

N00204.AR.003077  
NAS PENSACOLA  
5090.3a

LETTER REGARDING REVIEW AND COMMENTS ON FINAL WORK PLAN AND STATUS  
SURVEY PLAN FOR RADIUM SITES 12 AND 27 NAS PENSACOLA FL  
1/24/2012  
U S EPA REGION IV



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 4  
ATLANTA FEDERAL CENTER  
61 FORSYTH STREET, S.W.  
ATLANTA, GEORGIA 30303

January 24, 2012

Official Correspondence – This electronic message is being sent in lieu of regular mail

4SF/FFB

Ms. **Patty Marajh-Whittemore**, Remedial Project Manager,  
ITP Gulf Coast  
**Dept of the Navy; Naval Facilities Southeast**  
Attn: AJAX Street, Building 135N  
P.O. Box 30A  
Jacksonville, FL 32212-0030

Re: OU 2 NAS Pensacola, Radium Sites 12 & 27, Final WP & Final Status Survey Plan

Dear Ms Whittemore:

The U.S. Environmental Protection Agency has received and reviewed the above mentioned document and has enclosed comments on the document. Please address the comments in a separate correspondence and, once agreed upon, integrate the agreements into a revised document.

Thank you for the opportunity to review this document. Should any further clarification be required, please contact me at 404-562-8510 or [woolheater.tim@epa.gov](mailto:woolheater.tim@epa.gov).

Sincerely,

Timothy R. Woolheater  
Senior Remedial Project Manager  
Federal Facilities Branch

CC: David Grabka, FDEP

**TECHNICAL REVIEW OF THE  
RADIUM SITES, FINAL WP & FINAL STATUS SURVEY PLAN, REV.2  
OPERABLE UNIT (OU) 2 – SITES 12 AND 27  
AUGUST 2011**

**NAVAL AIR STATION PENSACOLA  
ESCAMBIA COUNTY, PENSACOLA, FLORIDA  
EPA ID NO. FL9170024567**

**I. GENERAL COMMENTS**

1. The Final Work Plan and Final Status Survey Plan, NAS Pensacola, Radium Sites 12, and 27, Rev. 2 dated August 19, 2011 (Work Plan) states that the Derived Concentration Guideline Limit (DCGL) for the radionuclide of concern (Radium-226 [Ra-226]) was determined based on a 25-millirem per year (mrem/yr) total effective dose equivalent (TEDE) assuming an industrial worker scenario. The establishment of a 25 mrem/yr dose limit was presumably based on Nuclear Regulatory Commission (NRC) regulations 10 Code of Federal Regulations (CFR) 20. However, the public dose limits found in the NRC regulations 10 CFR 20 are generally not compliant with United States Environmental Protection Agency (EPA) guidance and the Comprehensive Environmental, Response, Compensation, and Liability Act (CERCLA) program requirements to maintain risk within the  $10^{-4}$  to  $10^{-6}$  risk range. According to an EPA Memorandum on the establishment of Cleanup Levels for CERCLA sites with radioactive contamination, OSWER Directive 9200.4-18, a 25 mrem/yr limit is approximately equivalent to a  $5 \times 10^{-4}$  increased lifetime risk. The EPA OSWER Directive 9200.4-18 also establishes that a 25 mrem/yr dose limit is outside the acceptable CERCLA risk range of  $10^{-4}$  to  $10^{-6}$  and is above the 15 mrem/yr dose limit (approximately equivalent a “maximum” increased risk of  $3 \times 10^{-4}$ ) that EPA considers protective at sites with radiological contamination. Further, it is unclear how use of an industrial worker scenario for the establishment of dose limits is appropriate for a final status survey for establishing free release of a site (e.g., unrestricted use). Further justification for use of an industrial worker scenario rather than a residential scenario for establishment of dose limits is required. As such, revise the Work Plan to ensure that the project data quality objectives (DQOs) incorporate all data objectives/needs which include: 1) dose limits that are compliant with the CERCLA acceptable risk range or OSWER Directive 9220.4-18; and 2) a demonstration that the release limits are adequately protective of all potential receptors.
2. Section 1.0, Introduction, states that work to be performed at Site 25 is no longer included in the scope of work covered by the Work Plan for Sites 12 and 27. However, it was noted that text describing work to be performed at Site 25 is found in Sections 2.2.4, 2.2.5, 2.2.6, 6.1, 6.5, and 7.2 of the Work Plan. Therefore, it is recommended these sections be reviewed to remove unnecessary descriptions of work to be performed at Site 25.
3. Section 2.2.3, Site 12 Waste Profile Samples, and Section 2.2.9, Site 27 Waste Profile Samples, state that based on the Toxicity Characteristic Leaching Procedure (TCLP) analysis, it was determined that the soils from these sites are not mixed waste. The text does not specify but it is assumed these statements indicate that the soils at Sites 12 and 27 were determined to not contain Resource Conservation and Recovery Act (RCRA) hazardous substances; and therefore are not regulated as mixed wastes (i.e., radiological and RCRA hazardous). EPA regulation 40 CFR Part 261, Identification and Listing of Hazardous

Waste, includes criteria for determining whether wastes are considered RCRA hazardous based on the presence of certain hazardous substances or certain physical/chemical characteristics of the material. Since the TCLP test is used to make a determination whether waste is considered characteristically hazardous for toxicity only, it is incorrect to state that a TCLP analysis can be used solely to determine whether a waste is RCRA hazardous. Additionally, process history information documented in Section 2.1.2, Site 12, indicates Site 12 received waste materials which may have contained RCRA hazardous materials, such as scrap material containing metals, aircraft parts, scrap tires, and electronics. Additionally, Section 2.1.3, Site 27, lists historical processes such as paint stripping, plating, carburetor repairs, instrument shops, and others that indicate the potential for RCRA hazardous materials. Sections 2.2.3 and 2.2.9 should be revised to discuss whether the soils are considered mixed waste (radiological and RCRA hazardous) in accordance with the all of the requirements of 40 CFR Section 261 for identification of RCRA hazardous waste.

4. Section 2.3, Previous Remediation Activities, states that previous final status survey (FSS) activities performed at Sites 25, 12, and 27 following removal of contaminated soils included a 100% gamma scan walkover survey and the collection of soil samples. However the Work Plan does not state whether the side-walls of excavated areas were scanned or sampled. In order to provide adequate documentation of how the remedial activities were completed, the Work Plan should state how the sides of the excavated areas were investigated for compliance with the action level (DCGL).
5. The Work Plan does not address whether previous investigations determined if Ra-226 contamination at Site 12 - Scrap Bins and Site 27 - Radium Dial Shop Sewer has migrated to ground water. Further, Section 4.15, Ground Water Monitoring Well Sampling, and Section 5.6, Ground Water Sampling, indicates well sampling will be performed but does not state how the selected wells are sufficient for assessing the possible extent of Ra-226 resulting from these sites or what parameters will be included in the analyses. The Figures 11, 12, and 13 do not indicate where Sites 12 and 27 are located relative to the monitoring wells depicted; and therefore, are inadequate for demonstrating that Sites 12 and 27 have adequate monitoring well coverage where sources of Ra-226 contamination are known to exist. The Work Plan should be revised to provide additional information regarding previous and on-going groundwater investigations at Sites 12 and 27. Additionally, Figures 11, 12, and 13 should be revised to indicate where Sites 12 and 27 are located relative to the groundwater wells. Further, the text should explain how the currently planned groundwater monitoring well sampling is sufficient for identifying the extent of Ra-226 contamination (if any) resulting from contamination at these sites. Finally, the Work Plan does not include or reference the sampling and analysis plan (SAP) (Field Sampling Plan and Quality Assurance Project Plan [QAPP]) that will be used to implement the groundwater sampling requirements. Therefore, the Work Plan should be revised to include or reference the SAP/QAPP for this sampling.
6. Section 6.3 Derived Concentration Guideline Limit (DCGL) for Radionuclide of Concern for Soil, states that the DCGL using RESRAD for soil for Ra-226 is 1.61 picocuries per gram (pCi/g). However, the text does not state if this concentration includes background levels of Ra-226 or if the DCGL is 1.61 pCi/g above background. The Work Plan should be revised to include this information.
7. Section 6.4, Dose Modeling Summary, includes Table 11 which presents a summary of the pathway selections for dose modeling. It is noted that the drinking water exposure pathway was not accounted for in the RESRAD model used to estimate public exposure to Ra-226.

However, the Work Plan does not provide any justification for excluding this pathway and has not included a full description of previous or on-going groundwater monitoring plans and/or groundwater data. Provide a response or revise the Work Plan stating how it is justified to not include the drinking water exposure pathway in the RESRAD model. Information may include the results of previous groundwater sampling investigations for Ra-226 as well as any on-going groundwater monitoring sampling that would validate the assumptions regarding public exposure by this pathway.

8. Section 6.5.1.1, Excavation Bottoms/Asphalt-Concrete Surfaces, states that the FSS of excavation areas bottom and overburden soils will determine if the allowable release limits have been met or if further investigation/remediation is warranted. Additionally, the second paragraph of Section 6.5.2, Identification of Decisions, states “The primary uses of the data expected to result from completion of this FSS Plan is to provide information and data to support the unrestricted release of excavation bottoms in Sites 12, 27 and area in Site 25.” It is unclear from the text how the lateral extent (sidewalls) of the excavated areas will be determined to have met the allowable release criteria. If the overburden soils will be sampled to meet this requirement, the text should specifically state this fact and discuss how this is an adequate method for demonstrating compliance. Revise Section 6.5.1.1 to discuss how the sidewalls of the excavated areas will be sampled or surveyed either directly or by use of the overburden soil samples in order to demonstrate that the release limits have been met for this remedial action.
9. Section 7.1, Background Reference Radiation Levels, states that the background reference area soil samples were collected during previous phases of radiological scoping surveys and provides reference to Figures 14 and 15 for the location of the background reference area samples. Review of Figures 14 and 15 indicates that the area where the background samples were collected is fairly close to Site 27. Therefore, it is requested that the text state how the background area was selected and how it was determined this area was not impacted by site operations.
10. The Work Plan has not provided a SAP (Field Sampling Plan and QAPP) for the FSS activities. The Work Plan should be revised to include a copy of or reference to the SAP for the FSS.

## II. SPECIFIC COMMENTS

1. **Section 2.2.1, Site 12 Scoping Surveys (Concrete Surfaces), Page 9**  
The last sentence of Section 2.2.1 states “One sample result (1.61 pCi/g) was at the Derived Concentration Guideline Limit (DCGL) for Ra-226, the rest were below the DCGL.” This statement does not indicate if the DCGL of 1.61 pCi/g is a concentration that includes background concentrations of Ra-226, or if it is meant to indicate the DCGL is 1.61 pCi/g above background. The sentence should be revised to discuss whether the Ra-226 DCGL includes background.
2. **Table 1, Sample Summary Table, Page 10**  
Table 1 is referenced in Section 2.2.1, Site 12, Scoping Surveys (Concrete Surfaces). However, the table does not contain a specific label that would indicate where and how the data was obtained. For clarity and completeness, it is recommended Table 1 be re-labeled to include specific information regarding the location of where the samples were collected (i.e.,

select areas under concrete surfaces at Site 12) and how the samples were analyzed (i.e., laboratory gamma spectroscopy results).

3. **Section 2.2.2, Site 12 Scoping Surveys (Asphalt, Gravel, Soil Surfaces), Page 12**

Section 2.2.2 states that biased soil samples were collected from the areas that were surveyed and were sent to an offsite laboratory for gamma spectroscopy. The text does not describe how the biased samples were selected. It is assumed that selection of the soil samples was based on highest gamma gross counts from gamma scan surveys. However, this specific description is not provided. Additionally, Table 2, Sample Summary Table, provides a listing of the laboratory data including calculations for average and standard deviation. While these statistical measures may be useful for qualitative assessment, it should be understood that statistical methods for providing parameter estimators regarding a larger population are only valid for unbiased (probabilistic) sample data. For example, EPA guidance document *Guidance on Choosing a Sampling Design for Environmental Data Collection*, EPA/240/R-02/005 dated December 2002 states “Probability-based sampling designs apply sampling theory and involve random selection of sampling units. An essential feature of a probability-based sample is that each member of the population from which the sample was selected has a known probability of selection. When a probability-based design is used, statistical inferences may be made about the sampled population from the data obtained from the sampling units.” As such, the average and standard deviation values provided in Table 2 should not be considered defensible quantitative values, rather qualitative values that may or may not accurately represent the sampled population.

4. **Table 2, Sample Summary Table, Page 13**

Table 2 is referenced in Section 2.2.2, Site 12 Scoping Surveys (Asphalt, Gravel, Soil Surfaces). However, the table does not contain a specific label that would indicate where and how the data was obtained. For clarity and completeness, it is recommended Table 2 be re-labeled to include specific information regarding the location of where the samples were collected (i.e., biased soil samples from Site 12) and how the samples were analyzed (i.e., laboratory gamma spectroscopy results).

5. **Section 2.2.8, Site 27 Soil Samples, Page 18**

Section 2.2.8 states ten surface soil samples and two asphalt samples were collected south of the old Building 709. However, this section does not state how the samples were selected with respect to whether sampling was biased based on previous gamma scans or if samples were randomly collected. It is noted that Table 6, Site 27 Sample Summary Table, lists the sample results along with measures of averages and standard deviation of the sample results. While these statistical measures may be useful for qualitative assessment, it should be understood that statistical methods for providing parameter estimators regarding a larger population are only valid for unbiased (probabilistic) sample data are collected. Furthermore, the soil samples should be considered a separate “population” from the asphalt; and therefore, the asphalt sample data should not be included in the average or standard deviation calculations. The text should be revised to provide an explanation for how the sample locations were selected and if a biased or random sample collection scheme was used. Additionally, if the sample locations were selected in a biased manner, the text should state that the statistical measures of average and standard deviation are not considered true population estimators.

6. **Section 5.0, Soil Removal and Excavation Activities**  
Surveys and sampling is said to be conducted after remediation of these 2 areas. Please confirm MARSSIM remedial support and final status survey guidance will be used to ensure all contaminated soil to meet the DCGL will be removed.
  
7. **Figure 6, Site 12 Excavation Area Elevated Area Sample Map, Page 24**  
Figure 6 is not legible and should be corrected so that all text and pictorial representations can be discerned.
  
8. **Section 6.5.4, Definition of Study Boundaries, Page 48**  
Section 6.5.4 states that the concrete surface area in Site 12 and the asphalt/concrete surfaces in the soil laydown/bin staging area will receive a 50% gamma scan survey. However, the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) classification for these areas has not been provided as justification for not requiring 100% gamma scan. According to MARSSIM, if areas that were known to be contaminated were remediated, these areas should still be considered Class I areas; and therefore, will require 100% radiological scanning. Section 6.5.4 should be revised to state what MARSSIM classification was assigned to these areas and to provide justification for how the assigned classification was appropriate and compliant with MARSSIM guidance.