Department of Toxic Substances Control

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N00236.001693
ALAMEDA POINT
SSIC NO. 5090.3

April 10, 2000

Commanding Officer
Engineering Field Activity, West
Naval Facilities Engineering Command
Attn: Mr. Dennis Wong, Code 612
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DRAFT SITE 13 EMULSION RECYCLING TREATABILITY STUDY REPORT, ALAMEDA POINT, ALAMEDA, CALIFORNIA (FEBRUARY 2000)

Dear Mr. Wong:

The Department of Toxic Substances Control (DTSC) has reviewed the Draft Site 13 Emulsion Recycling Treatability Study Report, dated February 2000. The Treatability Study Report evaluated contaminated soil samples from Site 13 (1) for the ability of emulsion recycling to immobilize organic and inorganic chemical contaminants to soluble concentrations that meet federal and state action levels, and (2) to determine if the resultant produce can be used in a beneficial manner, either as road construction material or landfill cover material.

The work plan included evaluation of different soil samples with different levels of contamination, but did not address evaluation of different soil types. If the difference in soil types at Site 13 is significant, this factor should be evaluated. The report lacks information on how assumptions were made for cost estimates. The design of the air monitoring evaluation did not allow for determination of the contribution of emissions from each part of the process (screening and mixing).

While the results of the treatability study indicate that Site 13 soils can achieve or exceed the specifications established for the study, further evaluation of the use of magnesium oxide, the effects of elevated concentrations of lead and organics, methods used to determine the size and weight of individual treatment categories (metals-contaminated soils, organics-contaminated soils, non-impacted soils), and air emissions should be undertaken before implementing full-scale operations.

Specific comments are enclosed. Please contact me at (510) 540-3767 if you have any questions regarding this letter.

Sincerely,

Mary Rose Cassa

Mary Rose Cassa, R.G.
Engineering Geologist
Office of Military Facilities

enclosure

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M E M O R A N D U M

To: Mary Rose Cassa
Project Manager
Office of Military Facilities
Berkeley Office

Via: John Hart, P.E.
Chief, Engineering Services Unit

From: Mark Berscheid
Hazardous Substances Engineer
Engineering Services Unit

Date: April 6, 2000

Subject: SITE 13 EMULSION RECYCLING TREATABILITY STUDY REPORT, ALAMEDA POINT, ALAMEDA, CALIFORNIA

This letter addresses conclusions and recommendations related to my review of the Site 13 Emulsion Recycling Treatability Study Report (TSR) for the Alameda Point, Alameda, California. The TSR has been prepared for the Department of the Navy by Encapo, LLP, Dublin, California, Morrison Knudsen Corp., San Francisco, California, and Tetra Tech EM, Inc., Rancho Cordova, California.

CONCLUSIONS

1. The TSR has demonstrated it has evaluated contaminated soil samples from Site 13: A. For the ability of emulsion recycling to immobilize organic and inorganic chemical contaminants in Site 13 soils to soluble concentrations that meet federal and state action levels and B. To determine if the resultant product can be used in a beneficial manner, either as road construction material or landfill cover material.

The results of the initial optimum design mix evaluation indicated an inability of lime to provide sufficient lead fixation and material strength characteristics required for road base or landfill cover material for those samples containing elevated levels of lead. The TSR has evaluated another additive, magnesium oxide (MgO), that appears to provide the fixation and strength characteristics required. The TSR does not evaluate the effect

of the use of MgO in a sample containing elevated levels of lead and organics.

The TSR results are based on an evaluation of two soil samples with differing characteristics. One sample is characterized as a poorly graded sand while another is composed of silty sand. Optimally, the TSR would completely evaluate each soil type found at the site contaminated with: 1. Elevated levels of lead with low levels of organics; 2. Elevated levels of organics with low levels of lead, and; 3. High levels of lead and organics. For this evaluation the TSR has chosen to evaluate two different soil types, poorly graded sand and silty sand, each with a different contaminant ratio, elevated levels of lead and low levels of organics or low concentrations of lead with elevated organics. Although useful information can be obtained from this evaluation, I do not feel it reflects an adequate cross section of the types of soil and contamination that would be processed in the proposed 50,000 cubic yard excavation and 20,000 cubic yard treatment project. I feel the TSR has met the objectives of the treatability Study but more useful information could have been obtained by expansion of the study to include the evaluation of issues discussed herein. I concur with the conclusions of the TSR, based on the limited data discussed, that Site 13 soils can achieve or exceed the specifications established for the study.

2. The TSR has included the evaluation of the leachability characteristics of the emulsified samples, which is essential to a proper evaluation of emulsion recycling materials that will be used for road base or landfill covers. The TSR has modified the final design mix in order that samples processed through both types of emulsion mixtures, one using lime and the other MgO, can meet TCLP and STLC requirements. The TSR, however, does not evaluate an emulsified sample containing elevated levels of lead and organics for its leachability characteristics by use of TCLP and STLC as discussed above.

3. I concur with the Executive Summary statement in the TSR that although permeability values achieved in this study were not as low as the target value of 1×10^{-6} centimeters per second, it does not preclude the use of emulsion treated soil for certain site-specific landfill cover applications.

4. The TSR indicates a construction cost estimate, described in Section 4.1, shows that this technology could be used at Site 13, for treatment of contaminated soils, for less than the cost of transporting the soil to an appropriate off-site disposal facility. This is based on an assumption that approximately 50,000 cubic yards or 75,000 tons will be excavated, 5,000 tons of soil would require metals recycling using an MgO mix, 20,000 tons would require organics recycling using a lime mix, and 50,000 tons would test as non-impacted soil. The TSR supplies no information on how these assumptions were made and provides no detail of the proposed testing methods that will be used to determine the size of each process category. This cost estimate is then used to demonstrate the financial benefits of recycling emulsion-treated soils into road

construction. Although the cost estimates are viable based on the types of activities noted and quantities shown in the TSR, these cost estimates should not be considered in any further evaluation without supporting documentation related to the methods used to determine the size and weight of individual treatment categories of metals-contaminated soils, organics-contaminated soils, and non-impacted soils.

5. Per the Department of Toxic Substances Control (DTSC) request, the TSR has included Section 5.2, Air Monitoring Results for Volatile Organic Compounds. The initial request for air monitoring was based on DTSC's interest in an estimated mass of volatiles that may be released to the atmosphere. The TSR indicates the collection of air monitoring samples were for screening purposes only. I feel it is the responsibility of those conducting a "treatability study" to assess not only the proper mix ratio but thoroughly assess the process for other issues such as worker exposure to volatile contaminants and creation of vapor wastestreams that pose a risk to the environment and public health.

Past experience with excavation of hydrocarbon contaminated soils has shown that as much as 80% of the volatiles in contaminated soils escapes to the air in the process of excavation and screening. The TSR clearly indicates the separation of processes required by the designation of 50,000 tons of non-impacted soil that would require significant screening and testing in the separation process. Although the TPH contour map indicates the presence of diesel and jet fuel as the most volatile compounds present, I have enclosed information that shows the overlap in these compounds with gasoline. Since these compounds are made up of multiple hydrocarbon constituents, the overlap indicates many of the higher weight fractions in gasoline are present as lower weight compounds in diesel and jet fuel. Based on the level of these compounds in soils at this site, a significant mass of volatile contamination may be lost to the atmosphere during screening. With respect to the expected level of volatile contamination resulting from the proposed treatment operation, I do not concur with the TSR findings in estimating the mass of hydrocarbons emitted from soils during full-scale operation and feel the mass of hydrocarbons emitted is underestimated.

In the air monitoring evaluation, the TSR has chosen to <u>combine</u> the emissions from both the screening and mixing processes in the collection of air monitoring samples thereby making it impossible to determine the level of emissions from each individual process and a subsequent evaluation of risk to workers, public health and the environment.

6. The TSR has indicated it is comparing results in designated samples taken during screening and emulsification to samples from a clean soil (background) sample that has been identically processed. A valid analysis of this sort must contain a split background soil sample, collected using the latest collection methods (methanol preservation method), analyzed by a certified lab to document the absence of volatiles. As it is

presented in the TSR, the air monitoring analysis is of limited value for evaluation of worker health and safety or protection of public health and the environment.

7. In order to try to use the air monitoring information constructively, I have used the 11 ppbv value for benzene, shown in the summary of air monitoring results, for evaluation. Converting the value for benzene in the summary to ug/m^3, 32 ug/m^3 is found to be orders of magnitude above the EPA preliminary remedial goal (PRG) for benzene of .23 ug/m^3. As I have discussed earlier, the combination of air samples from two distinct process operations makes it difficult to discern which part of the treatment operation poses this risk but is a clear indicator that this issue needs to be addressed further.

RECOMMENDATIONS

8. I recommend the development, review and execution of an addendum to the TSR or implementation of actions during the treatment system design phase of the project that can satisfy the issues discussed above.

If there are any questions please contact me at (916) 322-3294.