



## Water and Wastewater

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### Introduction

A water policy that creates sustainable water use balances the needs for protection of the environment and public health, while not compromising the ability of future generations of San Franciscans to procure water to meet their basic needs. It also creates a shift from the traditional view of water as a commodity managed solely for the convenience of humans to a more balanced effort to maintain the water needs of the entire ecosystem of which humans are a part.

San Francisco is fortunate in having a pristine source of first-quality drinking water from the headwaters of the Tuolumne River in the Sierra Nevada Mountains. The undeveloped watershed located within Yosemite National Park provides pollutant-free water originating primarily from snow-melt over a granite base. The Tuolumne River is captured behind O'Shaughnessy Dam and diverted to San Francisco via the Hetch Hetchy system. This system, composed of a series of dams, transport pipes and hydraulic electrical-generating stations, brings drinking water all the way to the Bay Area from the mountains. Water diversions such as this one and others, however, can have a profound effect on the San Francisco Bay Estuary, which historically received waters from rivers throughout the State. Reductions in flow to the estuary limits water available for wildlife and the overall health of the system is fundamentally dependent on the quantity and quality of water available. The degradation of water quality through the introduction of toxic materials and the reduction of flow through unmanaged use can ultimately harm the quality of life for all Californians.

To sustain life in the whole Bay watershed, it is essential to change the traditional view of water management to one that recognizes that human interests, in the long run, cannot be separated from the interests of the plants and other animals in the watershed. To this end, some members of the group drafting this section proposed restoring Hetch Hetchy Valley as a long-term objective, although this was not the consensus of the group.

The goals defined below go beyond the status quo and seek to redefine current thought on the use, treatment and reuse of San Francisco's water and wastewater. For example, partial or complete recycling of the City's entire wastewater flow has been set as a goal to be attained in the not-too-distant future. This goal drives a number of related activities, such as

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monitoring and reducing pollutants entering wastewater before treatment and ultimately eliminating pollutants entering receiving waters after treatment. Recycling wastewater also requires increased stormwater management, including greater control of urban run-off and combined system overflows.

Pollution prevention and water management will allow better use of millions of gallons of high-quality Sierra water daily. These new and expanded uses could include groundwater replenishment, aquatic habitat creation or enhancement, fisheries protection through greater flows in streams, and riparian (stream-side) habitat restoration. The large water bank created by more careful water management would reduce the need for new dams or water projects and reduce current demand on overburdened smaller streams and creeks.

The new direction and goals proposed here take the long view toward creating a sustainable water policy for the residents of San Francisco.

### Sustainability Strategy

GOALS	LONG-TERM OBJECTIVES TO REACH SUSTAINABILITY	OBJECTIVES FOR THE YEAR 2001 (5-year plan)	ACTIONS
<p><b>1. Reuse</b></p> <p>To reclaim all wastewater.</p> <p>To maximize local reuse.</p> <p>To maximize recovery and reuse of resources from wastewater.</p>	<p>1-A. 100% of the City's wastewater is recycled for re-use.</p>	<p>1-1. 10% of the City's wastewater is recycled for local use.</p> <p>1-2. Dual plumbing is routinely installed for all new buildings over 40,000 sq. ft., and landscapes over 10,000 sq. ft., especially the ballpark, Hunters Point, China Basin and Treasure Island (in accordance with City Ordinance 391-92).</p>	<p>1-a. Formalize interagency cooperation on reuse issues.</p> <p>1-b. Use recycled water for street-sweeping and street flushing.</p> <p>1-c. Obtain voter approval for financing and implementation of the Phase I Local Recycled Water Master Plan by November, 1997.</p>
<p><b>2. Use Reduction</b></p> <p>To maximize water conservation and minimize water use and waste.</p>	<p>2-A. Water-conservation audits are performed at 100% of San Francisco businesses, industries and parks.</p>	<p>2-1. Domestic water use has decreased by 10%.</p> <p>2-2. Water conservation has been maximized through equipment replacement.</p> <p>2-3. Water conservation audits have been performed at 20% of San Francisco businesses, industries and parks.</p>	<p>2-a. Replace all toilets with 1.6-gallon flush toilets using a combination of incentive programs and mandates.</p> <p>2-b. Use recycled water for fire-fighting and irrigation.</p> <p>2-c. Implement urban water conservation best management practices as reflected in the Urban Memorandum of Understanding signed by the City as part of the Bay-Delta accord.</p> <p>2-d. Create tiered water pricing to encourage water conservation.</p> <p>2-e. Change the building code to require water conservation upon change of building ownership.</p> <p>2-f. Investigate and promote alternative water-saving technologies for gray-water (relatively clean water from sinks and showers).</p>

			<p>2-g. Increase the use of horizontal-axis washers and institutional conservation.</p> <p>2-h. Encourage maximum flexibility in work schedules, resulting in decreased commercial water use.</p>
<p><b>3. Stormwater</b></p> <p>To minimize contaminants in storm water and dry-weather flows.</p> <p>To plan for normal flows and extraordinary events.</p> <p>To minimize storm water flows into the combined sewer system.</p> <p>To manage and treat flows that enter the system.</p> <p>To strive to eliminate combined system overflow discharge.</p>	<p>3-A. Storm water/pollution-prevention plans exist for 100% of targeted industries.</p> <p>3-B. Rain catchment systems have been maximized.</p> <p>3-C. Permeable paving is used wherever appropriate.</p>	<p>3-1. Storm water/pollution-prevention plans have been developed for 30% of targeted industries.</p> <p>3-2. Vehicle transportation within the City has decreased by 10% to reduce oil in storm drains.</p> <p>3-3. Vegetation and landscaping techniques to reduce stormwater run-off, emphasizing drought-tolerant and native species, are used to the greatest extent possible.</p> <p>3-4. The number of trees planted on City streets has doubled.</p>	<p>3-a. Identify targeted industries for water/pollution-prevention plans.</p> <p>3-b. Visit 30% of businesses to conduct educational audits.</p> <p>3-c. Conduct a pilot program to determine best pollution prevention stormwater strategies.</p> <p>3-d. Organize additional tree planting agencies, develop action plans, and plant trees.</p> <p>3-e. Clean 10% of catch-basins each year.</p> <p>3-f. Create a free Muni system.</p> <p>3-g. Designate more bicycle paths.</p> <p>3-h. Increase tree-planting.</p>
<p><b>4. Source Control</b></p> <p>To eliminate contaminants in supply and receiving waters through pollution prevention for all categories of dischargers.</p>	<p>4-A. A "first-flush" system exists throughout the City, which establishes a practice of rinsing off accumulated pollutants on city streets into the sewage system before the rainy season, reducing the likelihood of their being inadequately treated if introduced along with a heavy rainfall.</p>	<p>4-1. 25% of target businesses use pollution-prevention technologies.</p> <p>4-2. Convenient hazardous-waste drop-off centers or pick-up services have been created for San Francisco businesses.</p> <p>4-3. Salt water discharge and/or intrusion into the City's sewer system has been minimized.</p> <p>4-4. The use of toxic chemicals in treatment of wastewater has decreased.</p>	<p>4-a. Eliminate the Steinhart Aquarium salt-water discharge to the sanitary system.</p> <p>4-b. Create a pilot curbside oil and paint recycling project.</p> <p>4-c. Create a dry-weather street-flush pilot project using recycled water.</p> <p>4-d. Increase the number of used motor oil and paint recycling and collection centers throughout the City.</p> <p>4-e. Coordinate with the tax office to identify businesses for potential pollution prevention practices.</p> <p>4-f. Establish a procedure by which guests in San Francisco hotels can choose to have towels replaced less frequently than every day, to reduce water used in unnecessary laundry.</p>

<p><b>5. Wastewater</b></p> <p>To discharge only wastewater that does not impair receiving water and supports restoration and habitat goals.</p>	<p>5-A. Impacts of all wastewater discharge constituents on all local environments are monitored quarterly.</p>	<p>5-1. The mass of pollutants and volume of discharge have been decreased by 10% from a 1995 baseline.</p> <p>5-2. A rodent control program to eliminate rodents from the sanitary sewer system has been developed.</p>	<p>5-a. Apply control measures for rodents in the sanitary sewer system such as trapping, baiting, and installing barriers.</p> <p>5-b. [See actions 3-a through 3-f.]</p>
<p><b>6. Water Supply</b></p> <p>To ensure a sustainable and adequate water supply for normal use, for extraordinary use (such as fire-fighting, earthquakes), and to do these considering the lowest impact on the environment.</p>	<p>6-A. All lakes in the City are clean and maintained.</p> <p>6-B. The auxiliary water supply system, which currently supplies water (that does not necessarily meet drinking water standards) to the Fire Department for emergency fire protection, has been expanded to provide emergency drinking water service for the entire city.</p>	<p>6-1. Water flows to the Bay and Delta have been restored to levels that protect viable populations of fish.</p>	<p>6-a. Begin addressing areas of San Francisco that are not served by the auxiliary water supply system, resulting in inadequate fire protection.</p> <p>6-b. Construct a recycled-water storage and distribution system on the west side of San Francisco.</p> <p>6-c. Conduct routine evaluation of infrastructure for replacing and upgrading aged pipes.</p> <p>6-d. Evaluate the impact of flushing the auxiliary water supply system into the Bay.</p> <p>6-e. Pass legislation or institute a policy change clarifying groundwater recharge and other environmental priorities.</p>
<p><b>7. Public Health</b></p> <p>To maximize protection of public health by providing safe drinking water and the safe handling of wastewater.</p>	<p>7-A. Drinking water is in compliance with lead-content standards at all times.</p>		<p>7-a. Investigate alternatives to chlorinating drinking water and wastewater, including ultra-violet disinfection.</p> <p>7-b. Develop a plan to monitor drinking water at schools for lead.</p> <p>7-c. Collect drinking water at schools and analyze it for lead content.</p> <p>7-d. Take interim measures to ensure that the lead levels in school drinking water meet the current state or federal standard that is most restrictive.</p> <p>7-e. Replace or control the source of leachable lead in the schools' drinking water systems if the level exceeds drinking water standards.</p> <p>7-f. Create water pollution signs in various languages and post them at beaches as appropriate.</p> <p>7-g. Review sign-posting on</p>

			ocean and bay shores and increase the number of locations as appropriate.
<p><b>8. Process</b></p> <p>To ensure public input into the water/wastewater planning process.</p> <p>To ensure fair and effective permit and enforcement procedures.</p>	8-A. Departments managing water and waste have been merged.	8-1. An environmental ombudsman position has been created to assist the public with environmental review.	<p>8-a. Encourage partnerships between city agencies, especially water and wastewater agencies, to implement the goals and objectives of the sustainability plan.</p> <p>8-b. Improve compliance among businesses that are required to pre-treat water that flows into the sewer system by creating an ordinance for citizen action for enforcement of applicable environmental codes.</p>
<p><b>9. Acknowledgment of True Environmental Costs</b></p> <p>To create a water and wastewater policy that reflects true environmental costs and benefits, including impacts on the local economy.</p>	9-A. Economic incentives and disincentives balance supply and demand to reflect true environmental costs and benefits.	<p>9-1. Sewer and water rates have been increased to encourage water conservation, with revenues going for recycling, water infrastructure, and similar purposes.</p> <p>9-2. 25% of targeted businesses have been provided with incentives to incorporate pollution-prevention strategies.</p> <p>9-3. Tax credits and financial incentives are in place for water reductions in homes and businesses.</p>	9-A. Create an audit to verify water and wastewater savings and to identify high water users to target for subsidies.
<p><b>10. Groundwater</b></p> <p>To restore and enhance ground-water supply and improve the water quality of San Francisco aquifers.</p>	10-A. Aquifers have been restored, in cooperation with other communities.	<p>10-1. The level of Lake Merced has been raised.</p> <p>10-2. Five ground-water projects have been developed that allow for the prudent management of the City's aquifers, a balanced potable water supply, and improved basin water quality.</p>	<p>10-a. Find alternative water sources so that no groundwater is used. (<i>Suggested for golf courses</i>)</p> <p>10-b. Implement joint groundwater management with Daly City.</p>
<p><b>11. Habitat Protection and Restoration</b></p> <p>To achieve long-term enhancement and restoration of local marine and fresh-water habitats.</p>	<p>11-A. Green space acreage has increased by 25%.</p> <p>11-B. Lobos Creek has been restored.</p> <p>11-C. All city lakes are managed for high water quality and habitat support.</p> <p>11-D. Water quality, habitat, and sediment has been restored along the entire San Francisco shoreline.</p> <p>11-D. Bay-side sediments have been decontaminated.</p> <p>11-E. Wetlands habitat to treat</p>	<p>11-1. Islais Creek has been restored.</p> <p>11-2. A lake management plan has been implemented.</p> <p>11-3. All aspects of environmental clean up are met or addressed on Treasure Island and Hunter's Point Naval Shipyard.</p> <p>11-4. Green space acreage has increased by 10%.</p> <p>11-5. Review the use of wetlands for the alternative treatment.</p>	<p>11-a. Create and fund (through compliance funds) programs to restore and construct wetlands for alternative treatment, and also construct new wetlands whenever feasible.</p> <p>11-b. Develop a lake management plan to control algae growth and support wildlife habitats.</p> <p>11-c. Develop a memorandum of understanding with local branches of federal agencies (such as the Golden Gate National Recreation Area) to protect and restore habitats.</p>

	<p>storm water flows throughout the City have been created.</p> <p>11-F. Recycled water is used for wetlands restoration.</p>		
<p><b>12. Education</b></p> <p>To create an inclusive community of environmental stewards.</p>	<p>12-A. Many local job opportunities have been created for people in communities with a history of environmental degradation.</p> <p>12-B. A model sustainable community has been built on Treasure Island.</p> <p>12-C. Everyone in the City is reached with a conservation education program.</p>	<p>12-1. All businesses relocating in San Francisco have been provided with a water-conservation and pollution prevention packet.</p> <p>12-2. Awareness of water conservation and water quality issues has been increased by 10% through the implementation of a citizens' education program.</p>	<p>12-a. Establish a recognition and incentive program to reward resident accomplishments.</p> <p>12-b. Revise, update and improve teachers' curriculum materials that encourage environmental stewardship.</p> <p>12-c. Provide information to the Bureau of Building Inspection to incorporate water reuse and water conservation strategies.</p> <p>12-d. Establish a speakers bureau.</p>
<p><b>13. Infrastructure</b></p> <p>To repair, replace and upgrade infrastructure in a timely and environmentally sound manner and with adequate funding.</p>	<p>13-A. A plan to repair, replace, and upgrade water and wastewater infrastructure is being implemented.</p>	<p>13-1. A long-term plan for repairing, replacing, and upgrading water and wastewater infrastructure has been developed.</p>	<p>13-a. Fund and implement a plan to repair, replace, and upgrade water and wastewater infrastructure within five years.</p>
<p><b>14. Alternative Technologies</b></p> <p>To include alternative water, wastewater and storm water policies that promote the most environmentally and biologically sound methods in the City Water and Wastewater Master Plan.</p>	<p>14-A. The ideas produced in the alternative wastewater study have been implemented.</p> <p>14-B. Use of toxics in wastewater treatment has been essentially eliminated.</p>	<p>14-1. A full, fair, and independent study of alternative wastewater methods has been conducted.</p>	<p>14-a. Conduct pilot water and wastewater projects.</p> <p>14-b. Complete the Bayside Alternatives study.</p> <p>14-c. Conduct a full, fair and independent study of alternative wastewater, storm water, water supply and water use policies.</p>
<p><b>15. Standards</b></p> <p>To create drinking water and wastewater standards that protect local and regional natural resources and public health, and are scientifically defensible while encouraging resource recovery.</p>	<p>15-A. Exceptions to drinking water and wastewater standards have been eliminated.</p>	<p>15-1. The effects of proposed and current exceptions to standards have been mitigated.</p>	<p>15-a. Conduct further research on drinking water and wastewater standards.</p>