

# **ROGUE RIVER ODMDS**

(Local Sponsor: Port of Gold Beach)

## **Description**

Dredged material from the Rogue River main Federal Navigation Channel (FNC) by hopper dredge is deposited at an ocean dredged material disposal site (ODMDS), approximately 1.75 miles from the FNC's entrance in an area of low traffic density (Figure 1). Material dredged from the federal entrance channel to the boat basin with a clamshell dredge may also be barged to the ODMDS. The entrance channel to the boat basin was relocated approximately 1,100 feet upstream in 1998 to reduce shoaling and dredging requirements to keep the entrance and basin channel passable.

A detailed description of the Rogue River ODMDS and its historical use is presented in the *Rogue River, Oregon Ocean Dredged Material Disposal Site Evaluation Study* and Environmental Assessment (EA), prepared by the U.S. Environmental Protection Agency (EPA), Region 10 in **September 2008**. The Final Rule for site designation was published **April 15, 2009** with designation effective on **May 15, 2009**.

Coordinates: Rogue River EPA Section 102 ODMDS Corner Coordinates (NAD 83; Final Rule, April 15, 2009):

42° 24' 15.40" N, 124° 26' 52.39" W  
42° 24' 03.40" N, 124° 26' 39.39" W  
42° 23' 39.40" N, 124° 27' 17.40" W  
42° 23' 51.40" N, 124° 27' 30.40" W

Dimensions: 3,600' x 1,400', 116 acres

Azimuth (long axis): 230° T

Average Depth: 60'

## **Dredged Material Description**

The sediment from between the Rogue River FNC entrance and the boat basin entrance channel is primarily sand, with an average in-place density of 2,050 grams/liter, and some gravel and cobbles. Some fine sand, silt, and clay are also found in the boat basin access channel. Sediments within the Federal navigation project are tested periodically, generally every five years, to ensure they are still suitable for ocean disposal. Nickel (Ni) has historically been detected at levels in excess of the 140mg/kg marine screening level (SL)\* published in the Dredged Material Evaluation Framework -1998 (DMEF), which has been applied to the evaluation of these sediments. The 2006 and 2009 Sediment Evaluation Framework (SEF) eliminated Ni as a chemical of concern in the marine environment. The Ni levels detected at the Rogue River Project are determined to be from natural sources and are considered background levels; in-water disposal will not create significant additional risk to the environment, beyond what naturally exists in the area. Testing of the primarily sandy material is limited to physical

analyses since the material meets the exclusion criteria found in the Marine Protection, Research and Sanctuaries Act (MPRSA) regulations.

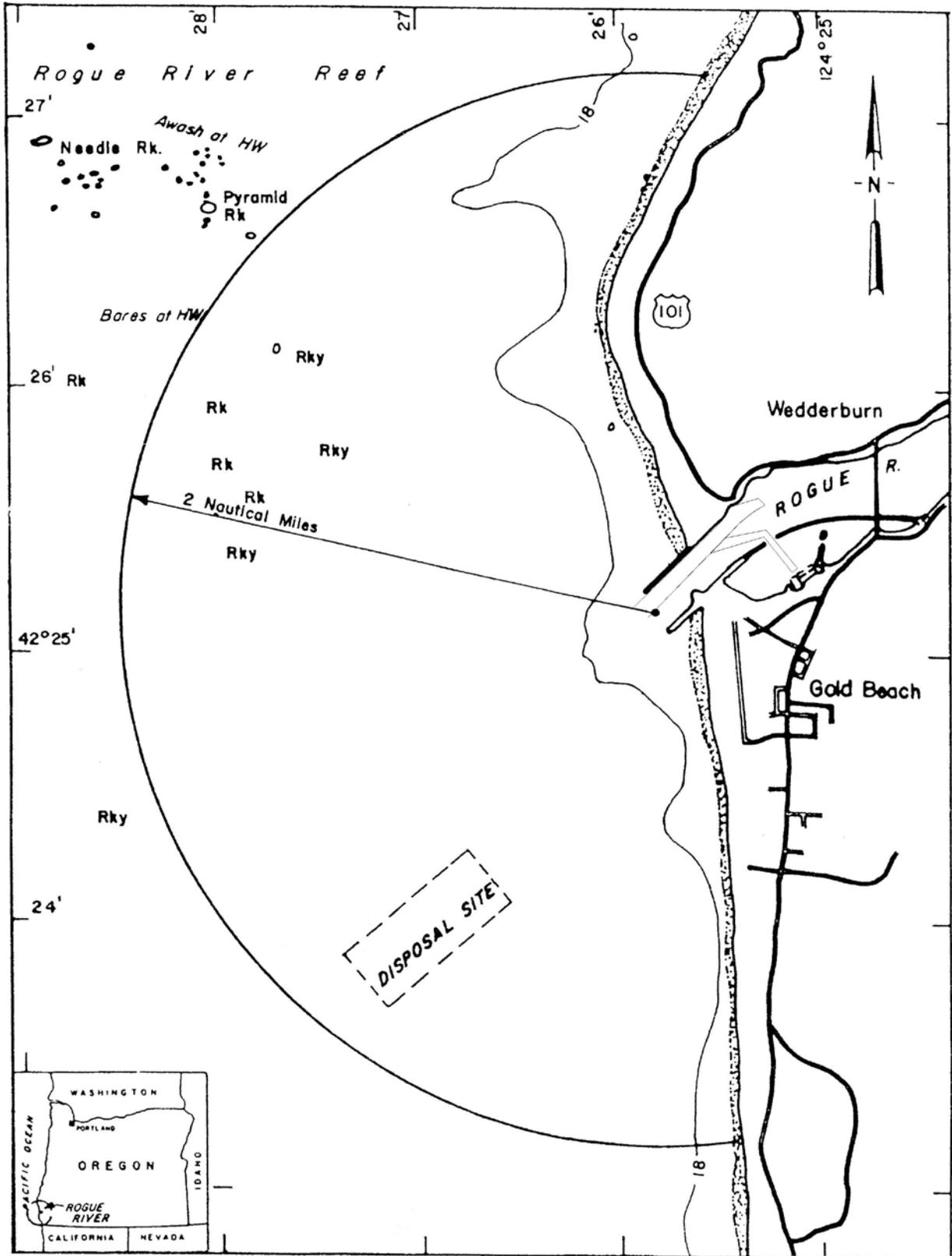


Figure 1: Rogue River ODMDS and Vicinity.

## **Sediment Evaluations – Navigation Channel**

**1981 February.** Sampling efforts within the FNC indicated that sediments in the river consisted of sand, whereas material within the mooring area and at the upland disposal site consisted of sandy-silt. In addition, sediment within the river contained relatively low volatile solids (less than 2%), whereas sediments in the boat basin and disposal site contained 5 percent volatile solids.

**1982 April.** Sediment analyses included elutriate and bulk chemistry as well as physical characterizations of the Rogue River FNC and within the Port of Gold Beach's mooring area. Chemical analyses were conducted only on the finer grained mooring area sediments. The sediments were found to contain no significant levels of measured contaminants. No significant chemical impacts were expected from placement of sediments into the ODMDS.

**1992 April.** Sediment samples were collected from the FNC and boat basin and subjected to physical and chemical analyses. Sediments from the FNC were gravelly coarse sand suitable for unconfined in-water disposal without further evaluation. Sediments collected outside the FNC, for EPA, Region 10, were sandy, clayey silt. They were high in chromium (Cr) and Ni, probably of natural origin. Copper (Cu) and zinc (Zn) were slightly elevated in the area of the western dock. Pesticides and polychlorinated biphenyls (PCBs) were undetected, phenols were detected in one sample, and several polynuclear aromatic hydrocarbons (PAHs) exceeded EPA, Region 10 SLs. Tributyltin (TBT) levels were low. Evaluation of the non-FNC samples would be required prior to ODMDS disposal.

**1997 July.** Nine sediment samples were taken from the Rogue River FNC shoals and analyzed for both chemical (5) and physical parameters. Physical analyses indicated the material is primarily gravelly coarse sand low in organic content. Chemical samples were analyzed for metals, including TBT, PAHs, total organic carbon (TOC), acid volatile sulfide (AVS), PCBs and pesticides. All chemical and physical analyses for this material indicate that the material is similar to materials at the offshore ODMDS and at the beach disposal site and it is suitable for disposal at either with no adverse environmental impacts expected.

**2002 August.** A total of seven (7) surface grab sediment samples were collected from the Rogue River FNC on August 21, 2002. All samples were submitted for physical analyses including total volatile solids. Four (4) of seven (7) sediment samples were analyzed for metals (9 inorganic), TOC, pesticides and PCBs, phenols, phthalates, miscellaneous extractables, organotin (TBT) and PAHs.

Mean grain size for all the samples is 0.10mm, with 16.53% gravel, 58.48% sand and 24.99% fines, with 3.67% volatile solids.

Nickel (Ni) was detected at levels in excess of the 140mg/kg DMEF SL, however these levels are consistent with historical levels detected within Rogue River FNC. The levels of Ni detected in the Rogue River are determined to be from natural sources and are considered natural background levels; in-water disposal will not create significant additional risk to the

environment, beyond what naturally exists in the area. All sediment is determined to be suitable for unconfined, in-water or beach placement without further characterization.

Year tested	1982	1992	1997	2002
Nickel mg/kg	162.5	231.5	207.8	219.5

**2007 August.** Six (6) surface grab sediment samples were collected from the Rogue River FNC and the boat basin access channel. All 6 samples were submitted for physical analyses including total volatile solids. Select samples containing higher percent of fine-grained material were analyzed for metals (10 inorganic), TOC, pesticides and PCBs, phenols, phthalates, miscellaneous extractables and PAHs.

Sampling and analyses of the ODMDS were conducted in accordance with the 2006 SEF. This included analyzed for metals (10 inorganic), TOC, pesticides, PCBs, phenols, phthalates, miscellaneous extractables, and PAHs. Metal analyses indicate that the sediment in the ODMDS Zone of Siting Feasibility area (2.0 n mi. from the Rogue River entrance) is typical of clean marine sands. The organic analyses showed concentrations of many chemicals of concern to be below method detection limits (MDLs) and well below established levels of concern for both sites.

Physical properties of the two sites vary in the percent of fine-grained material present. The average percent sand and gravel sized material in the Rogue River FNC outside of the boat basin entrance is 77.7%; at the ODMDS the percentage of the same classification of material is 96.4%. Material from the access channel inside the boat basin jetty, increases in fines as you proceed toward the mooring, from 20% fines to 50% fines (passing 200 sieve). Because the disposal site is highly erosive, fine-grained material is not likely to remain within the ODMDS site boundaries or general area.

Chemical analyses between the two sites were very similar. Some concentrations were slightly higher at the Rogue River FNC project, but all chemicals of concern even when detected were well below established levels of concern (SEF 2006) at both sites. Nickel (Ni) no longer has a marine SL in the 2006 SEF; it has historically been detected in the Rogue River sediment at levels higher than most Oregon coastal rivers. The levels of Ni detected at the Rogue River FNC are determined to be from natural sources and are consistent with historical natural background levels. The samples collected both inside and outside of the ODMDS site reflect this elevated Ni level. Benthic community samples indicate a healthy diverse benthic population. In addition, there is geological information regarding the high mineral content in this region.

**2012 September.** A total of four Ponar grab samples were collected from shoaling areas in the FNC from the entrance to river mile (RM) 0+10 and in the Gold Beach boat basin access channel. Based on grain size characterization, the material collected from the FNC entrance (RR-PG-01 and RR-PG-02) was determined to be suitable for unconfined, aquatic placement/disposal.

Chemical analysis was conducted on the two samples collected from the boat basin access channel (RR-PG-03 and RR-PG-04) in addition to physical analyses. Sediment chemistry results

were compared to the 2009 SEF marine SLs. The material characterized in the boat basin access channel was determined to need additional characterization prior to dredging. Sample RR-PG-04 contained a phenol concentration of 1,800 ppb, above the SEF SL of 420 ppb. A sample collected in the same area in 2007 had a phenol concentration of 1,200 ppb. Furthermore, a number of the contaminants of concern (CoCs) had detection and quantitation levels above their respective marine SL. The boat basin access channel required additional biological testing (bioassays) prior to unconfined, aquatic placement/disposal.

**2014 July.** The Corps collected sediment samples for marine bioassays from the Rogue boat basin access channel and fine-grained reference sediment from the Haynes Inlet near Coos Bay, Oregon. Bioassay test sediment samples and reference sediment samples were analyzed for physical and chemical parameters per the 2009 SEF. Testing for pesticides, PCBs, and TBT were not proposed because these contaminants were not detected in the test or reference sediment samples. Northwest Aquatic Services (NAS) conducted marine bioassays on the Rogue River boat basin access channel test sediment, a duplicate sample, and the reference sediment sample. Tests included a 10-day *Eohaustorius estuarius* survival test, a 20-day *Neanthes arenaceodentata* survival and growth test, and a 48-hour *Crassostrea gigas* larval test. The test sediments passed the amphipod survival test, but failed the single-hit criteria for dispersive sites for *Neanthes* and *Crassostrea*. The duplicate sample also failed the criteria for the non-dispersive sites for *Neanthes*. Therefore the fine-grained dredged material from the Rogue River boat basin access channel is not suitable for aquatic placement.

**2015 May.** The Corps collected 6 grab samples from the portion of the access channel that is outside the boat basin and two samples within the inner basin channel to delineate between the areas of unsuitable fine-grained sediments and suitable coarser sand-size material. All 6 samples from the outer boat basin channel were found to be sands, gravels, and cobbles. The decision was made to dredge only the coarse-grained (sand and gravel) materials from the outer portion of the access channel. The fine-grained material from inner boat basin access channel may be dredged once an upland disposal site is identified.

### **Sediment Evaluations – ODMDS Sediments**

**2007 July.** Five (5) surface-grab sediment samples were collected at the existing Rogue River Section 103 ODMDS site with a 0.96 m<sup>2</sup> modified Gray-O'Hara box core. Three (3) samples (01, 02 and 03) were collected from east to west on the centerline of the site. One (1) sample was collected north of the site (04) and 1 sample was collected south of the site (05). All samples were subjected to physical and chemical analyses.

#### **Physical and Volatile Solids (ASTM methods)**

Five (5) samples were submitted for testing. The mean value for a grain-size of sand or greater (sample 03 was 88.3 % gravel sized material) was 96.5%, with a mean value of 3.5% fine-grained material (less than 200 sieve); mean value for volatile solids was 2.2 %.

#### **Metals (EPA method 6010/7471), TOC (EPA method 9060)**

Five (5) samples were submitted for testing. Sediments were analyzed for ten (10) heavy metals.

Of the 10 metals, all but silver (Ag) and mercury (Hg) were present in all of the samples (Hg was not present in sample 03). No detected metal values approached their respective SEF SL.

Nickel (Ni) no longer has a marine SL in the 2006 SEF; it has historically been detected in the Rogue River sediment at levels higher than most Oregon coastal rivers. The levels of Ni detected at the Rogue River FNC are determined to be from natural sources and are consistent with historical background levels. The samples collected both inside and outside of the ODMDS site reflect this elevated Ni level.

#### Pesticides/PCBs (EPA method 8081/8082)

Five (5) samples were submitted for testing. DDT was detected in one sample between the method reporting level (MRL) and the MDL and the value reported was considered an estimate. Chlordane was not detected (reported as technical chlordane), but detection levels were elevated due to matrix interference during the analysis. The laboratory provided additional information for alpha and gamma chlordane (alpha and gamma are the primary isomers in technical chlordane), with sufficiently low detection limits individually, to evaluate chlordane as not present at levels of concern. No PCBs were detected in these sediments at sufficiently low MDLs.

#### Chlorinated Hydrocarbons, Phenols, Phthalates and Extractables (EPA method 8270C)

Five (5) samples were submitted for testing. No chlorinated hydrocarbons were detected. Low levels of several phthalates, extractables and phenol were detected, but at very low levels, well below their respective screening levels.

#### PAHs (EPA method 8270C)

Five (5) samples were submitted for testing. No “low molecular weight” PAHs or “High molecular weight” PAHs were detected in any of the samples. All detection levels were sufficient to adequately characterize sediment.

## ODMDS HISTORY

### Designation

1962, dredging of the entrance of Rogue River began.

1977, the Rogue River ODMDS received interim designation from the EPA (40 CFR 228.14).

1991 August, EPA, Region 10 published the Rogue, Oregon Dredged Material Disposal Site Designation Draft Environmental Impact Statement.

1998, the Corps under its MPRSA Section 103 authority selected the area of the 1977 interim site for dredged material disposal as the interim designation was no longer valid as of **January 1, 1997**. Per **WRDA 92** this Section 103 site can be used for 5-years with one possible maximum 5-year extension.

2008, EPA, Region 10 published the draft Rogue River, Oregon Ocean Dredged Material Disposal Site Evaluation Study and Environmental Assessment, **September 2008**. On **October 14, 2008** EPA, Region 10 published the proposed rule to designate the Rogue River ODMDS in the Federal Register.

2009, EPA, Region 10 published the Final Rule for site designation **April 15, 2009** with designation effective date of **May 15, 2009**.

### Evaluation Studies for Designation

1984 May, information on disposal site sediment and aquatic resources were obtained through field sampling.

During August and September 1984, Site specific geologic information and geophysical investigations by sidescan sonar and sub-bottom acoustic reflection profiling was performed. In addition, existing geologic and oceanographic data pertinent to the Rogue River ODMDS was compiled.

1985 August, disposal site sediments were collected and evaluated.

In 1988 October, the Rogue River Ocean Dredged Material Disposal Site Evaluation, Final Report was published by the USACE, Portland District.

In 2007, benthic infauna, fish trawls, sediment chemistry, and sediment physical studies for site designation were conducted. The biological samples were collected in August and November 2007 with sediment samples for physical and chemical analyses also collected in July 2007. Data is presented in EPA, Region 10's Rogue River, Oregon Ocean Dredged Material Disposal Site Evaluation Study and Environmental Assessment, **September 2008**.

Table 1 lists the annual volumes of dredged material, in 1,000's of cubic yards (CY), from the Rogue River FNC that were disposed of at the Rogue River ODMDS.

## MANAGEMENT/MONITORING

The first Rogue River **site management/monitoring plan (SMMP)** was completed and coordinated for public review in **April 1997**. No comments were received. The SMMP for this site calls for conducting bathymetric surveys annually as a Tier I activity. A new SMMP was prepared as part of EPA, Region 10 designation documents in **2008-2009** with annual bathymetric surveys are required.

In **1993 July**, sidescan sonar surveys were attempted at the Rogue River ODMDS in response to comments and concerns by representatives from Oregon Department of Fish and Wildlife (ODFW) and the Oregon Department of Land Conservation and Development (DLCD). Due to weather and equipment failure the effort was unsuccessful at this location. DLCD was primarily concerned with the Chetco River ODMDS, which was successfully surveyed; further sidescan sonar surveys have not been attempted.

**Bathymetric surveys** were conducted in **August 1984, May 1986, June 1987, October 1992, June 1996, May 1997, May 1998, June 1999, July 2000, September 2001, May 2002, May 2003, June 2005, May 2006, April 2007, May 2008, May 2009, May 2010, May 2011, May 2012, April 2013, March 2014, and March 2015**. Copies of the most-current bathymetry and bathymetry difference plots for the Rogue River ODMDSs are attached to the end of the report.

### Management/Monitoring Actions and Recommendations

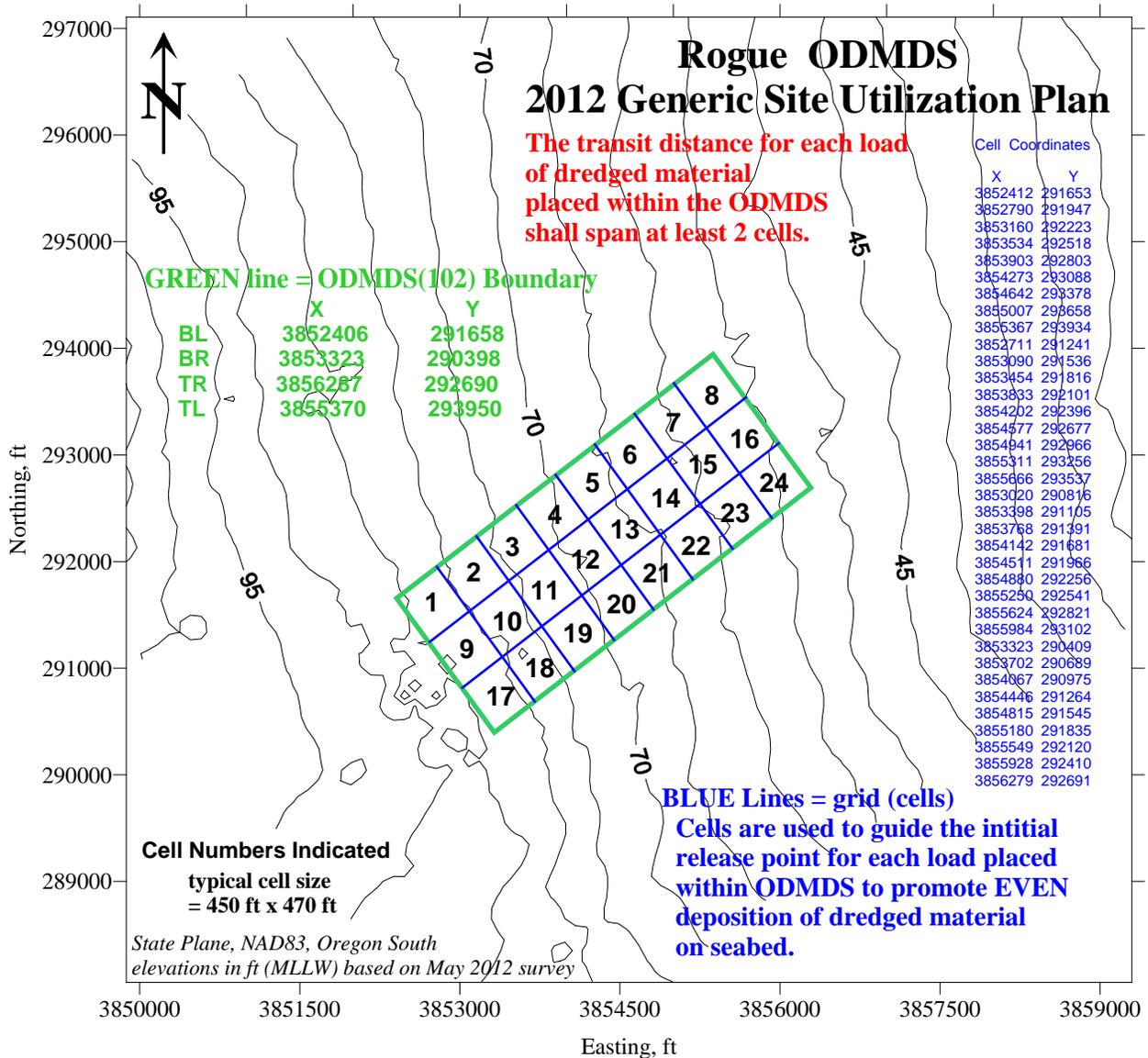
Beginning in **1992**, the Corps was notified of requirements for annual bathymetric surveys of all ODMDSs as a Tier I monitoring requirement.

Monitoring has indicated no significant mounding or other reasons to modify present management practices at this location. Special studies such as sidescan sonar surveys or benthic infauna and sediment characterization should be conducted as needed. It is recommended that dredged material consisting of primarily gravel and cobbles be placed in the most seaward portion of the site. Bathymetric surveys should be conducted annually.

The EPA, Region 10 Section 102 site designation SMMP calls for periodic studies as follows: "Monitoring the use of the Site and surrounding area for biological resources, and confirmatory characterization of sediment, physical, biological, and chemical studies as determined to be necessary are expected to occur on an approximate 7 to 9 year schedule, with the first monitoring event to occur in 2016. This schedule can be adjusted as necessary (see...Section on Adaptive Management and Monitoring). The level of effort for this reassessment is expected to be similar to effort expended in the 2007 baseline studies at the Site and surrounding area. It is anticipated that such reassessments will be documented as stand-alone reports to directly support monitoring efforts at the Rogue ODMDS. Monitoring reports will be

provided to EPA.”

In 2012, a generic dump plan (Figure 2) was developed for the Rogue ODMDS. Previous to the generic dump plans, directions were given to evenly distribute material evenly over the site or to restrict certain areas of the site due to mounding. Dump plans are adjusted according to annual bathymetric monitoring, and the development of a generic dump plan formalized this process.



**Figure 2. Rogue ODMDS generic dump plan (2012).**

A uniform placement strategy is applied at the Rogue ODMDS. Placement at the site is expected to result in uniform accumulation on the bottom. Proportionally, use of the entire ODMDS will have more material going to the shallow water areas (less than 65 feet) than the deepwater areas. There is more area of the ODMDS located shoreward of the 65 foot shallow water contour than offshore. Allowing use of the entire ODMDS minimizes the occurrence of

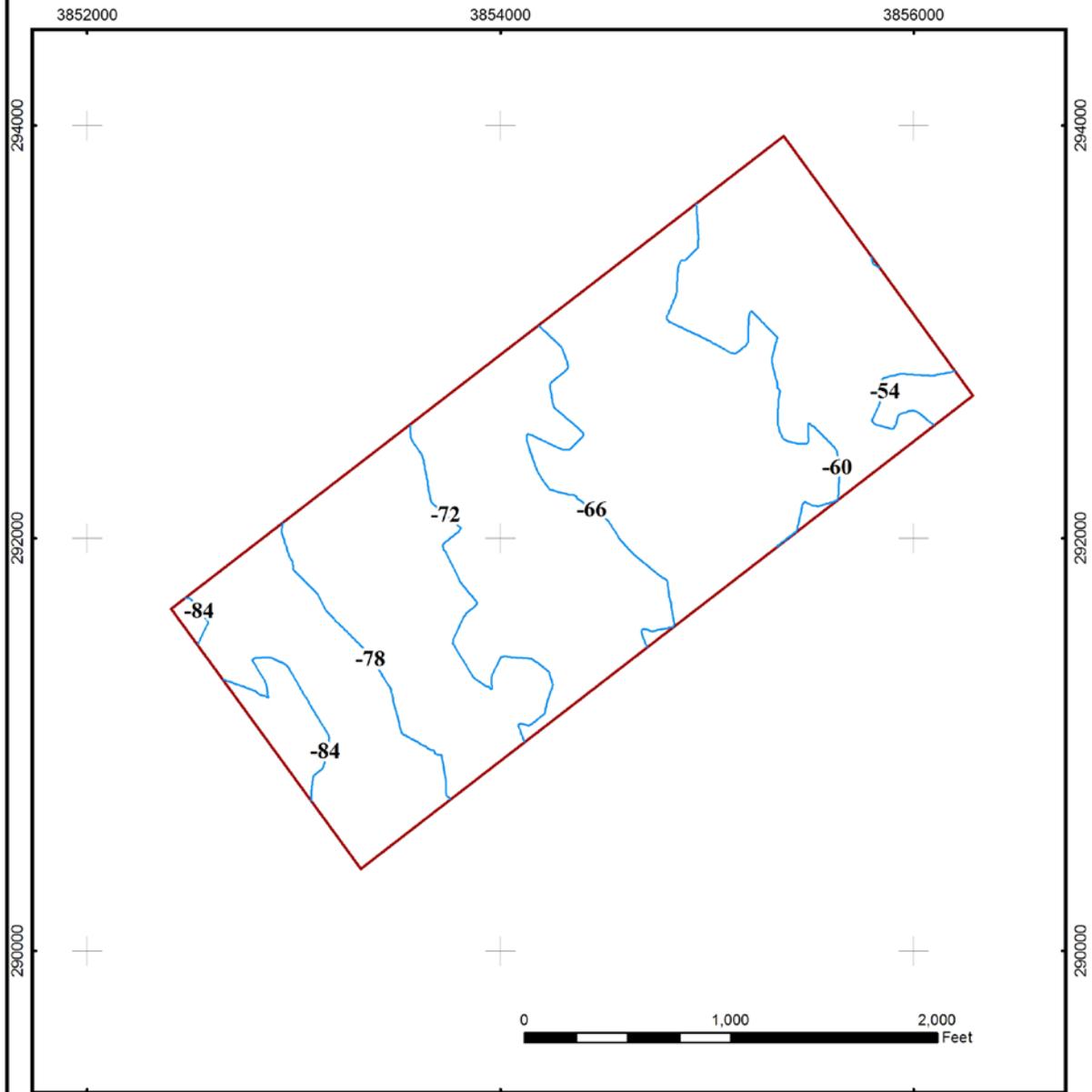
shallow water over-use (mounding / excessive deposition) and promotes operational flexibility for the dredges using the ODMDS. The intent of the generic dump plan is to preferentially use the shallow water area of the ODMDS, within the operational framework of dredging disposal and thereby conform to the SMMP.

No adjustment in management of the Rogue River EPA Section 102 ODMDS is necessary at this time.

**Table 1**  
**Volumes Dredged and Disposed**  
**Rogue River ODMDS**  
 [in thousands of cy]

<u>Fiscal Year</u>	<u>Hopper Dredge</u>
1986	0.0
1987	55.6
1988	36.4
1989	90.4
1990	70.3
1991	37.0
1992	32.2
1993	94.6
1994	120.0
1995	95.7
1996	44.1
1997	71.1
1998	55.6
1999	0.0
2000	44.8
2001	52.3
2002	35.1
2003	51.0
2004	31.0
2005	60.8
2006	20.1
2007	30.9
2008	21.5
2009	46.0
2010	38.2
2011	47.2
2012	48.8
2013	0
2014	59.9

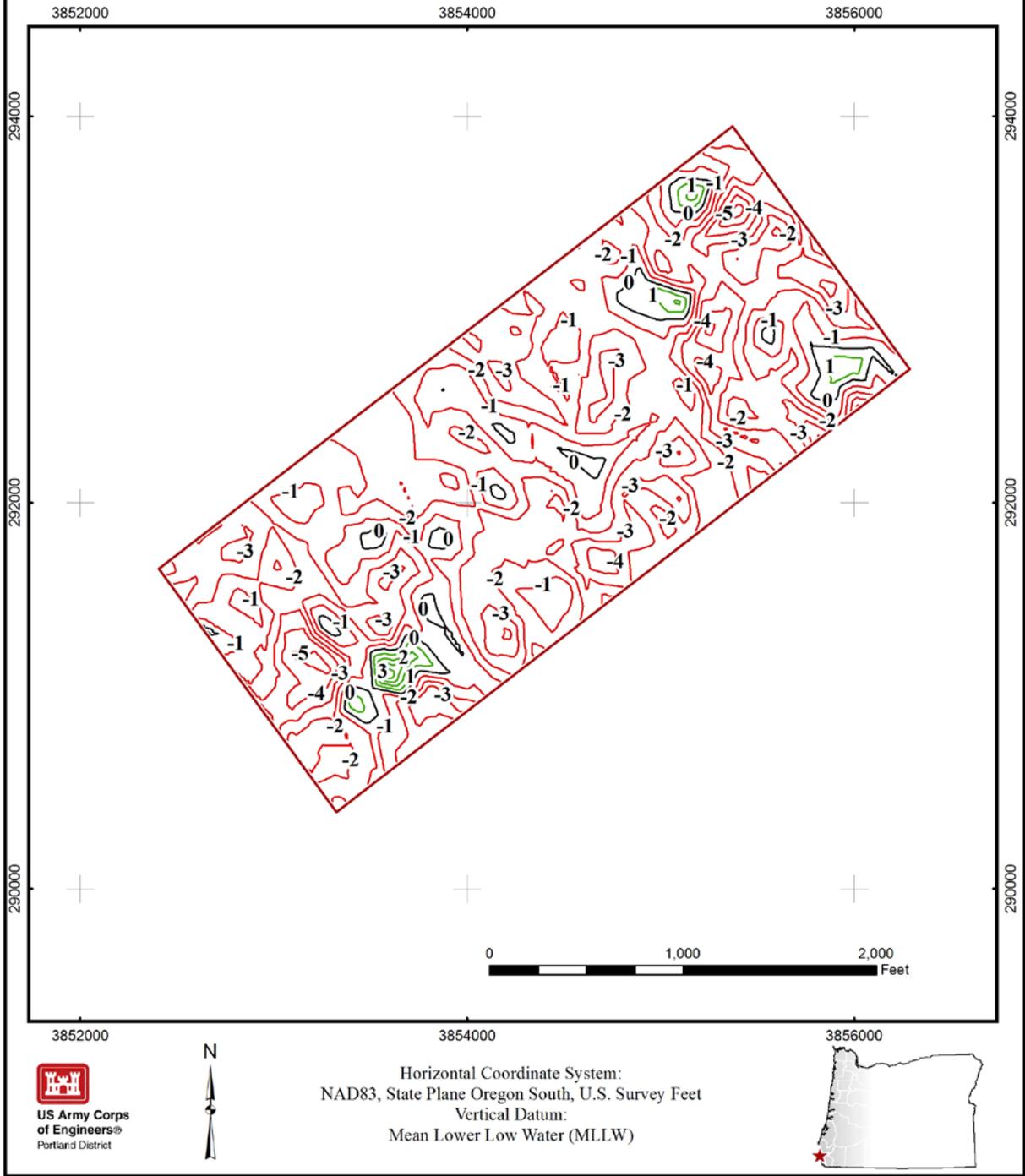
**OFFSHORE DREDGED MATERIAL DISPOSAL  
Rogue Disposal Site  
Survey Date: 5 March 2015  
6' Contours**



Horizontal Coordinate System:  
NAD83, State Plane Oregon South, U.S. Survey Feet  
Vertical Datum:  
Mean Lower Low Water (MLLW)



**OFFSHORE DREDGED MATERIAL DISPOSAL  
Rogue Disposal Site  
Survey Date: 3 April 2013 & 5 March 2015  
1' Contours of Change in Bathymetry**



# OFFSHORE DREDGED MATERIAL DISPOSAL Rogue Disposal Site

Survey Date: 9 May 1986 & 5 March 2015

## 1' Contours of Change in Bathymetry from 1986 to 2015

