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NFD POINT MOLATE
SSIC NO. 5090.3.A

DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132-5190

5090
Ser 06CM.MS/0392
April 16, 2001

Ms. Adriana Constantinescu
Project Manager
California Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subj: RESPONSE TO COMMENTS FOR THE SITE 3 DRAFT FIELD WORK PLAN, NAVAL FUEL DEPOT POINT MOLATE, RICHMOND, CALIFORNIA

Dear Ms. Constantinescu:

Enclosed is the Response to Comments for the Site 3 Draft Field Work Plan for NFD Point Molate. This document has also been provided to Mr. Kent Kitchingman of the City of Richmond. Resolution of these comments is to be conducted at a working meeting at Point Molate on April 24, 2001, at 9:30 a.m.

If you have any questions, please contact Ms. Michelle Gallice Sondrup at 619-532-0971.

Sincerely,

FAIQ ALJABI
Environmental Businessline Team Leader
By direction of the Commander

Encl: (1) Response to Comments for the Site 3 Draft Field Work Plan, NFD Point Molate

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RESPONSES TO COMMENTS BY THE REGULATORY AGENCIES AND CITY OF RICHMOND ON THE DRAFT SITE 3 FIELD WORK PLAN

NAVAL FUEL DEPOT POINT MOLATE

This document is the Navy's response to comments on the Draft Site 3 Field Work Plan for Naval Fuel Depot (NFD) Point Molate, dated February 16, 2001. Comments were received from Ms. Adriana Constantinescu of the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), in a letter dated March 14, 2001, and from Mr. Kent Kitchingman of the City of Richmond via electronic mail on March 20, 2001.

RESPONSES TO RWQCB COMMENTS

Comment 1: Section 1.1, Objectives and Data Gaps: Regional Water Quality Control Board (RWQCB) staff request that the Navy not use solely the presence of free product and residual saturation in soil to further assess soil and groundwater conditions. The proposed groundwater analysis should test for all hazardous compounds found in the fuels stored at Point Molate. This request is based upon the known historical use of the NFD Point Molate as a fuel storage facility for jet fuels (JP-5 and JP-8), marine diesel fuel (F-76) and other fuels including bunker fuel, gasoline, and aviation gasoline.

Response: **In addition to evaluating the presence of free product and residual saturation in soil, soil and groundwater samples will be collected and analyzed for specific constituents found in the fuel products used at NFD Point Molate. Soil samples will be analyzed for total petroleum hydrocarbons (TPH) extractable and purgeable, polynuclear aromatic hydrocarbons (PAHs) and benzene, toluene, ethylbenzene, and xylene (BTEX). Soil that may be a source of volatile organic compounds (VOCs) in groundwater (that is, soil deeper than 10 feet below ground surface [bgs] near well MW11-44) will be sampled for analysis of VOCs.**

Groundwater samples will be analyzed for TPH extractable and purgeable and BTEX. Locations where elevated concentrations of VOCs have been detected previously in samples of groundwater and some areas where monitoring wells are currently not located will also be sampled for analysis of VOCs. Groundwater samples will not be analyzed for PAHs because of their low solubility. In addition, no PAHS have been detected at concentrations that exceed action levels in the Fuel Product Action Level Development Report (FPALDR) in more than 60 historical samples from Site 3 monitoring wells. Target analytes for soil and groundwater samples will be clarified in Section 1.1 of the Final Field Work Plan.

Comment 2: Section 2.1.1 Past Investigations, Summary of Groundwater Data: Page 11, second paragraph contains the following statement: "Relatively low concentrations of several compounds have been detected in 22 samples analyzed for VOCs. Only two of these 22 samples contained individual constituents at concentrations exceeding 100 micrograms

per liter (ug/L)". Please explain why the concentration of 100 ug/L was selected as a screening level for VOCs.

Same paragraph contains information about groundwater quality data for two water samples collected from the wells MW11-13 and MW-44. Please provide the laboratory results for those two water samples with the attached Chain of Custody documentation and Well Development Data Sheet or indicate a previous report received by RWQCB containing the data.

Response: **The concentration of 100 µg/L was a subjective criterion used to evaluate the areas of significant VOC detections; in addition, previous data on VOCs were reviewed for frequency of detection and distribution across the site. Based on this review, the majority of detected VOCs were BTEX compounds. The concentrations of chlorinated solvents were very low (typically in the single-µg/L range, with a few exceptions). Other frequently detected VOCs (at concentrations ranging from less than 10 to 50 µg/L) included acetone, methyl ethyl ketone (MEK), and 2-hexanone. The rationale for the VOC sampling strategy will be further clarified in the Final Site 3 Field Work Plan. In responding to this comment and a similar comment from the City of Richmond, it was noted that the reference to "22 samples analyzed for VOCs" was incorrect. The actual number of groundwater samples analyzed for VOCs is 75. The work plan will be modified accordingly.**

Groundwater data for Site 3 are reported in the Treatment Ponds Area Final Site Characterization Report (PRC 1994), the 1994 quarterly groundwater monitoring reports, and the Final Phase II Remedial Investigation Report (TtEMI 2000). All of these documents have been previously submitted to RWQCB.

Comment 3: Section 2.2.1 Past Investigations, Summary of Soil Data: Table 2-2 attached to the FWP [field work plan] contains a summary of the analytical data for soil samples collected throughout Site 3. Please specify in this table how many soil samples were collected between 0 to 3 feet and 5 to 10 feet bgs, the two targeted zones proposed to be sampled to achieve the objectives of this FWP. It appears that very few samples were collected between 0-10' interval. If so the basis for the investigation is not substantiated.

Response: **A summary of the depths of soil results will be included in a separate table in addition to Table 2-2 in the Final Site 3 Field Work Plan.**

The sampling strategy for shallow soil is based on a combination of previous sampling results, visual observations, the site conceptual model, and the site closure strategy.

Previous analytical results indicate limited site-wide distribution of TPH, VOCs, and PAHs in shallow soils. Contamination in shallow soil has been detected only where there is a known source (such as a tank, pipeline, or other operation). Most shallow soil samples were collected during the basewide pipeline removal; these sample locations will be included in the Final Site 3 Field Work Plan.

Visual observations have also been used to evaluate extent of contamination in shallow soil during soil boring and the basewide pipeline removal.

The site history has aided in identifying a number of contaminant sources, including: tanks, pipelines, fuel reclamation operations, and the former sump pond. Samples for the pipelines were collected during the basewide pipeline removal. This investigation of Site 3 will involve collection of shallow soil samples to characterize former tank and fuel reclamation operations for TPH, BTEX, and PAHs. Shallow soil samples are also planned for the former sump pond area and at non-biased site-wide locations. Based on this and other comments, shallow soil samples will be included for all locations that were planned in the Draft Site 3 Field Work Plan for soil boring, but not shallow soil sampling, increasing the total number of shallow soil samples.

The site closure strategy will be well defined in the Site 3 Engineering Evaluation and Cost Analysis. This strategy will include removal of obvious surface contamination as a result of operations at tanks or the fuel reclamation facility. The overall site closure strategy also includes closure of the three treatment ponds; excavation and further sampling will be part of closure. These elements of the site closure strategy will be included in the Final Site 3 Field Work Plan.

To address this comment, a table (separate from Table 2-2) will be added to include the requested information, further explanation of the existing observations for shallow soil and strategy will be included, shallow soil samples will be added to the work plan, and the overall site closure strategy will be clarified.

Comment 4: Section 4.1 Soil Sampling and Analysis: Page 16: Last paragraph contains the following statement "soil samples will not be analyzed for VOCs (other than BTEX compounds) because historical data indicate that VOCs other than BTEX compounds have only been sporadically detected at low concentrations in Site 3 soil samples". Please present how many historical soil samples collected from the proposed sampling interval of 0 to 10 feet bgs were tested for VOCs and specify if the historical number and the proposed number of soil samples are representative for the recommended course of action and why.

Response: **A summary of VOC sampling in shallow soil and a review of the site history will be included to justify the omission of samples for analysis of VOCs in shallow soil. The data will be presented in an additional table as well as in Plates presenting results of groundwater and soil VOC analyses at Site 3 locations. Although limited shallow soil sampling has been conducted at Site 3, there is no history of VOC releases to shallow soils. This finding is consistent with the relatively low level of VOC detections in shallow soil and groundwater across Site 3. However, because the fuel reclamation facility has not previously been investigated for VOCs in shallow soil, VOCs will be included for shallow soil in this area.**

A strategy for sampling VOCs in soils between 0 and 10 feet below ground surface (bgs) and deeper than 10 feet bgs will be developed for the area near Well MW11-44 where there have been previously elevated detections of VOCs in one sample.

Comment 5: 4.2 Groundwater Sampling and Analysis: Page 17: First paragraph, third bullet contains the following statement: "Wells located on the shoreline side of the groundwater extraction and containment wall". Please, revise this statement.

Page 18: First paragraph presents that "Only two groundwater samples, collected from wells MW11-13 and MW11-44 will be analyzed for VOCs." Please, explain how sampling only two wells will answer to the proposed objective of this FWP to delineate the concentrations of dissolved TPH and VOCs in groundwater at Site 3.

Please, provide an explanation why the existing wells located around the wells MW11-44 and MW11-13, were not proposed for sampling and testing for VOCs and SVOCs in order to delineate the concentrations of dissolved TPH, VOCs, and SVOCs in groundwater at Site 3.

Response: **On Page 17, the first paragraph, third bullet will be revised to state, "...wells on the inland and shoreline sides of the extraction trench and containment wall."**

Sampling at these two wells was originally planned to verify the presence of VOCs since previous analytical results were from as long ago as 1992. In addition, previous data indicate no widespread VOC contamination at Site 3 so no other well samples were recommended for VOC analysis. However, to verify that no widespread VOC groundwater contamination exists at the site, additional wells will be analyzed for VOCs. Wells MW11-113, MW11-115, MW11-117, and MW11-121 (a new well located in the footprint of the former above ground storage tank G) will be sampled for analysis of VOCs in the vicinity of well MW11-44. Well MW 11-31 is between wells MW11-44 and MW11-13 and will also be sampled for analysis of VOCs. Wells MW11-104 and MW11-105 will be sampled for analysis of VOCs in the vicinity of well MW11-13.

Groundwater samples will not be analyzed for PAHs (or SVOCs) because of their low solubility and because PAHs have not been detected at concentrations that exceed action levels set in the FPALDR during previous sampling events.

RESPONSES TO CITY OF RICHMOND COMMENTS

Groundwater:

Comment 1: Section 2.2.1: The reference on page 11 to a maximum of 22 VOC samples is inconsistent with Table 2-1, which shows as many as 75. Please correct.

Response: **The first full paragraph on page 11 will be revised. The first three sentences will be revised as follows: "At least 75 groundwater samples were analyzed for VOCs using the CLP [contract laboratory program] volatile organic analysis (VOA) or EPA organics. Of these, 29 samples resulted in detectable levels of VOCs. Non-BTEX compounds detected included acetone, methyl ethyl ketone (MEK), 2-hexanone, chloroform, tetrachloroethene (PCE), trichloroethene (TCE), 1,2-dichloroethene (1,2-DCE), vinyl chloride, chlorobenzene, and methylene chloride. Only two of these 29 samples..."**

Comment 2: Table 2-1: What is the origin of N–nitrosodiphenylamine? Should it be addressed in the work plan as a contaminant of concern? What analytical method was used to measure it?

Response: **N-nitrosodiphenylamine is used as an accelerant in vulcanized rubber. Although its source is unclear, because it was not detected in additional groundwater sampling at the site, it is suspected to be a false positive. N-nitrosodiphenylamine was detected in only five of 58 samples (collected at five separate wells) using the CLP semivolatile organic analysis (SVOA) method. All of the detections occurred during a May/June, 1992 sampling event, with the highest concentration in a sample from well MW11-93 at 580 µg/L. N-nitrosodiphenylamine was not detected during subsequent sampling events, including six samples from well MW11-93 between March 1994 and April 1998 (with detection limits between 1 and 10 µg/L). As it occurred only sporadically in groundwater samples during one event and because the compound was not detected at the location with the previously highest detected concentration, n-nitrosodiphenylamine is not recommended for further analysis in samples from Site 3. This information on the detection of n-nitrosodiphenylamine will be included on Table 2-2 and in the text of the Final Field Work Plan.**

Comment 3: Section 4.3: Is it adequate to collect VOC samples only at locations where they were previously detected? How did these contaminants get there? Provide a more thorough discussion on the number of VOC samples collected on Site 3 and the results.

Response: **Based on this and RWQCB comment number 6, additional samples will be collected for analysis of VOCs in the vicinity of wells MW11-44 and MW11-13 (that is, where previous detections were significant). Samples from new wells in the fuel reclamation facility will also be analyzed for VOCs since this area has not previously been investigated. Site-wide sampling for BTEX in groundwater is planned as discussed in the Draft Site 3 Field Work Plan.**

The VOCs (particularly methyl ethyl ketone [MEK], acetone, tetrachloroethene [PCE], and trichloroethene [TCE]) were likely used in small quantities as cleaning solvents while the base was active. These solvents may have been incidentally disposed of in the former sump pond. Acetone, MEK, and methylene chloride are also common laboratory contaminants and frequently are identified in laboratory blanks. Over time, PCE and TCE have likely degraded to 1,2-dichloroethene (DCE) and vinyl chloride.

Additional information will be included in the field work plan to clarify previous detections of VOCs at Site 3.

Comment 4: Section 4.3: Only one sampling location is in the former FRF [fuel reclamation facility] area, and it's on the downgradient side of the containment wall. Explain how additional data on free product thickness will be obtained given the proposed location of the monitoring well. Why not monitor groundwater inside the wall?

Response: **As presented in the Draft Site 3 Field Work Plan, four borings, two to be converted to monitoring wells, will be used to characterize the former fuel**

reclamation facility. All four borings are upgradient of the extraction trench and containment wall. In addition, data from other wells in the area will be used to further define the extent of contamination near the former fuel reclamation facility, including monitoring wells MW11-94, MW11-103, and MW11-118.

Comment 5: Plate 2-7: Explain why sampling isn't needed along Diesel Road between well MW11-119 and MW11-27.

Explain why sampling isn't planned at well MW11-45 or other well located inside this free product area.

Explain why sampling between Treatment Ponds 2 and 3 and downgradient of 3 aren't planned.

Explain why natural attenuation parameters are not planned for the treatment pond area, or between the treatment ponds and the extraction trench.

Response: **Sample data and trenching observations from the basewide pipeline removal combined with historical soil boring and groundwater data from soil borings and wells 11-28 and 11-29 are adequate in characterizing the area between wells MW11-119 and MW11-27. This information will be clarified in the Final Site 3 Field Work Plan.**

Sampling in the free product area near well MW11-45 was not originally planned because previous analytical results indicate concentrations of TPH are below action levels. However, wells MW11-117 and MW11-121 (a new well within the footprint of former Tank G) are included to characterize VOCs and will also be sampled for analysis of TPH.

Sampling of new wells between ponds 2 and 3 and is not planned because access is difficult and future removal of the treatment ponds would require destroying wells constructed in this area. Sampling existing wells downgradient of pond 3 is planned based on existing data.

The locations identified to monitor natural attenuation have been selected in an attempt to collect samples along specific hydraulic pathways (including upgradient, within the plume, and downgradient within the plume), as well as for spot checks at specific locations (including the FRF and diesel plume areas). Samples from wells MW11-44 and MW11-115 will provide some information on natural attenuation in the treatment pond area. The collection of data on natural attenuation from a limited number of locations will be sufficient to provide a basis for screening the potential for natural attenuation across Site 3.

Soil:

Comment 6: Section 4.1: Collection of metals data should be considered for the sludge pond area, and discussed in the Workplan.

Where chlorinated VOCs were measured in the groundwater (11-13, 11-44) should additional soil samples be collected to identify their local presence?

Response: **The only known potential significant source of metals contamination would have been disposal of batteries. The Navy reported these batteries as removed from the former sump pond. In addition, excavation of the former sump pond was to a depth of at least 10 feet bgs, which would have removed soils in contact with the former sump pond in the potential soil exposure pathway. Sludges within the current treatment ponds will be excavated and disposed of as part of treatment ponds closure. Therefore, no samples for analysis of metals will be collected from the former sump pond area. However, because discarded batteries recently have been discovered in the former fuel reclamation facility, sampling for analysis of metals in soils will be considered there.**

A strategy for sampling for analysis of VOCs in soils deeper than 10 feet bgs will be developed for the area near Well MW11-44 where elevated detections of VOCs have been previously detected.

Comment 7: Table 2-2: Why weren't semi-VOAs other than PAHs reported in Table 2-2?

Response: **The compounds reported in Table 2-2 of the Draft Site 3 Field Work Plan were the same as those listed in Table 4-2 of the Final RI report. Listing of additional semivolatile organic compounds (SVOCs) was not considered important at the time, as there were no SVOCs identified as concerns in the Remedial Investigation (RI) Report. All SVOC results will be summarized in the Final Site 3 Field Work Plan.**

Comment 8: Section 4.1: Briefly explain the soil compositing approach (horizontal range and number of samples composited, all at the same depth?) to support the use of this approach.

Response: **Soils at each sampling location will be composited from 0 to 3 feet bgs and 5 to 10 feet bgs, with each composited interval representing a sample. Samples will not be composited across locations. The composite from 0 to 3 feet bgs is for evaluation of risk associated with terrestrial ecological and human recreational receptors. Both data sets for composited samples will be combined to evaluate exposure to soils up to 10 feet bgs associated with potential residential and construction worker exposures.**

Comment 9: Section 4.1: Explain why sampling is limited to 10' if contamination may be deeper.

Response: **Potential exposure pathways to human and terrestrial ecological receptors are considered reasonable only to a depth of 10 feet bgs. Some soil samples will be collected at a depth greater than 10 feet bgs to be evaluated as a source of groundwater contamination. This rationale will be clarified in the Final Site 3 Field Work Plan.**

Comment 10: Section 4.1: The use of partition coefficient results in what product? If a model will be employed what is the output? Same as above concerning natural attenuation parameters.

Response: **The partition coefficient will be used to estimate a concentration of contamination in soil that results in concentrations in groundwater that exceed action levels; therefore, the output may be used to provide an alternative action level for contaminants in soil below the saturated zone.**

Natural attenuation parameters will be evaluated to assess its potential as a site remedy.

Comment 11: Section 4.1: How is the HPC data used?

Response: **Heterotrophic plate counts (HPC) are used as a means for evaluating the current microbial population within site soils and groundwater. HPC data are used in combination with other groundwater data (dissolved oxygen, pH, TPH, sulfate, nitrate, and total Kjeldahl nitrogen) to evaluate microbiological-mediated natural attenuation.**

Other:

Comment 12: App. A, Table 4-1: Why the small number of surface samples? How were the ep and HPC sampling locations selected?

Response: **The shallow soil sampling strategy is based on a combination of previous sampling results, visual observations, the site conceptual model, and site closure strategy.**

Previous analytical results indicate limited site-wide distribution of TPH, VOCs, and PAHs in shallow soils. Contamination in shallow soil has been detected only where there is a known source (such as a tank, pipeline, or other operation). Most shallow soil samples were collected during the basewide pipeline removal; these sample locations will be included in the Final Site 3 Field Work Plan.

Visual observations have also been used to evaluate the extent of contamination in shallow soil during soil boring and the basewide pipeline removal.

The site history has been used to identify a number of contaminant sources, including: tanks, pipelines, fuel reclamation operations, and the former sump pond. Samples for the pipelines were collected during the basewide pipeline removal. This investigation of Site 3 will include collection of shallow soil samples to characterize former tank and fuel reclamation operations for TPH, BTEX, and PAHs. Shallow soil samples are also planned for the former sump pond area and at non-biased site-wide locations. Based on this and other comments, shallow soil sampling will be included for all locations that were planned in the Draft Site 3 Field Work

Plan for soil borings, but not for shallow soil sampling, increasing the total number of shallow soil samples.

The site closure strategy will be well defined in the Site 3 Engineering Evaluation and Cost Analysis. This strategy will include removal of obvious surface contamination as a result of operations at tanks or the fuel reclamation facility. Overall site closure strategy also includes closure of the three treatment ponds; excavation and further sampling will be conducted as part of closure. These elements of the site closure strategy will be included in the Final Site 3 Field Work Plan.

Comment 13: App. B, B6.1.1 Indicates that field duplicates will be taken; if not, please correct. (I think it is useful to know the variance of duplicate soil samples, even if it is mostly attributable to soil heterogeneity).

Response: **The third paragraph of this section will be modified as follows: "The control limit for precision on field duplicates and laboratory matrix spikes is set at 25 percent RPD [relative percent difference] for water samples. Duplicate soil samples will not be collected during this investigation. A significant variance is commonly associated with soil duplicate samples because it is difficult to collect truly homogenous soil samples (EPA 1999). Furthermore, duplicate samples for soil are not representative of the same point. Because soil is not homogenous between two points, identical soil samples will not be collected."**

Comment 14: Figures, Fig. 7-1: The route to the hospital is not the quickest and should be corrected.

Response: **The route to the hospital via Parr Boulevard has been indicated as quicker and will be included on Figure 7-1.**

TETRA TECH EM INC.

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Response to Comments by the Regulatory Agencies and City of Richmond on the Draft Site 3 Field Work Plan, April 16, 2001

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