Signal Oil

RRM

Date October 7, 1999

Number of pages including cover sheet 4

TO: *Juliet Shin*
Alameda County
Environmental Health

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FROM: *Robert Giattino*
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CC:

REMARKS: ☐ Urgent ☒ For your review ☐ Reply ASAP ☐ Please Comment

Dear Ms. Shin,

Per your request, attached is a response to your comments regarding the Soil and Groundwater Investigation Results report for the former Signal Oil Marine Terminal, 2301-2332 Blanding Avenue, Alameda, California.

Sincerely,

R. L. Giattino

RG

RRM
engineering contracting firm

October 7, 1999
Project AA46

Ms. Juliet Shin
Alameda County Environmental Health
1131 Harbor Way Parkway, #250
Alameda, California 94502-6577

Re: *Soil and Groundwater Investigation Results*
Former Signal Oil Marine Terminal
2301-2332 Blanding Avenue
Alameda, California

Dear Ms. Shin:

As you requested, this letter provides clarification on matters pertaining to a soil and groundwater investigation report prepared by RRM, Inc. (RRM) for the referenced site, dated May 7, 1999. Inquiries and comments you submitted are paraphrased below, followed by a response to each item.

- *Were samples for the recent investigation (October 1998) collected in the same areas as those described in the report "Soil Investigation and Shallow Groundwater Survey" by Geomatrix, dated September 1995?*

  RRM placed Boring SB-9 very near the location of Geomatrix groundwater survey point GWS-9. A groundwater sample from GWS-9 contained the highest concentrations of benzene, toluene, ethylbenzene, xylenes; and gasoline and diesel range total petroleum hydrocarbons detected by Geomatrix. Boring SB-11 was placed near Geomatrix Boring SB-6 to assess groundwater conditions in the general area previously shown to contain petroleum hydrocarbon-affected soil (data for Geomatrix borings SB-1, SB-2, and SB-6). Borings SB-10 and SB-12 were placed along the site boundaries to define the extent of petroleum hydrocarbon-affected soil and groundwater. Both the RRM and Geomatrix boring locations are shown on Figures 2 through 5 of the RRM report.

- *A default value of 300 centimeters (9.84 feet) was used to calculate site-specific target levels (SSTLs) in the Groundwater Services, Inc. (GSI) software. The average depth to the groundwater table at the time of the October 1998 investigation was between 4.59 and 6.70 feet below ground surface. Why was the default depth to groundwater value used?*

  The only complete human health exposure pathway for the site is mass transfer from affected groundwater and/or soil into the breathing zone, and subsequent inhalation. Whether the groundwater table was at 4.59 or 9.84 feet below ground surface (bgs), the groundwater SSTL for benzene (82 or 1,700 parts per million [ppm] for groundwater depths of 4.59 and 9.84 feet bgs, respectively) is above the maximum concentration found in groundwater at the site by either Geomatrix (6.2 ppm) or RRM (1.4 ppm). Both Geomatrix and RRM found that the depth to affected soil beneath the site ranges between 4.5 and 14 feet bgs. For the inhalation exposure pathway from soil to be complete, the affected soil horizon must not be saturated with groundwater; otherwise there is no vapor transport. When Geomatrix did their investigation work, depth to groundwater ranged between 3.7 to 9.6 feet bgs. So, to achieve the most conservative estimate for the inhalation exposure pathway completed from soil, the maximum depth to groundwater recorded at the site was used. The GSI default values for depth to groundwater and thickness of affected soil adequately matched conditions associated with the maximum depth to groundwater recorded at the site.

- *The Alameda County of Environmental Health has adopted use of environmental protection standards specifically developed for the San Francisco Bay marine shoreline (Reference: Shoreline Environmental Protection Zone Standards, Burns & McDonnell Waste Consultants Inc. Memorandum, April 20, 1999). Conditions at the site are to be compared with these standards to evaluate the threat to the environment.*

  Comparison of site data with the Shoreline Environmental Protection Zone Standards for total petroleum hydrocarbons (TPH) supplied by Alameda County (0.64 ppm diesel range TPH and 3.7 ppm gasoline range TPH) shows that the diesel range TPH concentration detected at Boring SB-9 (2.2 ppm) exceeds the standard. There is a physical barrier between the site and the canal; and petroleum hydrocarbons were not detected in a canal sample collected in the general area of Boring SB-9. Given the evidence that biodegradation is reducing petroleum hydrocarbon concentrations, the existence of a sea wall between the site and Alameda Canal, the fact that no petroleum hydrocarbons were detected in canal water, and the length of time that has transpired since operations at the site ceased (i.e., there has been plenty of time for petroleum hydrocarbons to show up in the canal), it is recommended that no further action be taken.

- *How was the volumetric water content determined?*

  Table 2 of the *Soil and Groundwater Investigation Results* report provides a summary of physical soil properties. Soil samples collected from the vadose zone and saturated zone were analyzed. The volumetric water content is reported as the percent saturation. Averages for the vadose zone percent saturation values and percent porosity values were used to determine the volumetric water content.

If you have questions or comments, please call me.

Sincerely,

RRM, Inc.

R. L. Giattino
Chemical Engineer