score of 100 points if the intake is within 5 miles and 50 points if it is between 5 and 10 miles of a CSO outfall.

The information necessary for this criterion should be available at the State or local public health agency offices or other State offices responsible for monitoring or regulating drinking water intakes and drinking water supplies.

(Note: During the test of this guidance, this criterion was the only one to score zero for every permittee tested. Where CSOs occur to salt or brackish water, the reason for this score is obvious. Most of the other permittees included in this test have a long history of water quality problems in the water bodies affected by CSOs. It is likely that drinking water supply intakes are not located near CSO outfalls in such cases.)

3.6 Criterion 6

If the composition of wastewater flows prior to any CSO outfall (based on dry weather flows) in the CSS includes:

- **More than 50 percent industrial and commercial discharges or significant individual sources of potentially toxic materials:**
  Score 50 points.

- **Thirty to 50 percent industrial and commercial discharges or significant individual sources of potentially toxic materials:**
  Score 25 points.

- **Less than 30 percent industrial and commercial discharges or significant individual sources of potentially toxic materials:**
  Score 0 points.

Rationale: This criterion uses the surrogate measure of CSO industrial/commercial contributions to address the potential impact of CSOs on the quality of the receiving water body. It is based on the following assumptions: (1) possible discharges to the CSS of potentially hazardous materials, including oils, greases, and spilled materials, are greatest for industrial users and intermediate for commercial users, (2) runoff volumes would be greatest from industrial and commercial areas because of their high proportions of impervious surfaces and the likelihood of runoff contamination is higher in these areas, and (3) most residential areas have relatively higher rates of wet weather infiltration, lower traffic volumes, and thus lower potentials for the release of toxic chemicals in significant quantities.

State agencies generally do not have the information needed for this criterion. Often, the permittee's staff or consultant reports prepared for the permittee are the best sources of this information. When this information is not otherwise available, USGS topographic maps can be used to delineate the drainage basin. Then, land-use or zoning maps available for most cities can be laid over the USGS maps, and the percent composition of the area can be delineated using planimetry or a related method.

3.7 Criterion 7

For any site-specific concern not addressed through the other criteria that is a major concern to the NPDES permitting authority:

Score 0 to 200 points.

Rationale: This criterion recommends that the NPDES permitting authority increase the score and rank of any CSS where special concerns not addressed in other criteria are attributable to actual or potential impacts from the system. Permit writers can assign a score based on best professional judgment and the relative impacts of the system. Concerns considered under this criterion might include CSOs that threaten aesthetics or human health. For example, if floatables from CSOs compromise the aesthetics in an area used for recreational boating, this criterion might receive a score of 100. If the concern is a threat to human health (e.g., CSOs entering streets or basements), a permit writer should assign a score of 200 for this criterion.

The value of this criterion was illustrated during the test of this guidance (see Appendix A). If it were not for this criterion, the CSS for Sacramento, California, would have scored only 50 points, primarily because Criteria 1 to 6 focus on impacts to receiving waters. For Sacramento, however, CSO impacts on receiving waters appear to be relatively minor, but there is a major problem with CSOs onto city streets and into homes and commercial basements in the older sections of the city. Because of this impact to human environments, an additional score of 200 points was assigned under this criterion.