California Water Boards

Edmund G. Brown Jr.
Governor

Matthew Rodriquez
Secretary for Environmental Protection

San Francisco Bay Regional Water Quality Control Board

N00221_002416
MARE ISLAND
SSIC NO. 5090.3.A

May 28, 2015 (EKW)
GeoTracker Parent ID: T0609560708

Department of the Navy
BRAC Program Management Office
Attn. Ms. Janet Lear
1455 Frazee Road, Suite 900
San Diego, CA 92108-4301
Via Email: janet.lear@navy.mil

Subject: **Concurrence with Exception to Sources of Drinking Water Policy Request for Municipal and Domestic Supply, Southern Portion of Parcel XVI including Paint Waste Area, Former Mare Island Naval Shipyard, Vallejo, California**

Dear Ms. Lear:

At the request of the Navy, Regional Water Board staff reviewed the Navy's February 26, 2015, correspondence providing technical information with the purpose of assessing the potability and beneficial uses of shallow groundwater in the southern portion of Parcel XVI, which contains the Navy's Paint Waste Area (PWA) cleanup site (the Site). The area that is the subject of the request is shown on Figure 1 (attached). Based on the information provided by the Navy, including lithology, well location, screen interval, and total dissolved solids (TDS) concentrations, Regional Water Board staff concur that shallow groundwater to a depth of 15 feet below ground surface (bgs) within the Site meets exception (a) of State Water Resources Control Board (State Water Board) Resolution No. 88-63 and is not likely to be used as a source of drinking water.

BASIS FOR CONCURRENCE

Regulatory Basis: Beneficial uses for groundwater and surface water are defined in the San Francisco Bay Basin Plan[1]. The Basin Plan states that, unless otherwise designated, all groundwater is considered suitable, or potentially suitable, for municipal or domestic supply (MUN) and that, in making exceptions, the Regional Water Board will consider the criteria referenced in State Water Board Resolution No. 88-63 and Regional Water Board Resolution No. 89-39, "Sources of Drinking Water," where:

a) The TDS exceed 3,000 milligrams per liter (mg/L) (5,000 microSiemens per centimeter, µS/cm, EC), and it is not reasonably expected by the Water Board that the groundwater could supply a public water system; or

b) There is contamination either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices; or

[1] California Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board), 2013, San Francisco Bay Basin (Region 2), Water Quality Control Plan (Basin Plan), June 29.

c) The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day; or

d) The aquifer is regulated as a geothermal energy-producing source or has been exempted administratively pursuant to 40 Code of Federal Regulations (CFR) Part 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbon or geothermal energy, provided that these fluids do not constitute a hazardous waste under 40 CFR Part 261.3.

Site-specific Rationale: In support of its request, the Navy provided site-specific TDS concentrations and specific conductance measurements for groundwater samples collected from four shallow monitoring wells installed at the Site (see Figure 1). The wells were screened across the shallow water bearing zone (SWBZ), which consists of artificial fill (to a depth of approximately 7 feet bgs) into the underlying bay mud to a total depth of approximately 15 feet bgs. The TDS concentrations for the shallow groundwater ranged from 15,500 mg/L to 25,100 mg/L with an average concentration of 21,150 mg/L, which is greater than the criterion of 3,000 mg/L. The specific conductance data ranged from 14,570 to 42,360 µS/cm with an average of 35,750 µS/cm, which is greater than the criterion of 5,000 µS/cm. The data are summarized in the table below.

Well	Screened Interval (ft bgs)	Sample Date	TDS (mg/L)	Specific Conductivity (µS/cm)
MW89A/ PWAMW-01	5-15	7/15/14	23,600	39,600
		1/23/15	NA	40,920
MW90A/ PWAMW-02	3.5-15	7/17/14	15,500	31,800
		1/23/15	NA	14,570
MW91A/ PWAMW-03	3.5-15	7/17/14	20,400	36,000
		1/23/15	NA	39,460
MW88A/ PWAMW-04	3.5-15	7/17/14	25,100	41,300
		1/23/15	NA	42,360
	Average Concentration		**21,150**	**35, 750**

1. ft bgs=feet below ground surface; TDS = total dissolved solids; mg/L=milligrams per liter, µS/cm=microSiemens per centimeter
2. Data from monitoring wells screened across shallow water-bearing zone into underlying bay mud.

In addition, shallow groundwater beneath parcels in the immediate vicinity of the Site, to the west, south, and east contains TDS greater than 3,000 mg/L and has received concurrence for an exception to sources of drinking water policy from the Regional Water Board.[2,3,4,5] The area

[2] San Francisco Bay Regional Water Quality Control Board (Water Board), 2002, Response to Request for Drinking Water Source Exclusion, Investigation Area A3, Mare Island, Vallejo, Solano County, September 9.

[3] Water Board, 2014, Concurrence with Exception to Sources of Drinking Water Policy, Shallow Groundwater at Investigation Area B, Lennar Mare Island, Vallejo, Solano County, February 21.

[4] Water Board, 2004, Approval of Request for Water Board Concurrence with the Groundwater Beneficial Use Exception for Municipal and Domestic Supply (MUN), Investigation Area H1, Former Mare Island Naval Shipyard, Vallejo, Solano County, March 17.

encompassing these parcels (Investigation Area A3, Investigation Area B, Investigation Area H1, and DRMO/DRMO/Crane Test Area North) and its location relative to the Site are shown on Figure 1.

Basis for Shallow Groundwater Depth Determination: The Site was tidal marsh habitat prior to placement of dredge sediment in the 1930s. Additional fill was placed in the 1940s, creating an upland area within the Site.

Investigations across Mare Island reveal three principal geologic units in areas outside the original island (fill areas): artificial fill material, unconsolidated natural deposits, and bedrock. A description of these geologic units, as identified beneath the Site, is presented below from shallowest to deepest depth:

- Artificial fill material: The fill beneath the Site consists of clay, silt, sand, gravel and debris, and is present from ground surface to between 6 and 7 feet bgs. This geologic unit generally comprises the SWBZ in these areas and is the zone that is the subject of the Navy's request.
- Unconsolidated natural deposits of silty clay (young bay mud): The young bay mud is present under the fill to a depth of up to at least 50 feet bgs. The naturally-occurring young bay mud ensures that groundwater containing residual chemicals will not likely impact deeper groundwater and defines the extent of the SWBZ.
- Bedrock: Though not encountered during drilling at the Site, bedrock consisting of sandstone and siltstone has been observed beneath the young bay mud in other areas of Mare Island.

CLOSING

Based on review of the information presented above, Regional Water Board staff concur that shallow groundwater to 15-foot depth at the Site (southern portion of Parcel XVI, including Paint Waste Area) exceeds 3,000 mg/L TDS on average and meets State Water Board Resolution No. 88-63 and Regional Water Board Resolution No. 89-39, "Sources of Drinking Water," exception criterion (a) outlined above. Therefore groundwater cleanup standards for the shallow groundwater do not need to be based on criteria used for protection of drinking water sources.

Please note that State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," requires attainment of background levels of water quality, or the highest level of water quality that is reasonably achievable if background levels cannot be restored. Furthermore, State Water Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304," states that cleanup levels other than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards. Where it is not possible to achieve background water quality, State Water Board Resolution No.

(footnote continued from previous page)

[5] Water Board, 2013, Concurrence with Exception to Sources of Drinking Water Policy, Shallow Groundwater at the Defense Reutilization and Marketing Office (DRMO), DRMO South, and Crane Test Area North, Former Mare Island Naval Shipyard, Vallejo, Solano County, December 16.

92-49 requires cleanup to the best level of water quality that is technologically and economically feasible.

If you have any questions, you can contact Elizabeth Wells of my staff via phone at (510) 622-2440 or via email at ewells@waterboards.ca.gov.

Sincerely,

Digitally signed by Bruce H. Wolfe
DN: cn=Bruce H. Wolfe, o=SWRCB, ou=Region 2, email=bwolfe@waterboards.ca.gov, c=US
Date: 2015.05.28 19:27:38 -07'00'

Bruce H. Wolfe
Executive Officer

Attachment: Figure 1

cc (via Email):

Department of the Navy
Ms. Heather Wochnick – heather.wochnick@navy.mil
Ms. Brooks Pauly – brooks.pauly@navy.mil

Department of Toxic Substances Control
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Ms. Carolyn d'Almeida - dAlmeida.Carolyn@epamail.epa.gov

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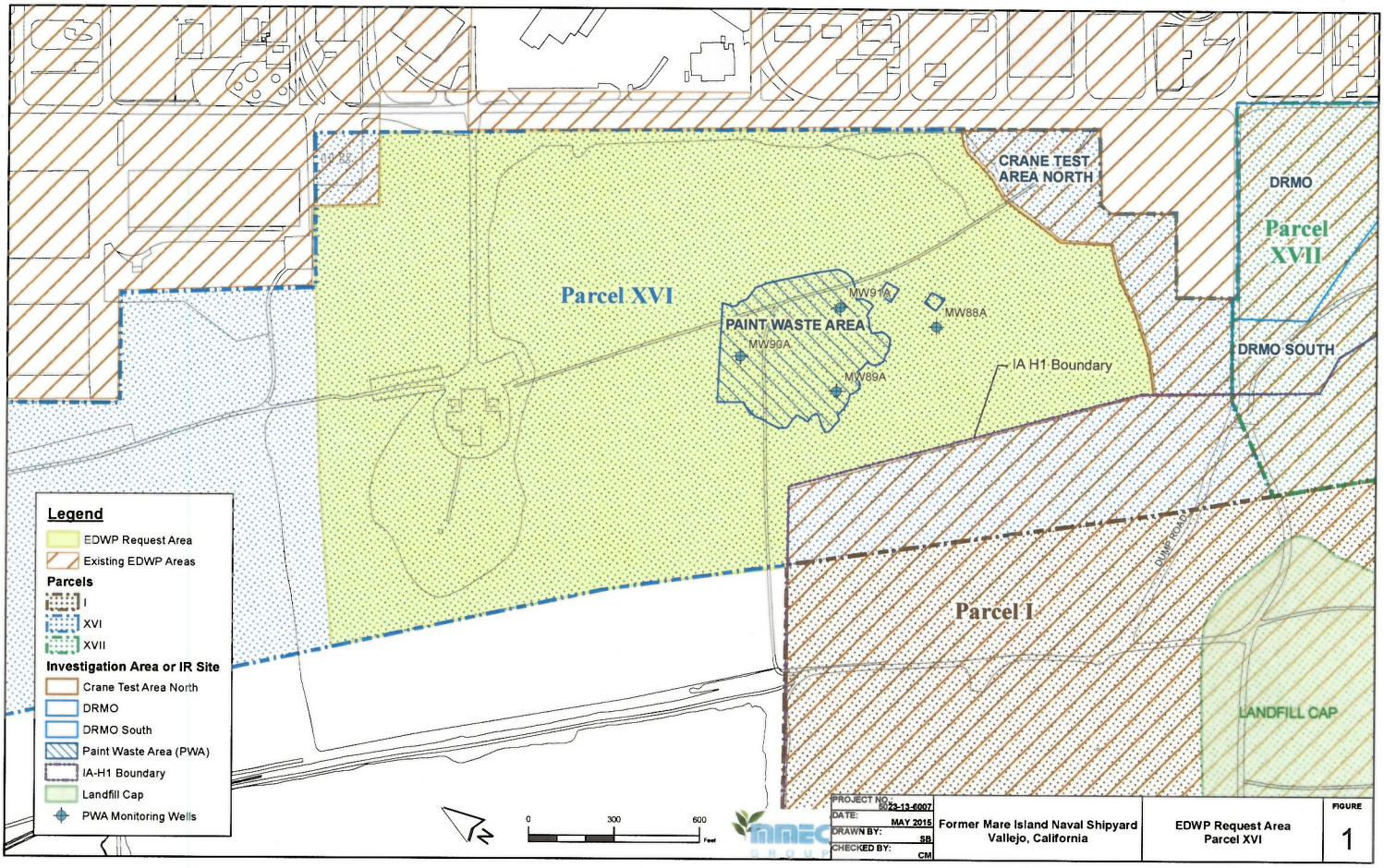
CRANE TEST AREA NORTH
DRMO
Parcel XVII
Parcel XVI
PAINT WASTE AREA
MW91A
MW88A
MW90A
MW89A
IA H1 Boundary
DRMO SOUTH
DUMP ROAD
Parcel I
LANDFILL CAP
Legend
EDWP Request Area
Existing EDWP Areas
Parcels
I
XVI
XVII
Investigation Area or IR Site
Crane Test Area North
DRMO
DRMO South
Paint Waste Area (PWA)
IA-H1 Boundary
Landfill Cap
PWA Monitoring Wells
0
300
600
Feet
PROJECT NO.: 623-13-6007
DATE: MAY 2015
DRAWN BY: SB
CHECKED BY: CM
Former Mare Island Naval Shipyard
Vallejo, California
EDWP Request Area
Parcel XVI
FIGURE
1