

# Dredged Material Management Office (DMMO) Dredging and Placement of Dredged Material in San Francisco Bay January-December 2018 Report



Photo Credit: Jessica Vargas, USACE 2019



Photo Credit: Brandon Beach, USACE 2019

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**Dredged Material Management Office  
Dredging and Placement of Dredged Material in San Francisco Bay  
January-December 2018 Report**

## I. INTRODUCTION

### Dredged Material Management Office

Since 1996, as part of the Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS), the Dredged Material Management Office (DMMO) has been promoting economically and environmentally sound dredging and the placement of dredged sediment in the San Francisco Bay (Bay) region. The DMMO is a joint program comprised of the following member agencies: U.S. Army Corps of Engineers, San Francisco District (USACE); the U.S. Environmental Protection Agency, Region IX (EPA); the San Francisco Bay Regional Water Quality Control Board (Water Board); and the San Francisco Bay Conservation and Development Commission (BCDC). The California State Lands Commission (SLC), the California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS) participate in the DMMO on an as available and needed basis.

The goal of this interagency group is to increase efficiency and consistency in the permitting process and to foster a comprehensive and consolidated approach to dredged sediment management issues. Together, the DMMO agencies facilitate processing of dredging permit applications within each partner agency's existing laws, policies, and regulations. The DMMO meetings provide a mechanism for the permit applicants, interested parties and the public to participate in the application review process. The DMMO reviews dredging projects within San Francisco Bay Estuary to its eastern extent at Sherman Island, the Bay's major tributaries to the point where navigation is no longer feasible, upland areas surrounding the estuary and the San Francisco Deep Ocean Disposal Site (SF-DODS), also known as the LTMS Study Region.

The DMMO generally meets twice a month on Wednesdays and the meetings are open to the public. The USACE posts meeting schedules, agendas, and documents slated for review on the DMMO website [www.dmmosfbay.org](http://www.dmmosfbay.org).

#### DMMO Responsibilities

- **Review and approve sediment quality sampling and analysis plans.**
- **Analyze the results of sediment quality tests.**
- **Make suitability determinations for placement at in-Bay, ocean and beneficial reuse sites.**
- **Receive, review, and coordinate dredging project permit applications, in the San Francisco Bay Area.**
- **Develop guidance documents as needed.**
- **Coordinate implementation of programmatic requirements such as species consultations, alternative disposal site analyses and record-keeping.**

The DMMO reviews and analyzes dredging project test results as well and project information such as compliance with environmental work windows and placement site volume targets set forth in the LTMS Management Plan. Dredging data is summarized in the DMMO annual reports each year, and along with guidance documents and other DMMO background information, can be found on the USACE LTMS website

[www.spn.usace.army.mil/Missions/DredgingWorkPermits/DredgedMaterialManagementOffice\(DMMO\).aspx](http://www.spn.usace.army.mil/Missions/DredgingWorkPermits/DredgedMaterialManagementOffice(DMMO).aspx)

### **Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS)**

The LTMS was formed in 1990 in response to concerns about potential direct, indirect and cumulative impacts from dredging and dredged sediment disposal on water quality, wildlife and beneficial uses of San Francisco Bay. In 1998 the LTMS agencies published a programmatic EIS/EIR that evaluated a range of alternatives for integrated management of dredging and dredged sediment placement.<sup>1</sup> The selected, environmentally preferred alternative from the programmatic EIS/EIS established the long term goals of at least 40% of dredged sediment being beneficially reused, no more than 20% being disposed in the Bay, and the remainder being disposed at the San Francisco Deep Ocean Disposal Site. The LTMS Management Plan<sup>2</sup>, published in 2001, contains detailed measures for implementing the selected program.

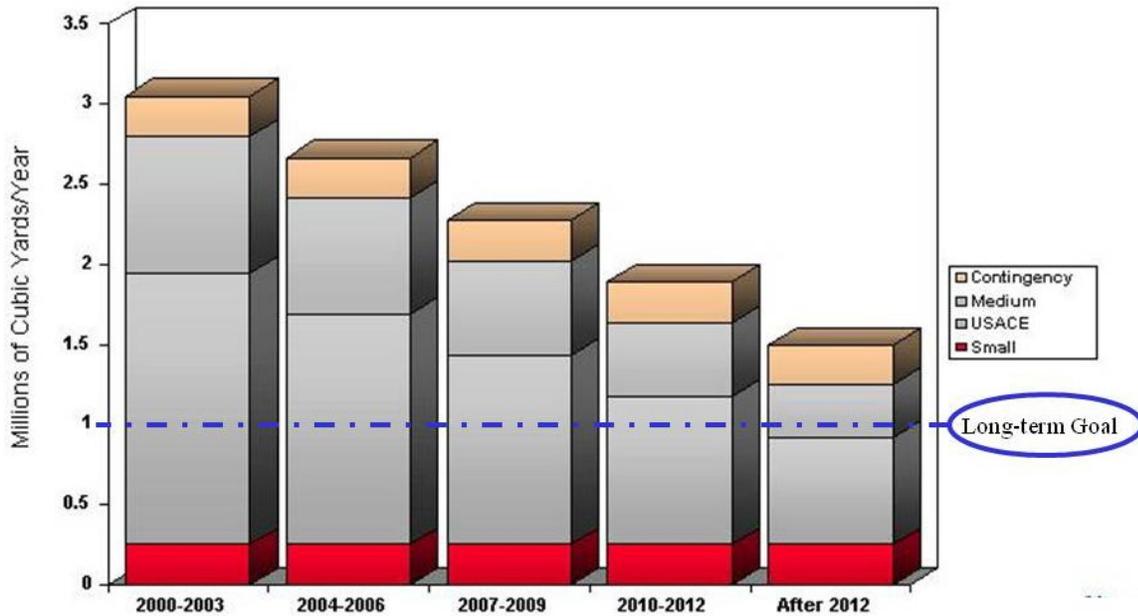
Of particular importance was the Management Plan's 12-year transition period, designed to gradually reduce the annual in-Bay disposal volume limit to a maximum of 1.25 million cubic yards of sediment (cy) by the end of 2012. The annual target volumes were averaged every three years to allow for inter-annual variability in sediment deposition and dredging project production. The purpose of the transition period was to provide time for dredging project sponsors to plan for the logistic and economic changes of the new dredged sediment management program and for additional beneficial reuse sites to be developed. The 12-year transition period began with an immediate reduction of the allowed in-Bay disposal volume by over 50%, to 2.8 million cy for the first three years. A further reduction of 378,500 cy occurred every three years thereafter, until the long term in-Bay volume limit of 1.25 million cy was reached starting in 2013 (Figure 1).

In 2013, after completion of the transition period, the LTMS agencies conducted a review of the overall program and found that in-Bay disposal remained below the annual transition period limits each year, except 2011 (Figure 2). However, for each three-year period the annual volumes were averaged, and the average volumes remained below the transition period limits. Therefore, individual project allocations (as provided for in the Management Plan) were not triggered. The LTMS Twelve Year Review, as well as the DMMO annual reports, containing detailed year-by-year history of dredging volumes and placement locations are available on the LTMS web site.

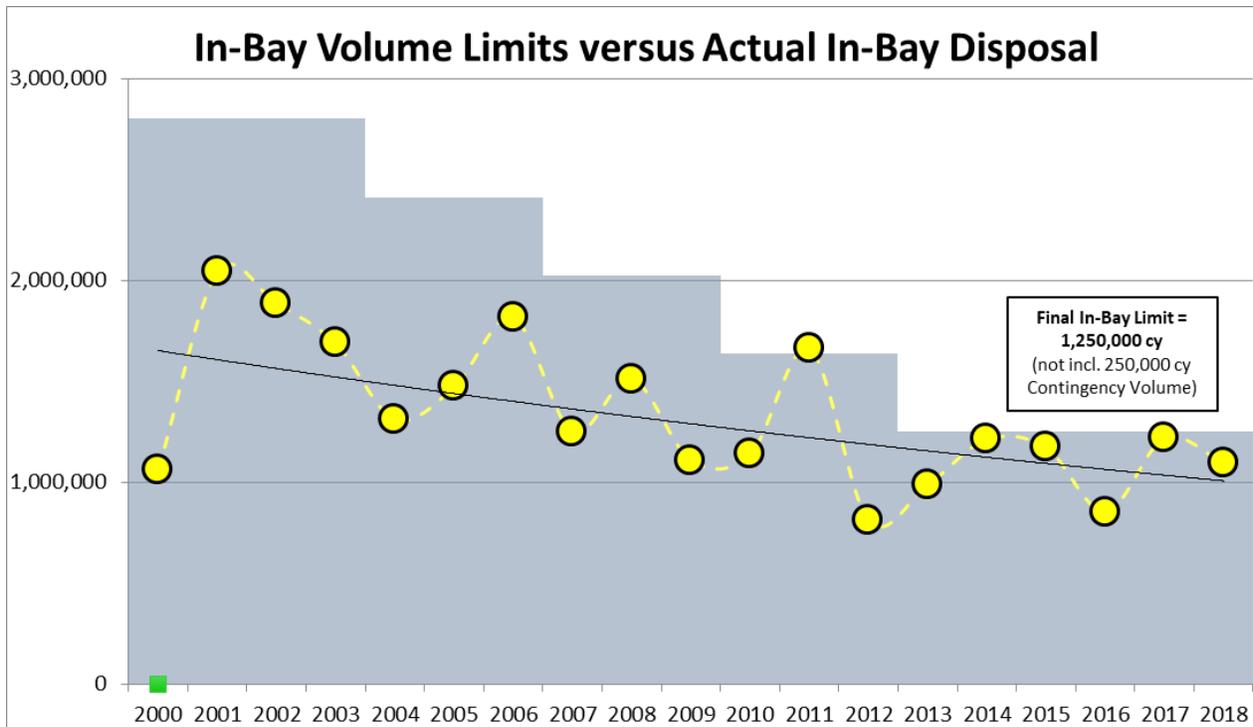
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<sup>1</sup> Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region EIS, 1998. [www.spn.usace.army.mil/Missions/Dredging-Work-Permits/LTMS/Volume-1/](http://www.spn.usace.army.mil/Missions/Dredging-Work-Permits/LTMS/Volume-1/)

<sup>2</sup> Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region, Management Plan, 2001. [www.spn.usace.army.mil/Missions/Dredging-Work-Permits/LTMS/](http://www.spn.usace.army.mil/Missions/Dredging-Work-Permits/LTMS/)



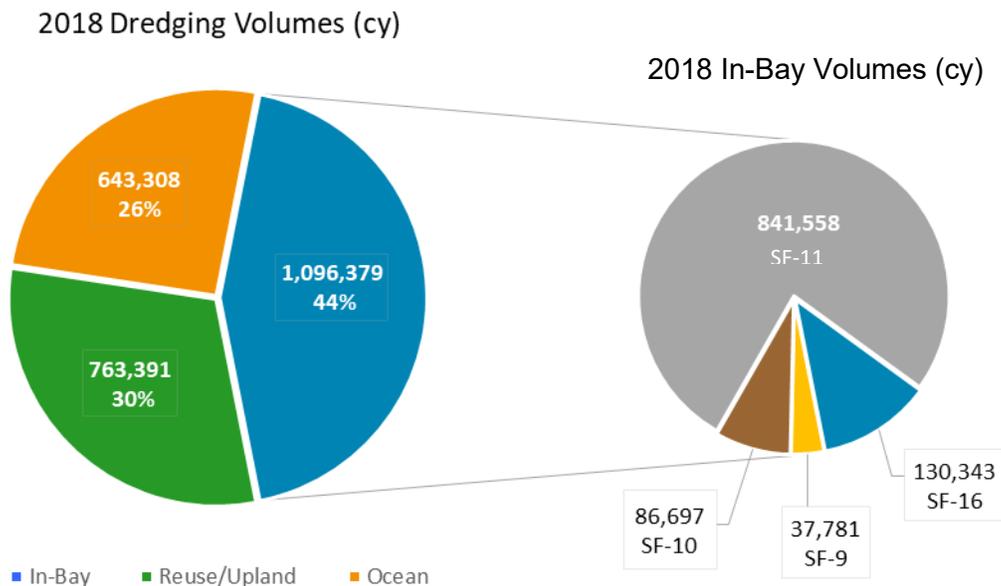
**Figure 1.** The LTMS Transition Period, showing the in-Bay disposal volume limit decreases that occurred every three years until the end of 2012. The Transition Period is now complete, and the final annual in-Bay limit of 1.25 million cy is in place.



**Figure 2.** Actual in-Bay disposal volumes (yellow dots), compared to the transition period limits (2000-2012) and the final post-transition period disposal limit (2013-2018) (blue shading).

## II. 2018 DREDGING AND PLACEMENT OVERVIEW

In 2018, 27 projects (7 fewer than in 2017) dredged a total of 2,503,078 cy of sediment from San Francisco Bay. As summarized in Figure 3 and Table 1, a total of 1,096,379 cy (43.8% of the total volume dredged; slightly more than 3.5% over 2017) was placed at four designated in-Bay dredged sediment disposal sites, while 763,391 cy (30.5%) was beneficially reused (approximately the same as in 2017) and 643,308 cy (25.7%; almost 5% less than in 2017) was disposed at SF-DODS. Of the sediment disposed at the four in-Bay disposal sites, 841,558 cy (77%; almost double from 2017) went to the Alcatraz Disposal Site (SF-11); 86,697 cy (8%) went to the San Pablo Bay Disposal Site (SF-10); 37,781 cy (3%) went to the Carquinez Strait Disposal Site (SF-9); and 130,343 cy (12%) went to the Suisun Bay Disposal Site (SF-16). Detailed volume information for 2018 is provided in Appendix 1 (by placement site) and Appendix 2 (by dredging project, including monthly disposal volumes).



**Figure 3.** 2018 total dredging and placement summary, showing detail for In-Bay Disposal Sites.

### In-Bay Disposal

Although the LTMS Plan's 20% in-Bay disposal goal was exceeded again in 2018, the actual in-Bay disposal volume of 1,096,379 cy was over 120,000 cy less than in 2017 and did not exceed the 1.25 million cy annual limit. The 3-year average in-Bay disposal volume (2016-2018) was 1,056,052 cy (Table 1) which did not exceed the 1.25 million cy proposed in the LTMS Management Plan, therefore no dredger-specific allocations will need to be considered at this time.

<b>Dredging Volumes Under LTMS, 2000 through 2018 (cy)*</b>									
<b>Calendar Year</b>	<b>In-Bay Disposal Target**</b>	<b>In-Bay Disposal</b>	<b>In-Bay % of Total</b>	<b>Reuse/Upland</b>	<b>Reuse % of Total</b>	<b>Ocean Disposal</b>	<b>Ocean % of Total</b>	<b>Total Dredging</b>	<b>3-year in-Bay averages</b>
2000	2,800,000	880,000	22.3%	2,294,676	58.1%	775,000	19.6%	3,949,676	
2001	2,800,000	2,041,936	56.1%	1,028,256	28.3%	566,679	15.6%	3,636,871	<b>1,939,673</b>
2002	2,800,000	1,887,083	55.4%	650,051	19.1%	866,400	25.5%	3,403,534	
2003	2,800,000	1,890,000	51.8%	646,337	17.7%	1,113,814	30.5%	3,650,151	
2004	2,412,500	1,312,829	52.0%	869,452	34.5%	341,000	13.5%	2,523,281	<b>1,534,316</b>
2005	2,412,500	1,473,253	23.3%	4,718,716	74.5%	137,717	2.2%	6,329,686	
2006	2,412,500	1,816,866	42.0%	1,558,487	36.0%	954,456	22.0%	4,329,809	
2007	2,025,000	1,249,338	28.8%	1,527,549	35.3%	1,554,362	35.9%	4,331,249	<b>1,289,765</b>
2008	2,025,000	1,512,098	35.4%	2,587,094	60.5%	175,855	4.1%	4,275,047	
2009	2,025,000	1,107,859	28.6%	2,688,264	69.5%	72,289	1.9%	3,868,412	
2010	1,637,500	1,139,780	56.5%	591,595	29.3%	285,460	14.2%	2,016,835	<b>1,209,659</b>
2011	1,637,500	1,668,043	50.7%	971,368	29.5%	652,970	19.8%	3,292,381	
2012	1,637,500	821,153	31.5%	1,014,561	38.9%	772,760	29.6%	2,608,474	
2013	1,250,000	987,268	31.1%	553,066	17.4%	1,632,515	51.5%	3,172,849	<b>1,124,045</b>
2014	1,250,000	1,213,331	57.4%	770,618	36.5%	130,006	6.1%	2,113,955	
2015	1,250,000	1,171,535	37.3%	1,251,958	39.9%	717,555	22.8%	3,141,048	
2016	1,250,000	852,049	31.2%	1,117,833	41.0%	758,887	27.8%	2,728,769	<b>1,056,052</b>
2017	1,250,000	1,219,727	40.3%	883,475	29.2%	922,594	30.5%	3,025,796	
2018	1,250,000	1,096,379	43.8%	763,391	30.5%	643,308	25.7%	2,503,078	
	<b>Mean</b>	<b>1,333,712</b>		<b>1,394,039</b>		<b>688,086</b>		<b>3,415,837</b>	
	<b>Total</b>	<b>25,340,527</b>	<b>39.0%</b>	<b>26,486,747</b>	<b>40.8%</b>	<b>13,073,627</b>	<b>20.1%</b>	<b>64,900,901</b>	

\* Final volumes based on post-dredge surveys. May differ from volumes published in individual DMMO Annual Reports.

\*\* Not including 250,000 cy Contingency Volume

**Table 1.** Dredging and placement volumes under the LTMS program, 2000-2018.

### **Beneficial Reuse and Upland Placement**

In 2018, nearly 800,000 cy (30.5% of the total dredged) was beneficially reused or taken to upland placement sites. Four beneficial reuse sites were used by dredging project proponents (Table 2). Each site has varying equipment, logistical, and sediment characteristic requirements. More detailed information for each of the beneficial reuse sites that received dredged sediment in 2018 are provided below:

Placement Location	Sediment Placed (cy)	% of Total Reuse/Upland
Montezuma Wetlands Restoration Project	687,717	90%
Cullinan Ranch Restoration Project	68,525	9%
San Rafael Rock Quarry	6,308	0.8%
SF-8 inshore portion (non-Federal)	841	0.1%
<b>Total</b>	<b>763,391</b>	<b>99.9%</b>

**Table 2.** Beneficial reuse or upland placement sites that received dredged sediment in 2018

- Montezuma Wetland Restoration Project (MWRP)

In 2018, the MWRP received 687,717 cy of dredged material for reuse (90% of the total reused). The sediment came from 11 maintenance dredging projects: Most of the volume came from one federal dredging project – 460,931 cy from the Oakland Federal Channel. The remaining volume came from dredging projects at Amports, Sausalito Yacht Harbor, Valero, Chevron, Vallejo Ferry terminal, Mare Island Dry Docks, Port of Oakland, and Port of San Francisco.

- Cullinan Ranch Restoration Project

In 2014, USACE, BCDC, and the Water Board revised their permits for the Cullinan Ranch Restoration Project site in the San Pablo Bay National Wildlife Refuge, increasing the volume of dredged sediment authorized for placement from 450,000 cy over 50 acres, to 2.8 million cy over 290 acres of the 1,575-acre site. In 2018, this site received 68,525 cy (9% of the total reused volume). Projects sending material to Cullinan include Coast Guard Station Vallejo and Foster City.

- San Rafael Rock Quarry

San Francisco Marina placed 6,308 cy of material from their West Basin maintenance dredge project at the San Rafael Rock Quarry.

- SF-8 Bar Channel Site, Eastern Portion (sand only)

The SF-8 ocean disposal site is mainly used by USACE, for sand dredged from the Main Ship Channel (MSC) offshore of San Francisco Bay. The placement of sand from the MSC at SF-8 is not considered beneficial reuse because that sand is already in the San Francisco Bar and the littoral transport system associated with it. However, clean sand from other dredging projects that is placed within the easternmost portion of SF-8 (inside the 3-mile limit) is considered beneficial reuse, because it adds new sand to the Bar and its littoral transport system. In 2018, the San Francisco Marina West Basin maintenance dredge project placed a total of 841 cy of clean sand in the easternmost portion of the SF-8 disposal site.

### Sediment Suitability for In-Bay Unconfined Aquatic Disposal

Approximately 99% of sediment dredged in 2018 (2,473,162 cy of the 2,503,078 cy total) was suitable for unconfined aquatic disposal in the Bay (SUAD), while 1% (29,916 cy) was not suitable for unconfined disposal in the Bay (NUAD). The NUAD material came from one project, the WETA South San Francisco Ferry Terminal maintenance dredging. All of the NUAD material was placed at SF-DODS. Based on the sediment characterization results, the sediment was not directly toxic in bioassays but was determined to be NUAD based on sediment chemistry: e.g. it exceeded a Total Maximum Daily Load (TMDL) concentration limit.

Project	NUAD Volume (cy)	Reason NUAD	Placement Site
WETA South SF Ferry Terminal	29,916	PCBs	SF-DODS
<b>Total</b>	<b>29,916</b>		

**Table 3.** Projects dredged in 2018 that included sediment not suitable for unconfined in-Bay disposal (NUAD).

### Dredging Equipment used in the Bay

Almost all the dredging projects inside the Bay in 2018 used mechanical dredges (e.g., clamshells or excavator buckets). One in-Bay USACE project (Richmond Outer) dredged 726,920 cy using a hydraulic hopper dredge over two separate dredge episodes (Appendix 4). The USACE hydraulic dredging represented 40% of the total USACE in-Bay dredging (726,920 cy of the 1,796,008 cy total) in 2018. In addition, USACE conducted two dredge episodes using a hydraulic hopper dredge in the Main Ship Channel (outside the Bay) in 2018, removing approximately 466,583 cy.

### Environmental Work Windows

Environmental work windows, developed via programmatic consultations on the LTMS Program, encourage projects to work when sensitive species are not present in the San Francisco Bay and its tributaries. These windows vary depending on project location and for many projects begin either on June 1 or August 1 and generally last through November 30 of each year. On July 9, 2015, NMFS issued an amended LTMS Programmatic Biological Opinion for salmon, steelhead, and green sturgeon<sup>3</sup>. This update addresses green sturgeon and modifies some environmental work windows (Coho salmon). For the first time, the amended biological opinion allows some projects to plan to work outside the established windows provided that the sediment dredged outside the window is placed at a beneficial reuse site benefitting fish habitat. It further provides the LTMS agencies the ability to authorize limited dredging (up to a cumulative total of 50,000 cy) outside the window, without further consultation with NMFS, when unforeseeable circumstances delay project completion.

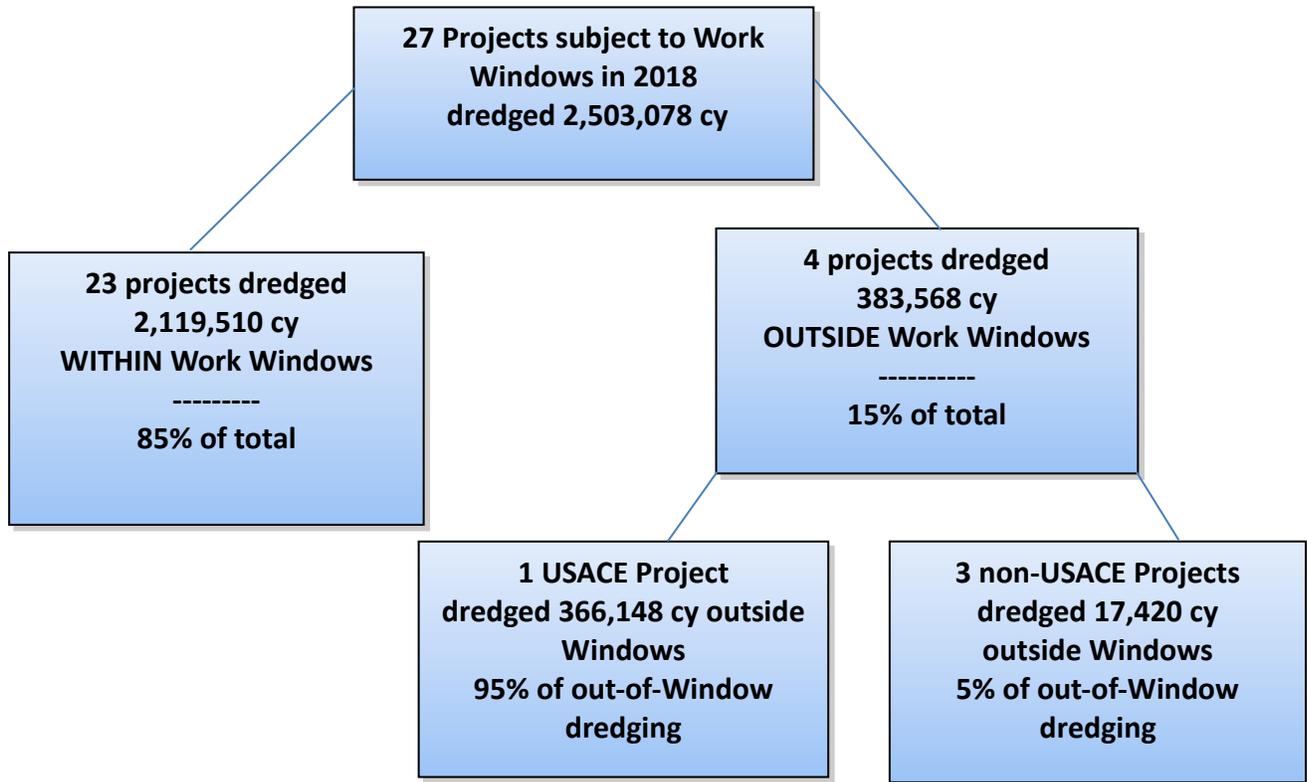
<sup>3</sup> [http://www.spn.usace.army.mil/Portals/68/docs/Dredging/LMTS/LTMS%20NMFS%20BiOp%207\\_9\\_2015.pdf](http://www.spn.usace.army.mil/Portals/68/docs/Dredging/LMTS/LTMS%20NMFS%20BiOp%207_9_2015.pdf)

Environmental work window restrictions were met by 23 of the 27 dredging projects conducted in 2018<sup>4</sup>. Most of these projects began work in or after the month of June, and 23 of them were completed entirely within their work windows (Figure 4). Of the 27 projects subject to the environmental work windows, three non-USACE projects (Foster City intake channel, US Coast Guard Station Vallejo, and South San Francisco Ferry Terminal) requested and received an extension from DMMO to perform minor amounts of dredging that could not be completed by the close of the salmonid and herring work windows. Two of these non-USACE projects placed a combined 12,688 cy at sites which beneficially reuse the dredged material for tidal wetland restoration that benefits fish habitat per the terms of the LTMS programmatic Biological Opinion (Appendix 2). In addition, one project (South San Francisco Ferry Terminal) dredged 4,732 cy in December and placed the dredged material at SF-DODS. Per the terms of the NMFS LTMS Programmatic Biological Opinion, an equivalent volume of sediment dredged from this project after November 30, 2018 must be beneficially reused within a year at tidal wetland restoration site(s) that benefits fish habitat. However, since it is unlikely that dredging at the South San Francisco Ferry Terminal would need to be completed within the following year, it has been stipulated that the material from any subsequent dredge event at the Ferry Terminal shall be placed at a beneficial reuse site until the equivalent volume is met.

The USACE Oakland Inner and Outer Harbor channels project planned ahead for likely dredging after the work windows closed in 2017, and ultimately dredged 183,656 cy between January and April 2018. The dredged material from the beginning of the year was placed at SF-DODS. Per the terms of the NMFS LTMS Programmatic Biological Opinion, an equivalent volume of sediment dredged from this project after November 30, 2017 must be beneficially reused within a year at tidal wetland restoration site(s) that benefits fish habitat. Additionally, the USACE Oakland Inner and Outer Harbor channels project began another dredge episode in September 2018 and dredged past the close of the work window on November 30, 2018. The project removed 182,492 cy between December 1 and December 31, 2018 (and continued dredging into early 2019). This sediment was placed at Montezuma, per the terms of the NMFS LTMS Programmatic Biological Opinion.

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<sup>4</sup> Valero Refinery and the Mare Island Dry Docks have separate consultations with the state and federal resource agencies and are not managed under the programmatic LTMS work windows. The dredging of the Main Ship Channel also does not follow the LTMS work window and is not included in the annual volume totals.



**Figure 4.** 2018 projects and dredge volumes relative to environmental work windows.

### Essential Fish Habitat (EFH) Compliance

In June of 2011, the USACE and EPA signed an agreement with NMFS entitled, “*Agreement on Programmatic EFH Conservation Measures for Maintenance Dredging Conducted under the LTMS Program (Tracking Number 2009/06769)*.” Under this EFH agreement, the LTMS agencies report annually on projects that trigger provisions related to elevated levels of contaminants in the residual (post-dredge) sediment surface, and that used minimization measures to reduce potential adverse effects to eelgrass and other submerged aquatic vegetation.

Three projects dredged in 2018 had elevated levels of PCBs or PAHs in the sediment potentially exposed after dredging (the residual sediment, represented by “z-layer” samples). The Sausalito Yacht Harbor and the South San Francisco Ferry Terminal had elevated levels of PCBs in the z-layer samples. The Port of San Francisco Berth 35 had elevated levels of PAHs in the z-layer samples (See Appendix 3). Per the EFH agreement, the DMMO required an evaluation of the bioaccumulation potential of the residual layer sediments to determine whether additional contaminant-related management action was warranted. Conservative modeling of the potential for the contamination present to cause adverse food web effects indicated that environmental harm would not likely occur, and the three projects were approved to proceed without further management action.

The EFH agreement also includes minimization measures to protect eelgrass. Four non-USACE dredging projects in 2018 conducted pre-dredge eelgrass surveys. Three of the projects were within

250 meters of eelgrass, and therefore were required to use silt curtains to minimize impacts of dredging-related suspended sediment plumes on eelgrass (Appendix 3).

In addition, portions of two USACE projects, Richmond Inner Harbor and Oakland Harbor, were also within 250 meters of eelgrass beds (Appendix 4). The USACE dredging projects did not deploy silt curtains, but used an option in the EFH consultation and instead performed light monitoring and completed pre-dredge and post-dredge surveys of eelgrass areal extent in the vicinity of the dredging projects to determine if there were deleterious effects. The combination of light monitoring and survey data showed no observable adverse effects to eelgrass from the two USACE projects.

### III. RELATED ISSUES

#### DMMO Projects and Sediment Quality Database

DMMO has developed a web-based data management system to store, retrieve, query and update sediment quality data and information in support of the DMMO. The DMMO's San Francisco Bay dredging and disposal database is available online ([www.dmmosfbay.org](http://www.dmmosfbay.org)). The database contains sediment testing data from years 2000 to 2019, and the database has been designed to allow dredging project sponsors, labs, and consultants to upload their project data directly into the system on an ongoing basis. Historic Sampling and Analysis Plans (SAP) and Sampling and Analysis Results (SAR) reports are available to download for individual projects, and historical sediment testing data (including chemical and bioassay testing results) can be queried both for individual projects and regionally.

In 2018, DMMO began the process of handing over hosting duties for the database to the San Francisco Estuary Institute (SFEI). Once the database was transferred to SFEI's servers, DMMO and SFEI began work to clear the back-log of laboratory data needing to be incorporated into the database and to work on the remaining list of changes and upgrades to the database website. Several modifications have been proposed and planned, including developing an improved method for assessing fees for the Regional Monitoring Program (RMP) and enhancing how data can be queried and viewed for multiple processes. Several SFEI scientists and staff have already utilized the data from the website to produce reports such as Don Yee and Adam Wong's PCB synthesis report, "Evaluation of PCB Concentrations, Masses, and Movement from Dredged Areas in San Francisco Bay."

#### SediMatch

The San Francisco Bay Joint Venture (SFBJV), with DMMO and LTMS agency support, developed SediMatch, a sediment placement site database and web tool to improve and increase the matching of dredging projects with appropriate beneficial reuse sites. In addition to SFBJV and BCDC, the Bay Area Flood Protection Agencies Association, the Bay Planning Coalition and others wanted to bring the dredging/sediment supply and the wetland restoration communities together for the shared goals of creating healthy wetland habitats and maximizing beneficial reuse of sediment. SediMatch launched in November 2016 and efforts to update and improve it continued in 2018. The DMMO database may soon be linked to the SediMatch web tool. The funds to support this effort were made

available through a USEPA Water Quality Improvement Grant. The SediMatch web tool is also hosted by San Francisco Estuary Institute (SFEI) and can be found at <http://sedimatch.sfei.org>. With SediMatch now online the DMMO agencies encourage dredgers and restoration site operators to begin populating the site with information and use it.

#### **IV. LOOKING AHEAD**

As mentioned, the LTMS Transition Period ended after 2012, and the final 1.25 million cy annual in-Bay disposal volume limit has been in place since that time. However, in response to concerns about the limited availability/affordability of reuse sites for many projects, the LTMS Management Committee in 2015 authorized DMMO to use the 250,000 cy/year “contingency volume” if needed, without requesting project-specific approvals from the Management Committee. This flexibility reduces the potential for triggering dredger-specific “allocations” as a result of an occasional anomalous dredging year (under the Management Plan, the contingency volume does not count against the three-year average volume limit of 1.25 million cy/year). The 3-year average in-Bay disposal volumes for 2016–2018 is 1,056,052 cy of dredged material. The 3-year average is below the 1.25 million cy limit, however, in-Bay disposal does continue to account for just under 40% of the annual disposal volume. While the disposal limits have been consistently met for several years more work needs to be done to increase opportunities for a larger percentage of the annual dredge volume to be placed at sites outside San Francisco Bay.

## V. CONTACTS AND LINKS

### DMMO MEMBER AGENCIES' PRIMARY STAFF CONTACTS:

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RWQCB	Beth Christian	(510) 622-2335	Elizabeth.Christian@waterboards.ca.gov
EPA	Jennifer Siu	(415) 972-3983	siu.jennifer@epa.gov
SLC	Dobri Tutov	(916) 574-0722	dobri.tutov@slc.ca.gov

### RESOURCE AGENCY CONTACTS:

CDFW	Arn Aarreberg (Bay Region)	(707) 576-2889	arn.aarreberg@wildlife.ca.gov
	Craig Weightman (Tributaries)	(707) 944-5500	craig.weightman@wildlife.ca.gov
	Jim Starr (Delta region)	(707) 944-5500	jim.starr@wildlife.ca.gov
USFWS	Ryan Olah (Bay region)	(916) 414-6625	Ryan_Olah@fws.gov
	Kim Squires (Bay-Delta region)	(916) 930-5634	Kim_Squires@fws.gov
NMFS	Sara Azat	(707) 575-6067	Sara.Azat@noaa.gov

### USEFUL LINKS

**DMMO WEBSITE** (guidance documents, etc.):

[www.spn.usace.army.mil/Missions/DredgingWorkPermits/DredgedMaterialManagementOffice\(DMMO\).aspx](http://www.spn.usace.army.mil/Missions/DredgingWorkPermits/DredgedMaterialManagementOffice(DMMO).aspx)

**DMMO DATABASE WEBSITE:** [www.dmмосfbay.org](http://www.dmмосfbay.org)

**LTMS WEBSITE:** [www.spn.usace.army.mil/Missions/DredgingWorkPermits/LTMS.aspx](http://www.spn.usace.army.mil/Missions/DredgingWorkPermits/LTMS.aspx)

**SFEI "DREDGED MATERIAL TESTING THRESHOLDS" WEBSITE:**

<https://www.sfei.org/content/dmmo-ambient-sediment-conditions>

**LTMS 12-YEAR REVIEW:**

[www.spn.usace.army.mil/Missions/DredgingWorkPermits/LTMS/LTMSProgram12YearReviewProcess.aspx](http://www.spn.usace.army.mil/Missions/DredgingWorkPermits/LTMS/LTMSProgram12YearReviewProcess.aspx)

**PROGRAMMATIC EFH CONSULTATION AGREEMENT:**

[www.spn.usace.army.mil/Portals/68/docs/Dredging/LMTS/LTMS%20EFH%20full%20signed%20agreement%20FINAL%206-9-2011.pdf](http://www.spn.usace.army.mil/Portals/68/docs/Dredging/LMTS/LTMS%20EFH%20full%20signed%20agreement%20FINAL%206-9-2011.pdf)

**PROGRAMMATIC ESA CONSULTATION:**

[https://pcts.nmfs.noaa.gov/pcts-web/dispatcher/trackable/WCR-2014-1599?overrideUserGroup=PUBLIC&referer=%2fpcts-web%2fpublicAdvancedQuery.pcts%3fsearchAction%3dSESSION\\_SEARCH](https://pcts.nmfs.noaa.gov/pcts-web/dispatcher/trackable/WCR-2014-1599?overrideUserGroup=PUBLIC&referer=%2fpcts-web%2fpublicAdvancedQuery.pcts%3fsearchAction%3dSESSION_SEARCH)

## **APPENDIX 1**

### **2018 Dredging Volumes by Placement Site**

Disposal Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2018 Total Volume
SF-8 (Federal only)	0	0	0	0	0	0	0	0	0	0	0	0	0
SF-9, Carquinez Straits	0	0	0	0	0	0	2,821	5,324	0	5,418	24,218	0	37,781
SF-10, San Pablo Bay	0	0	0	0	0	27,081	0	0	0	51,283	8,333	0	86,697
SF-11, Alcatraz	0	0	0	0	0	349,997	0	95,302	19,592	353,154	23,513	0	841,558
SF-16, Suisun Bay	0	0	0	0	0	0	0	0	26,575	103,768	0	0	130,343
<b>TOTAL in-Bay</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>377,078</b>	<b>2,821</b>	<b>100,626</b>	<b>46,167</b>	<b>513,623</b>	<b>56,064</b>	<b>0</b>	<b>1,096,379</b>
Reuse/Upland; Cullinan Ranch Restoration Project (CRRP)	10,074	0	1,850	6,800	0	0	0	0	0	37,619	12,182	0	68,525
Reuse/Upland; Montezuma Wetlands Restoration Project (MWRP)	0	0	0	0	19,264	5,714	6,857	0	140,772	188,564	141,440	185,106	687,717
Reuse/Upland; San Rafael Rock Quarry	0	0	0	0	0	0	0	2,691	3,617	0	0	0	6,308
Reuse/Upland; SF-8 NON-FEDERAL	0	0	0	0	0	0	0	0	841	0	0	0	841
<b>TOTAL REUSE (non-fed)</b>	<b>(10,074)</b>	<b>0</b>	<b>(1,850)</b>	<b>(6,800)</b>	<b>(19,264)</b>	<b>(5,714)</b>	<b>(6,857)</b>	<b>(2,691)</b>	<b>(145,230)</b>	<b>(226,183)</b>	<b>(153,622)</b>	<b>(185,106)</b>	<b>(763,391)</b>
Reuse, SF-17 Ocean Beach (Federal)	0	0	0	0	(9,828)	(303,498)	0	0	0	(34,700)	(118,557)	0	(466,583)
SF-DODS, Deep Ocean Disposal Site	142,878	117,878	141,670	41,986	0	0	2,904	0	5,096	50,483	135,681	4,732	643,308
<b>GRAND TOTAL</b>	<b>152,952</b>	<b>117,878</b>	<b>143,520</b>	<b>48,786</b>	<b>19,264</b>	<b>382,792</b>	<b>12,582</b>	<b>103,317</b>	<b>196,493</b>	<b>790,289</b>	<b>345,367</b>	<b>189,838</b>	<b>2,503,078</b>

## **APPENDIX 2**

### **2018 Dredging Volumes by Project**

Project	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2018 TOTAL VOLUME
AMPORTS, Benicia; SF-9	0	0	0	0	0	0	0	0	0	3,418	0	0	3,418
AMPORTS, Benicia; Montezuma (MWRP)/Reuse	0	0	0	0	0	0	0	0	0	14,905	2,089	0	16,994
BELVEDERE ACCESS CHANNEL; SF-11	0	0	0	0	0	0	0	0	0	0	2,863	0	2,863
BENICIA MARINA; SF-9 (knock down in July)	0	0	0	0	0	0	(knock down)	0	0	0	4,551	0	4,551
CHEVRON RICHMOND LONG WHARF; SF-10	0	0	0	0	0	0	0	0	0	0	8,333	0	8,333
CHEVRON RICHMOND LONG WHARF; Montezuma (MWRP)/Reuse	0	0	0	0	0	0	0	0	0	0	41,582	2,614	44,196
COAST GUARD STATION, VALLEJO; SF-9	0	0	0	0	0	0	0	0	0	0	1,589	0	1,589
COAST GUARD STATION, VALLEJO; Cullinan (CRRP)/Reuse	0	0	0	0	0	0	0	0	0	0	12,182	0	12,182
FOSTER CITY; City of; Cullinan (CRRP)/Reuse	10,074	0	0	0	0	0	0	0	0	0	0	0	10,074
GLEN COVE MARINA, SF-11	0	0	0	0	0	0	0	0	3,366	7,575	0	0	10,941
MARE ISLAND DRYDOCK; Montezuma (MWRP) Reuse	0	0	1,850	6,800	0	0	0	0	0	37,619	0	0	46,269
MARINA DREDGE NEIGHBORS; SF-11	0	0	0	0	0	0	0	1,200	0	0	0	0	1,200 *
PHILLIPS 66 (Rodeo); SF-9	0	0	0	0	0	0	2,821	5,324	0	0	0	0	8,145
PIER 39 MARINA; PORT OF SAN FRANCISCO; SF-11	0	0	0	0	0	0	0	0	8,478	22,870	0	0	31,348
PLAINS ALL AMERICAN Terminal (Eagle Rock); SF-DODS	0	0	0	0	0	0	2,904	0	0	0	0	0	2,904 #
PORT OF OAKLAND, Berth Maintenance; SF-11	0	0	0	0	0	0	0	54,535	0	0	0	0	54,535
PORT OF OAKLAND, Berth Maintenance; Montezuma (MWRP)/Reuse	0	0	0	0	0	0	0	0	0	41,982	0	0	41,982
PORT OF REDWOOD CITY, Wharves 1-4; SF-11	0	0	0	0	0	0	0	0	0	0	9,654	0	9,654
PORT OF REDWOOD CITY, Wharves 1-4; SF-DODS	0	0	0	0	0	0	0	0	0	0	35,728	0	35,728
PORT OF SAN FRANCISCO, Berth 27; SF-11	0	0	0	0	0	0	0	20,666	0	0	0	0	20,666
PORT OF SAN FRANCISCO, BERTH 35 E&W; SF-DODS	0	0	0	0	0	0	0	0	5,096	13,589	0	0	18,685
PORT OF SAN FRANCISCO, BERTH 35 E&W; Montezuma (MWRP)/Reuse	0	0	0	0	0	0	0	0	8,026	26,032	0	0	34,058
PORT OF SAN FRANCISCO, BERTH 35 E&W; SF-11	0	0	0	0	0	0	0	0	0	11,296	0	0	11,296
SAN FRANCISCO MARINA, WEST BASIN; SF-8/Reuse	0	0	0	0	0	0	0	0	841	0	0	0	841
SAN FRANCISCO MARINA, WEST BASIN; San Rafael Rock Quarry/Reuse	0	0	0	0	0	0	0	2,691	3,617	0	0	0	6,308
SAN FRANCISCO YACHT CLUB; SF-11	0	0	0	0	0	0	0	18,901	7,748	12,854	10,996	0	50,499
SAUSALITO YACHT HARBOR; Montezuma (MWRP)/Reuse	0	0	0	0	0	5,714	6,857	0	3,429	12,572	13,714	0	42,286
VALERO; Montezuma (MWRP)/Reuse	0	0	0	?	19,264	0	0	0	22,170	0	0	0	41,434
VALLEJO YACHT CLUB; SF-9	0	0	0	0	0	0	0	0	0	2,000	18,078	0	20,078 #
WETA, SOUTH SAN FRANCISCO FERRY TERMINAL; SF-DODS	0	0	0	0	0	0	0	0	0	0	0	4,732	4,732 +
WETA, VALLEJO FERRY TERMINAL; Montezuma (MWRP)/Reuse	0	0	0	0	0	0	0	0	0	0	5,836	0	5,836
USACE, MAIN SHIP CHANNEL; SF-17, Ocean Beach	0	0	0	0	(9,828)	(303,498)	0	0	0	(34,700)	(118,557)	0	(466,583) **
USACE, OAKLAND INNER/OUTER HARBOR; SF-DODS	142,878	117,878	141,670	41,986	0	0	0	0	0	36,894	0	0	481,306
USACE, OAKLAND INNER/OUTER HARBOR; Montezuma (MWRP)/Reuse	0	0	0	0	0	0	0	0	107,147	93,073	78,219	182,492	460,931 +
USACE, RICHMOND INNER; SF-DODS	0	0	0	0	0	0	0	0	0	0	99,953	0	99,953
USACE, RICHMOND OUTER HARBOR; SF-11	0	0	0	0	0	349,997	0	0	0	298,559	0	0	648,556
USACE, RICHMOND OUTER HARBOR; SF-10	0	0	0	0	0	27,081	0	0	0	51,283	0	0	78,364
USACE, SUISUN BAY CHANNEL; SF-16	0	0	0	0	0	0	0	0	26,575	103,768	0	0	130,343
<b>GRAND TOTAL</b>	<b>152,952</b>	<b>117,878</b>	<b>143,520</b>	<b>48,786</b>	<b>19,264</b>	<b>382,792</b>	<b>12,582</b>	<b>103,317</b>	<b>196,493</b>	<b>790,289</b>	<b>345,367</b>	<b>189,838</b>	<b>2,503,078</b>

\* NO post dredged volume (only BIN)

\*\* NO post dredged volume for the Oct-Nov episode (only BIN)

+ Dredging continued into 2019

# No daily disposal logs submitted

Red = SF-8

Brown = SF-10 (San Pablo)

Gray = SF-16 (Suisun Bay)

Pink = SFDODS (Deep Ocean Site)

Orange = SF-9 (Carquinez)

Blue = SF-11 (Alcatraz)

Turquoise = SF-17 (Ocean Beach)

Green = Upland/Reuse

## **APPENDIX 3**

### **2018 Non-USACE Projects EFH Compliance Summary**

Appendix 3. 2018 Non-USACE Maintenance Dredging Projects LTMS Programmatic EFH Agreement Compliance							
Project Name	Placement Site	USACE File Number	Dredge Date	Permitted Area (Acres)	Dredge Area (Acres)	Dredge Volume (cy)	EFH Compliance Issues
Projects with Eelgrass Present							
Belvedere Access Channel, Episode 2	SF-11	2005-29693	November	0.71	0.5	3,450	Eelgrass within 250 Meters, silt curtain deployed
Glen Cove Marina	SF-9	2009-00120	September	7.5	1.2	10,941	Eelgrass survey complete. No eelgrass within dredge footprint in enclosed marina.
San Francisco Yacht Club	SF-11	2008-00447	August	13.9	12.6	50,499	Eelgrass within 250 meters, silt curtain deployed at entrance channel.
Sausalito Yacht Harbor, Episode 3	MWRP	2009-00207	June	22	11.9	42,286	Eelgrass within 250 Meters, silt curtain deployed at each Dredge Unit. Z-layer concentrations of PCBs elevated above BT level. Trophic trace modeling showed no bioaccumulation risk from PCBs.
Projects without Eelgrass Present							
Amports, Episode 4	SF-9 / MWRP	2014-00033	October - November	8.75	2.1	21,500	No eelgrass within 250 meters. No EFH issues associated with episode.
Benicia Marina, Episode 5	Knock-down	2014-00061	July and November	1.35	16.96	200	No eelgrass within 250 meters. No EFH issues associated with episode.
Benicia Marina, Episode 6	SF-9	2014-00061	November	0.99	16.96	4,551	No eelgrass within 250 meters. No EFH issues associated with episode.
Chevron Long Wharf, Episodes 9 & 10	SF-10 / MWRP	2009-00052	November and December	44.1	25.2	52,615	No eelgrass within 250 meters. No EFH issues associated with episode.
Eagle Rock, Episode 2	SF-DODS	2016-00218	July	0.2	2.52	4,100	No eelgrass within 250 meters. No EFH issues associated with episode.
Foster City	Cullinan Ranch	2015-00405	January	1.33	1.33	10,074	No eelgrass within 250 meters. No EFH issues associated with episode.
Mare Island Dry Docks, Episode 15, 16 & 17	CRRP	2008-00311	March-April and October	7.32	18.31	50,450	No eelgrass within 250 meters. No EFH issues associated with episode.
Marina Neighbors, Episode 1	SF-11	2011-00164	August	0.5	0.5	1,200	No eelgrass within 250 meters. No EFH issues associated with episode.
Phillips 66, Episode 4	SF-9	2014-00431	July-August	50.5	3.82	8,145	No eelgrass within 250 meters. No EFH issues associated with episode.
Port of Oakland, Episode 8	SF-11	2014-00090	August	95	13.66	54,535	No eelgrass within 250 meters. No EFH issues associated with episode.
Port of Oakland, Episode 9	SF-11	2014-00090	October	95	8.93	41,982	No eelgrass within 250 meters. No EFH issues associated with episode.
Port of Redwood City, Episode 2	SF-11 / SF-DODS	2015-00058 / 2017-00259	November	6.85	6.85	45,382	No eelgrass within 250 meters. No EFH issues associated with episode.
Port of San Francisco, Episode 13	SF-11	2013-00333	September	361	6.3	31,348	No eelgrass within 250 meters. No EFH issues associated with episode.
Port of San Francisco, Episode 14	SF-11	2013-00333	August	361	5.08	20,666	No eelgrass within 250 meters. No EFH issues associated with episode.
Port of San Francisco, Episode 15	SF-11 / SF-DODS / MWRP	2013-00333	September	361	20	64,039	No eelgrass within 250 meters. Z-layer concentrations of PAHs elevated above BT level. Trophic trace modeling showed no bioaccumulation risk from PAHs.
San Francisco Marina West Harbor	SF-8 / SRRQ	2008-00074	August	28	2.18	7,149	No eelgrass within 250 meters. No EFH issues associated with episode.
U.S. Coast Guard Vallejo Station, Episode 2	SF-9 / CRRP	2008-00049	October-November	1.5	1.5	15,600	No eelgrass within 250 meters. No EFH issues associated with episode.
Valero, Episode 18	MWRP	2012-00248	May & September	3.67	5.48	41,434	No eelgrass within 250 meters. No EFH issues associated with episode.
Vallejo Yacht Club	SF-9	2013-00139	October	6.0	4.66	20,278	No eelgrass within 250 meters. No EFH issues associated with episode.
WETA South San Francisco Ferry - Oyster Point Marina	SF-DODS	2006-400061	November	29	7.21	4,500	No eelgrass within 250 meters. Z-layer concentrations of PCBs elevated above BT level. Trophic trace modeling showed no bioaccumulation risk from PCBs.
WETA Vallejo Ferry Terminal, Episode 3	MWRP	2015-00082	November	1.0	2.97	5,836	No eelgrass within 250 meters. No EFH issues associated with episode.

SF-9 = Carquinez Disposal Site  
 SF-10 = San Pablo Bay Disposal Site  
 SF-11 = Alcatraz Disposal Site  
 SF-DODS = San Francisco Deep Ocean Disposal Site

CRRP = Cullinan Ranch Restoration Project  
 SRRQ = San Rafael Rock Quarry  
 BT = Bioaccumulation Testing Trigger  
 TBP = Theoretical Bioaccumulation Potential  
 TRV = Toxicity Reference Value

## **APPENDIX 4**

### **2018 USACE Projects EFH Compliance Summary**

Appendix 4. 2018 USACE Federal Maintenance Dredging Projects LTMS Programmatic EFH Agreement Compliance Summary						
Project Name	Placement Site	Dredge Type	Dredge Date	Dredge Volume (Cubic Yards)	Total Project Area (Acres)	EFH Compliance Issues
Projects with Eelgrass Present						
Oakland Inner Harbor	Montezuma Wetland Restoration Project (MWRP)	Clamshell	September to February*	532,308	525	Eelgrass present within 250 meters, light monitoring conducted
Oakland Outer Harbor	San Francisco Deep Ocean Disposal Site (SF-DODS) and Montezuma Wetland Restoration Project (MWRP)	Clamshell	September to February*	306,484	251	Eelgrass present within 250 meters, light monitoring conducted
Richmond Inner Channel	San Francisco Deep Ocean Disposal Site (SF-DODS)	Clamshell	November	99,953	82	Eelgrass present within 250 meters, light monitoring conducted
Projects without Eelgrass Present						
Main Ship Channel	Ocean Beach Demonstration Site (SF-17)	Hopper	May to June and October to November	466,583	1,204	No EFH compliance issues
Richmond Outer Channel	San Pablo Bay Disposal Site (SF-10) and Alcatraz Island Disposal Site (SF-11)	Hopper	June and October	726,920	540	No EFH compliance issues
Suisun Bay Channel	Suisun Bay Disposal Site (SF-16)	Clamshell	November	130,343	461	No EFH compliance issues

\*Includes some 2019 volumes