June 27 2019

Project Description:
Proposal to Expand EPA's
Humboldt Open Ocean Disposal Site (HOODS) and Identify a Beneficial Nearshore Sand Placement Site (NSPS)

INTRODUCTION

The Humboldt Open Ocean Disposal Site (HOODS) was designated by the U.S. Environmental Protection Agency (EPA) in 1995, based on a full EIS, to provide an environmentally appropriate location for disposal of clean (non-toxic) sediments dredged from Humboldt Bay area navigation channels. The continued availability of an ocean dredged material disposal site (ODMDS) in the vicinity of Humboldt Bay is necessary to maintain safe deep-draft navigation via authorized federal channels and other permitted shipping facilities. The HOODS site has experienced significant mounding, creating the possibility of potentially hazardous navigation conditions in the future if the mounding worsens. Today, HOODS has limited remaining capacity to receive future dredge material disposals. While the situation does not constitute an imminent hazard, EPA and USACE have determined that expedited management action is required to prevent adverse conditions from developing. If disposal capacity at HOODS is not expanded soon, the ability to maintain Humboldt Bay navigation channels, and the commercial and recreational uses they support, is at risk.

EPA is in the process of preparing an environmental assessment to support this expansion. A preliminary evaluation has determined that expansion of the HOODS boundaries would continue to meet all the criteria and factors set forth in the Ocean Dumping regulations published at Parts 228.5 and 228.6 of Title 40 Code of Federal Regulations (CFR). These regulations were promulgated in accordance with the criteria set out in Sections 102 and 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (MPRSA). The EA currently under preparation will describe compliance with these factors, as well as the National Historic Preservation Act, the Coastal Zone Management Act, and the Endangered Species Act.

1. BACKGROUND

1.1 Location

Humboldt Harbor and Bay is located in Humboldt County on the coast of Northern California (Figure 1), approximately 225 nautical miles north of San Francisco and approximately 156 nautical miles south of Coos Bay, Oregon. Humboldt Bay is the second largest coastal estuary in California. It is the only harbor between San Francisco and Coos Bay with channels large enough to permit the passage of large ocean-going vessels.

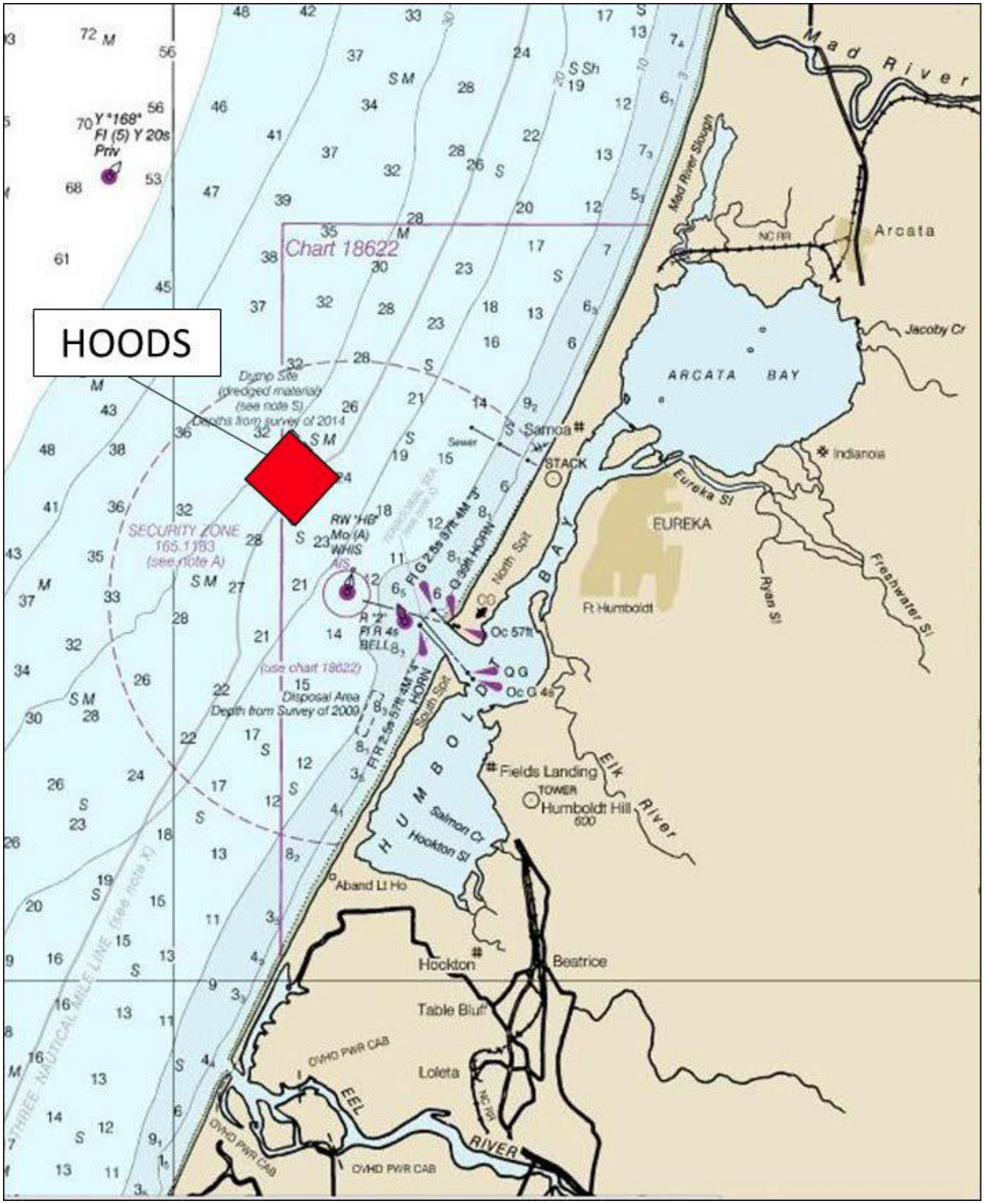

Figure 1: Humboldt Bay area, showing the location of the existing Humboldt Open Ocean Dispsal Site (HOODS).

Humboldt Bay lies in a narrow coastal plain surrounded by rolling terraces, steep mountains, and narrow valleys typical of the coastal ranges in the region. Much of the forested area consists of coastal redwoods and Douglas fir. Eureka, the largest city on the north coast of California and the seat of Humboldt County, and its neighbor, Arcata, are the two largest cities bordering the Bay. Eureka, which is approximately five miles east of the entrance to the Bay, is accessible from the water by the North Bay and Eureka channels. Arcata, which is approximately seven miles north of Eureka, was once accessible from the Bay by the Arcata Channel; however, this channel is no longer in use.

Humboldt Bay is a naturally land-locked estuary composed of two large bays, the relatively shallow South Bay to the south and the larger Arcata Bay to the north. The Bay extends north and south for a distance of approximately 14 miles, covering 26.5 square miles at high tide and approximately 7.8 square miles at low tide. A long, narrow thalweg and a small bay, the Entrance Bay, connect South and Arcata Bays, providing an outlet to the Pacific Ocean. Humboldt Bay is separated from the Pacific Ocean by a sand spit that is incised by two large armored rubble-mound jetties – the North and South Jetties. These fabricated rubble-mound jetties, constructed by USACE, which are approximately 2,000 feet apart, define the entrance channel to Humboldt Harbor, which requires regular dredging to maintain safe navigation.

1.2 Humboldt Bay Navigation and Dredging History

Humboldt Bay has been dredged for navigation purposes for nearly 140 years (Table 1). USACE first began dredging Humboldt Bay's interior channels in 1881 to provide safe navigation within the bay. The first attempt at stabilizing the Entrance Channel to Humboldt Bay commenced in 1889 when USACE started constructing the North and South Jetties; they were completed in 1900. Since then, there have been periodic changes to Humboldt Harbor and Bay to provide safe navigation for ocean-going vessels of many sizes. Humboldt Bay is also a designated harbor of refuge with an important U.S. Coast Guard presence.

Today the USACE conducts annual operation and maintenance (O&M) dredging activities of the federal navigation channels in Humboldt Bay with disposal of the dredged material at HOODS (Figure 1). Maintenance dredging to maintain Humboldt Bay's navigation channels occurs in the Bar and Entrance Channels and in the Interior Channels (Table 2) any time between mid-March through the end of September. Typically, a large hopper dredges (e.g., the *Essayons*) works sandy areas at and near the entrance channel because smaller hopper dredges, and mechanical (clamshell) or cutterhead/pipeline dredges cannot operate safely in the rough seas encountered in the Entrance Channel. Smaller hopper dredges (e.g., the *Yaquina*) can safely work the Federal channels inside the Bay, and mechanical or pipeline dredging can be conducted in the interior marinas and commercial docks of Humboldt Bay.

During recent years, due to Federal budget limitations, USACE has focused on maintaining the Bar and Entrance Channel where clean sand deposits build up quickly. Entrance channel dredging alone has averaged approximately 1 million cubic yards (cy) each year, while interior channels and marinas/docks are dredged less frequently and generally dredge a relatively small volume compared the Bar and Entrance Channel (Figure 2, Table 3). However, USACE estimates that there is currently a backlog of approximately 4.5 million cy of sediment that would need to be dredged to return all of the Federal Channels to full authorized depth.

Table 1: General Chronology of Humboldt Harbor and Bay navigation improvements

DATE	DESCRIPTION
1806	First recorded chart of Humboldt Bay (Bay of the Indians) by the Wiyot Indians.
1849	Humboldt Bay rediscovered and named Trinity Bay.
1850	Renamed Humboldt Bay.
1853	First marker buoys used for the Bay.
1856	Light tower construction completed on North Spit.
1871	Studies for navigation improvements begin.
1881	600 vessels per year using the Bay.
1881	Brush and plank jetties constructed but destroyed the following winter.
1881	First USACE project authorized, the Eureka Channel is dredged.
1881	Arcata, Samoa, and Hookton Channels dredged for the first time.
1883	First survey for a low water jetty on the South Spit
1884	South Jetty authorized.
1887	Training wall was shown on South Spit Jetty plans.
1888	Dual jetties authorized.
1889	South Jetty construction commences (brush and stone construction).
1891	North Jetty construction commences.
1894	North Jetty built out to Bend 420, South Jetty built out to Bend 230.
1896	Bar Channel deepened to 25 feet deep and 100 feet wide.
1900	Initial jetty construction completed: 8,000 feet long, 5 to 10 feet above MLLW.
1911–1917	Jetties damaged, repaired, and raised from original elevation of 10 to 12 feet MLLW to a reconstructed height of 18 feet above MLLW.
1939	Dual rubble-mound jetties completed.
1939	Entrance Channel completed: 30 feet deep and 500 feet wide.
1939	Eureka, Samoa, Arcata, and Fields Landing Channels initial construction completed.
1954	Entrance Channel deepening completed to 40 feet.
1954	Eureka and Samoa Channels deepening (30 feet) completed and North Bay Channel initial construction completed.
1959	Engineering and design study; repair North and South Jetties.
1960–1963	Repair jetty damage of winter 1957–1958.
1964–1965	Extreme damage to jetties, 100-ton blocks washed away.
1966–1967	Repair and maintenance on North and South Jetties.
1969	Jetty repair study and model conducted by the USACE' Engineering Research and Design Center (ERDC) in Vicksburg, Mississippi.
1971	Humboldt Bay Bridge completed, connecting the North Spit with Eureka.
1971–1973	Heads of both jetties completely destroyed, dolos placed on jetties.
1977	USACE names jetties a historical engineering landmark.
1995	EPA designates HOODS as a new permanent ODMDS
1999	Bar and Entrance Channel deepened to 48 feet MLLW and segments of the interior channels to –38 MLLW.
1999	Deepening of Samoa Turning Basin to 38 feet MLLW.
To date	USACE places an average of ~1,000,000 cy/year of entrance channel sand at HOODS

Table 2: Description of Humboldt Harbor Federal Navigation Channels

Channels	Authorized Depth (ft MLLW)	Width (ft)	Length (ft)	Typical Volume, Annualized (cy)	Sediment Type
Bar and Entrance	48	500 - 1,600	8,500	1,100,000	Sand & gravel
North Bay	38	400	18,500	100,000	Sand
Samoa + Turning Basin	38	400 -1,000	8,100 + 1,000	20,000	Sand
Eureka	35	400	9,700	25,000	Silt
Field's Landing + Turning Basin	26	300 - 600	12,000 + 800	6,000	Sand & Silt

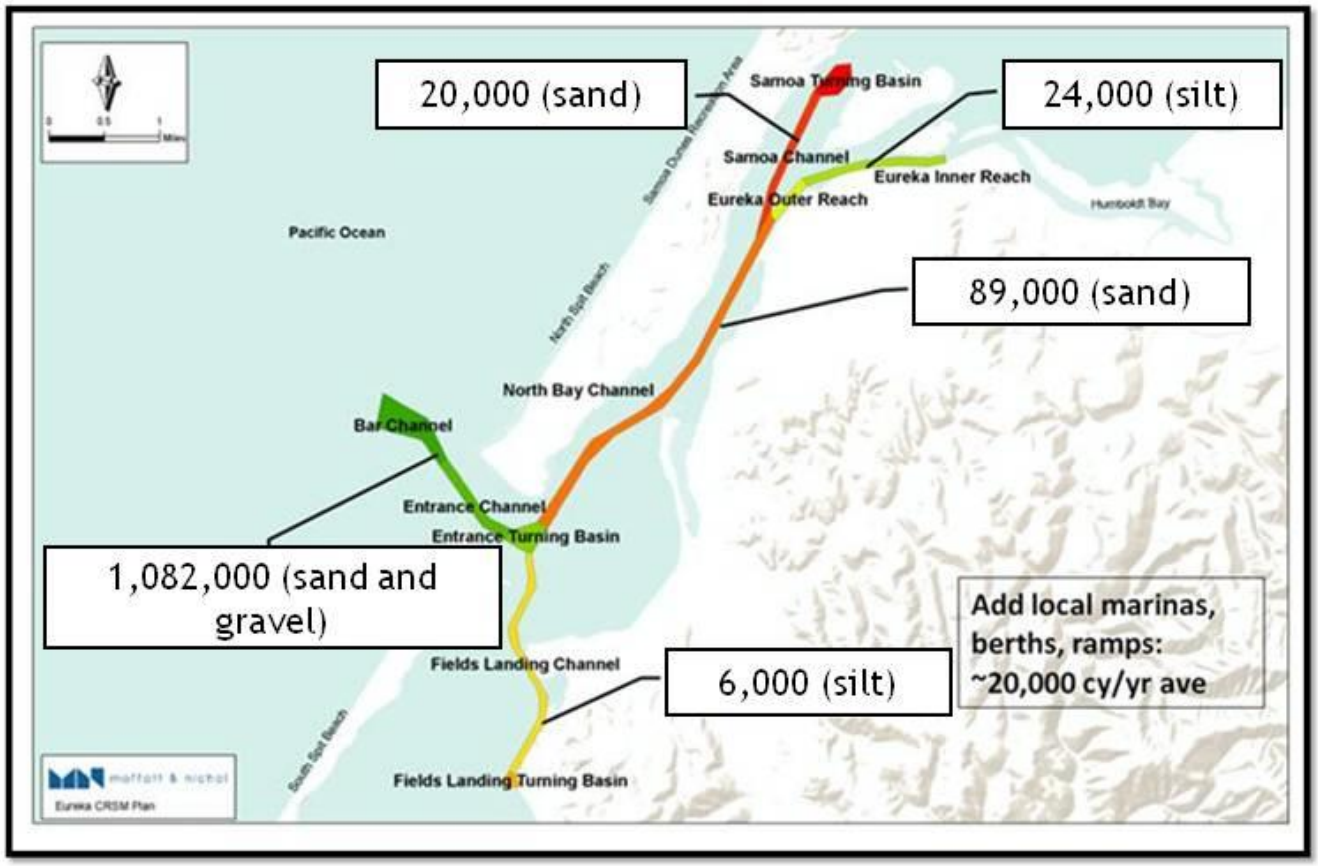

Figure 2: Humboldt Bay's federal navigation channels and the typical volume of sediment (cy) dredged from each, on an annualized basis. Note that several additional facilities are managed by other permittees (including the City of Eureka, the Humboldt Bay Harbor District, the US Coast Guard, and various commercial docks) that are also dredged periodically. But volumes dredged for those facilities are cumulatively much less than the USACE dredging.

Table 3: Recent annual dredging volumes for the federal channels, in 1,000s of cy.

Year	Large Hopper Dredges[1]	Small Hopper Dredges[2]
2007	1,123	173
2008	1,094	217
2009	955	108
2010	770	0
2011	1,199	155
2012	1,183	0
2013	573	102
2014	625	0
2015	715	0
2016	1,715	0
2017	1,047	0
Total	10,999	755
Average	1,000	69

[1]e.g., *Essayons*
[2]e.g., *Yaquina*

1.3 Ocean Disposal at HOODS

Ocean dredged-material disposal sites around the nation are designated by EPA under the authority of the Marine Protection, Research and Sanctuaries Act (U.S.C. 1401 et seq., 1972) and the Ocean Dumping Regulations at 40 CFR 220-228. Disposal-site locations are chosen based on several general and specific site selection factors (EPA 1995, and discussed further below), specifically to minimize cumulative environmental effects of disposal to the area or region where the site is located. Disposal operations must be conducted in a manner that allows each site to operate without significant adverse impacts to the marine environment, and without significant conflicts with other uses of the ocean.

The HOODS location was first used as a disposal site in September 1990, under a temporary designation by USACE pursuant to Section 103 of MPRSA. In 1995, EPA Region IX released a final Environmental Impact Statement entitled *Designation of an Ocean Dredged Material Disposal Site off Humboldt Bay, California*. The EPA's final rule on designating HOODS as a multi-user disposal under Section 102 of MPRSA was published in the Federal Register on September 28, 1995 (60 Fed. Reg. 50,108). The site designation became effective on October 30, 1995 for a period of 50 years. Since then, approximately 25,000,000 yd^3 of dredged material have been placed there, the vast majority of which has been clean sand from the Bar and Entrance Channel.

HOODS is a square disposal site, covering one square nautical mile (nmi^2) of the sea floor (Figure 1 and Figure 3) in water depths naturally ranging from approximately 150 to 180 feet. Its centroid is located approximately 3.5 nmi offshore of the seaward end of the Entrance Channel into Humboldt Bay. Table 4 lists the corner coordinates of the overall site.

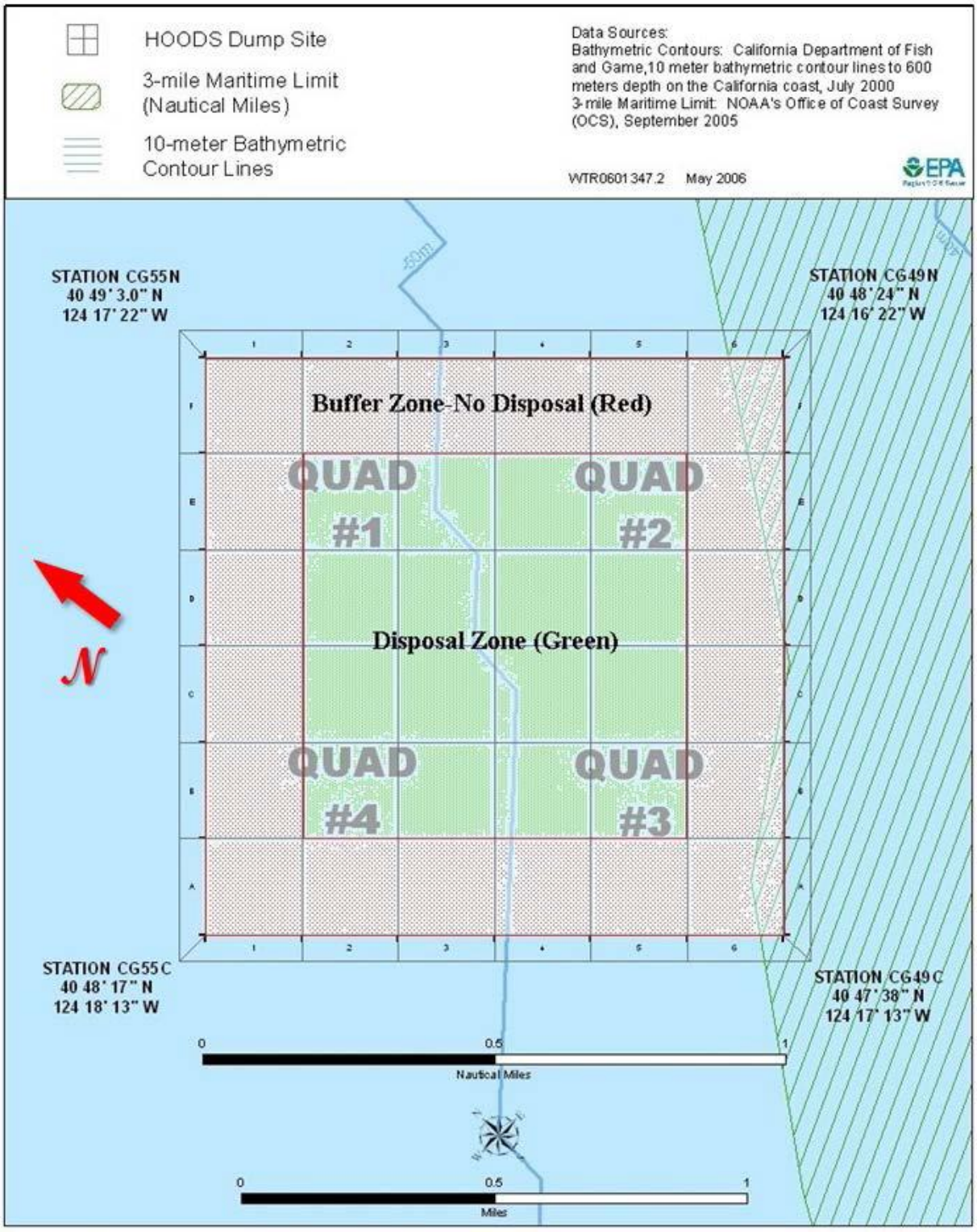

Figure 3: HOODS Detail. The site is divided into 4 quadrants and 36 individual cells. Initially, dredged-material disposal was only allowed in the green interior cells, so that material placed at the site would remain largely contained within the overall site boundaries. Over time, a number of the green interior cells have beed closed in order to manage ongoing mounding at the site.

Table 4: HOODS existing corner coordinates (NAD 83).

Corner	Latitude	Longitude	Centroid Lat.	Centroid Long.
North	40° 49' 03" N	124° 17' 22" W	40° 48' 20" N	124° 17' 17" W
East	40° 48' 24" N	124° 16' 22" W		
South	40° 47' 38" N	124° 17' 13" W		
West	40° 48' 17" N	124° 18' 13" W		

The 1995 site designation EIS for HOODS identified a 50,000,000 cy capacity, and an estimated life of 50 years for HOODS based on a presumed average disposal rate of 1,000,000 cy/year. The 50,000,000 cy capacity equated to a mound at the site whose top elevation would not exceed approximately -130 feet mean lower low water (mllw). Mounding to much higher elevations (meaning, that created water shallower than -130 feet) was predicted to have the potential to affect the wave climate over the site during the largest winter storms. To avoid any such effect, and thereby avoid creating any potential navigation safety concerns, EPA has strictly managed how disposal occurs at HOODS. Under the HOODS Site Management and Monitoring Plan (SMMP), a cell-based management approach has been used to ensure that disposed material builds up (mounds) evenly at the site and does not substantially spread outside the site. Perimeter cells were used as a no-disposal buffer zone to ensure that most dredged material would be deposited on the seafloor within the overall site boundary. Individual disposal events (dump loads) are required to be discharged into interior cells only, and subsequent dumps must move to different interior cells. No cell can be used again until all allowable cells have been used. This method has ensured that mounding proceeds evenly, as confirmed by annual bathymetry surveys conducted by USACE. However, because the peripheral cells were used as a no-disposal buffer area, the effective site capacity was reduced to approximately 25,000,000 cy and 25 years.

1.4 Mounding of Sand at HOODS

The USACE San Francisco District monitors bathymetric condition at HOODS typically twice each year, before and after dredging and disposal. (Hydrographic surveys going back to at least 2009 are available on the USACE web site at https://www.spn.usace.army.mil/Missions/Surveys-Studies-Strategy/Hydro-Survey/Humboldt-Bay-Channel/). Over the years, several cells (especially near the center of the site) began to reach the -130 foot target depth. As this occurred, EPA closed such cells to further disposal. By 2014, the majority of the inner cells had reached, and in some cases somewhat exceeded, the -130 foot target (Figure 4, Figure 5). In consequence, beginning in 2015 EPA authorized ongoing disposal to occur only in deeper areas over the slopes of the disposal mound, halfway into the buffer cells of the existing site (Figure 6). This adaptation was expected to allow approximately 5 more years of additional disposal (at typical annual volumes), while still retaining the vast majority of the sand within the site boundaries. (This approach is reasonable specifically because the material being disposed by USACE is virtually all sand, which does not spread far from the placement location, the way silts or clays could, before settling on the bottom.) GPS-based monitoring of individual disposal events (a requirement of the SMMP for all projects using the disposal site) confirmed that the dredging equipment used by USACE is capable of successfully disposing of material with precision, in the new smaller cells (Figure 7).

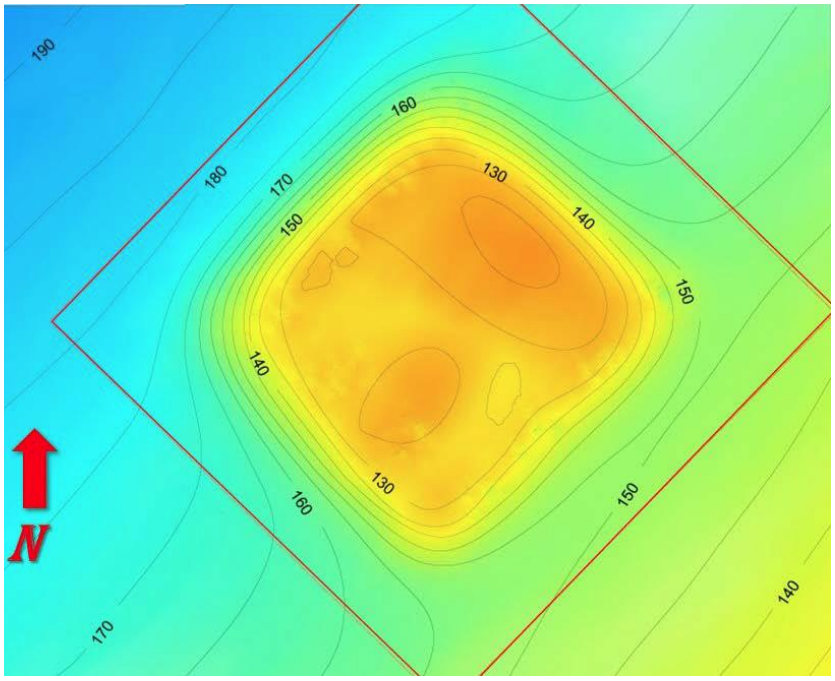

Figure 4. Shaded relief depiction of bathymetry at HOODS as of August 2014, showing mounding to -130 feet or less over much of the site. Red box is the existing disposal site boundary. Contours are in 5-foot intervals. Depths are shown in feet MLLW.

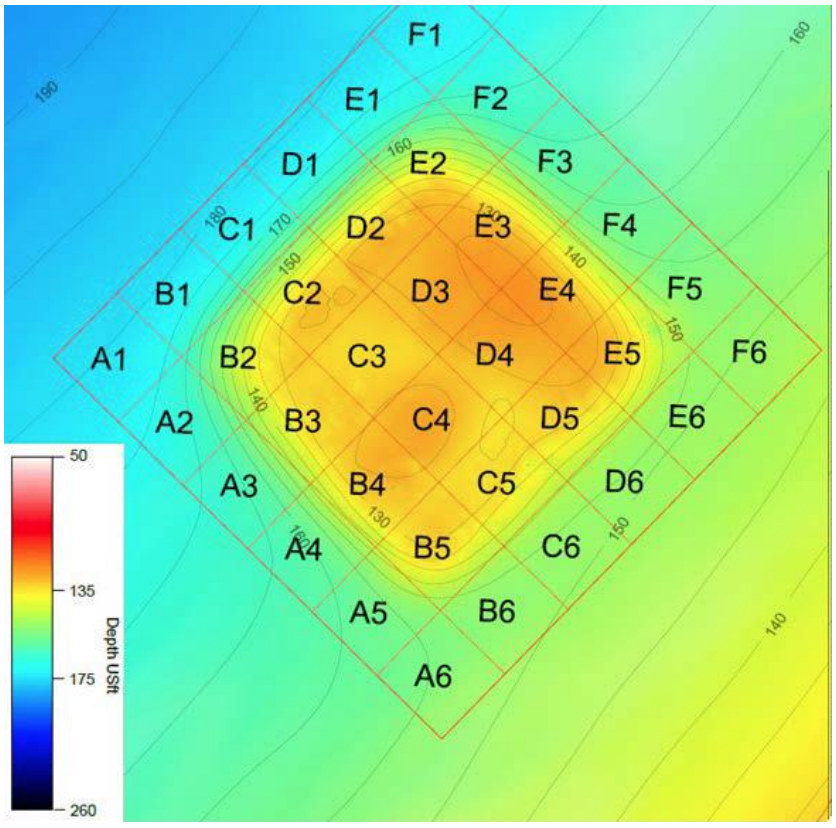

Figure 5. Map of HOODS disposal cells overlain on bathymetry from August 2014. Depths are in feet MLLW.

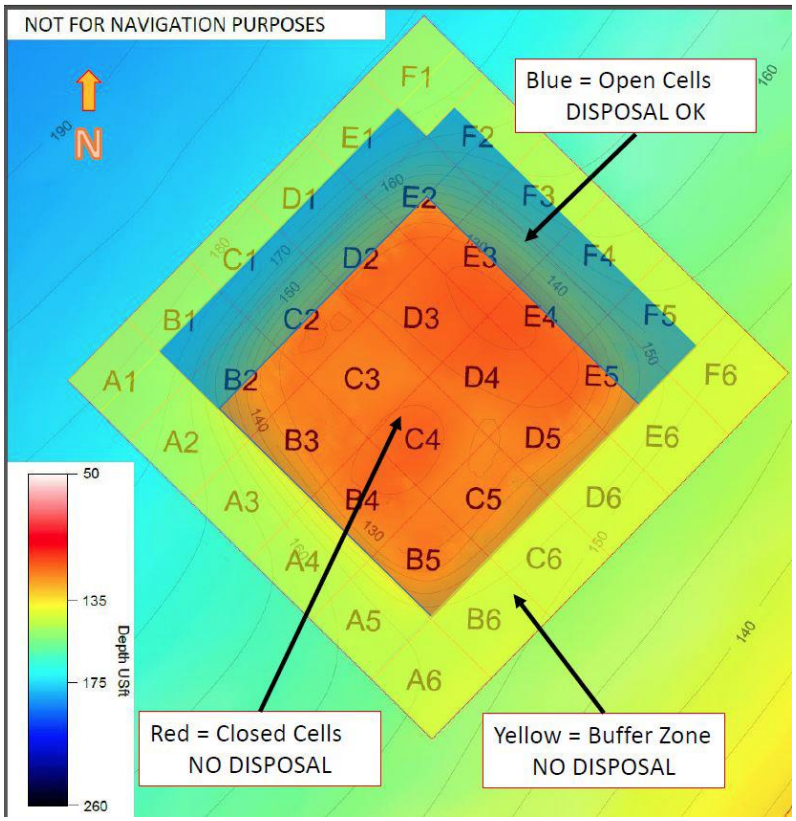

Figure 6. Open and closed disposal cells at HOODS starting in 2015, with disposal only allowed over the north and west slopes of the mound including portions of eight Buffer Zone cells on those sides. This increased short-term disposal capacity by 5.6 - 8 million cy, enough for approximately 5 more years, or through 2020.

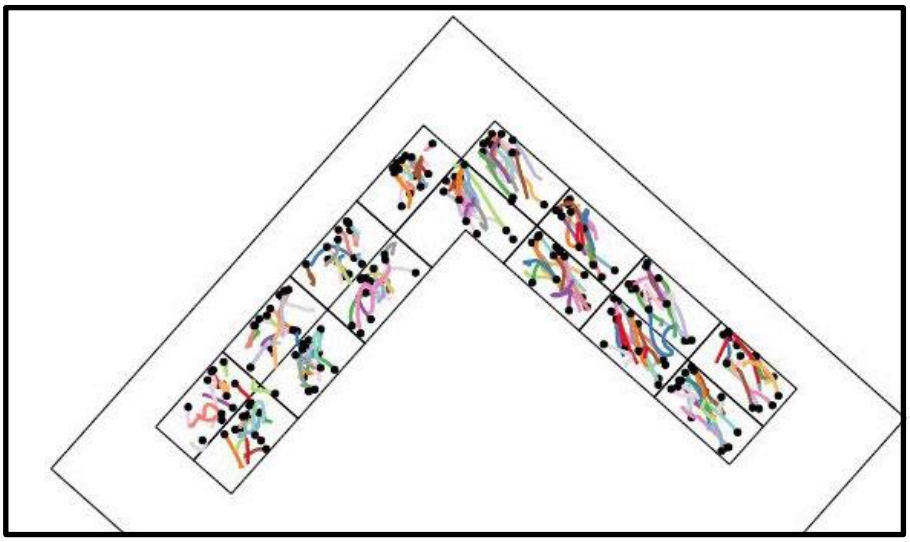

Figure 7. Locations of actual disposal events at HOODS in 2015. All disposal actions occurred successfully within the modified disposal cells, despite most of them being only ½ the size of previously-allowed disposal cells. Dots with lines show starting point and track of individual disposal events.

Bathymetric survey results from March 2018 led EPA to close additional portions of cells B2, C2, and D2 to further disposal in 2018 (Figure 8). Based on this adaptive management approach, EPA expects there to be adequate disposal capacity at HOODS through at least the year 2020.

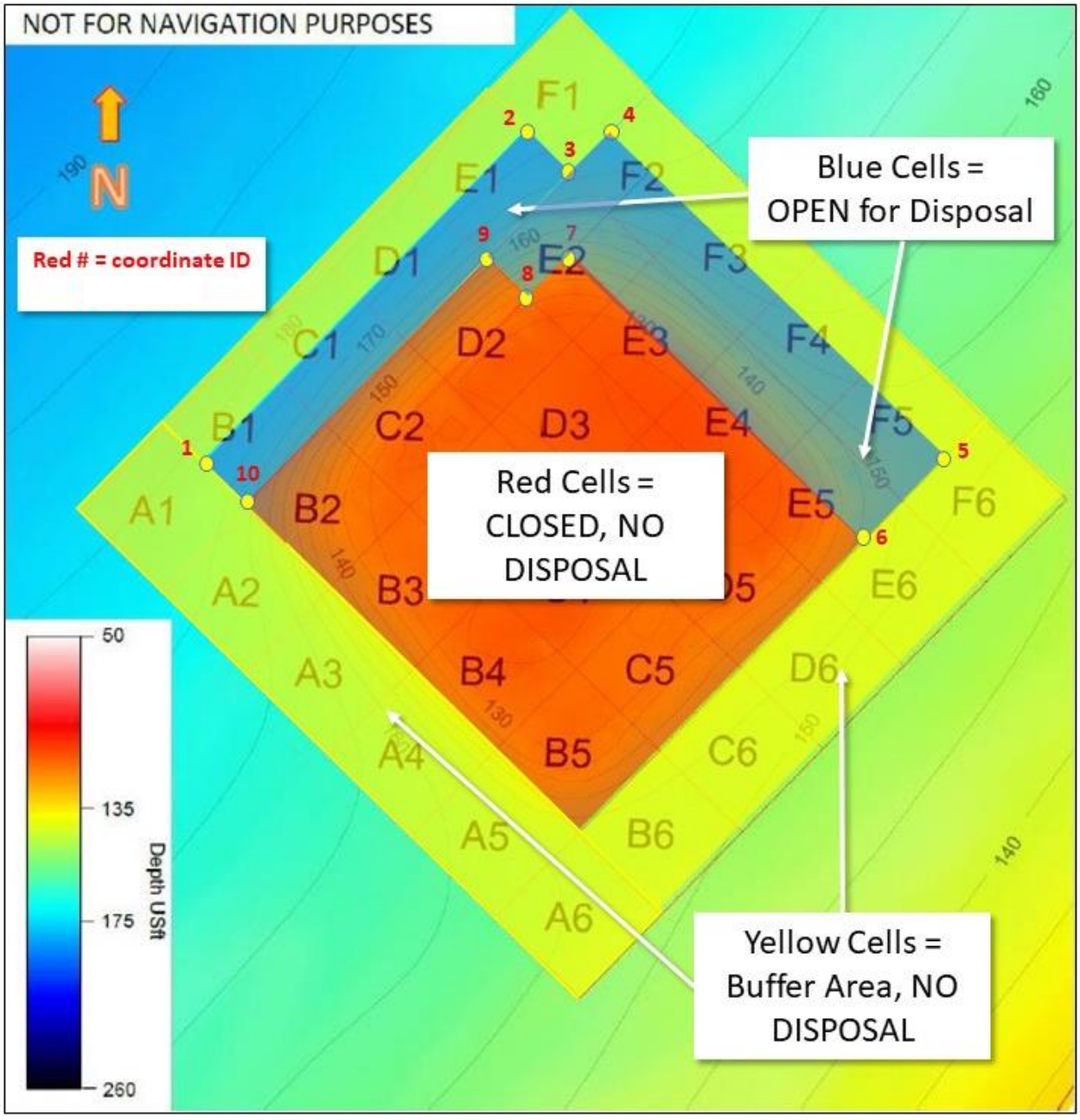

Figure 8. Open and closed disposal cells at HOODS for 2018 and 2019. Mounding from ongoing disposal since 2015 has led to the closure of further portions of cells B2, C2, and D2. (Figure shows cell boundaries overlain on 2014 bathymetry.)

2. PURPOSE AND NEED FOR ACTION

2.1 Statutory and Regulatory Requirements

The Marine Protection, Research and Sanctuaries Act of 1972, as amended (MPRSA), also known as the Ocean Dumping Act, was passed in recognition of the fact that the disposal of material into ocean waters could potentially result in unacceptable adverse environmental effects. Under Title I of the MPRSA, the EPA and USACE were assigned responsibility for developing and implementing regulatory programs to ensure that ocean disposal would not "... unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities."

The EPA administers and enforces the overall program for ocean disposal. As required by Section 104(a)(3) of the MPRSA, ocean disposal of dredged material can occur only at a site that has been designated to receive dredged material. Pursuant to Section 102(c), the EPA has the responsibility for permanent site designation, while under Section 103 USACE can designate project-specific disposal sites on a temporary basis if an EPA-designated disposal site is not available.

The MPRSA criteria (40 CFR, Part 228) states that EPA's site designations under Section 102(c) must be based on environmental studies, and on historical knowledge of the impact of dredged material disposal on similar areas. General criteria (40 CFR 228.5) and specific factors (40 CFR 228.6) that must be considered prior to site designation were addressed in the 1995 HOODS EIS. That evaluation was updated based on monitoring conducted in 2008 and 2014, and documented in EPA's 2016 monitoring synthesis report[1].

Related federal statutes applicable to the ocean disposal site designation process include the National Environmental Policy Act of 1969 as amended; the Coastal Zone Management Act of 1972 as amended; the Endangered Species Act of 1973 as amended; the Magnuson-Stevens Fisheries Conservation and Management Act of 1976 as amended; and the National Historic Preservation Act of 1966, as amended, as well as Executive Orders that may apply. Issues raised as a result of consultations with Federal and State agencies and Tribes will be addressed in the EA to be prepared.

Finally, an EPA-designated site requires a site management and monitoring plan (SMMP). Use of the designated site is subject to any restrictions included in the SMMP, which is expected to be reconsidered at least every 10 years. The original SMMP for HOODS was updated in 2006 after EPA conducted preliminary monitoring of the site. A revised draft SMMP will be included in the EA to be prepared.

2.2 Purpose of the Proposed Action

HOODS Expansion: The primary purpose of the proposed action is to expand the boundaries of the existing HOODS ocean disposal site in order to provide capacity for ongoing environmentally acceptable disposal of suitable dredged material from Humboldt Harbor navigation channels and other facilities. This would occur as a rulemaking action by EPA under the MPRSA.

[1] https://www.epa.gov/sites/production/files/2016-09/documents/humboldt_open_ocean_disposal_site_hoods_2008-2014_monitoring_synthesis_report.pdf).

Ocean disposal currently remains necessary for most navigation dredging projects in and around Humboldt Bay, due to a lack of available upland or beneficial reuse alternatives. Although various efforts are under way to create upland placement and reuse opportunities in the area, only extremely limited capacity is presently available. Capacity for some degree of ocean disposal of suitable sediment will remain important in the future, even if new reuse opportunities become available over time. Figure 9 shows the location of the existing HOODS and the alternative expansion footprints under consideration.

Identification of a Potential Nearshore Reuse Site as an Alternative to HOODS Disposal: As noted, the vast majority of the sediment volume dredged each year from Humboldt Bay is clean entrance channel sand removed by USACE (or USACE-contracted) hopper dredges. These vessels are typically available to work the Humboldt Federal channels for only a prescribed number of days each year, and their ability to place material at confined or upland sites is extremely limited at present (e.g., the USACE hopper dredge *Essayons* is not equipped for pump-out of sediment from the hopper, and can only bottom-dump).

Therefore, in parallel to the proposed action, EPA also proposes to describe a Nearshore Sand Placement Site (NSPS) that represents a potential long-term alternative to HOODS for placement of clean sand dredged by USACE. The NSPS is a rectangle approximately 0.65 nmi (1.2 km) wide by 3 nmi (5.6 km) long (north to south) in water depths from approximately 30 – 80 feet, beginning approximately 0.4 nmi (0.75 km) offshore (Figure 9). Placement of some or all of the entrance channel sand in this nearshore area would constitute beneficial placement, rather than waste disposal, in that it would return sand to the littoral system north of the Humboldt Bay entrance thus helping to limit or buffer against shoreline erosion there. (In contrast, sand disposed at HOODS is effectively removed from the littoral system and does nothing to support shoreline resiliency. In fact, it is a large net remover of sand from the littoral system, potentially adding to local shoreline erosion effects over time, particularly as sea level rise accelerates in the future.) Placement of sand at the NSPS would also reduce ongoing mounding concerns at HOODS, prolong the useful life of the expanded ocean disposal site, and allow a smaller offshore disposal "footprint" to be used over time. Possible future establishment of the NSPS as a long-term placement site would occur separately as a joint EPA-USACE action under the CWA (specifically, under the 404(b)(1) regulations at 40 CFR Part 230.80).

2.3 Need for the Proposed Action

The need for the Proposed Action of expanding the HOODS boundaries is that the existing site is effectively "full". Since the site was designated in 1995, disposal of approximately 25,000,000 cy of sand has occurred, resulting in a mound with an elevation averaging approximately -130 feet mllw. The original EIS identified as this as the maximum desirable mound elevation. Ongoing mounding substantially above this elevation could begin to affect the action of waves in large storm events, potentially causing navigation safety concerns for vessels transiting the area. At the same time, ongoing dredging of the Humboldt Harbor navigation channels and related maritime facilities is necessary to ensure continued safe navigation to and within Humboldt Bay itself. Such safe navigation is crucial to the maritime-related commerce of the area. Therefore, reliable capacity to accommodate disposal or reuse of area dredged material will continue to be critically needed, and HOODS as it is currently configured will no longer be able to provide such capacity beginning in approximately 2020.

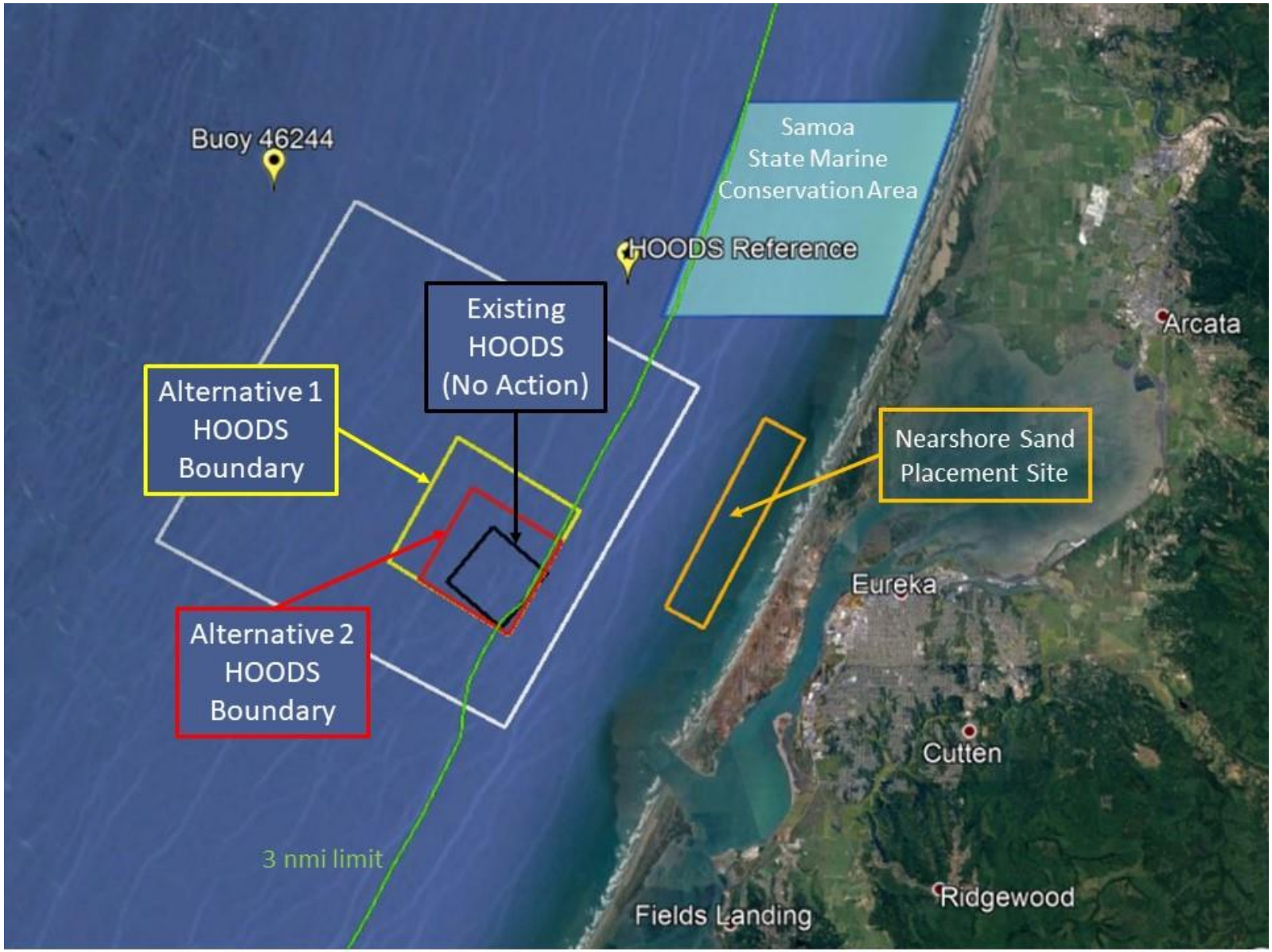

Figure 9 . Proposed Action area, showing the current HOODS site and the two boundary expansion alternatives in relation to Humboldt Bay, the City of Eureka, and the Samoa State Marine Conservation Area. Alternative 1 (proposed action) would expand the existing boundaries by 1 nmi to the north and west, while Alternative 2 would expand the boundaries by ½ nmi. Also shown is the location of the potential Nearshore Sand Placement Site and the HOODS sediment reference testing site.

3. HOODS EXPANSION OPTIONS

3.1 Alternative 1 (Preferred): Expansion by 1 nmi

Alternative 1, the Proposed Action, is to expand the existing HOODS boundary by 1 nmi to the north (upcoast) and 1 nmi to the west (offshore) (Figure 9). Alternative 1 is the Preferred Alternative because it would provide environmentally acceptable disposal capacity for many years, while also affording the most operational flexibility for managing the dredged material in a manner that would further minimize even physical impacts over time. This configuration would result in the total area of the site increasing from 1 square nmi to 4 square nmi. The effective total capacity of the site would increase from the original 25 million cy (see Section 1.3) to over 100 million cy (i.e., allowing for 75 million cy of additional disposal to occur), before mounding to -130 feet could again occur across the entire site. If today's disposal practices were to continue unchanged (i.e., if 1 million cy of entrance channel sand per year were to continue being placed at HOODS indefinitely), the site would reach capacity again in about 75 years. However, the effective life of the expanded site could be much longer than 75 years if nearshore placement for beach or littoral system support were to begin at some point for the clean dredged sand. In that event, disposal of fine sediment would continue in the expanded HOODS footprint, but it could be managed in such a way that little or no additional long-term mounding would occur at all. Supporting information, including evaluation of the No Action alternative, will be provided in the EA.

Table 5: HOODS Alternative 1 corner coordinates (NAD 83).

Corner	Latitude	Longitude	Centroid Lat.	Centroid Long.
North	40° 50' 33" N	124° 18' 00" W	40° 49' 05" N	124° 17' 35" W
East	40° 49' 27" N	124° 15' 45" W		
South	40° 47' 38" N	124° 17' 13" W		
West	40° 48' 47" N	124° 19' 31" W		

3.2 Alternative 2: Expansion by 1/2 nmi

Alternative 2 is the expansion of the existing HOODS boundary by 1/2 nmi to the north (upcoast) and 1/2 nmi to the west (offshore) (Figure 9). This configuration would result in the total area of the site increasing from 1 square nmi to 2.25 square nmi. The effective total capacity of the site would increase from the original 25 million cy (see Section 1.3) to approximately 56 million cy (i.e., allowing for approximately 31 million cy of additional disposal to occur), before mounding to -130 feet could again occur across the entire site. If today's disposal practices were to continue unchanged (i.e., if 1 million cy per year of entrance channel sand were to continue being placed at HOODS indefinitely), the site would reach capacity again in about 31 years. However, the effective life of the expanded site could be much longer than 31 years if nearshore placement for beach or littoral system support were to begin at some point for some or all of the clean dredged sand.

Like Alternative 1, even if nearshore placement were to divert some or all of the sand from disposal at HOODS, fine sediment would continue to be disposed in the expanded HOODS footprint. However, unlike Alternative 1, the space available to manage this ongoing disposal in such a way as to minimize further mounding within the site boundaries would be reduced. Supporting information will be provided in the EA to be prepared.

Table 6: HOODS Alternative 2 corner coordinates (NAD 83).

Corner	Latitude	Longitude	Centroid Lat.	Centroid Long.
North	40° 49' 58" N	124° 17' 54" W	40° 48' 46" N	124° 17' 27" W
East	40° 49' 26" N	124° 15' 44" W		
South	40° 47' 38" N	124° 17' 13" W		
West	40° 48' 30" N	124° 18' 57" W		

3.3 Elements Common to Alternatives 1 & 2

Sediment Quality.
In accordance with MPRSA and the Ocean Dumping Regulations (40 CFR 227), USACE can only permit ocean disposal, and EPA will only concur in such disposal, when the dredged sediment is "suitable" for ocean disposal. Suitable for ocean disposal means that the sediment has no more than "trace" levels of chemical pollutants, as determined by bioassays showing that it is not directly toxic to marine organisms, and that any chemical pollutants present would not bioaccumulate in the food web to levels of ecological or human health concern. Clean sand dredged from high energy areas that are removed from immediate sources of pollution can often be determined by EPA and USACE to be suitable for ocean disposal without conducting extensive physical, chemical, and biological testing each year. This is true of Humboldt Bay entrance channel sand.

However, other sediments (such as those along the Eureka waterfront and in other Humboldt Bay marinas and docks) must be tested to support a suitability determination. In these cases, EPA and USACE first approve a Sampling and Analysis Plan (SAP) to ensure that the testing to be done is representative of the sediment to be dredged. The representative sediment samples are characterized physically and chemically, and a suite of seven bioassays is conducted for potential toxicity and bioaccumulation.

Sediment testing requirements for ocean disposal are detailed in the national "Ocean Testing Manual" (OTM) published jointly by EPA and USACE[2]. Only sediments that pass all of the bioassays can be considered for ocean disposal. Periodic monitoring of the various ocean disposal sites managed by EPA Region 9 has consistently confirmed that pre-dredge testing conducted in accordance with the OTM does adequately represent the sediment that is later dredged and dumped. Such monitoring was recently completed for HOODS in 2014 and is described in the synthesis report[3]. Only sediment determined by EPA and USACE to be suitable for ocean disposal will be allowed for placement at HOODS in the future under either Alternative 1 or Alternative 2. (In addition, only clean sand would be allowed for placement at the NSPS in the future.)

Need for Ocean Disposal.
Designation of an ocean disposal site does not mean that any future project will be approved to use it, even if the project's sediment is "suitable." The MPRSA and the Ocean Dumping Regulations (40 CFR 227.14) also direct that dredged sediment may only be permitted to be discharged at an ocean disposal site if there is a "need for ocean disposal." A need for ocean disposal exists when EPA and

[2] https://www.epa.gov/ocean-dumping/evaluation-dredged-material-proposed-ocean-disposal-green-book

[3] https://www.epa.gov/sites/production/files/2016-09/documents/humboldt_open_ocean_disposal_site_hoods_2008-2014_monitoring_synthesis_report.pdf

USACE find that there are no practicable alternative locations and methods of disposal or recycling available for an individual dredging project. For dredged material, an important alternative to consider is whether there are beneficial placement or reuse options available that would be practicable to use given the project's location, timing, and logistics. A site for beneficial placement that is not already permitted or otherwise authorized may not be practicable.

The need for ocean disposal is determined on a project-by-project basis. Thus, if beneficial placement is not feasible for an episodic dredging project in one year, it could be feasible in a future year if a reuse site becomes available. Cost associated with taking dredged material to a beneficial use placement site is a legitimate factor to consider, but cost need not be equal to or less than ocean disposal; an alternative site may be practicable if it is available at a "reasonable incremental cost" compared to ocean disposal (40 CFR 227.16(b)). Expansion of HOODS does not mean that alternatives will cease to be evaluated for every project. EPA and USACE will continue to approve ocean disposal at HOODS only for projects that do not have a practicable alternative to ocean disposal available to them.

Nearshore Sand Placement Site (NSPS).

While monitoring at HOODS has confirmed that there have been no direct adverse impacts from offshore disposal, neither does offshore disposal provide any direct environmental benefits. An obvious potential alternative to ocean disposal of clean sand at HOODS would be its placement at a shallower nearshore site for the purpose of littoral system support or beach nourishment.[4] Shallow water placement of clean sand happens at many locations in California, elsewhere on the west coast, and nationwide. Such placement can help buffer against coastal erosion and the effects of sea level rise.

However, to be practicable for USACE to use with its currently available equipment, such a site must be in water deep enough for USACE's bottom-dump dredge vessels to operate safely. At the same time, to successfully reintroduce sand into the littoral transport system that supports the shoreline and beach, such a site must be shallower than the "depth of closure" (the depth below which normal seasonal wave action can naturally move the sand toward shore). For the Humboldt Bay area these competing considerations mean that a nearshore sand reuse site should be in water depths no greater than approximately 75 feet, and no shallower than approximately 35 feet. Sand placed within this depth range should not result in adverse or permanent mounding, as has occurred at HOODS, because seasonal wave and current action would be able to move the sand within the littoral system.

When HOODS was originally designated in 1995, the San Francisco District of the USACE established the Humboldt Shoreline Monitoring Program (HSMP). The HSMP was established based on California Coastal Commission (CCC) concerns that the placement of large volumes of sand in the relatively deep waters of HOODS could disrupt the supply of sand which would typically support local beaches. As a result, the objective of the HSMP are to (1) monitor the surrounding shoreline for excessive shoreline retreat, (2) determine the cause of any excessive shoreline retreat that is observed, and (3) recommend corrective action should sediment disposal at HOODS be the cause. Under the HSMP periodic shoreline monitoring has occurred several times, most recently in 2016. Associated with that ongoing work, a version of the proposed NSPS was identified as a possibly appropriate

[4] Sand placed at HOODS is in water too deep, and too far offshore, for normal seasonal transport processes to move it back into the littoral transport system. Placing sand at HOODS therefore removes it from the littoral system and is considered "disposal", as opposed to "beneficial placement" that reintroduces the sand back into the littoral system.

location by USACE in its "*Five-Year Programmatic Environmental Assessment, 404(b)(1) Analysis, and FONSI, Humboldt Harbor and Bay Operations and Maintenance Dredging (FY 2012 – FY 2016)*" (USACE 2012). USACE did not pursue nearshore placement at that time, noting the need to conduct and monitor demonstration placements at the site before proposing whether the site should be formally identified for ongoing use.

The EA under preparation will draw from and update the information in the 2012 USACE EA. For example, the dimensions of the NSPS have been substantially reduced from the 2012 USACE recommendation in order to avoid any overlap or conflict with the recently established Samoa State Marine Conservation Area to the north (see Figure 9). The upcoming EA will not formally designate the NSPS but will provide documentation pursuant to NEPA and other applicable Acts that USACE may use as a basis for proposing to conduct sand placement demonstration operations there. If the site is subsequently shown (via monitored demonstration placements) to have no significant adverse environmental impacts, EPA and USACE could propose to formally designate it for ongoing use. Any such designation would involve a separate Clean Water Act noticing and public comment process (under 40 CFR 230.80). Any long-term use of the NSPS would be managed in concert with either HOODS expansion Alternative 1 or Alternative 2. In either case, nearshore beneficial placement of clean sand would directly extend the operational life of HOODS by reducing the amount of sand disposal (and therefore mounding) occurring there.