

**NPS/CZARA FACT SHEET No. 3**  
**Urban Management Measures**



The SWRCB, CCC, and other State agencies have identified 15 management measures (MMs) to address urban nonpoint sources of pollution that affect State waters. With approximately 80% of the nation's population living in coastal areas, controlling polluted runoff in urban areas is a challenge. Negative impacts of urbanization on coastal and estuarine waters are well documented in a number of sources, including California's Clean Water Act §305(b) and §319 reports and the Nationwide Urban Runoff Program.

Major pollutants found in runoff from urban areas include sediment, nutrients, oxygen-demanding substances, road salts, heavy metals, petroleum hydrocarbons, pathogenic bacteria, and viruses. Suspended sediments constitute the largest mass of pollutant loadings to receiving waters from urban areas. Construction is a major source of sediment erosion. Petroleum hydrocarbons result mostly from automobile sources. Nutrient and bacterial sources include garden fertilizers, leaves, grass clippings, pet wastes, and faulty septic tanks. As population densities increase, a corresponding increase occurs in pollutant loadings generated from human activities. Many of these pollutants enter surface waters via runoff without undergoing treatment.

- California's management measures to address urban sources of nonpoint pollution:**
- 3.1 Runoff from Developing Areas**
    - A. Watershed Protection
    - B. Site Development
    - C. New Development
  - 3.2 Runoff from Construction Sites**
    - A. Construction Site Erosion and Sediment Control
    - B. Construction Site Chemical Control
  - 3.3 Runoff from Existing Development**
    - A. Existing Development
  - 3.4 Onsite Disposal Systems (OSDSs)**
    - A. New OSDSs
    - B. Operating OSDSs
  - 3.5 Transportation Development (Roads, Highways, and Bridges)**
    - A. Planning, Siting, and Developing Roads and Highways
    - B. Bridges
    - C. Construction Projects
    - D. Chemical Control
    - E. Operation and Maintenance
    - F. Road, Highway, and Bridge Runoff Systems
  - 3.6 Education/Outreach**
    - A. Pollution Prevention/Education: General Sources

Urban runoff management requires that several objectives be pursued simultaneously. These objectives include the following (American Public Works Association, 1981):

- Protection and restoration of surface waters by the minimization of pollutant loadings and negative impacts resulting from urbanization;
- Protection of environmental quality and social well-being;
- Protection of natural resources, e.g., wetlands and other important aquatic and terrestrial ecosystems;

- Minimization of soil erosion and sedimentation problems;
- Maintenance of the predevelopment hydrologic conditions;
- Protection of ground-water resources;
- Control and management of runoff to reduce or prevent flooding; and
- Management of aquatic and riparian resources for active and passive.

**Management Measures:**

The control of urban NPS pollution requires the use of two primary strategies: the prevention of pollutant loadings and the treatment of unavoidable loadings. California's urban management measures are organized to parallel the land use development process in order to address the prevention and treatment of NPS pollution loadings during all phases of urbanization; this strategy relies primarily on the watershed approach, which focuses on pollution prevention or source reduction practices. A combination of pollution prevention and treatment practices is favored because planning, design, and education practices are generally more effective, require less maintenance, and are more cost-effective in the long term.

The major opportunities to control NPS loadings occur during the following three stages of development: (1) the siting and design phase, (2) the construction phase, and (3) the post-development phase. Before development occurs, land in a watershed is available for a number of pollution prevention and treatment options, such as setbacks, buffers, or open space requirements, as well as wet ponds or constructed urban runoff wetlands that can provide treatment of the inevitable runoff and associated pollutants. In addition, siting requirements and restrictions and other land use ordinances, which can be highly effective, are more easily implemented during this period. After development occurs, these options may no longer be practicable or cost-effective. MMs 3.1A through 3.1C address the strategies and practices that can be used during the initial phase of the urbanization process.

The control of construction-related sediment loadings is critical to maintaining water quality. The implementation of proper erosion and sediment control practices during the construction stage can significantly reduce sediment loadings to surface waters. MMs 3.2A and 3.2B address construction-related practices.

After development has occurred, lack of available land severely limits the implementation of cost-effective treatment options. MM 3.6A focuses on improving controls for existing surface water runoff through pollution prevention to mitigate nonpoint sources of pollution generated from ongoing domestic and commercial activities.