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4 May 1999

From: Commanding Officer, Engineering Field Activity, West, Naval Facilities
Engineering Command

To: U. S. Environmental Protection Agency (Attn: Ms. Claire Trombadore)
U. S. Environmental Protection Agency (Attn: Ms. Sheryl Lauth)
California Department of Toxic Substances Control (Attn: Mr. Chein Kao)
California Regional Water Quality Control Board (Attn: Mr. David Leland)

Subj: RESPONSE TO COMMENTS ON THE PHASE IV RADIATION INVESTIGATION FIELD
SAMPLING WORK PLAN, ENGINEERING FIELD ACTIVITY, WEST, NAVAL
FACILITIES ENGINEERING COMMAND, HUNTERS POINT SHIPYARD,
SAN FRANCISCO, CALIFORNIA

Encl: (1) Response to Agency Comments on the Draft Phase IV Radiation Investigation Field
Sampling Work Plan for Hunters Point Shipyard, San Francisco

1. The draft Phase IV Radiation Investigation Field Sampling Work Plan for Hunters Point Shipyard was issued 24 February 1999. This letter provides the Navy's response to agency comments on this draft Work Plan, enclosure (1). Since the comments were mainly related to interpretation of the data, not to changes in the actual sampling or sampling procedures, no revisions were made to the draft Work Plan. Therefore, by copy of this letter, the draft Phase IV Radiation Investigation Field Sampling Work Plan is considered acceptable as the draft Final Work Plan. If there are no comments, the Work Plan will be considered final on 3 June 1999.

2. If you have any questions, please contact either Ms. Luann Tetrick, Code 62210, at (650) 244-2561, or the undersigned at (650) 244-2655.

Original signed by:
RICHARD E. POWELL
By direction

Copies to:
California Department of Health Services (Sacramento) (Attn: Ms. Dierdre Dement)
Roy F. Weston, Inc. (Attn: Ms. Karla Brasaemle)
TechLaw Inc. (Attn: Mr. Adam Klein)
NAVSEA DET RASO (Attn: LCDR Vinny Deinnocentiis)
Tetra Tech EM Inc. (Attn: Mr. Jim Sickles) (w/o encl)

Blind copies to:
622, 6221RP, 6229WR, 62210LT, 702P3, 09CNB,
62C HPS CSO (Lt. Michael Gough), 62C HPS CSO (Dave Quichocho)
Admin Records (3 Copies)
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Chron File: Ser 62210/L9123-1
Activity File: HPS

**RESPONSE TO AGENCY COMMENTS ON THE
DRAFT PHASE IV RADIATION INVESTIGATION FIELD SAMPLING WORK PLAN
HUNTERS POINT SHIPYARD, SAN FRANCISCO**

This document presents the U.S. Department of the Navy's (Navy) responses to comments from the regulatory agencies on the draft Phase IV radiation investigation field sampling work plan for Hunters Point Shipyard (HPS), dated February 24, 1999. The comments addressed below were received by mail from the California Department of Health Services (DHS) on April 1, 1999 and the U.S. Environmental Protection Agency (EPA) on April 15, 1999.

Agency comments are presented in boldface type, and Navy responses are presented in normal type.

RESPONSE TO COMMENTS FROM DHS

General Comments

1. **Comment:** It is not clear if U.S. EPA will be performing comparative analysis of samples collected during the Phase IV radiation investigation or if confirmation samples will be collected by RASO for verification that the areas are ready for unrestricted release. DHS may want to collect and analyze confirmation samples following or in conjunction with the final status survey for verification that the areas meet unrestricted release criteria. Please notify DHS prior to scheduling that final status survey.

Response: The Engineering Field Activity West (EFA West) contractor (Tetra Tech EM Inc. [TtEMI]) will collect all samples for the Navy. The Navy will notify DHS prior to the sampling event.

Specific Comments

1. **Comment:** Page 7, Section 5.3. DHS may not agree with methods which pool all the various sampling media data together to determine background and a standard deviation. Distribution analysis is a good method to correlate the data and determine if all the data points, including the 3σ value, fall within the background distribution. (The following documents, "Interpretation of Environmental Radioactivity Measurements" (by D.A. Walte, CRC Handbook of Environmental Radiation, Boca Raton; CRC Press, 1991, pp. 173-182) and Livermore Big Trees Park January 1995 Soil Survey Results (by Don MacQueen, Lawrence Livermore National Laboratory, July 1995), which describe and use distribution analysis, are good reference sources for using this method.)

Response: The Navy will only pool samples collected from the same media (such as soil, concrete, and asphalt). The Navy is using approach methods which are

referenced from the EPA's "Multi-Agency Radiation Survey and Site Investigation Manual" (MARSSIM) and a supporting technical document, NUREG-1505, "A Nonparametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys" (EPA 1997).

The Navy will make available to DHS the analytical data collected from the Phase IV radiation investigation for DHS's own statistical calculations.

2. **Comment:** Page 8, Section 5.4. In addition to meeting a dose limit of 25 mrem per year for residual radioactivity, for unrestricted release of these areas, DHS uses the 5 pCi per gram concentration limit from 40 CFR 192 for homogeneously distributed Ra-226 in soil.

Response: The Navy will comply with or waive federal and state applicable or relevant and appropriate requirements (ARAR) as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The main contaminants of concern (COC) for the Phase IV radiation investigation are cesium-137 and radium-226 (Ra-226) in asphalt/concrete, though cobalt-60 and europium-152 may also be present above ambient concentrations. The matrix of concern is asphalt/concrete, but soil will be evaluated to ensure no COCs have migrated into the soil from the asphalt/concrete.

The Navy recognizes that Title 40 Code of Federal Regulations (CFR) 192 allows averaging of an area of 100 square meters of elevated radioactivity above 5 picoCuries per gram (pCi/g) of Ra-226 in soil over the first 15 centimeters of soil below the surface. Additionally, pursuant to CERCLA, only relevant and appropriate standards will be selected; therefore, if more than one radioactive contaminant is present it would be inappropriate for DHS to apply both 10 CFR 20 (which requires a dose limit of 25 millirem per year residual radioactivity, for unrestricted release) and 40 CFR 192 for the same contaminant because 40 CFR 192 is relevant if only Ra-226 is present.

Because the Navy has not been advised, pursuant to the National Hazardous Substances and Pollution Contingency Plan (NCP), of any promulgated California requirements limiting the Ra-226 concentration, the Navy will use an average concentration of 5 pCi/g in soil over the first 15 centimeters of soil below the surface if 40 CFR 192 is the selected ARAR.

RESPONSE TO COMMENTS FROM EPA

Specific Comments

1. **Comment:** **Section 2.1, Page 2: The appropriate DCGL for the residual Cs137 contamination at the peanut spill is the site specific background for Cs137.**

Response: The Navy will use the MARSSIM Manual (EPA 1997), which was jointly developed by the EPA, U.S. Nuclear Regulatory Commission (NRC), and U.S. Department of Defense (DoD), and NUREG 1505 (NRC 1997) for evaluating residual radioactivity concentrations at impacted locations. After the Navy conducts additional background sampling, an evaluation will be conducted to determine if areas distinguishable from background require remediation, based on site-specific factors. The actual cleanup criteria developed will be presented in the Record of Decision (ROD) or other appropriate documents.

Accordingly, the Navy does not agree with this comment.

2. **Comment:** **Section 3.1.1, Page 4: The commercial scenario PRG for Cs137 and its progeny, Ba137, is 0.072 picoCurie per gram. This value is very similar to the typical Cs137 background values for California soils.**

Response: See response to EPA specific comment 1.

3. **Comment:** **Section 3.2, Page 4: No typical ambient levels for either Co60 or Eu152 were ever reported in the previous radiation scoping survey work performed by PRC. The presence of either radionuclide at detectable levels constitutes contamination.**

Response: Cobalt 60 (Co-60) (22 pCi/g) and europium 152 (Eu-152) (130 pCi/g) were detected in one sample taken at the Building 707 concrete pad, as reported in Attachment E1 to Appendix E of the Parcel E draft final remedial investigation report, dated October 27, 1997. These two radiological isotopes were first detected in a sample at HPS during the Phase III radiation investigation. Co-60 and Eu-152 were used in research by the Naval Radiological Defense Laboratory (NRDL). Eu-152 was also detected in the sump at Building 364 at 1.3 pCi/g. Because Eu-152 is a fission product, it may also be present at trace concentrations as part of the environmental radioactivity due to fallout.

4. **Comment:** **Section 5.3, Page 7: MARSSIM uses the Wilcoxon Rank Sum Test to determine when a cleanup has been done to be considered indistinguishable from background. California DTSC has published a document that outlines an indistinguishable from background strategy for arsenic and other heavy metals titled "Selecting Inorganic Constituents as Chemicals of Potential Concern for Risk Assessment at Hazardous Waste Sites & Permitted Facilities." This document is available from CaDTSC's website.**

Response: See response to EPA specific comment 1. The Navy is aware of the document and has proposed to use a different approach (Refer to the response to general EPA comment 1).

5. Comment: **Section 5.4, Page 8: The DCGLs for Co60 and Eu152 should be the commercial scenario PRGs. As stated above the DCGL for Cs137 should be its site specific background.**

Response: See response to EPA specific comment 1.

General Comments

1. Comment: **It was not clear if each individual sample result from previously contaminated areas is being compared against the background, or the average of all of the sample results is being used.**

Response: The Wilcoxon Rank Sum Test (WRS) test compares the two groups of data without consideration of individual pairs and also without computation of an average result. The WRS Test cannot always be used to differentiate between indistinguishable and background levels. (Refer to MARSSIM page 2-39, section 2.6.2 for details). Additional guidance is found in NUREG-1505.

The reviewer is incorrect in stating in EPA specific comment 4 that, "MARSSIM uses the Wilcoxon Rank Sum Test to determine when a cleanup has been done to be considered indistinguishable from background." Rather, MARSSIM recognizes that the power of the WRS test may be limited when data sets have extremely small differences. The Navy will pool sample results before applying the appropriate statistical methodology. MARSSIM discusses alternative statistical models (Section 2.6.1, page 2-34 et. seq.) which will be considered, as necessary.

2. Comment: **One additional comment: On December 14, 1998, EPA's Steve Dean met LtCmdr VinnieDeinnoentiis and several staff members from Tetra Tech at Building 364. The group collectively determined the sampling points for the additional Cs137 peanut spill background samples. Mr. Dean used a new Exploranium GR130 to perform gamma spectrum analyses within the peanut spill itself and at several of the selected background sampling points on the asphalted areas outside of Building 364. The GR130 only detected Cs137 in the peanut spill area. None of the other spectra taken at our selected background sampling locations reported Cs137 present.**

Response: The comment is noted.