# Seven Goals for San Francisco's Sewage System Master Plan

SWAle supports the development of an environmentally just and sustainable wastewater program that recognizes that all water is a resource. In viewing the development of the SFPUC Wastewater Master Plan through that lens, the following priorities become clear:

- The Plan must redress the *environmental injustices* created by the last Master Plan,
- *Pollutant loading* to the Bay and Ocean must be continually and significantly reduced,
- The *volume of water* entering the system for treatment must be minimized,
- A *reliable and flexible* system is essential in order to respond to catastrophic events and address water supply issues,
- The Plan must provide *environmental benefits*,
- The Plan must take proactive steps to address the impact of *climate change*, and
- The Plan must specifically address ways to achieve both *economic and environmental sustainability*.

While we have assigned specific objectives and strategies for each goal, the implementation of green infrastructure alternatives is common to all. Our organizations strongly feel that such alternatives must be an essential component of the Wastewater Master Plan, and that they must be assigned quantifiable targets. Without meaningful goals, these alternatives merely become window dressing for the status quo, rather than practical, multiple benefit solutions to real challenges.

## Goal: Redress Environmental Justice Issues in Bayview Hunters Point

The decision to centralize the City's wastewater treatment in this neighborhood in the prior master plan process has been acknowledged by staff to be a mistake. The treatment of 80 percent of San Francisco's wastewater in the Bayview has led to myriad problems, including odors, mosquitoes, local flooding, and a concentration of combined sewer discharges at Islais Creek. The development of this master plan gives the PUC an opportunity to correct the City's error.

**Key Objectives:**

1. Replace Southeast Water Pollution Control Plant at an appropriate location away from residences;
2. Reduce local flooding;
3. Eliminate untreated and minimally treated discharges into Islais and Yosemite Creeks;
4. Provide economic development opportunities for local contractors and robust workforce development for local residents;
5. Provide environmental benefits to the community.

**Recommended Strategies:**

a) Develop environmental justice guidelines with community to guide planning effort;

b) Investigate watershed-based decentralized treatment alternatives to reduce the volume of sewage and stormwater transported to the Bayview Hunters Point neighborhood;
c) Develop a clear procedure and criteria for identifying and evaluating alternative plant locations that includes strong neighborhood involvement and involves public agencies that control potential sites;
d) Develop minimum site design guidelines (for instance, all processes covered, no discernible odor at nearest residences, appropriate shielding/landscaping);
e) Apply Low Impact Development (LID) technologies to improve the appearance of the neighborhood, reduce street flooding and to reduce or eliminate overflows.
f) Institute community-based water quality testing at all Bayside outfall areas, report test results to the community (online), and post unhealthy contaminant levels at Bayside fishing piers, small boat launch areas, and other locations that provide access to water contact recreation

### Performance measures

i. Support of affected communities for decision on size and location of treatment facilities.
ii. Reduction in volume of sewage and stormwater transported to the Southeast neighborhood for treatment.
iii. Quantified reduction in peak stormwater flows as well as in Sewage and Stormwater Overflows in neighborhood.
iv. Number of jobs at all levels (entry, journeymen, professional) held by southeast residents.
v. Measurable improvement in bay water quality at testing sites.

### Key Policy Decisions

- SFPUC should adopt a resolution acknowledging the unfair burden placed on the residents of Bayview Hunters Point by the concentration of wastewater treatment facilities in their neighborhood;
- The Mayor's Office should ensure city department coordination in the site selection process.

## Goal: Reduce pollutant loading to Bay and Ocean

The discussion on whether to discharge treated effluent to the bay and ocean has been largely a discussion of potential regulatory drivers. Instead, the PUC's priority should be to minimize the number of pollutants and the total volume discharged to the environment. As part of that priority, the Wastewater Master Plan should analyze a suite of alternatives that can be implemented over the period of the plan and that will result in continuous improvement in the quality (which in SF often means the quantity as well) of discharges.

### Key Objectives:

1. Minimize Combined Sewer Discharges by volume;
2. Increase dry-weather treatment to tertiary level;
3. Increase level of wet-weather treatment;
4. Achieve at least secondary treatment for all discharges.

### Recommended Strategies

a) Continually review best practices of other cities and counties in the development of green infrastructure strategies for stormwater diversion and treatment and use pilot projects to determine the most effective strategies for the City;

b) Develop quantifiable goals for total pollutant loading as well as for key individual pollutants;
c) Include provisions for tertiary treatment in all site alternatives;
d) Increase pollution prevention activities to keep key contaminants out of system;
e) Employ upstream LID strategies to keep stormwater out of the combined system as well as to desynchronize the flow to reduce peak stormwater volumes;
f) Rebuild current bay outfall; consider additional outfalls as needed;
g) Institute community-based water quality testing at all Bayside outfall areas,
h) report test results to the community (online), and post unhealthy contaminant levels at Bayside fishing piers, small boat launch areas, and other locations that provide access to water contact recreation.

### Performance Measures

i. Number of pilot projects completed; volume of reduction attained by implementation of successful programs.
ii. Number of postings at beaches and bayside water recreation areas.
iii. Water sampling at outfalls shows reduced incidence of contamination
iv. Quantified reduction in Combined Sewer Discharges, measured by watershed.
v. Goals for reduction in inputs of target contaminants into the collection system are met.
vi. Removal of Mission and Islais Creeks from Clean Water Act 303(d) listing.

### Key Policy Decisions

- Commission should adopt a policy of minimizing pollutant loading in their discharges, and direct staff to include quantifiable goals for reducing loading in the WWMP.
- Commission should direct staff to consider more proactive pollution prevention strategies, including federal, state and local legislation as needed to remove priority pollutants from the marketplace.

## Goal: Reduce the total volume of water entering the system

Once a drop of water enters the collection system, it takes energy and chemicals to treat it, no matter how clean it was upon entry. Moreover, saltwater intrusion into the collection system on the Bayside makes recycling more resource intensive and expensive. The most sustainable, cost-effective option, therefore, is to maximize use of water before it enters the collection system for treatment, and to reduce the overall volume of water that requires treatment.

### Key Objectives:

1. Minimize the volume of stormwater entering the collection system,
2. Reduce water use through conservation,
3. Support on-site water reuse.

### Recommended Strategies

a) Review best practices of other cities and counties in the development of green infrastructure strategies for stormwater reduction;
b) Encourage on-site graywater systems in lieu of recycled water in dual-plumbed buildings;
c) Identify opportunities for rainwater storage, such as cisterns under playing fields and disconnected downspouts;
d) Develop recycled water supply for eastside commercial use;
e) Jointly market consumer options for LID and water conservation technologies.

### Performance Measures

i. Set quantifiable targets by watershed for overall stormwater diversion to be met using green infrastructure strategies.
ii. Set green infrastructure targets for each watershed based upon peak volumes in a 100-year storm event.
iii. Measure and report water consumption reduction measures implemented and resulting volume reduction
iv. Measure and report green roofs installed, trees planted, green space added to streets, public plazas and parks, down spouts disconnected.
v. Measured reduction in water use due to reuse strategies.

### Key Policy Decisions

- Commission to adopt an overall stormwater reduction policy through green infrastructure strategies as a primary policy foundation for Master Plan.

## Goal: Maximize Flexibility and Reliability

Given the high probability of major seismic activity impacting San Francisco within the next 30 years, and the likelihood that parts of the system will be unusable after such an event, the Wastewater Master Plan needs to identify how the system can function in such an event. Additionally, our relationships with neighboring communities, such as Brisbane and Daly City should be clearly outlined in the document, and their concerns identified and addressed.

### Key Objectives

1. Ensure operation of system in case of an unplanned outage, extreme weather or seismic event;
2. Ensure security of system in design of new facilities;
3. Ensure system is properly maintained;
4. Expand green infrastructure components of system to reduce portion of system susceptible to damage from seismic event or other disaster.

### Recommended Strategies

a) Develop quantifiable level of service goals for operational and seismic reliability; identify critical facilities and prioritize upgrades to meet those goals (for example; all 30” mains and pump stations operational within 6 hours; ability to treat all dry weather flows to secondary standards within 12 hours);
b) Incorporate green infrastructure to reduce the likelihood of untreated sewage releases in the event that an outage occurs during a storm;
c) Consider intertie between Daly City and Oceanside plant to provide redundancy on West side;
d) Decentralize treatment to minimize widespread problems;
e) Encourage use of cisterns to provide emergency and drought supplies;
f) Develop recycled water supply for eastside commercial uses to reduce stress on water system and increase economic recovery after event;
g) Develop ongoing maintenance program for collection system using industry best practices and providing training and funding for workers;
h) Develop operational scenarios for 100, 200, and 500-year storm events; use green technology strategies to achieve goal of no flood damage in 100-year storm events.

### Performance Measures

i. No untreated or minimally treated discharges as a result of an unplanned outage or seismic event.
ii. Reduction in odor complaints.
iii. Decrease in unplanned maintenance activities.
iv. No property damage due to flooding or backflow in 100-year storm events.

### Key Policy Decisions

- Commission should require the Wastewater Enterprise to develop quantifiable water supply goals as part of the WWMP for use by the Water Enterprise in revising their 2030 demand estimate.

## Goal: Environmental Benefits

The construction of San Francisco's sewer system spelled the demise of the City's natural hydrology. The city's streams have become major conduits for the sewer system, and their flows are now sent to the treatment plants to be treated and discharged as sewage. Water that was once used as part of the City's potable supply also now contributes significantly to the overflows that occur during rainstorms. The WWMP gives SFPUC the opportunity to correct past misjudgments and also to address the need for additional green space in San Francisco. San Francisco currently provides only about half the open space for its residents that are recommended by the state, and the population of the City is expected to increase by 100,000 people in the next 25 years.

### Key Objectives

1. Restore or mimic natural hydrology where appropriate and feasible,
2. Improve and increase open space opportunities within San Francisco.

### Recommended Strategies

a) Use watershed component of WWMP to investigate opportunities for stream restoration or re-creation (for example, canyon restoration at SF State, parts of Islais Creek);
b) Use watershed and recycled water components of WWMP to identify opportunities for wetlands creation (for example, Hunters Point shipyard, Port property, Lake Merced);
c) Investigate watershed-based decentralized treatment alternatives to restore natural hydrology where possible;
d) Encourage use of Green Infrastructure strategies to increase both public and private open space opportunities (i.e., street greening, green roofs);
e) Identify opportunities to disconnect stream flows from combined system (for example, Lake McNab in McLaren Park, parts of Islais and Mission Creeks).

### Performance Measures

i. Increase in acreage of open space.
ii. Number of city blocks with greening plans, and number of plans implemented.
iii. Increase in habitat within City limits.
iv. Reductions in Sewage and Stormwater Overflows, measured by watershed.

### Policy Decisions

- Commission should direct staff to include an environmental benefit component in the WWMP.
- Commission should establish a policy of reducing stream flows into combined system.

- Commission should direct staff to work with Mayor's office to develop appropriate funding guidelines and additional funding sources for this program.

## Goal: Address Climate Change

We applaud the Wastewater planning team for proactively looking at the impacts of climate change on the system. Their consultants estimate a 1'-3' rise in sea level in this century (assuming no full-scale glacial meltdown). In addition, more violent swings in weather are expected to occur, with longer droughts but also more extreme rain events. Both effects will result in increased flooding in already low-lying areas of the City, and will also increase the area of the City subject to such events. The most at-risk areas are the inner Mission's Industrial Protection Zone and large areas of the South of Market.

Additionally, rising tides already overwhelm the combined sewer overflow outfalls of the transport structures that ring the City several times each year. This situation can be expected to worsen over time, which will require the PUC to install control structures (tidegates) to prevent Bay water from entering the system, pumps to discharge wastewater when the outfalls can't be used, and eventually to abandon or relocate the outfalls.

### Key Objectives

1. Minimize and if possible eliminate Combined Sewer Discharges,
2. Reduce and if possible eliminate flooding in low-lying areas,
3. Develop building requirements to protect new developments from flooding,
4. Ensure new plants can accommodate future sea level rise,
5. Encourage car-free developments to reduce climate change impacts, improve water quality, and increase opportunities for stormwater capture.

### Recommended Strategies

a) Develop models for 100-, 200-, and 500-year storms to identify areas at current and future flooding risk; make this information publicly available;
b) Work with City Planning to create incentives for sustainable development that address the issues of stormwater diversion and rising sea level;
c) Add backflow prevention activities in flood-prone areas;
d) Educate the public about the threat to low-lying areas;
e) Establish disclosure requirements in flood-prone or liquefaction areas and include PUC concerns;
f) Employ LID strategies on a watershed basis to reduce Combined Sewer Discharges in and upstream of defined flood or liquefaction zones;
g) Revise City datum to ensure new construction is built above flood levels, and consider raising street grades in low-lying areas;
h) Adopt green infrastructure strategies such as green roofs, expanded street landscaping in flood-prone areas, disconnecting downspouts in order to reduce overall volume of stormwater entering system; consider offering incentives for stormwater retention in flood-prone watersheds;
i) Design new treatment plants to accommodate greater than currently expected sea level rise.

### Performance Measures

i. Quantified reduction in number, volume of Combined Sewer Discharges.
ii. Revision of City datum.

iii. Development of BMPs for new developments.
iv. Measurable decrease in backflows.
v. Measurable decrease in Combined Sewer Discharges.

### Key Policy Decisions

- Commission should establish a "zero overflow" goal.
- Commission should direct staff to work with Department of Building Inspection, City Planning to update City datum.
- Commission should direct staff to work with City departments to develop protocol to identify and protect flood or liquefaction zones.

## Goal: Sustainability

***"A Sustainable Society meets the needs of the present without sacrificing the ability of future generations and non-human forms of life to meet their own needs."*** **--United Nations**

A sustainable approach means not letting the solution to one problem become the cause of another; applying the precautionary principle; and seeking solutions that provide multiple benefits. Economic sustainability is a key component of this approach. The need for cost-effectiveness should be evaluated in terms of lifetime costs and benefits, which will sometimes mean greater up-front capital outlays in order to reap the benefits of lower O&M costs over time.

### Key Objectives

1. Minimize use of potable water,
2. Maximize use of stormwater,
3. Achieve a net decrease in greenhouse gas emissions,
4. Minimize use of toxic chemicals,
5. Meet zero-waste targets through a reduce, reuse, recycle approach,
6. Require future development to fully offset its contribution to the wastewater system.

### Recommended strategies

a) Use gravity instead of pumping wherever possible (for instance, decentralized treatment);
b) Incorporate renewable energy for pumping and treatment;
c) Consider use of UV disinfection, using photovoltaic as energy source;
d) Identify recycled water source for current and future purple piping;
e) Expand scope of purple piping ordinance to all new developments in San Francisco, including redevelopment areas;
f) Encourage inclusion of purple piping in Brisbane redevelopment areas;
g) Maximize use and production of recycled water and decentralize the locations of the recycled water plants to minimize pumping for distribution to receiving sites;
h) Use no Tuolumne River water for LID projects - instead use drought tolerant plantings, stored stormwater, or recycled water;
i) Use renewable membranes for MBF alternatives;
j) Explore ways to maximize use of biosolids;
k) Adopt green infrastructure strategies such as green roofs, expanded street landscaping in flood-prone areas, disconnecting downspouts in order to reduce overall volume of stormwater entering system and energy costs of treatment;
l) Require new real estate development to fully offset wet weather inputs to the system.

## Performance Measures

i. Measure and report net energy consumption annually.
ii. Measure and report water consumption reduction measures implemented and resulting volume reduction
iii. Measure and report green roofs installed, trees planted, green space added to streets, public plazas and parks, down spouts disconnected.
iv. Compare Ecological Footprint, before and after.
v. Use emerging measurement tools, such as those for greenhouse gas emissions.

## Key Policy Decisions

- Commission should commit to expansion of Purple Piping ordinance and provision of recycled water supply to serve both the current and projected scope of the ordinance.
- SFPUC, as well as Mayor and Supervisors, should commit to zero use of Tuolumne River water for street beautification projects.
- SF PUC should involve Brisbane city officials, as well as developer of Brisbane Baylands project, in Master Planning effort.