

1.0 Introduction

In order to maintain accessibility to its boat launch facilities, the Port San Luis Harbor District must periodically dredge the approaches to its Mobile Hoist Pier and Sport Launch. Dredging activities, and the subsequent deposition of the dredge spoils, are regulated by the U. S. Army Corps of Engineers (ACOE) as specified in Dredging Permit #200201383-LM, and by the California Coastal Commission (CCC) as set forth in Coastal Development Permit No. 3-08-038.

In February of 2013, Port San Luis Harbor District (the Port) submitted a sampling and analysis plan (SAP) for the testing of sediments to be collected from the Port San Luis dredge site to the ACOE. The SAP was assembled in accordance with the EPA's 1998 "Evaluation of Dredged Material Proposed for Discharge in the Waters of the U.S. – Testing Manual (Inland Testing Manual)" (EPA 1998). The SAP was approved by the ACOE and subsequently implemented. Sediment samples were collected from the proposed dredge area and the two disposal sites currently used by the Port on October 11, 2013. The samples were submitted for chemical and physical analysis in accordance with the SAP. This report documents the collection and analysis of those samples. Results of the analyses are summarized in the report and all laboratory reports are included in the appendices.

2.0 Project Description

Port San Luis Harbor District (the Port) proposes to dredge bottom sediments from the basins adjacent to Mobile Hoist Pier, the Sport Launch (referred to as the Trailer Boat Launch in some of the past documents submitted to the ACOE), and the area adjacent to the shoreward end of Harford Pier, down to a depth of –10 feet below Mean Lower Low Water (MLLW). The currently permitted dredge area is described in ACOE Dredging Permit #200201383-LM, and is shown, along with the six approved dredge spoil disposal sites, in **Figure 1**. It should be noted that although the permitted dredge area encompasses 32 acres, at the present time and for the foreseeable future dredging will be limited to the areas immediately adjacent to those areas noted above.

The maximum dredge depth permitted is 10 feet below MLLW, with an additional foot to allow for overdredging. Sand in the vicinity of Mobile Hoist Pier will be removed to the maximum depth allowed. Dredging in the vicinity of the Sport Launch, however, is limited by the nature of the bottom substrate. An underlying rocky bottom limits dredging in the area immediately adjacent to the Sport Launch to about 5 to 7 feet below MLLW. The depth to which dredgeable material can be found increases as one moves away from the Sport Launch, and dredging will extend to the maximum depth of 10 feet below MLLW where it can be achieved.

The Port anticipates that the volume of sediment to be removed annually from the entire dredge area will not exceed the maximum 250,000 cubic yards of material currently allowed by their dredge permit. Over the past five years (2009 – 2013) the average annual volume of material removed during maintenance dredging has been 30,272 cubic yards (**Table 1**). The Port anticipates that a similar volume of material will be removed annually for the foreseeable future.

Dredged material will be used for beach nourishment at the sites shown in **Figure 1**. The sites currently permitted for this purpose include those historically used for disposal, specifically, Fisherman’s Beach and Olde Port Beach, and four sites introduced in 2003: Lighthouse Beach, Avila Beach, West Bluff Beach and Jetty disposal sites. At this time, the West Bluff Beach site is being used exclusively for beach nourishment and the Fisherman’s Beach site could be potentially used. The Port does not anticipate using any of the other four sites in the foreseeable future.

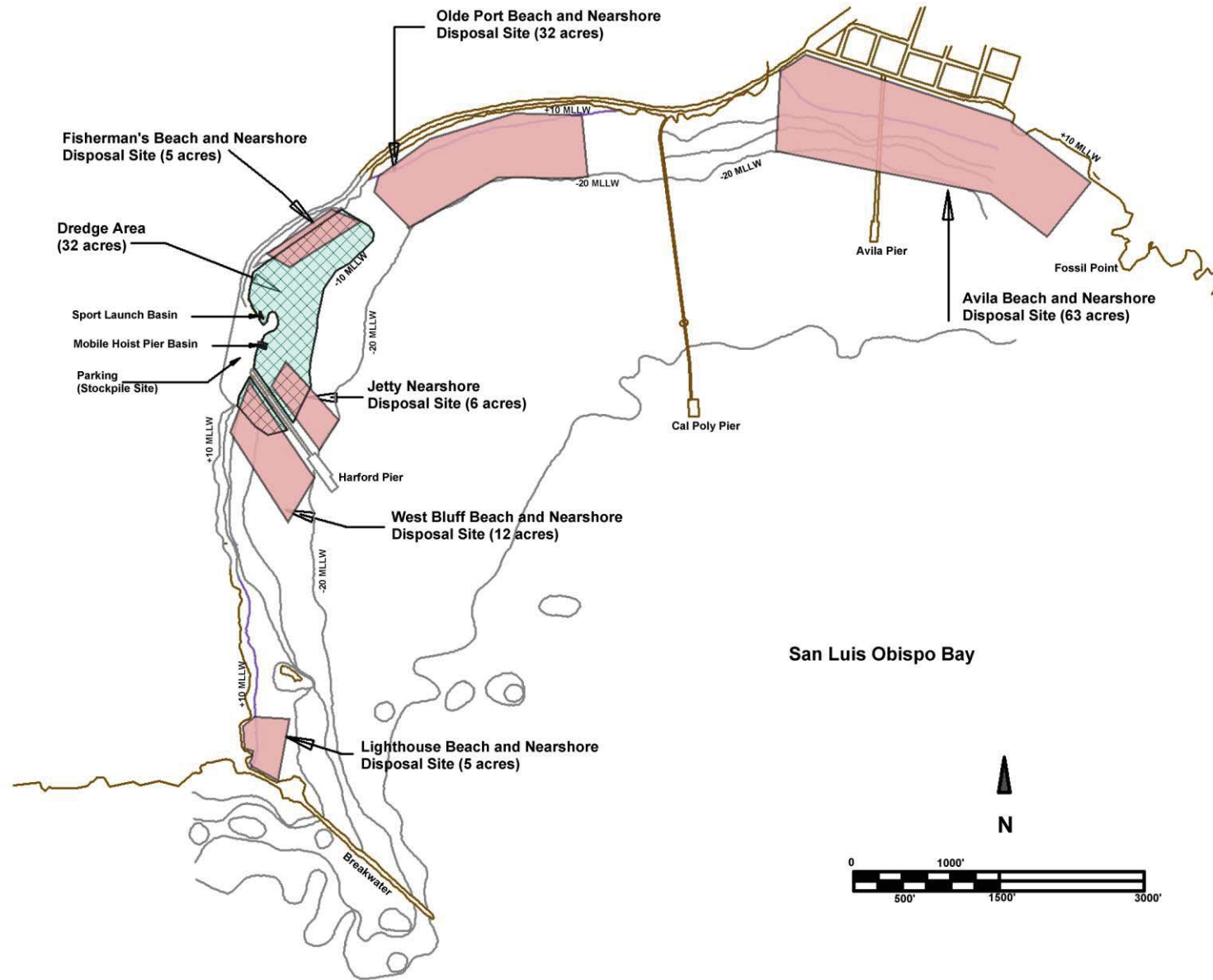


Figure 1. Map of Port San Luis Harbor 2013 Dredge and Disposal Sites

Table 1. Chronology of recent dredge activity at Port San Luis, California.

Period of Dredge Activity	Sport Launch Dredge Vol. (yds³)	Mobile Boat Hoist Dredge Vol. (yds³)	Total Dredge Vol. (yds³)
03/94 – 05/94	3,223	3,282	6,505
02/95 – 06/95	3,397	2,768	6,165
12/95 – 05/96	3,751	3,711	7,462
11/96 – 06/97	3,555	3,904	7,459
02/98 (post El Niño storms)	4,882	6,621	11,503
02/99 – 08/99	4,407	3,105	7,512
11/99 – 12/99	350	0	350
02/00 – 09/00	3,410	3,563	6,973
01/01 – 08/01	7,335	1,420	8,755
02/02 – 07/02	4,465	965	5,430
03/03 – 05/03	10,560	7,995	18,555
03/04 - 05/04	7,507	4,620	12,127
03/05 – 05/05	8,032	5,115	13,147
03/06 – 08/06	17,605	6,551	24,156
03/07 – 08/07	15,012	6,930	21,942
03/08 – 07/08	9,660	8,085	17,745
03/09 – 06/09	11,655	6,335	17,990
03/10 – 10/10	21,175	18,673	39,848
03/11 – 05/11	11,565	6,139	17,704
03/12 – 06/12	19,682	10,287	29,969
03/13 – 08/13	23,800	22,050	45,850

5.0 Methods

Two sediment sampling stations were established within the PSL dredge zone as shown in **Figure 2**. The locations of the sampling stations were chosen to place them adjacent to the principal storm drains that discharge into the dredge area. Proximity of the sampling stations to these discharge points should maximize the probability of sampling any potential contaminants that have accumulated in the sediments from land based sources. The locations of areas of potential pollutant contact are also shown in **Figure 2**, as is the direction of runoff, runoff discharge points and the positions of the sediment sampling stations relative to the discharge points. Each of the stations specified has been sampled at least three times previously during the period from 1996 through 2009.

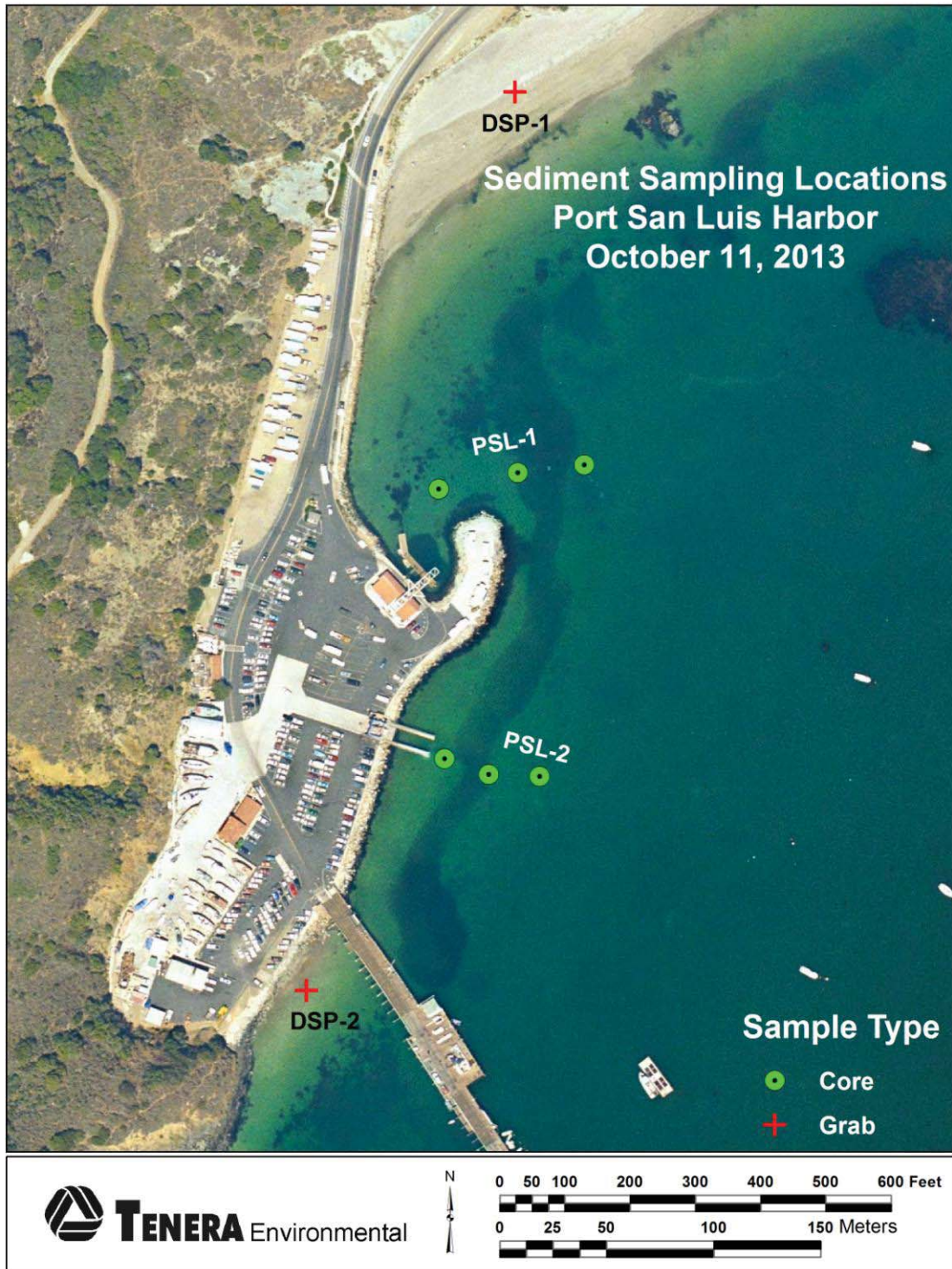


Figure 4. Locations of individual sediment cores and grab samples collected in the Port San Luis Harbor dredge and disposal areas on October 11, 2013.

For the purpose of subsequent physical and chemical analyses, three sub-samples were taken from each composite sample. One subsample was used for chemical analyses, another for particle grain size analysis, and a third sample was archived. The chemical constituents tested for are shown in **Table 3**. The methods used for chemical analyses and the acceptable detection limits for these tests are specified in the EPA’s 1995 “QA/QC Guidance for Sampling and Analysis of Sediments, Water and Tissues for Dredged Material Evaluations – Chemical Evaluations” (EPA 1995), and is cited by the “Inland Testing Manual” (EPA 1998) as the source of this information. In some cases, newer or revised methods of analysis have been substituted based on conversations with the EPA and California Department of Fish and Wildlife.

Table 3. Chemical constituents tested and methods of analysis for sediment samples.

Chemical Constituents	EPA Method	PQL. (Practical Quantitation Limit) (mg/kg)
Metals		
Arsenic (As)	6010B	0.5
Cadmium (Ca)	6010B	0.3
Chromium (Cr)	6010B	0.5
Copper (Cu)	6010B	0.5
Lead (Pb)	6010B	0.5
Mercury (Hg)	7471A	0.03
Nickel (Ni)	6010B	0.5
Selenium (Se)	6010B	0.5
Silver (Ag)	6010B	0.5
Zinc (Zn)	6010B	1
Total Sulfides	9034	10
Organo – Chlorine Pesticides	8081	
Non-Polar Oil and Grease	9071B	500
Total Oil and Grease	9071B	500
Polynuclear Aromatic Hydrocarbons (PAH)	8270-SIM	

6.1 Results of Chemical Analyses

The results of the chemical analyses performed on the two composite sediment samples collected from the Port San Luis dredge area on October 11, 2013 are summarized in **Table 4**.

Table 4. Results of chemical analyses of Port San Luis 2013 sediment samples. Also included are the Effects Range Low (ERL) guidelines for metals (Long, et al., 1995).

Chemical Constituent	Method	PSL-1 (mg/kg)	PSL-2 (mg/kg)	ERL (mg/kg)
Metals				
Arsenic	EPA-6010	0.8	0.9	8.2
Cadmium	EPA-6010	ND	ND	1.2
Chromium	EPA-6010	17.7	17.3	81
Copper	EPA-6010	4.6	4.3	34
Lead	EPA-6010	1.6	1.6	46.7
Mercury	EPA-7471	0.06	0.04	0.15
Nickel	EPA-6010	13.1	12.8	20.9
Selenium	EPA-6010	ND	ND	
Silver	EPA-6010	ND	ND	1.0
Zinc	EPA-6010	11	11	150
Total Sulfides	EPA-9034	ND	ND	
Organo-Pesticides	EPA-8081	ND	ND	
Non-Polar Oil and Grease	EPA-9071B	999	1240	
Total Oil and Grease	EPA-9071B	1170	1420	
Polynuclear Aromatic - Hydrocarbons (PAH)	EPA-8270-SIM	ND	ND	

It should be noted that that the laboratory subcontracted to perform test EPA 8081 (Babcock Laboratories) originally performed the wrong test (EPA 8082) on the sample and then later performed the correct test on the remainder of the sample. This exceeded the normal hold time for the test by several days. The results of the test, and subsequent QC testing, are documented in the report from the laboratory included in Appendix A.

6.2 Results of Particle Size Analysis

The results of the particle size analysis performed on the two composite sediment samples collected from the Port San Luis dredge area and the two samples collected from the dredge disposal sites currently in use are summarized in **Table 5**.

Table 5. Particle size distribution of Port San Luis dredge and disposal site samples.

Station (Sample Code)	Percent Gravel ¹	Percent Sand ²	Percent Silt & Clay ³
PSL-1	1.0	94.9	4.1
PSL-2	0.0	96.7	3.3
Fisherman's Beach (DSP-1)	0.0	98.0	2.0
West Bluff Beach (DSP-2)	6.0	92.6	1.4

¹ Gravel = fraction of sediment retained by #8 US Standard Sieve

² Sand = fraction of sediment passing through #8, but retained by #200 US Standard Sieve

³ Silt and Clay = fraction of sediment passing through #200 US Standard Sieve