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SENT VIA EMAIL AS PDF

August ___, 2020

Sean-Ryan McCray
Remedial Project Manager
Department of the Navy
Base Realignment and Closure Program Management Office West
33000 Nixie Way, Building 50
San Diego, CA 92147

Subject: EPA Comments on the Draft Radiological Scoping Survey Report,
Parcel F Structures—Submarine Pens
Hunters Point Naval Shipyard Superfund Site

Dear Mr. McCray:

Please see attached EPA comments on the "Draft Radiological Scoping Survey Report, Parcel F Structures—Submarine Pens" for the Hunters Point Naval Shipyard Superfund Site in San Francisco, California. The draft Work Plan is dated June 2020.

Please contact me at 415-972-3181 or [HYPERLINK "mailto:praskins.wayne@epa.gov"] with any questions.

Sincerely,

Wayne Praskins
EPA Project Manager

cc: Nina Bacey, California Department of Toxic Substances Control
Terry Han, California Department of Public Health, EMB
Tina Low, San Francisco Regional Water Quality Control Board
Amy Brownell, San Francisco Department of Public Health

EPA Comments on the Draft Radiological Scoping Survey Report,
Parcel F Structures—Submarine Pens
Hunters Point Naval Shipyard Superfund Site
Draft Report dated June 2020; EPA Comments dated xxxx, 2020

1. **Section 2.4, Previous Investigations and Removal Actions, Page 2-2:** This section does not mention previous investigations of Drydock 6 described in the 2004 HPNS Historical Radiological Assessment (mentioned in Tables 6-6 and 6-7 and Sections 8.3.2.11 to 8.3.2.12 in the HRA). Please provide a brief summary of these previous investigations.

2. **Section 3.4.4 and Table 4:** The ranges of values for several parameters appear to differ between the text and table (e.g., alpha background count rates for surface scans, alpha scan total efficiency values, beta scan background values). For example, for the alpha background on concrete the text gives a range of 3.5 cpm to 10.5 cpm but the table shows 21.2 to 34.5 cpm. Please clarify and make any needed corrections.

3. **Section 3.3.5, Step Five—Develop a Decision Rule, Page 3-5:** Please clarify the consequences of exceeding a gamma scan Investigation Level (IL). Section 3.3.5 states that locations where a gamma scan survey result exceeds the IL will be included in the surface area covered by the alpha/beta scanning survey. Did exceedance of a gamma scan IL also result in a gamma static measurement, as suggested by Section 4.3.3?

4. **Section 3.4.2, Gamma Static Measurements, Page 3-6:** This section states that one-minute gamma static measurements were performed with the Ludlum Model 44-20 3-inch by 3-inch Sodium Iodide (NaI) gamma scintillation detector. Why was the RS-700 not used for horizontal surfaces given its larger detector size and lower MDC capability, as was done for scans?

5. **Section 4.3.1, Reference Background Areas, Page 4-4:** This section states that, "A small concrete pad adjacent to SU 3 was used as the RBA for gamma measurements." Section 5.3.2 of the May 2019 Work Plan states that, "The reference area behind Building 810 (Figure 1) will be used to collect gamma instrument-specific background levels." A footnote in Table 5 states that "concrete in Parcel C" was used as RBA for static gamma. Please explain the apparent change from the work plan and clarify which RBAs were used for which types of measurement. If a change was made from the work plan and is not described in one of the Field Change Requests included in Appendix B, please discuss in Section 1.2 ("Deviations from Planning Documents").

6. **Section 3.3.5, Step Five—Develop a Decision Rule, Page 3-4:** This section says, "The IL for gamma scan measurements is the average of gamma scan measurements for a SU plus three standard deviations (FCR-003; Appendix B)." Section 5.4.5 of the May 2019 Work Plan says "The IL for gamma scan measurements is the average of gamma scan measurements for a similar material in an appropriate background area plus three standard deviations." Please explain this apparent change.

7. **Section 6.1.1.1, Survey Unit 1, Page 6-1:** This section and others in the report present scanning results for impellers (also described as impeller units, impeller surfaces, and outlet impellers). In Section 2.2 it is stated that the pumps used to dewater the drydocks were not visible and presumed to have been removed. Please clarify the nature of the equipment or surface described as impellers and scanned as part of the study. ~~In Section 2.2 it is stated that the pumps used to dewater the drydocks were not visible and presumed to have been removed.~~

8. **Section 6.1.3, In Situ Gamma Spectroscopy Results, Page 6-3:** This section states that, "The net spectrums were plotted and the critical levels assessed for ROC-specific energy ranges to determine if there was ROC-specific activity present above background. The spectral analysis did not identify activity statistically above background." Please revise the Report to include the formula used to calculate the critical levels for gamma in situ measurements conducted using the Canberra InSpector 1000 detection system. The report also refers to the use of critical levels in Sections 4.3.4 and 5.3.3.

9. **Section 6.2.1.1, *Survey Unit 1,* Alpha/Beta Scan Survey Results, Page 6-3:** The text in Section 6.2.1.1 and Table 7 indicate that 798 measurements (11 percent) exceeded the alpha release criterion of 100 disintegrations per 100 square centimeters (dpm/100 cm^2) in Survey Unit 1, and alpha and beta two-minute bias static measurements were performed at the 20 most elevated scan locations. A statement in Section 5.4.3 of the May 2019 Work Plan calls for static measurements at biased locations to investigate survey results exceeding project ILs. Please clarify why the other 700+ locations that exceeded the alpha release criterion were not investigated and the relationship between this fact and the recommendation for further investigation of the submarine pens. Similar circumstances occurred in Survey Units 2 and 3.

10. **Section 6.4.2, Gamma Scan Survey Results Data Quality Review, Page 6-9:** The text states that the review of the gamma scan data identified some differences between individual data sets; gamma scans on horizontal surfaces in SU 2 using the RS700 detectors were approximately 10 to 15 percent higher than the gamma scan data collected in SU 1 and SU 3. In addition, it was noted that approximately 5 percent of the gamma scan data collected with the 3-inch by 3-inch NaI detector on horizontal surfaces in SU 2 were higher than expected from a normal distribution of data. This indicates a difference in gamma radiation levels on horizontal surfaces in open areas of SU 2. Sixteen gamma static measurements and one in situ gamma spectroscopy measurement were performed in SU 2 to investigate potentially elevated results. However, the text does not explain why the results were different. Please revise this section to explain what factors may have contributed to the differences in gamma scan data for SU 2 and whether any such factors may have adversely affected the data quality or usability of such data.

11. **Section 6.4.2 (Gamma Scan Survey Results Data Quality Review):** It is unclear how gamma sensitivity of the detectors used during this project was determined and whether the sensitivity was sufficient to meet project objectives. This section states that "Gamma sensitivity was addressed during planning based on the probability of

detecting discrete sources of gamma radiation (i.e., 226Ra deck markers)." However, the Report does not address whether the gamma sensitivity for the Ludlum 44-20, RS-700, and Canberra InSpector 1000 used to collect the data for this project was determined to be sufficient for identifying discrete radiological sources on, in, or near cement or metal structures or how the sensitivity was determined. Please revise the Report to include all gamma instrumentation scanning and static Minimum Detectable Concentrations (MDCs) and/or to provide the calculations used to determine the probability of detecting discrete sources of radiation attributable to the identification of Radium-226 deck markers in cement or metal-based structures.

12. **Section 6.4.4, In Situ Gamma Spectroscopy Measurement Results Data Quality Review, Page 6-11:** The text does not state if one of the project objectives was to identify elevated Cesium-137 (Cs-137) that may be present due to historical operations at the site. For example, it is unclear if one of the seven regions of interest (ROIs) was set to detect Cs-137. Please revise the text to clarify whether an objective was to identify areas with elevated Cs-137 and, if not, explain why not.

13. **Section 6.4.4, In Situ Gamma Spectroscopy Measurement Results Data Quality Review, Page 6-11:** The text states that no differences in the in situ gamma spectroscopy results were identified and that all in situ gamma spectroscopy measurement results are comparable; however, the criteria used to determine there were no differences in the results are not discussed. For example, the text does not state if ranges of static measurements in total counts per minute (cpm) or if values for specific radionuclides between survey units were compared, or if the comparison was to background data. Furthermore, since the configurations of surveyed areas were different (e.g., some were collected on horizontal surfaces and others on vertical surfaces), it is not clear how it was determined that all of the in situ measurements are comparable. Finally, it is not clear what differences would be considered significant. Please revise this section to provide a more detailed discussion that explains how the data were evaluated and what criteria were used as the basis for the conclusion that all in situ gamma measurement results were comparable.

14. **Section 6.4.4, In Situ Gamma Spectroscopy Measurement Results Data Quality Review, Page 6-11:** This section states, "No sensitivity calculations were performed beyond the ability to identify peaks within the regions of interest. This process was sensitive enough to accomplish the survey objectives;" however, the text does not state what criteria were used to determine that the process was sensitive enough to accomplish the survey objectives, or to what survey objectives this statement is referring. For example, if the survey objective was to identify potential discreet radiological sources such as historical deck markers, then this section should be revised to state that was the basis for the sensitivity evaluation. Please revise this section to provide the criteria used to assess whether the sensitivity of the in situ measurements was sufficient, to provide a more detailed description that explains how the in situ measurements were determined to have met the sensitivity requirements, and provide a table comparing the assumed sensitivity in Table 5 in the May 2019 Work Plan with the actual sensitivity.

15. **Section 6.4.5, Alpha/Beta Scan Measurement Results Data Quality Review, Page 6-12:** As described in this section the number of measurements in each survey unit was increased from 18 to 54 to reflect the calculated upper bounds on the alpha scan data (200 to 250 dpm/100 cm^2) and allow for an alpha scan MDC as high as 300 dpm/100 cm^2. The May 2019 Work Plan states, "The assumptions regarding the number of measurements will be evaluated during the field effort and additional static measurements will be collected as required," but it is unclear if that was done. Please revise this section to include the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)-based calculations to verify that 54 samples per survey unit was adequate.

16. **Section 7.3, Recommendations, Page 7-4:** Please describe the practical challenges mentioned in the statement that "Due to practical challenges with alpha scanning in outdoor environments at levels consistent with the release criteria listed in Table 1, the survey may be limited to additional material (concrete) sampling to supplement static and smear measurements."

17. **Table 5, Reference Background Area Summary Statistics:** Table 5 appears to be missing summary statistics for some of the instruments used, like the Canberra InSpector 1000 and the RSL-700. Please revise Table 5 to include summary statistics for all instruments used.

Commented [A1]: And the RSL-700?

18. **Table 12, Sample Summary Statistics and Section 6.3, Solid Sample Laboratory Analysis Results, Pages 6-7 and 6-8:** Table 12 does not list the total propagated uncertainty (TPU) associated with the radionuclide results. TPU is important because a reported value above the DLC would not be considered a definitive detection if the associated TPU is larger than the reported value, or if the results would fall below the MDC if the absolute value of the uncertainty is subtracted from the result. In addition, it is unclear whether the data were qualified as a result of the data validation. In order to support the presentation of the results of the investigation and conclusions thereof, please revise Table 12 to include the associated TPUs for all results, and revise the text and Table 12 to state whether any data qualifiers were required as a result of the data validation.

Commented [A2]: Should this say DLC, not MDC?

Commented [A3R2]: MDC is correct.

19. **Table 12, Sample Summary Statistics and Section 6.3, Solid Sample Laboratory Analysis Results, Pages 6-7 and 6-8:** Five concrete samples were reported to have low-levels of Plutonium-239 (Pu-239). Section 6.3 states that the values were detected above the MDC and below the project quantitation limit goal but does not discuss the results further. We request that the Navy first consider the total propagated uncertainty associated with the five samples and the data validation results to determine if the detections are definitive. If they are, please discuss possible sources of the Pu-239 and whether any change in the conclusions about the status of the submarine pens is appropriate.

20. **Table 12, Sample Summary Statistics:** Table 12 includes a column with Method Detection Limits (MDLs). The May 2019 Work Plan calls for the use and reporting of the Decision Limit Concentration (DLC), not the MDL. Please revise Table 12 to replace the MDLs with DLCs.

21. **Appendix D, Reference Background Area Data**: Appendix D does not include background data for gamma scanning surveys for concrete or metal or background data for the Canberra InSpector 1000 static measurements for concrete and metal. It is also unclear if the procedure for scabbling an area near the Finger Piers as described in Field Change Request (FCR) 004 was implemented as this is not discussed in the text and if the background statics included in Appendix D are the "before" or "after" scabbling gamma scan and gamma static data. Please revise the Report to include the missing background data for gamma scans using the Ludlum Model 44-20 3-inch by 3-inch NaI gamma scintillation detector and the RS-700. In addition, please revise the Report to include a list of the background data for the InSpector 1000 used for the static measurements. Finally, please revise the text to discuss whether the procedure for scabbling an area near the Figure Piers as described in FCR 004 was implemented and provide the "before" and "after" scabbling gamma scan and gamma static data.

22. **Apparent Typos/Minor Editorial Comments:**

- Section 2.2: Section 2.2 is titled "Site History" but describes only the Drydocks and Ship Berths rather than the entire HPNS site. We suggest changing the section title to better match the text.
- Section 4.3.1. This section refers to Section 2.2 for additional description of the RBA for alpha/beta measurements. We were unable to locate any information on the RBA in Section 2.2.
- Section 4.3.5: There appears to be a typo in the following sentence: "A total 2,148 locations that exceeded the alpha scan IL"
- Section 5.4.1, Instrument Efficiency, Page 5.3: The formula listed in this section indicates the background count rate is denoted by 'R_s'. Since 'R_{S+B}' is stated to represent the gross rate (sample plus background) perhaps the background count rate should be defined as 'R_B.'
- Section 5.4.3, Calculation of Surface Activity, Page 5-5: The definition of 'B' for the formula for calculating surface activity appears to be erroneous as 'B' is defined as the background efficiency rather than background count rate.
- **Section 4.3.5, Page 4-6:** The text indicates that static measurements were collected from the 20 or 21 highest scan result locations in each SU but Section 6.2.3.3 states that 48 static measurements were collected at SU3.