

Fact Sheet

Point Loma Wastewater Treatment Plant Secondary Equivalency

The City of San Diego • Public Utilities Department



Pt. Loma Wastewater Treatment Plant



The City of San Diego's water resource strategy includes conservation, recycled water, groundwater, water reuse, and watershed and resource protection to help meet future water needs.



Clean Water Act of 1972

The Clean Water Act of 1972 (CWA) establishes the basic structure for regulating discharges of pollutants into waters of the United States. Under the CWA, all U.S. dischargers are required to meet secondary treatment standards as the minimum treatment level. A single set of technology based, "one size fits all" standards was adopted for all municipal dischargers whether their discharge entered a lake, stream, river, bay or ocean.

The CWA defines secondary treatment in terms of only three wastewater constituents: Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS) and pH.

-BOD is a measure of how much organic material in the wastewater can be broken down by microorganisms. It measures the potential for the discharge to deplete oxygen in the receiving water.

-TSS is a measure of the non-dissolved particles in the wastewater.

-pH is the acidity of the wastewater.



Pt. Loma Wastewater Treatment Plant

Standards are such that the pH in the discharge is to be between 6.0 and 9.0 at all times. The TSS and BOD standard require at least 85% removal and the monthly average concentration for either constituent in the discharge is not to exceed 30 milligrams/liter (mg/l).

Point Loma Wastewater Treatment Plant

The Point Loma Wastewater Treatment Plant (PLWTP) currently operates as a chemically enhanced primary treatment facility with a permitted capacity of 240 million gallons per day (mgd), under a modified 301(h) National Pollutant Discharge Elimination System (NPDES) permit that allows for alternate discharge standards for TSS and BOD. All other discharge standards, such as toxics, bacteria, etc., are the same as in a conventional secondary treatment permit. Given geographic constraints related to federal property and defense interests around the plant, the cost of converting PLWTP to secondary treatment technology is \$1.8 billion.

The PLWTP is unique from most other wastewater dischargers in that it discharges its treated effluent through a four and a half mile long ocean outfall. The outfall is one of the longest and, at 310 feet, one of the deepest in the United States. The thermocline, a temperature layer within the water, keeps suspended solids deep.

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This discharge point also has the advantages of site-specific ocean conditions that include strong ocean currents, and a bottom topography and an outfall diffuser design that provides superior dispersion and allows the discharge to be assimilated into the ocean water with a high degree of dilution. Years of comprehensive ocean monitoring at this site have demonstrated that this system is highly effective in protecting the ocean environment.

No Impacts on the Marine Environment

The scientific community has found that for an open coastal discharge like the PLWTP, BOD is of little concern. At the request of Congress, the National Research Council completed a study in 1993 entitled “*Managing Wastewater in Coastal Urban Areas*”, wherein it was determined that “*In open coastal waters and well-flushed estuaries, oxygen depletion due to BOD from wastewater discharges through a well designed outfall is generally of no ecological concern.*” Verifying this, very conservative modeling, even at the ultimate PLWTP capacity of 240 mgd, has shown that it is overwhelmingly evident that dissolved oxygen depression due to the discharge of advanced primary effluent will be within California State Ocean Plan regulatory standards at all times with a substantial margin of safety. Additionally, thousands of dissolved oxygen determinations have been made in the ocean off Point Loma and no negative effect from the BOD discharge has ever been observed.

As part of the permit process and in consultation with regulatory agencies, the City’s ocean monitoring program has been studied by independent ocean scientists (Scripps Institution of Oceanography) and scientific organizations (Southern California Coastal Water Research Project) and modified in order to insure that it provides sufficient and appropriate data with which to assess the effects of the discharge and is consistent with other large dischargers.

Secondary Equivalency

Upon the implementation of Pure Water San Diego, flows and solids loading to the PLWTP for treatment will be reduced. This diversion of flows to the PLWTP will have a direct beneficial effect on overall plant discharge.

The current PLWTP NPDES permit authorizes total treated wastewater discharge of 240 mgd. If operating at secondary treatment standards for the same amount of flow, the permit would allow TSS mass emission discharge of approximately 9,942 metric tons (mt) per year.

Therefore, PLWTP could achieve the same aggregate TSS mass emission discharge as would be allowed under secondary treatment – or “secondary equivalency” – by reducing the total wastewater it processes. Although not reaching the secondary level of parts per million concentration in the effluent, PLWTP also would continue to meet or exceed the long-standing TSS and BOD removal rates approved in its current NPDES permits.

Specifically, secondary equivalency for PLWTP under the Pure Water strategy would encompass:

- annual cap on TSS of 9,942 mt/yr by 2027, with prior incremental reductions, allowing for build out of the advanced water purification system to off-load PLWTP treatment;
- concentration limit on TSS of 60 mg/l, calculated on a 30-day average;
- minimum removal rates of 80% for TSS and 58% for BOD, consistent with current NPDES permit;
- current CWA standard for pH and other effluent limitations of secondary treatment;
- maintenance of the deep ocean outfall with discharge depth no less than 300 feet;
- federal anti-degradation policy compliance;
- current enhanced Point Loma Ocean Monitoring program and Industrial Source Control program;
- standard NPDES permit renewal review process every five years;
- production of at least 83 mgd of water suitable for potable reuse by 2035, calculated on an annual average, with achieving development milestones set by EPA as contained within NPDES permit renewals.

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This approach to secondary equivalency, combined with the Pure Water San Diego purification projects, is consistent with the new EPA Integrated Planning and Permitting framework. Those EPA principles emphasize achieving the same regulatory goals by offering greater flexibility on potential solutions, linking quality compliance with quality planning across different water resource sectors, promoting innovative technologies and green infrastructure, and prioritizing investments based on cost-benefit analysis. Plan elements also reflect alternatives analysis, performance criteria, and extensive public stakeholder input.

Thus, the Pure Water San Diego strategy offers a prime example of EPA Integrated Planning, producing pragmatic, non-traditional solutions that better balance federal compliance with overall water resource needs and cost effectiveness.

Despite this alignment with policy and environmental goals, EPA authority to approve secondary equivalency under existing statute and regulation is unclear. Whether through administrative or legislative means, the City seeks to partner with EPA on ways to ensure PLWTP compliance with Clean Water Act standards using secondary equivalency and eliminating the unnecessary \$1.8 billion conversion cost. Certainty that the conversion expenditure will not be needed enables the region to commit its constrained financial resources to investment in the more cost-effective, Pure Water San Diego program to provide a safe and sustainable source of local water supply, while continuing to ensure public and environmental health.

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