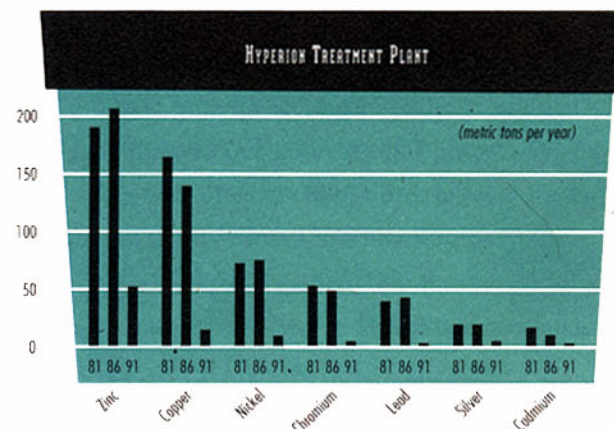
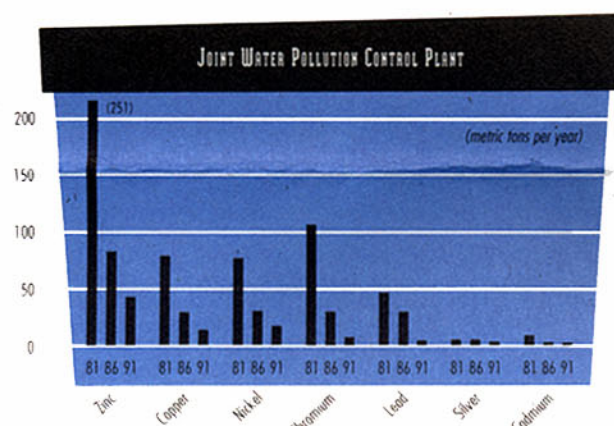


URBAN RUNOFF

It appears that individual action has also made a difference in reducing emissions: Authorities cite water conservation measures as a cause for reductions in total flow. Other factors affecting the improved effluent discharges are stricter limits on industrial pollutant dis-



Estimated mass emissions of various heavy metals from the Hyperion Treatment Plant in 1981, 1986 and 1991.



Estimated mass emissions of various heavy metals from the Joint Water Pollution Control Plant in 1981, 1986 and 1991.

charges to the sewer system, better enforcement of discharge standards, and more effective pollution prevention.

Recovering Marine Life Although the effects of wastewater outfalls on surrounding fish and invertebrate communities are still noticeable, the environmental monitoring programs conducted by Hyperion, JWPCP, the Southern California Coastal Water Research Project (SCCWRP), and others show that marine life

communities near outfalls are beginning to resemble those in more pristine areas. Fin erosion in bottom-dwelling fish such as Dover sole is rarely observed. The severely degraded environment around the now-terminated Hyperion seven-mile sludge line is slowly recovering, as evidenced by reduced contaminants and increased species diversity.

Controlling Urban Runoff Storm drain runoff contains a variety of pollutants, such as dust, tire and brake lining particles, heavy metals, crankcase oil and engine combustion products, litter, pesticides, bacteria, and many others. Because urban runoff is difficult to control, it has not been regulated until recently.

The Santa Monica Bay Restoration Project was instrumental in facilitating the development of one of the first stormwater runoff permits in the nation. This permit requires Los Angeles County and its 89 cities to control pollution from urban runoff. As the measures required under the permit are implemented over the next few years, we should see significant reductions in surfzone bacterial counts near storm drains, accompanied by other water quality improvements.

Remediating Ocean Floor Contamination DDT, a very persistent synthetic pesticide discharged until the early 1970s, is still affecting the marine food web around the Whites Point outfall and possibly around some ocean dump sites as well. In 1990, the National Oceanic and Atmospheric Administration filed a natural resources damage lawsuit against the responsible parties and is conducting large-scale studies to evaluate remediation options.

Prospects for the Future The process of recovery is well underway in many sections of the Bay. But it is apparent that the job of restoration is far from done and that all those who hold a stake in the Bay's health must increase their efforts to promote and practice environmental stewardship.

URBAN RUNOFF AND STORMWATER QUALITY

The Major Challenge for the SMBRP

Public perception of water pollution usually involves images of large pipes discharging polluted water into coastal areas, litter strewn on beaches, and oil spills.

Public and governmental pressure has succeeded in greatly reducing contaminants that enter Santa Monica Bay from local sewage treatment plants, power generating stations, and heavy industry. With better control of these sources, pollution reduction efforts are now focusing on urban and stormwater runoff. When the public calls to mind images of water pollution, they may very well be looking at urban and stormwater runoff.

Controlling a pollution source with as many origins as there are people in the watershed is no easy task, particularly in the greater Los Angeles area with its 89 separate governmental jurisdictions and population of nine million. Although required by the Clean Water Act when it was amended in 1977, management of urban runoff and stormwater quality has languished over the last decade and a half, in part because of the tremendous complexity of dealing with this multi-faceted pollution source.

Urban Runoff Sources Urban runoff and stormwater, channeled to the Bay through Los Angeles' massive storm drain system, is made up of widely scattered and infinitely variable kinds of matter — the by-products of human activity in the watershed.

Runoff increases when roads, buildings or pavement (any so-called "impervious surfaces") cover land that once absorbed and filtered rainfall. For instance, in single-family residential areas, an average of 55 percent of the surfaces are impervious, while in light industrial areas, 90 percent of the surfaces are impervious. However, since more land in the Santa Monica Bay watershed is devoted to residential use, it accounts for a greater percentage of runoff pol-

lutants. Additionally, storm drain catch basins, those "holes" in the gutter, have become receptacles for litter, hazardous materials, oil and grease, and other items discarded there.

Urban Runoff — From the Street to the Ocean

After a long dry spell, a major storm in Los Angeles sweeps up much of the dirt, grime, and other pollutants that have collected on the surfaces of the city, and in the gutters and catch basins, and washes them directly into the ocean.

If you've seen the dirty water produced by one child's bath after a long summer day, you can easily imagine what the "bath water" of the greater Los Angeles area might be like after accumulating many months' worth of dirt and pollutants.

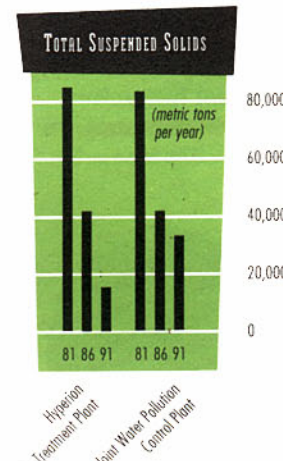
But while a child's bath water travels via our sewer system to a sewage treatment facility for cleansing before being discharged to the ocean, the city's "bath water" flows through the storm drain system directly to the ocean with no treatment whatsoever.

Teamwork Managing urban runoff and stormwater pollution will clearly require a team effort. City and county governments in Los Angeles are now held responsible for addressing urban runoff and stormwater quality management under a state and federal water quality protection permit.

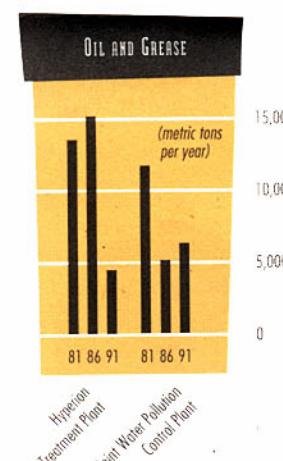
The permit calls for cities within each of the county's geographic watersheds to work in tandem and in a spirit of cooperation to manage urban runoff water quality. One of the prime areas for cooperation is in the arena of education — both for the general public and for targeted officials and industries. Attacking this problem successfully will mean not only working hard, but working together.



Urban runoff is a tremendously complex and multi-faceted pollution source — its management will clearly require a team effort.

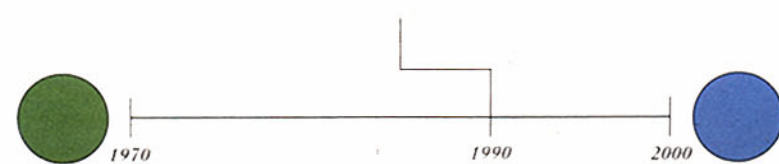


Annual mass emissions of total suspended solids from Santa Monica Bay wastewater treatment facilities.



Annual mass emissions of oil and grease from Santa Monica Bay wastewater treatment facilities.

In 1990, the Los Angeles Regional Water Quality Control Board issued an NPDES permit regulating urban runoff in the Los Angeles County area.



In 1990, the California Department of Fish and Game closed the commercial white croaker fishery off Palos Verdes Peninsula, reducing the likelihood of contaminated fish reaching the marketplace.

