

CHAPTER 1. INTRODUCTION

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The Terminal Island Treatment Plant (TITP) is mandated to conduct a comprehensive monitoring program of influent, effluent, and receiving waters of the Outer Los Angeles Harbor by directive of the National Pollutant Discharge Elimination System (NPDES) Permit No. CA0053856, Order No. 93-014. This permit, which became effective March 11, 1993, was adopted by the California Regional Water Quality Control Board, Los Angeles Region (RWQCB).

As directed by the RWQCB Monitoring and Reporting Program No. 2171 (unless otherwise specified), "quarterly monitoring shall be performed during the months of February, May, August, and November, semiannual monitoring during the months of February and August, and annual monitoring during the month of May" for required influent, effluent, and receiving water samples. In addition, "weekly effluent analyses shall be performed on different weekdays during each month."

Reporting requirements include both monthly and annual monitoring reports submitted to the RWQCB. The monthly reports, to be submitted by the first day of the second month following each monthly monitoring period, include water quality of receiving waters and microbiological monitoring (shoreline and harbor stations) data. An annual report, discussing the previous year's effluent and influent monitoring data, is to be submitted by the 15th of March of the year following data collection. A second annual report, discussing the previous year's Outer Los Angeles Harbor ambient water quality, benthic sediments and organisms (infauna and sediment chemistry, trawling, and tissue chemistry) and microbiological monitoring (shoreline and harbor surface waters), is to be submitted by the first of July of the year following data collection. Temporal and spatial trends in the data are to be analyzed in this report, with particular reference to comparisons between stations with respect to distance from the outfall and comparisons to data collected during previous years. Appropriate statistical tests and indices, subject to approval by the RWQCB Executive Officer, are to be calculated and included within the annual report.

As mandated by the NPDES permit, annual reports discussing the effluent quality of TITP and the comprehensive receiving water monitoring program were published for samples collected from 1993 through winter 1995 (CLA, EMD 1994-1996). These reports were based on the listed monitoring stations found in the NPDES permit (RWQCB 1993) (Table 1-1) for all aspects of the receiving water monitoring program. Beginning in late 1994, dredge and fill activities associated with the Pier 300/400 Implementation Program (PIP) caused major disruptions in the TITP NPDES-mandated receiving-water monitoring program in Outer Los Angeles Harbor. Accessibility to sampling stations was either restricted or completely eliminated. The truncation of the existing TITP outfall terminus to the edge of Pier 300 and the initiation of dredge activities for the new TITP outfall extension through the future site of the Increment 3 landfill for Pier 400, restricted access to the terminus of the new discharge site (Figure 1-1).

Hence, it was increasingly difficult to accurately assess the impacts of the discharge of TITP effluent into Outer Los Angeles Harbor. When further restrictions occurred with the progression of Increment 2 construction activities for Pier 400 (ACE 1992), a Los Angeles Harbor Interim Monitoring Program (that accounted for PIP) was proposed and submitted to the RWQCB in September 1995 (Table 1-1). The program was implemented upon approval by the RWQCB. Annual reports for 1995 and 1996 (CLA, EMD 1996-1997) that discussed the Outer Los Angeles Harbor comprehensive monitoring program included the summer 1995 and winter 1996 sampling that were based on the Interim Monitoring Program. By July 1996, the placement of the new TITP outfall extension in the proposed fill area of Pier 400 had been completed. In addition, the continued progression of rock dike construction enclosing the Increment 2 phase of Pier 400 had created a new shoreline configuration for the Outer Los Angeles Harbor. This reconfiguration of Outer Los Angeles Harbor caused the complete elimination of a major portion of the original 1993 NPDES-mandated sampling stations, thus affecting the entire marine monitoring program and necessitating a re-evaluation of the entire program.

Table 1-1. Summary of the Los Angeles Harbor Monitoring Programs, including the 1993 NPDES

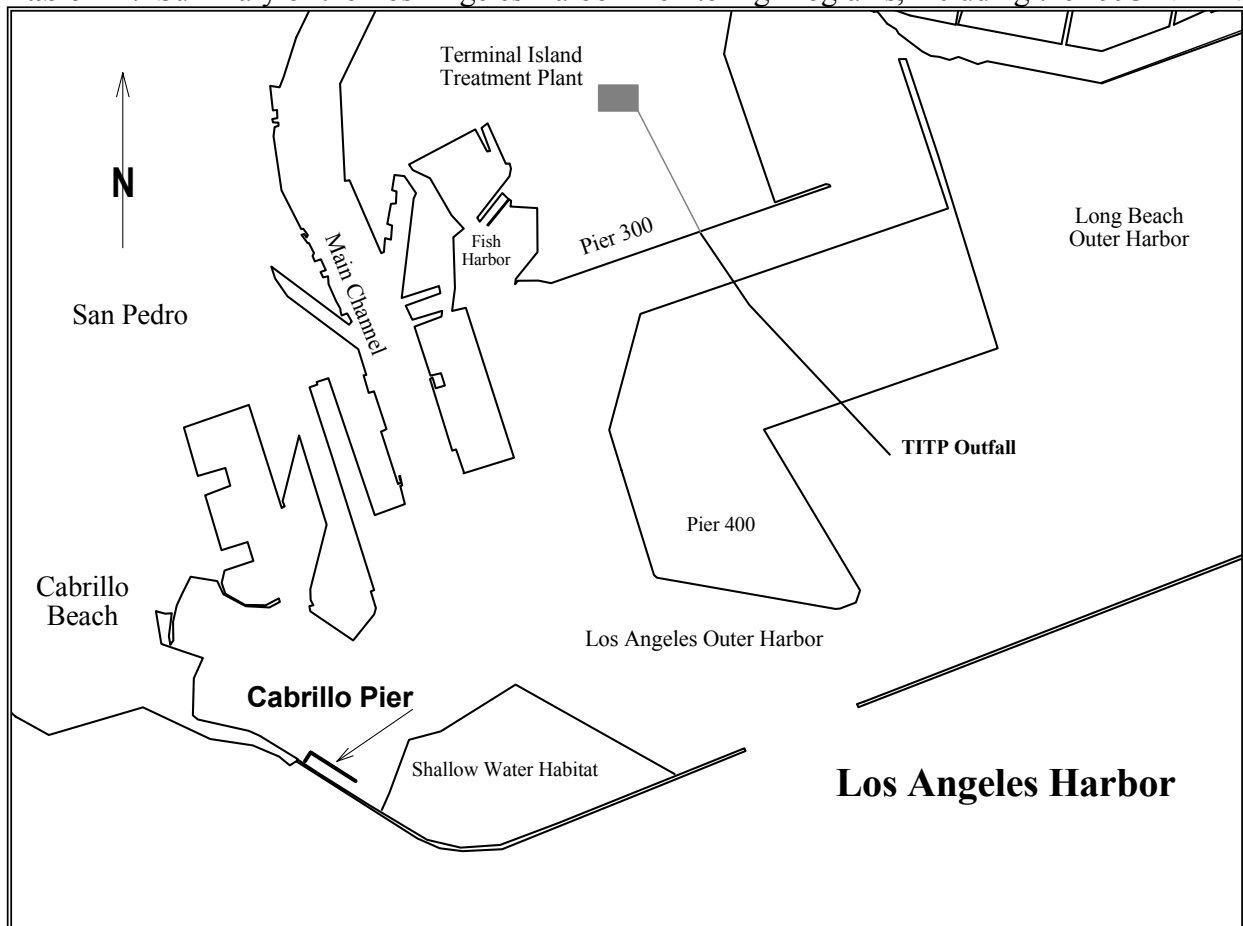


Figure 1-1. Map of the Los Angeles Harbor

requirements, the interim program, and the current Pier 400 monitoring program.

SAMPLING PROGRAM	1993 NPDES PERMIT	INTERIM MONITORING PROGRAM (September 1995)	PIER 400 MONITORING PROGRAM (July 1996)
Harbor Micro	9 stations, surface & depth; 5X's/month; total, fecal, entero	6 stations, surface and depth; 5X's/month; total, fecal, entero	Plume Tracking: 14 stations, fecal, surface, monthly. Water Quality Micro: 7 stations, total, fecal, entero, surface, 5X's/month.
Water Quality: CTD	22 stations; monthly	13 stations; monthly	23 stations; monthly
Water Quality: Discrete Sampling	5 stations quarterly; 2 depths for ammonia & total, fecal, entero	5 stations quarterly; 2 depths for ammonia & total, fecal, entero	Plume Tracking: 14 stations, fecal surface, monthly
Benthic: Infauna	18 stations; 2X's/year	6 stations; 2X's/year	13 stations; 2X's/year
Benthic: Sediment Chemistry	18 stations; sulfides, TOC, & grain size- 2X's/year; priority pollutant analysis - 1X/year	6 stations; sulfides, TOC, & grain size- 2X's/year; priority pollutant analysis - 1X/year	13 stations; grain size 2X's/year; TOC, sulfides, & selected priority pollutants 1X/year
Trawling	5 stations; 4X's/year	4 stations; 4X's/year	6 stations; 4X's/year
Tissue Chemistry: Fish Collection	10 croakers + 10 sportfish from Cabrillo Pier & Horseshoe Kelp 2X's/year	No sample required	5 croakers from each of 3 sites (outfall area, Cabrillo Pier area, and outside Harbor); muscle dissection & analysis annually
Tissue Chemistry	Nine metals, Total DDT, DDT derivatives, total PCB, PCB derivatives, wet weight, % lipids	Nine metals, Total DDT, DDT derivatives, total PCB, PCB derivatives, wet weight, % lipids	Nine metals, Total DDT, DDT derivatives, total PCB, PCB derivatives, BNA, TOX, wet weight, % lipids

These newly proposed modifications to the marine monitoring program allowed the Environmental Monitoring Division (EMD) to better assess environmental impacts due to the discharge of TITP secondary effluent at its new terminus off the southeastern corner of Pier 400. The Post-Pier-400 Monitoring Program was submitted to the RWQCB in July 1996 (Table 1-1). The program was implemented in July 1996 with the approval of the RWQCB. Since the 1996 summer survey, with the exception of the 1998 summer survey, the annual reports that assessed the data collected for the TITP monitoring program (CLA, EMD 1997-2003 and this report) were based on the Post-Pier-400 Monitoring Program.

Changes that occurred in the NPDES-required sampling program during the 1998 summer survey were a result of the Southern California Bight 1998 Regional Marine Monitoring Program (Bight '98) undertaken between July and September 1998 (SCBRMP 1998). To participate in the Bight '98 regional survey, the City of Los Angeles, with the consent of the RWQCB, resource exchanged a portion of their required NPDES permit sampling effort from the 1998 summer survey (July-September) for samples to be collected as part of this regional survey (see CLA, EMD 1999 Chapter 1).

At the same time that the new Post-Pier-400 Monitoring Program was initiated, treatment at TITP was upgraded. Since 1977, TITP had been a full secondary treatment facility. TITP was upgraded to include a filtration system, which became operational in December 1996. Since 1997, the effluent discharged from TITP to Outer Los Angeles Harbor has been filtered secondary-treated wastewater. In 1999, construction of an Advanced Wastewater Treatment Facility (AWTF) was initiated and essentially completed in October 2001. The AWTF was designed to treat the TITP filtered secondary effluent further for the plant's water reclamation project as part of the Harbor Water Recycling Project/Dominguez Gap Barrier Project (RWQCB, 2003). During 2002 and 2003, about 5 MGD of the TITP effluent received tertiary treatment (micro-filtration and reverse osmosis) at AWTF before discharge into the Harbor.

Following the implementation of the Post-Pier-400 Monitoring Program, the discharge of effluent from TITP has averaged 15.9 (1996), 16.3 (1997), 16.6 (1998), 15.1 (1999), 15.7 (2000), 15.2 (2001), 15.1 (2002) and ** (Chapter 2 of this report) MGD. Results from the Post-Pier-400 Monitoring Program (CLA, EMD 1997-2003; and this report) have not indicated any effect from the TITP effluent on the harbor environment due to the masking effect created by the dredging activities and fill operations in close proximity to the southeast corner of Pier 400 and the outfall terminus. Results of sediment grain size and infauna and trawl community analyses indicate a continuing impact in relation to the past PIP construction activities, but continued signs of recovery within the infaunal community are being noted in the Outer Los Angeles Harbor (CLA, EMD 2000-2003, and this report).

The final stage of dredging and landfill for Pier 400 was completed in April 2000. The disruptions that have occurred since 1994 in assessing the potential impacts of the TITP effluent discharge into Outer Los Angeles Harbor have resulted in the need for three separate monitoring programs (Table 1-1). Since the completion of Pier 400 construction, all required NPDES samples have been collected as required by the present Post-Pier-400 Monitoring Program

without the disruption that had previously been incurred by the location of the dredge vessel or floating dredge pipe positioned over established sampling sites.

In January 1998, the Port of Los Angeles (POLA) authorized the Channel Deepening Project for Inner Los Angeles Harbor. This project would continue the deepening of shipping channels into Inner Los Angeles Harbor already completed in the Outer Los Angeles Harbor that was utilized to create Pier 400 (POLA 1992). Beginning in late summer 2002 the Channel Deepening Project began dredging operations, with an estimated completion date of December 2004 (ACE 2003). This project was initiated to dredge the surface-sediments from the primary navigation channels in Inner Los Angeles Harbor (Los Angeles Main Channel, West Basin, East Channel, East Basin, and Cerritos Channel) to increase depths to accommodate the newer, deeper draft container vessels that will be docking within POLA. To accommodate the resulting dredged sediments several disposal alternatives were developed by the Los Angeles Harbor Department (ACE 2000, 2002). One of these was the Pier 400 Submerged Storage Site (P4SSS). POLA proposed to use this site as a temporary submerged storage site for clean, non-toxic sediments that would normally be discharged at the LA-3 ocean disposal site. The proposed dredge disposal site would be approximately 120 acres in size and located at the southeast edge of Pier 400, adjacent to the existing TITP outfall pipe. The P4SSS will be used as a storage area for up to 3.9 million cubic yards (mcy) of sediments for future fill material at other sites in LAH, or would be left as base for construction of a fill that would expand Pier 400 (NMFS 2000; ACE 2002, 2003). It has been proposed that the site would be undisturbed for the first three years following the completion of construction to allow for recolonization of the sediments by infauna, after which the deposited sediments could be reused (CSTF 2002). There has been no established timeframe for the reuse of this storage site.

Construction of the P4SSS was initiated in September 2002. With the placement of marker buoys denoting the area of construction, an immediate impact upon the Pier 400 Monitoring Program was noted for water quality and trawls. Construction involved the creation of a submerged dike that would be no higher than -20 feet (6.3 m) mean lower low water to contain the dredge material (ACE 2000). Due to the area of construction for the P4SSS, specific stations that are part of the TITP NPDES permit could not be accessed in November and December of 2002. The water quality stations HW21, HW22, HW41, HW42, and HW52 (Figure 4-1, this report) could not be reached due to construction activities. The trawl stations HT7, HT8, HT9, and HT11 (Figure 7-1, this report) could not be sampled because the trawl transects of these stations fell within the area under construction.

During 2003 access to the required TITP NPDES sampling stations for water quality and trawl was still permanently blocked by the completion of construction of the P4SSS. In addition to these stations, the permanent loss of two infaunal stations (HM1 and HM5) occurred due to burial by the deposition of dredged sediments into the P4SSS.

Studies have shown that the time period for an area to recover to original population levels after being affected by construction activities of dredging varies between 1-3 years (Reish 1961, 1963; HEP 1976; Oliver et al. 1977; Currie and Parry 1996; Kenny and Rees 1996; Ray 2000, Ellis 2003). When dredging activities were completed in the vicinity of the TITP outfall in April

2000, it was felt that any potential effects of the TITP effluent on the marine communities of Outer Los Angeles Harbor could possibly begin to be assessed by the end of 2002. And, as time progressed these communities would continue to recover allowing for a more accurate assessment of the potential impacts of the TITP effluent discharge on the Outer Los Angeles Harbor. However, with the new construction for P4SSS, a new extended period of recovery will be required to assess the potential impacts of the TITP effluent on the harbor environment.

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