#### Memorandum for Record

July 7, 2021

Subject: Suitability Determination Memorandum and Antidegradation Assessment for Port of Everett, Central Marina West, Maintenance Dredging, in Everett, Washington (NWS-2021-485).

### Introduction

This suitability determination memorandum (SDM) and antidegradation assessment documents the consensus regarding the suitability of the proposed dredged material for unconfined aquatic disposal and compliance of the post-dredge leave surface as determined by the Dredged Material Management Program (DMMP) agencies (U.S. Army Corps of Engineers (USACE), Washington Departments of Ecology and Natural Resources, and the U.S. Environmental Protection Agency (EPA)).

### **Project Description**

The project is located near the mouth of the Snohomish River in Possession Sound, Everett, Washington. The northwestern corner of the Port of Everett's (Port's) Central Marina (referred herein as Central Marina West; Map 1) requires maintenance dredging to allow for safe navigation within the public marina and prevent damage to existing marina infrastructure. The Central Marina West dredge area was last characterized in 2010 and approximately 31,000 cubic yards (CY) of material was dredged and disposed of at the Port Gardner disposal site in 2011/2012.

Waterbody	Puget Sound (Possession Sound)
Water classification	Marine
Project rank	Low moderate
Total proposed dredging volume (cy)	~32,270
Target proposed dredging depth	-12 ft MLLW
Max. proposed dredging depth (includes 2 feet overdepth)	-14 ft MLLW
Proposed disposal location(s)	Open-water disposal (Port Gardner)
Dredged Material Management Units (DMMUs): No. of stations	1 DMMU with four sampling stations
DMMO tracking number	POEMA21 -1-A-F-430
EIM Study ID	POEMA21
USACE Regulatory Reference Number	NWS-2021-485
Sampling and Analysis Plan (SAP) Approval Date	February 24, 2021 (Windward 2021a)
Sampling Date(s)	February 25, 2021
Sediment Characterization Report Approval Date	June 30, 2021 (Windward 2021b)
Testing Parameters	DMMP Marine COCs plus tributyltin and dioxins/furans (D/Fs)
Biological Testing	Bioassay testing not required
Suitability Outcome	All material found suitable for in-water disposal
Recency Expiration Date (low moderate = 6 years)	February 2027
Antidegradation Assessment	In compliance

#### **Project Summary**

### Sampling and Analysis Description

Sampling was conducted on February 25, 2021 using a vibracorer aboard the research vessel Tieton, operated by the subcontractor Gravity Marine Services. DGPS was used to provide accurate horizontal

positioning. Vertical positioning was conducted using predicted tide measurements from National Oceanic and Atmospheric Administration (NOAA) tide Station ID 9447659 and lead line measurements taken from the bow of the sampling vessel. Map 2 shows the sediment sampling locations and Tables 1 and 2 provide the core collection details.

Cores were collected from four sampling stations. All accepted cores met the requirements in the SAP and were processed/sampled on the research vessel on the day of collection. A sample composite consisting of the dredge prism and overdepth (mudline to -14 feet MLLW) of all four cores was collected and analyzed for the DMMP chemicals of concern plus tributyltin and D/Fs. Individual Z-samples (-14 ft to -16 ft MLLW) from each sampling station were collected and retained in frozen archive, but analysis was not triggered. All analyses were conducted by Analytical Resources Incorporated in Tukwila, Washington except grain size which was analyzed by AM Test in Kirkland, Washington.

# **Data Validation**

Laboratory Data Consultants conducted EPA Stage 2B (all COCs except D/Fs) and EPA Stage 4 (D/Fs) review and validation. The validation process resulted in some additional J and UJ qualified data (estimated values) and U qualified data (EMPCs below the reporting limit and analytes associated with method blank detections) beyond those assigned by the lab, based on specified protocol or technical advisory; but, no analytical results were rejected; and all data were considered usable, as qualified, by the data validator.

# **Analytical Testing Results**

Tables 3 and 4 summarize the analytical results for the DMMU sample composite alongside the DMMP marine guidelines (DMMP, 2018). No results exceeded screening levels (SLs) or bioaccumulation triggers (BTs). Sediments within Central Marina West were predominantly silt and sand. The total organic carbon was 1.65%.

**Dioxins/furans and Tributyltin**. D/F and tributyltin analyses were performed because they are chemicals of concern in portions of the Port of Everett Central Marina. The D/F concentration found in the sample composite was 2.0 ng/kg-TEQ, which is below the 4 ng/kg-TEQ guideline. The concentration of tributyltin was 1.25 ug/kg, which is well below the 74 ug/kg BT.

### **DMMP** Determinations

### Suitability Determination

Chemical concentrations in the dredge prism composite sample were below the DMMP marine SLs and BTs as discussed above. The DMMP agencies have concluded that all 32,270 CY of characterized material from the Central Marina West is suitable for open-water disposal at the Port Gardner non-dispersive disposal site. Removal of sediment within the characterized dredging prism is authorized until the recency expiration date of February 2027 as long as there are no significant changes to the project scope or new contaminant sources identified.

### Antidegradation Determination

The sediment to be exposed by dredging must either meet the State of Washington Sediment Management Standards (SMS) or the State's Antidegradation Standard (Ecology, 2013) as outlined by DMMP guidance (DMMP, 2008). Concentrations of all DMMP chemicals of concern were below the DMMP SLs and BTs, demonstrating compliance with the State of Washington Antidegradation Standard.

### **Debris Management**

The DMMP agencies implemented a debris management requirement following the 2015 SMARM in order to prevent the disposal of debris (natural or anthropogenic) greater than 12 inches in any dimension at open-water disposal sites in Puget Sound. Debris screens are required unless it can be demonstrated that debris is unlikely to be present or that the debris is large woody debris that can be easily observed and removed by other means during dredging. The Port confirmed that they will be using a debris screen for dredging.

### Notes and Clarifications

The decisions documented in this memorandum do **not** constitute final agency approval of the project. During the public comment period that follows a public notice, resource agencies will provide input on the overall project. A final decision will be made after full consideration of agency input, and after an alternatives analysis is done under section 404(b)(1) of the Clean Water Act.

A pre-dredge meeting with DNR, Ecology and the Corps of Engineers is required at least 7 days prior to dredging. A dredging quality control plan must be developed and submitted to the USACE Seattle District's Regulatory Branch and Ecology. Refer to the USACE permit and Ecology 401 certification for project-specific submittal requirements and timelines.

The DMMP does not make specific beneficial use determinations. However, these data are available for the assessment of project-specific beneficial use by the project proponent, permitting agencies, local health jurisdictions and/or the owner of a receiving property.

### References

- DMMP, 2008. *Quality of Post-Dredge Sediment Surfaces (Updated)*. A Clarification Paper Prepared by David Fox (USACE), Erika Hoffman (EPA) and Tom Gries (Ecology) for the Dredged Material Management Program, June 2008.
- DMMP, 2018. Dredged Material Evaluation and Disposal Procedures (User Manual). Dredged Material Management Program, updated December 2018.
- Ecology, 2013. Sediment Management Standards Chapter 173-204 WAC. Washington State Department of Ecology, February 2013.
- Windward Environmental (Windward). 2021a. Port of Everett Central Marina West Sediment Characterization Sampling and Analysis Plan. Final. Prepared for Port of Everett, February 19, 2021.
- Windward. 2021b. Port of Everett Central Marina West Sediment Characterization Data Report. Final. Prepared for Port of Everett, July 2021.

### **Agency Signatures**

7/7/2021

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Date

Joy Dunay – U.S. Army Corps of Engineers, Seattle District

Date

7/7/2021

Erika Hoffman – U.S. Environmental Protection Agency, Region 10

07/07/2021

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Date

Laura Inouye, PhD. – Washington State Department of Ecology

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Date

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### **Copies Furnished:**

DMMP agencies Kelly Werdick, USACE Regulatory Project Manager Susan McGroddy, Windward Environmental, LLC DMMO File



pared by craigh, 12/14/20; W.:Projects/Port of Everett Marina Dredging Support/GIS/Maps and Analyses/SAP/Map 1 7167 Vicir



	Та	rget	Ac	tual	Distance	Water	Tide	Mudline		Core	
Core					from	Depth <sup>b</sup>	Elevation <sup>c</sup>	Elevation	Penetration	Recovery	
ID	Longitude <sup>a</sup>	Latitude <sup>a</sup>	Longitude <sup>a</sup>	Latitude <sup>a</sup>	Target (ft)	(ft)	(ft)	(ft MLLW)	Depth (ft)	Depth (ft)	Recovery (%)
S1-01	47.998582	-122.223296	47.998576	-122.223280	4.4	-17.5	-6.74	-10.76	9.5	9.2	96.8
S1-02	47.997888	-122.223385	47.997921	-122.223344	15.8	-16.8	-7.35	-9.45	10.0	9.5	95.0
S1-03	47.998385	-122.222862	47.998383	-122.222858	1.3	-17.1	-7.79	-9.31	9.5	9.4	98.9
S1-04	47.998413	-122.222157	47.998403	-122.222171	4.9	-16.1	-8.55	-7.55	10.0	9.5	95.0

 Table 1.
 Target and actual sampling coordinates and penetration depths at each core location

<sup>a</sup> NAD83 geographic coordinates – decimal degrees.

<sup>b</sup> Water depth was measured using a leadline.

<sup>c</sup> Tide elevations from NOAA's predictions for Everett tide station No. 9447659.

ID – identification

MLLW – mean lower low water

NAD83 – North American Datum of 1983

NOAA – National Oceanic and Atmospheric Administration

Table 2.	Sediment core lengths and	sample intervals for	composite sample
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Location ID	Mudline Elevation (ft MLLW)	Core Length <sup>a</sup> (ft)	Core Interval (ft MLLW)	Dredged Material Sample Interval (ft MLLW)	DMMU	Composite Sample ID	Z-sample Interval (ft MLLW)	Z-sample ID
S1-01	-10.76	9.2	-10.76 to -19.96	-10.76 to -14.0			-14.0 to -16.0	CM21-S1-01-Z
S1-02	-9.45	9.5	-9.45 to -18.95	-9.45 to -14.0		CN121 51 65	-14.0 to -16.0	CM21-S1-02-Z
S1-03	-9.31	9.4	-9.31 to -18.71	-9.31 to -14.0		CIVI21-51-CS	-14.0 to -16.0	CM21-S1-03-Z
S1-04	-7.55	9.5	-7.55 to -17.05	-7.55 to -14.0	-		-14.0 to -16.0	CM21-S1-04-Z

<sup>a</sup> Core length is actual core length with no recovery correction.

DMMU – dredged material management unit

ID – identification

MLLW – mean lower low water

# Table 3. Chemistry results for DMMU composite sample compared to DMMP criteria

	DMMU1			
Chemical <sup>a</sup> (unit)	(CM21-S1-CS)	SL	ВТ	Max. Level
Metals (mg/kg dw)				
Antimony	0.06 UJ	150	nc	200
Arsenic	10.3	57	507.1	700
Cadmium	0.30	5.1	11.3	14
Chromium	43.1	260	260	nc
Copper	44.6	390	1,027	1,300
Lead	11.7	450	975	1,200
Mercury	0.0770	0.41	1.5	2.3
Selenium	1.24	nc	3	nc
Silver	0.14 J	6.1	6.1	8.4
Zinc	70.7	410	2,783	3,800
Organometals (µg/kg dw)				
TBT as ion	1.25 J	nc	73	nc
PAHs (µg/kg dw)				
2-Methylnaphthalene	14.7 J	670	nc	1,900
Acenaphthene	13.0 J	500	nc	2,000
Acenaphthylene	12.0 J	560	nc	1,300
Anthracene	23.5	960	nc	13,000
Benzo(a)anthracene	32.0	1,300	nc	5,100
Benzo(a)pyrene	25.7	1,600	nc	3,600
Benzo(g,h,i)perylene	13.9 J	670	nc	3,200
Total benzofluoranthenes	92.2	3,200	nc	9,900
Chrysene	77.3	1,400	nc	21,000
Dibenzo(a,h)anthracene	19.9 U	230	nc	1,900
Dibenzofuran	12.9 J	540	nc	1,700
Fluoranthene	175	1,700	4600	30,000
Fluorene	15.7 J	540	nc	3,600
Indeno(1,2,3-cd)pyrene	14.0 J	600	nc	4,400
Naphthalene	62.8	2,100	nc	2,400
Phenanthrene	87.4	1,500	nc	21,000
Pyrene	154	2,600	11,980	16,000
Total HPAHs	492 J	12,000	nc	69,000
Total LPAHs	214.4 J	5,200	nc	29,000
Phthalates (µg/kg dw)				
Bis(2-ethylhexyl)phthalate	41.9 J	1,300	nc	8,300
Butyl benzyl phthalate	5.0 U	63	nc	970

	DMMU1	DMMP Criteria			
Chemical <sup>a</sup> (unit)	(CM21-S1-CS)	SL	BT	Max. Level	
Diethyl phthalate	19.9 U	200	nc	1,200	
Dimethyl phthalate	19.9 U	71	nc	1,400	
Di-n-butyl phthalate	19.9 U	1,400	nc	5,100	
Di-n-octyl phthalate	19.9 U	6,200	nc	6,200	
Other SVOCs (µg/kg dw)					
1,2,4-Trichlorobenzene	5.0 U	31	nc	64	
1,2-Dichlorobenzene	1.3 J	35	nc	110	
1,4-Dichlorobenzene	1.8 U	110	nc	120	
2,4-Dimethylphenol	2.7 J	29	nc	210	
2-Methylphenol	19.9 U	63	nc	77	
4-Methylphenol	52.7	670	nc	3,600	
Benzoic acid	199 U	650	nc	760	
Benzyl alcohol	16.4 J	57	nc	870	
Hexachlorobenzene	0.50 U	22	168	230	
Hexachlorobutadiene	0.50 U	11	nc	270	
n-Nitrosodiphenylamine	19.9 U	28	nc	130	
Pentachlorophenol	99.6 U	400	504	690	
Phenol	29.5	420	nc	1,200	
PCBs (µg/kg dw)					
Total PCB Aroclors	19.7 UJ	130	nc	3100	
PCBs (mg/kg OC)					
Total PCB Aroclors	1.19 UJ	nc	38	nc	
Pesticides (µg/kg dw)					
Aldrin	0.50 U	9.5	nc	nc	
Total chlordane	1.00 U	2.8	37	nc	
Dieldrin	1.00 U	1.9	nc	1,700	
Heptaclor	0.50 U	1.5	nc	270	
4,4'-DDD	1.00 U	16	nc	nc	
4,4'-DDE	1.00 U	9	nc	nc	
4,4'-DDT	1.00 U	12	nc	nc	
Total DDTs	1.00 U	nc	50	69	
Dioxin/furan (ng/kg dw)					
Dioxin/furan TEQ – mammal <sup>a</sup>	2.05 J	4	10	nc	

<sup>a</sup> Calculated using toxicity equivalency factors given by van den Berg et al. (2006).

BT – bioaccumulation trigger

DDD - dichlorodiphenyldichloroethane

 ${\sf DDE-dichlorodiphenyldichloroethylene}$ 

DDT – dichlorodiphenyltrichloroethane

DMMP – Dredged Material Management Program

nc – no criterion OC – organic carbon PAH – polycyclic aromatic hydrocarbon PCB – polychlorinated biphenyl SL – screening level

#### CENWS-ODS-ND

DMMU – dredged material management unit

dw-dry weight

HPAH – high-molecular-weight polycyclic aromatic hydrocarbon J – estimated concentration

LPAH – low-molecular-weight polycyclic aromatic hydrocarbon

### Table 4.Conventional and grain size results

Chemical	Unit	DMMU1 (CM21-S1-CS)
Grain size		
Total fines	% dw	56.5
Total gravel	% dw	0.1
Total sand	% dw	43.4
Total silt	% dw	48.3
Total clay	% dw	8.20
Conventionals		
тос	% dw	1.65
Total solids	% ww	62.31

dw – dry weight

ww - wet weight

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SVOC – semivolatile organic compound

TEQ – toxic equivalent

- U result undetected at reporting limit shown
- UJ result undetected at the estimated reporting limit shown

TOC – total organic carbon