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LETTER AND THE U S EPA REGION I COMMENTS ON THE REMEDIAL INVESTIGATION
WORK PLAN/TIER II SAMPLING AND ANALYSIS PLAN AQUIFER PROTECTION DISTRICT
AT HANGAR 1 FORMER NAS SOUTH WEYMOUTH MA
01/06/2015
U S EPA REGION REGION I BOSTON MA



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

January 6, 2015

Mr. Brian Helland, RPM
BRAC PMO, Northeast
4911 South Broad Street
Philadelphia, PA 19112

Re: *Draft Remedial Investigation Work Plan/Tier II Sampling and Analysis Plan
Aquifer Protection District at Hangar 1
Former Naval Air Station South Weymouth, Weymouth, Massachusetts
November 2014*

Dear Mr. Helland,

Pursuant to CERCLA § 120(e)(2) and the November 1999, "Federal Facility Agreement (FFA) - South Weymouth Naval Air Station, Weymouth, MA", the U.S. Environmental Protection Agency (EPA) has completed its review of the above-referenced document, and disapproves the document for the reasons discussed below and in the attached comments and recommendations. Specifically, the draft work plan falls significantly short in scope and content and must be broadened to ensure adequate identification and characterization of perfluorinated compound (PFC) contamination at the Hangar 1 site, as required by Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

As you are aware, a No Action ROD for Hangar 1 soil and groundwater was signed in 2010. The decision was supported by a finding of "no significant risk" in a 2009 streamlined human health risk assessment, using data from historical baseline studies and samples collected during the removal of the Hangar 1 floor drain system. Although PFCs had not been evaluated in these earlier studies, they were discovered, shortly thereafter, during a 2010 investigation of probable PFC source areas requested by Massachusetts Department of Environmental Protection (MassDEP) and EPA. Subsequent sampling of Hangar 1 groundwater in 2011 and 2014, confirmed concentrations of PFOA and PFOS in groundwater above the EPA Provisional Health Advisory (PHA) of 0.4 ug/L and 0.2 ug/L, respectively.

The portion of the former Hangar I site located over a medium-yield aquifer (identified as both a Potential Drinking Water Source Area (PDWSA) and Aquifer Protection District (APD)). The portion of the site "outside of the PDWSA" was symbolically segregated from the portion "within the PDWSA" during Navy/LNR land-purchase negotiations in late-2011. (PFOS and PFOA has been detected above EPA PHA values in both the APD and

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non-APD.) As you may recall, the distinction between the two areas resulted in the prompt issuance of an ESD for the 2010 Hangar 1 ROD (restricting the use of groundwater in this area for drinking water purposes in the non-APD area) and inclusion of this 22-acre, "hold-back" property in the final, land purchase and sales agreement. Although supportive of the distinction between the two areas for negotiation/discussion purposes, it was always understood that a comprehensive investigation of PFCs would be conducted, in accordance with CERCLA and the former NAS-South Weymouth FFA, to more thoroughly evaluate known and suspected source areas and clearly define the extent to which downgradient resources have been impacted by the release of PFCs into the environment.

In addition, as reflected in previously-issued correspondence regarding PFCs at the FFTA and Hangar 1 sites (and subsequently discussed at various BCT meetings), EPA has always considered the 12 monitoring wells located within the 22-acre non-PDWSA parcel crucial components of any supplemental groundwater investigation (and final remediation strategy, if warranted). Contrary to the statements in Navy's May 15, 2014, correspondence regarding the "dissociation" of the PFC-impacted groundwater residing within the APD from that in the non-APD portion, the "site", as defined in CERCLA, includes both the source of contamination and any area to which the contamination has come to be located.

Therefore, despite the ESD's reference to the "placement of deed restrictions" as "the final action for the 22-acre parcel", the confirmed detection of PFCs (i.e., PFOA and PFOS) in monitoring wells located in both the APD and non-APD portions of the former Hangar 1 property, renders the issue of one area being "covered by the ESD" and one not, irrelevant. In addition, although the Navy's May 15, 2014, correspondence clearly communicated its intent to "scope, design, develop, implement, and report on a Remedial Investigation (RI) to address data gaps on nature and extent as well as construct a Baseline Risk Assessment utilizing the most current information available", the above-referenced, draft Remedial Investigation (RI) Work Plan/Tier II Sampling and Analysis Plan (SAP) falls significantly short in all of these areas and should be amended based on the attached comments and recommendations.

Should you have any questions or concerns in regards to issues discussed above or contained in the attached pages, please do not hesitate to contact me at (617) 918-1393. I look forward to discussing these issues with you at your earliest convenience.

Sincerely,



Carol A. Keating
Remedial Project Manager
Office of Site Remediation and Restoration
Federal Facilities Superfund

Brian Helland, RPM
BRAC PMO, Northeast
U.S. Department of the Navy

Attachment

cc: Dave Barney, Navy
Dave Chaffin, MADEP
Jim Young, SRA
Matthew Barry, Starwood, LLC
Michele Snyder, Resolution
ARAWH
Rona Gregory, USEPA

EPA Review of
Draft Remedial Investigation Work Plan/Tier II Sampling and Analysis Plan
Aquifer Protection District at Hangar 1
Former Naval Air Station South Weymouth,
Weymouth, Massachusetts - November 2014

GENERAL COMMENTS

1. Pursuant to Section 26.3 of the November 1999, "Federal Facility Agreement (FFA) - South Weymouth Naval Air Station, Weymouth, MA", the Navy is obligated to address past or future releases of hazardous substances, contaminants or pollutants resulting from Navy activities, regardless of whether it has sold or transferred an interest in the property. In addition, CERCLA requires that the both the source of contamination, as well as any area to which it has come to be locate, be identified, investigated, and evaluated as to current and/or potential threats to public health or welfare or the environment. Although the ESD states that the "placement of deed restrictions will be the final action for the 22-acre parcel", the confirmed detection of PFCs (i.e., PFOA and PFOS) in monitoring wells located in both the APD and non-APD portions of the former Hangar 1 property, renders the issue of one area being "covered by the ESD" and one not, irrelevant.
2. As discussed in the attached cover letter (and as detailed in EPA's "Guidance for Conducting RI/FS' under CERCLA"), the Hangar I RI Work Plan should be amended to incorporate, at a minimum, all of the components of a comprehensive *Sampling and Analysis Plan* (comprised of a *Field Sampling Plan (FSP)* and *Quality Assurance Project Plan (QAPP)*). Specifically, the FSP should specify and outline all necessary activities to obtain additional site data. It must include an evaluation explaining what additional data are required to adequately characterize the site, conduct a baseline risk assessment, and support the evaluation of remedial technologies in the FS. It should also clearly state sampling objectives; necessary equipment; sample types, locations, and frequency; analyses of interest; and a schedule stating when events will take place and when deliverables will be submitted.

The QAPP should address all types of investigations conducted and should include, but not be limited to, a description of the project (should be duplicated from the work plan), a project organization chart (illustrating the lines of responsibility of the personnel involved in the sampling phase of the project), quality assurance objectives for data (such as the required precision and accuracy, completeness of data, representativeness of data, comparability of data, and the intended use of collected data), sample custody procedures, type and frequency of calibration procedures for field and laboratory instruments, internal quality control checks, and quality assurance performance audits and system audits. Based on recent BCT discussions regarding this effort, EPA should emphasize that it less concerned about the actual name of the document (i.e. RI Work Plan vs Tier II SAP) and more concerned that the scope of the investigation adequately characterizes the nature and extent of PFC contamination at the Hangar 1 site. This includes the identification and through evaluation of probably source areas and any other area to which PFCs have come to be located, within and/or outside of the PDWSA/PPA.

3. As noted in EPA's previously-issued comments on the "Hangar 1 SAP and FFTA LTM Plan – Perfluorinated Compounds", significant data gaps exist in the current Hangar 1 groundwater monitoring well network that must be addressed to facilitate adequate characterization of PFOA/PFOS in the area associated with Hangar 1. Specifically, additional groundwater data should be collected from the area east and downgradient of MW05-033, additional details regarding groundwater flow direction in the area south-southeast of Hangar 1 should be assimilated and analyzed, existing monitoring well screen depths should be confirmed and analyzed to confirm adequate placement and their ability to capture migrating plumes, and an updated groundwater flow mapping should be prepared based on the recent synoptic water level measurements collected as part of the aforementioned Hangar 1 sampling effort.
4. PFCs were often produced and used in mixtures containing process residuals. Recent evidence suggests that these residuals can degrade to form intermediates and PFCs (such as PFOS and PFOA). Given that multiple forms of PFCs can exist at a site and that both PFOA and PFOS have already been confirmed at concentrations exceeding EPA's Provisional Health Advisories, EPA requests that the scope of the proposed RI be expanded to include sampling and analysis for all poly- and perfluorinated alkyl substances, PFC precursors, and intermediate degradation products.
5. Additional and/or modified figures that provide a visual reference to former Hangar 1-related structures and components, historic and proposed sample locations, and other site-specific features discussed in the draft work plan, should be incorporated into the document. Specifically, a figure (similar to Figure 2-2 in the March 1999, Removal Action Report for Hangar 1) should be added that shows the locations of the oil-water separator, the drain lines impacted by the AFFF spill, and the sanitary sewer and oil-water separator that received the discharge from the spill. Similar components of the Crash Truck Garage, if any, should also be included on the figure. See also the specific comments on Figure 10-2.
6. An assessment of leaching potential is typically characterized by analyzing soil concentrations and comparing them to the default or calculated leaching criteria. Please elaborate upon the proposed "synthetic precipitation leaching procedure" and provide justification to evaluate/assess leaching potential based solely on the results of this specific test.
7. Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) are ionic compounds that tend to migrate via water from shallow to subsurface soils. In light of the limited number of subsurface soil samples collected to date, additional sampling is recommended from within the former trench drain system (and other potentially impacted, subsurface locations**) to adequately rule out the potential presence of PFOA/PFOS at depth (** areas where shallow soils were excavated (i.e., trench drain piping system) with minimal, if any, consideration/assessment of potential subsurface soil contamination).
8. The aforementioned March 1999, Removal Action Report for Hangar 1 refers to the cleaning of other AFFF-containing, above-ground storage tanks at Naval Air Station South Weymouth, and specifically mentions the former firehouse located immediately northwest of Hangar 1. Please elaborate on this discussion and identify locations, if any, of other AFFF storage tanks.
9. Please include a list of references for documents cited in the work plan.

PAGE-SPECIFIC COMMENTS

10. Page 6-2, Worksheet #6- For clarification purposes, please identify members of the “project team” and describe their relationship, if any, to the “responsible entity” in the preceding column.
11. Page 6-2, Worksheet #6, SAP Changes – The Sampling and Analysis (SAP) is a “Primary” document in accordance with Paragraph 10.2 of the aforementioned South Weymouth FFA. As such, the current plan to limit EPA notification to “significant” field changes, is unacceptable. Please amend this section to ensure that EPA is notified of any SAP change, modification, amendment, and/or field change (excluding those related to costs) within 5 business days.
12. Page 6-1, Worksheet #6 – The last page for this worksheet was mislabeled as WS 6-1 instead of WS 6-6 (the previous page is labeled WS 6-5). Please verify and revise as appropriate.
13. Page 3, Section 7.2 - SOP 3-07 requires a horizontal accuracy of 0.1 feet. If that accuracy is not Navy’s intent, please indicate that SOP 3-07 will be modified for this project and provide the appropriate expected post-processed accuracy.
14. Page 10-3, Figure 10-2 – Please amend the figure to include an overlay of monitoring well locations and corresponding historic and current PFC detections (i.e., a combination of Figures 10-1 and 10-2).
15. Page 10-3, Figure 10-2 – Figure 2-2 from the March 1999 Removal Action Report for Hangar 1 indicates that the two AFFF tanks were not located in the northwestern corner of the building as shown but rather in the next bump out to the northeast. Please include definitive documentation in the RI WP supporting the location of the AFFF tanks and the associated soil sampling locations.

It is presumed that most if not all of the spilled AFFF drained to the interior floor trenches and discharged to the sanitary sewer on the west side of Hangar 1 and flowed north in the sewer, following the sewer network to some undetermined discharge point. Please edit this figure to show this sanitary sewer and its northern extent including manholes. Please also identify the material type and construction for the sewer pipe.

It is also possible that some of the AFFF may have discharged to the exterior door trenches and ultimately to the storm sewer on the southwest of Hangar 1 and the storm sewer and oil-water separator on the northeast. If this occurred AFFF may have penetrated farther north into the aquifer protection district along the storm sewer and to the discharge point of the storm sewer. Please provide the details of the cleanup performed for the AFFF spill so the potential areal extent of the impacts of the spill can be better understood.

16. Page 10-4, Section 10-3- For reasons previously discussed, the paragraph should be amended to reflect the fact that the “division” of the site into two parcels was a conceptualized in the December 2011, ESD as a means to facilitate Navy/LNR land-purchase discussions/negotiations in late-2011 (i.e., the designation of a “non-APD” area allowed for the inclusion of an additional 22-acres in the land purchase agreement).

17. Page 10-6, Figure 10-3 – Please revise the figure to show updated groundwater flow based on April 2014, synoptic water level measurements.
18. Page 10-7, Section 10-3 – Please include a discussion of groundwater flow as confirmed by synoptic water level measurements collected in April 2014.
19. Page 10-7, Section 10.4.2 – Please edit the text to confirm that the oil-water separator has also been removed.
20. Page 10-8, Section 10.4.3 – Please check the first sentence which contradicts the statement at the top of this page regarding the location of the maximum PFOS/PFOA concentrations detected in soil.
21. Page 10-8, Section 10.4.3, ¶2 – Please include a table documenting the reduction in the magnitude of PFOS and PFOA concentrations in the overburden aquifer at Hangar 1 because the cited reference does not provide that documentation. Please note that two sampling events are not sufficient to document a trend; therefore, the implications of the existing text are overstated and should be revised.
22. Page 10-9, Section 10.4.5- Several portions of this section may warrant revision based upon the outcome/resolution of previously-identified issues.
23. Page 10-11, Section 10.4.5 – The document states that dermal contact with PFOS and PFOA in groundwater is not proposed due to lack of chemical-specific information. New information is available for PFOA, however, in Franko et al 2014. Dermal Penetration Potential of Perfluorooctanoic Acid (PFOA) in Human and Mouse Skin. J. Toxicol. Environ. Health, Part A: Current Issues 75:1, 50-62. The k_p at reasonable pH (about 5) is about $8.8E-05$ cm/hr (Table 3). Please evaluate this paper and use it to calculate dermal risk of PFOA for groundwater exposure if appropriate. If not, please discuss why in the uncertainty section and whether dermal exposure could be significant. It is uncertain whether EPA would continue to maintain that this is “outside the effective domain” now that there are experimental measurements.
24. Page 10-11, Section 10.4.5 – The discussion at the end of this section states that ecological receptors are not considered to contact groundwater under a current or future use scenario. Since groundwater containing PFOS and PFOA migrates toward surface water (French Stream, TACAN ditch), there should be an evaluation whether these PFCs can reach levels in the hyporheic zone of French Stream or TACCAN ditch that are toxic to aquatic organisms. Work plan should include either modeling or piezometer sampling to rule out this potential risk to aquatic organisms.
25. Page 11-1, SAP Worksheet #11- The entire worksheet may need to be revised based upon outcome/resolution of several previously-discussed issues. Additional comments may be issued, if warranted, based on EPA/Navy/MassDEP discussions at the January 8, 2015, BCT meeting.

26. Page 11-2, Section 11.3, ¶1 – For clarity the areas subject to investigation should be more thoroughly described as the areas impacted by the historical spill of 5,000 to 10,000 gallons of AFFF including the surface area impacted by the spill, the soil beneath the former drain lines and the oil-water separator(s), and the soil surrounding the sanitary sewer in the vicinity of Hangar 1 as well as the soil and concrete in the vicinity of the Crash Truck Garage. Please also clarify whether any drains existed for the Crash Truck Garage.

Navy needs to clarify in this document whether or not the parkway overlies the former Crash Truck Garage; however, the existence of the parkway does not necessarily establish that a source area is not present beneath the parkway due to the ionic nature of PFOS and PFOA which would have allowed them to penetrate into the subsurface with water. Navy needs to provide details to justify not sampling in a potential source area beneath the parkway.

27. Page 11-2, Section 11.3, ¶3 – Inaccurate water levels may be obtained if the sampling event occurs following a significant precipitation event due to the extent of impermeable surface in the project vicinity which could cause mounding at the perimeter of the impermeable surfaces.
28. Page 11-2, Section 11.3 - Project action levels should be 1/10 of the calculated RSL values for tapwater if such values are based on HQ =1. PALs are typically used for selection of contaminants of potential concern. The risk assessment should include any other chemical detected above RSLs set at cancer risk = 1E-06 or HQ =0.1.
29. Page 11-3, Section 11.4 – The site boundaries shall consist of the surface area impacted by the spill, the soil surrounding the former drain lines and the oil-water separator, and the soil surrounding the sanitary sewer in the vicinity of Hangar 1 as well as the soil and concrete in the vicinity of the Crash Truck Garage including any soil surrounding impacted drains or sewers. Please edit the text accordingly.
30. Page 11-3, Section 11.5- Please revise the “decision rules” to acknowledge that any decisions regarding future, next steps will be made by the Navy, in consultation with MassDEP and EPA, as required by CERCLA and in accordance with the November 1999, South Weymouth FFA.
31. Page 11-3, Section 11.5 – Decision Rule #3 – Please edit the text to read: “... exceed PFOS and/or PFOA project”.
32. Page 14-3, Section 14, ¶1 – Navy should propose supplemental soil sampling depth intervals other than just those at the water table to demonstrate with reasonable certainty that soil is not a continuing source of AFFF contamination.
33. Page 14-5, Section 14, ¶4 – Please add a second sentence to this paragraph that reads: “To ground-truth the sample locations with Site features, GPS coordinates will also be collected from several definable Site features and used to establish sample locations relative to these features.”
34. Page 14-5, Section 14, ¶5 – Please add another paragraph to describe the management of soil waste that cannot be returned to the boreholes.

35. Page 14-7, Section 14, Data Management and Review- Pursuant to paragraphs 14.3 and 31.1 of the November 1999, South Weymouth FFA, a summary of “quality-assured results” (of sampling and tests (and other data generated through implementation of the FFA)), must be provided to EPA prior to monthly BCT (i.e. Project Manager) meetings. The summary should include “all data received and not previously provided by the Navy during the reporting period (i.e., prior month). In addition, any “unvalidated” data included in the summary package should be included and identified as “draft”.
36. Page 17-1, Worksheet #17- For reasons previously stated, the scope of the proposed investigation is unacceptable and must be expanded to include the collection of samples from the entire former Hangar 1 property, including, but not limited to, the “non-APD” area. Specifically, soil borings/monitoring wells are needed downgradient (i.e., south-southeasterly direction) of monitoring well locations (former) MW05-308, 1-H1-MW-902, MW05-304, MW05-302, MW05-306, MW05-031, MW05-034, and MW09-006. While the newly proposed bedrock monitoring wells are needed to fill previously-identified data gaps, additional data is needed from areas between existing and proposed locations.
37. Page 17-1, Worksheet #17, Groundwater Sampling – Please verify that 2014 synoptic water level results were used to update groundwater flow mapping and in the identification of proposed soils and groundwater sampling locations.
38. Page 17-1, Table 17-1 – How do the screen intervals for replacement wells, H1-MW-900, -901 and -902 compare to the previous. MW-306, -307, and -308 wells? (Unfortunately, MW-900 and -901 appear to be located beyond the northern-most extent of previous PFC detections and as such, may not be truly representative of previous (PFC-confirmed) sample locations.
39. Page 17-1, Table 17-1 - The Navy’s proposed well screen intervals need to be presented in this work plan based on existing groundwater depth data, contaminant detections, and data gaps. As necessary, proposed intervals can be field adjusted to address unforeseen Site conditions. Please identify all proposed well screen intervals and provide the rationale for the intervals selected.
40. Page 17-2, Section 17, ¶3 – Navy should propose supplemental soil sampling depth intervals other than just those at the water table to demonstrate with reasonable certainty that soil is not a continuing source of AFFF contamination.
41. Page 17-3, Figure 17-1 – This figure by itself is inadequate to present the sampling locations. Figures presenting sampling locations relative to potential source areas, such as drains, impacted sewers, oil-water separator, sumps, and impacted surface areas are required to properly evaluate the proposed sampling plan. Please supplement this work plan with such figures.
42. Page 17-3, Figure 17-1 – Based in the positioning of wells around the perimeter of the groundwater restriction boundary, it appears that a goal of the proposed remedial investigation is to evaluate the adequacy of the groundwater restriction boundary. Therefore, please edit this work plan to include that as one of the investigation’s goals if that is the intent.

43. Page 17-3, Figure 17-1 – Monitoring wells H1-MW102 and H1-MW-102D should be relocated farther south closer to the potential source area to evaluate the groundwater there. If PFOS or PFOA are detected at concentrations exceeding the provisional health advisory values, supplemental step-out well locations can be established to better define the limits of contamination. Currently there are no wells immediately northwest of the potential source areas.
44. Page 17-3, Figure 17-1 – Monitoring wells H1-MW101 and H1-MW-101D should be moved to be adjacent to H1-SB103. If PFOS or PFOA are detected at H1-MW101, H1-MW-101D, H1-MW101, or H1-MW-101D at concentrations exceeding the provisional health advisory values, supplemental step-out well locations can be established to better define the limits of contamination.
45. Page 17-3, Figure 17-1 – Include a new bedrock well adjacent to MW05-303 and potentially at MW05-302. If PFOS or PFOA are detected at concentrations exceeding the provisional health advisory values at MW05-303 then supplemental step-out well locations, including near MW05-302, can be established to better define the limits of bedrock contamination.
46. Page 17-4, Table 17-2 – Collecting soil samples only at the top of the water table does not confirm that there is no source of leachable PFOS or PFOA in the soil. A more comprehensive soil sampling effort is warranted to better characterize the soil to identify potential sources of leachable PFOS and PFOA.
47. Page 21-1 – If the 0.1-foot accuracy required by SOP 3-07 will not be attained please add a note to the comments column to indicate that SOP 3-07 will be modified for this project.
48. Page 23-1, SAP Worksheet #23 – Please include as an attachment to this SAP, copies of the analytical SOPs listed on this worksheet.
49. Appendix A, SOP 3-07, Page 3, Section 7.2 – The horizontal survey accuracy specified, 0.1 feet, is not consistent with the accuracy specified in the text. Please review and correct as appropriate.
50. Appendix A, SOP 3-07, Page 3, Section 8.1 – Please correct the third bullet: mean sea level is not the same as the lower low water level.