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LETTER AND COMMENTS FROM U S EPA REGION I REGARDING DRAFT FINAL REMEDIAL INVESTIGATION FOR SITE 11 SOLVENT RELEASE AREA NAS SOUTH WEYMOUTH MA
06/21/2010
U S EPA REGION I

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION I
5 Post Office Square, Suite 100
Boston, MA 02109-3912

June 21, 2010

Brian J. Helland, P.E.
BRAC Program Management Office NE
4911 South Broad Street
Philadelphia, PA 19112-1303

Re: Draft Final Remedial Investigation for the Solvent Release Area (IR Site 11, OU14)

Dear Mr. Helland:

EPA reviewed the *Draft Final Remedial Investigation for Solvent Release Area (IR Site 11), Naval Air Station South Weymouth,* dated April 2010. EPA's review of the incorporation of its comments on the Draft RI and new comments on the Draft Final RI are presented below. Overall, EPA's requests and recommendations on the draft document (November 2008) have been accommodated in the Draft Final version. Detailed comments are provided in Attachment A.

The Draft Final Remedial Investigation is expanded significantly in accord with previous discussions and with the Work Plan Addendum dated March 2009. Seventeen soil samples were collected (p. 2-11, §.2.3.1.3) and three new bedrock borings were advanced (p. 2-13, §2.3.2.2) in 2009. The latter were characterized by borehole geophysics (p. 2.-15, §2.4.2), and monitoring wells were installed (p. 2-19, §2.5.2). Results from the soil and groundwater samples collected in 2009 were consistent with previous results. PCE was detected in new source-area well MW20-503D at 2600J ppb, but in none of the new wells along the western flank of the plume. The additional results do not significantly change the delineation of the plume, and suggest that contamination on the western and southern margins is reasonably well bounded.

Appendix H, the Human Health Risk Assessment supporting information has been reorganized and completed. The exposure point concentrations, COPC selection, receptors and pathways, uptake calculations, toxicity data, *etc.* are acceptable and follow the Work Plan and the Work Plan Addendum. The vapor intrusion pathway has been added as proposed in the Work Plan Addendum. Risk to human receptors has been calculated for the vapor intrusion pathway appropriately except that while the Work Plan Addendum proposed eight soil gas samples, only one sample was collected. The text explains that eight soil vapor probes were installed but only one could be sampled because soil vapor screens were completely saturated owing to heavy rains. The text also states that the water table was high at the Site. If the soil was saturated because of heavy rains, would it not be possible to collect soil gas data when there have not been heavy rains? The objective of the soil gas data was to provide site-specific data to lessen the uncertainties associated with vapor intrusion modeling. This objective has not been met. The approach used in the RI has identified vapor intrusion as a pathway for unacceptable risk to human receptors, so it may not be necessary to collect soil gas data for the RI. However, since PRGs are needed for the FS, soil gas

data would help to derive more accurate PRGs, and should be considered if the data could be collected during a drier period than attempted previously.

By compiling many of the components of this RI separately during various phases of investigation, into one cohesive data set, some new insights have arisen and the CSM has been strengthened. EPA is concerned, however, that previously identified monitoring issues still require resolution and will need to be addressed at some point. EPA recommends a technical meeting to examine the issues further. EPA would like the opportunity to present graphical information and discuss some of the comments raised herein and possible resolutions to them. Specifically, EPA would like to discuss the: 1) delineation of the leading edge of the plume in overburden; 2) nature and locations of groundwater discharge to surface water; 3) delineation of the leading edge of the plume in bedrock; 4) delineation of source area in bedrock; and 5) conditions up-gradient to the site, including the potential for additional sources.

EPA appreciates the detailed figures in the revised RI to depict the extensive multi-faceted data set as they illustrate the interrelationships among multiple data sets. The revised hydrogeologic cross sections (Figures 3-2 through 3-5) and Figure 5-1, which overlays TCE concentration data from soil and groundwater sampling, are particularly helpful.

The overburden area included within the "interpreted 1% (2000 ug/l) of PCE solubility in overburden" delineation on Figure 5-2, represents a shallow, easily accessible locus of contamination which is a likely remediation target. An excavation effort could enable a closer evaluation of subsurface materials in order to clarify lingering questions about the precise nature and locations of the release(s). While surface dumping of small quantities of liquid waste appears to be the most plausible explanation, the possibility of buried drums should be addressed. A removal action will enable assessment of the subsurface beneath areas where previous magnetometer surveys identified metal presumed to be 'near-surface' materials. The potential for metallic material *beneath* the surface anomalies remains untested.

EPA is concerned that the interpretations offered in the RI appear to rely to some extent on un-validated results (*i.e.,* pre-RI groundwater data). Please explain why some of the previous data are considered usable and some are not. Given the apparent QA/QC problems with the pre-RI groundwater data, revisions to the current CSM may be needed. While some effort has been directed toward assessing the potential for additional source(s) in up-gradient areas, previous efforts have focused on Building 95. The EBS characterization of Building 95 provided limited data from three shallow monitoring wells (MW-01, -02, -03). The MW-408/D1/D2 cluster has provided additional information for the overburden and bedrock aquifers, but contamination in bedrock zones complicate the use of this well for delineating upgradient impacts. Characterization in the region between MW-408 on the west to MW-BG-4 on the east, a distance of over 400 feet, is limited. Few buildings are immediately upgradient of this area and the upgradient area contains ditches and woods easily accessed by roadways. While the MW-338 results suggest a lack of contamination in that area, the CVOC detections at nearby up-gradient locations (e.g., MW-339 and PZ-6) do. The MW-338 construction data suggest that the screen for this well appears to be about 11 to 12 feet above the bedrock surface. Figure 3-6 suggests that there is a significant depression on the bedrock surface along this upgradient portion of the site. Additional characterization is needed in the upgradient areas of the site (*e.g.,* geophysical surveys, monitoring well installations).

Components of the groundwater/surface water interaction in the East Mat ditch suggest a number of

problems with components of the data. As a result, conclusions regarding the location and levels of contamination reported in groundwater, surface water and sediment should be reevaluated. This effort should be repeated under more favorable conditions. Issues include 1) lack of agreement between PDB samples and surface water samples, 2) lack of sufficient contrast between surface water and groundwater temps, 3) shallow piezometer screen installation depths, and 4) inability to penetrate stream bottom with temperature probe.

Numerous detections of VOCs were recorded from surface water, suggesting a discharge of VOC-laden groundwater to the ditch, yet PDB samplers were for the most part "ND" or recorded much lower concentrations than the co-located surface water samples. It may be appropriate to consider another variation of diffusion sampler technology, such as the vapor-filled VOA vials originally called for. The water-filled PDB samplers do not appear to be sufficiently sensitive in this setting. Therefore, the robustness of the plume delineation in this area and the delineation of sediment contamination are questionable. The site team should discuss appropriate follow-up actions.

The presence of VOCs in surface water (*e.g.,* SW/SD-107) at the downgradient limits of the site boundary indicate the potential for off-site transport and may suggest that the down-gradient limits of the overburden groundwater plume have not yet been established. While numerous control points exist on the East Mat side of the ditch, reexamination of 2-D resistivity sections suggest that a small scale liner depression feature on the bedrock surface may extend from the SW/SD-112 area directly southward across the ditch. This area is not monitored presently. There is a lack of shallow well control on the northern (upgradient) side of the ditch that would be expected to transport VOC if the stream is acting as a groundwater discharge point. Lastly, the role of the engineered drainage system in potential offsite transport of contaminants needs to be assessed more comprehensively. Specifically, surface geophysical surveys, vertical profiling transects for groundwater characterization, and additional monitoring well installations should be considered.

The hydrogeologic cross sections and other information indicate that the true lateral extent of the high-concentration source area is not fully delineated in bedrock, nor has the leading edge of the plume in bedrock been identified. While the locus of high-concentration source material in bedrock, including potential DNAPL is near MW-405D1/D2, the vertical limits are not defined. Cross-section B-B' indicates a vertically elongated source zone, perhaps controlled in part by the presence of steep or vertical fractures. Cross-section I-I', perpendicular to the interpreted bedrock flow direction, shows a similar distribution of source material. Successive transverse slices through the plume in the upgradient direction (to the north) highlight a lack of deep control in that direction suggesting that the bedrock source area is not constrained to the north and northwest. The only transverse cross-section in the down-gradient direction to the south (J-J') suggests a diminishment of contaminant levels to very low levels (< 1 ug/l) over a distance of some 500 feet. However, J-J' also indicates that none of the deep bedrock monitoring points along this line (MW10-410D1/D2, MW-406D1/D2, MW-407D1/D2) penetrated the projected locations of 2-D resistivity anomalies 1, 2, and 3. Since these features may have the potential to act as preferential flow pathways in bedrock, the downgradient monitoring and delineation of the plume in bedrock may not have been adequately completed to the south. The only other deep monitoring points to the south of the MW10-405 D1/D2 area are MW20-502D and MW10-412D1/D2. MW20-502D appears to have intersected an area containing very few fractures. No well was installed near MW20-502D because there was so little water. Similarly, while MW10-412D1/D2 was targeted to resistivity anomaly 5, the projection of this feature apparently intersects the borehole up in the cased-off part of the well above the bedrock. Also, the bedrock intersected by MW10-412 D1/D2 had few fractures. EPA

therefore believes that additional effort should be directed to establish the limits of the dissolved plume in bedrock in the southerly direction.
Potential for migration of DNAPL and/or dissolved-phase contaminants to the southeast also exists. Resistivity anomaly 4 extends from the MW-405D1/D2 area directly to the southwest. While MW10-409D2 may have intersected this feature, the 2-D resistivity survey data suggest a vertical orientation. The uncertainty on the dip value assumed for 2-D anomaly 4 suggests that MW10-409D2 may have simply missed the feature. The presence of a NE-SW striking fracture/feature extending to the southwest through the intervening area between MW10-409D1/D2 and MW10-412D1/D2 is further corroborated by the bedrock surface map (Figure 3-6) that shows an abrupt NE-SW striking depression on the bedrock surface in the MW20-316, MW10-405, MW10-410 area. Please establish monitoring zone(s) in this feature. EPA believes that additional actions are needed to delineate the high-concentration CVOC source zone known in the MW10-405D1/D2 area. It is not clear that this zone has been well delineated in any direction, but the potential presence of NE-SW striking feature through the known source areas suggests that the source zone data gap is most acute to the northeast and southwest from the MW10-405 area. Additional delineation of the dissolved-phase plume in bedrock appears necessary in the southwest and south of the MW10-405 area. Additional actions toward these objectives will likely require additional geophysical surveys, drilling, and monitoring well installations.

Past clean-up activities at the former pistol range focused on remediation of lead. It is not clear whether contaminants relating to historical use of the 'de-armament embankment' structure (which predated the pistol range) have been evaluated. For example, the potential for contamination from explosive and propellant compounds (*e.g.,* RDX, perchlorate) and perflourinated compounds (*e.g.,* PFOA/PFOS) potentially used as fire-fighting agents should be explored. Identification of a small subset of on-site monitoring wells for sampling and analysis for these compounds would be helpful.

I look forward working with you and the Massachusetts Department of Environmental Protection to complete the investigation and remediation of the Solvent Release Area. Please do not hesitate to contact me at (617) 918-1385 should you have any questions.

Sincerely,

Kymberlee Keckler, Remedial Project Manager
Federal Facilities Superfund Section

Attachment

cc: Dave Barney, USN, South Weymouth, MA
Dave Chaffin, MADEP, Boston, MA
Kevin Donovan, SSTTDC, South Weymouth, MA
Phoebe Call, TTNUS, Wilmington, MA

ATTACHMENT A

Page	Comment
Comment 61	EPA recommended that the uncertainties associated with the elimination of chemicals based on a comparison to site background be addressed. The Uncertainties Section now recognizes that there are uncertainties associated with the elimination of the chemicals as COPCs before the Step 3A food chain model but does not fully address the comment. The comment requested insight into the uncertainties, thus the recommendation to look at the different HQs. Simply stating that there are uncertainties does not provide any insight into the direction or magnitude of these uncertainties. The uncertainty discussion should be enhanced.
Comment 63	The text in Section 7.3.4 has been changed to no longer rely on comparisons with background UPLs to eliminate aroclor 1260 and endrin aldehyde as ecological COPCs. The text notes the low NOAEL-based HQ and argues that "a kingfisher would likely only derive a small portion of its diet from aquatic organisms in the ditches." This qualitative argument should be better supported, as it is used to eliminate two chemicals as COPC. Please consider using the following, or similar, to better support the elimination of aroclor 1260 and endrin aldehyde: "A conservative home range for the kingfisher, based on the *Wildlife Exposure Factors Handbook*, would be 0.71 km, the average of the non-breeding season home range and the conservative breeding season home range. An average home range would be 1 km, the average of the non-breeding season home range and the average breeding season home range. If the available habitat at the SRA is about 0.37 km (approximately 600 feet of East Mat Ditch and 600 feet of the Eastern Drainage Ditch [please confirm distances]) during the wet months and 0.19 km during the dry months (when the Eastern Drainage Ditch does not have flowing water), one could assume the year-round available habitat is an average of these, or 0.28 km. Given this, one could derive a conservative home range factor of 0.4 and an average home range factor of 0.28. Using these home range factors would not quite drop the NOAEL-based HQs for the kingfisher below 1.0. However, given that there are possibly more attractive locations for the kingfisher to forage than the two ditches (mainly along the Old Swamp River) and given that the LOAEL-based HQs are less than one, even without considering home range, eliminating aroclor 1260 and endrin aldehyde is acceptable."
Comment 84	While the ecological screening level for aroclors has been revised, aroclors have been selected as COPC, and they have been carried through the food chain models, potential risk to soil plants and invertebrates have not been discussed in the risk characterization. Please address.
Comment 88	In the electronic version of the Draft Final RI, none of the symbols in Figures 6-1 and 7-1 specify the pathway(s) that each receptor is exposed to.

Comment 90	EPA recommended that bioaccumulation factors represented in Table I.1 by regression values be numerically presented, based on site maxima and site averages, rather than simply listed as "Regression equation." Although the response indicated that this would be done, the table has not been changed. Please present the numerical bioaccumulation factors used in the food chain models.

New Comments

p. 6-31, §6.4.5.2	Under *Exposure of Workers to Volatiles in a Construction/Utility Trench*, the intake equation is not correct because the units do not cancel and body weight is used. Please revise or explain why this inhalation equation calculates an intake rather than an exposure concentration.
§6.6	The equation for ILCR is "ILCR=(IUR)(Exposure Concentration)(1000 ug/mg)." The more appropriate equation is "ILCR = (IUR)(Exposure Concentration)" because the conversion factor of 1000 ug/mg is more appropriately included in the equation for the exposure concentration. Please revise.
Figure 3-6	Please revise this figure. The color coding near MW-412 should be red given the elevation here, yet the area is shaded green, giving the impression the area is six feet or so lower than the data indicate. Several distinct low areas on the bedrock surface (*e.g.*, near MW-338) are not highlighted as low areas. Please tabulate all of the point data used to generate this figure, including borehole/MW ID, refusal depth, ground surface elevation, elevation of refusal, and/or bedrock surface. It is important to indicate whether bedrock was confirmed and how such confirmation was obtained. Please also consider relevant bedrock-depth information interpretable from the 2-D resistivity profiles.
Appendix H	Table 1 lists adult and adolescent recreational user for the soil exposure pathway. Please change this to adult and child recreational user.
Appendix I	In the table entitled Kingfisher, please add the chemical names in the first few rows under Average Inputs, Terrestrial Wildlife Model Hazard Quotient Calculation.