N00129.AR.000485
NSB NEW LONDON
5090.3a

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

February 6, 1997

Mark Evans, Remedial Project Manager
U.S. Department of the Navy
Naval Facilities Engineering Command
Northern Division
10 Industrial Highway
Code 1823, Mail Stop 82
Lester, PA 19113-2090

Re: Background Review Report for the Lower Subase Remedial Investigation

Dear Mr. Evans:

I have reviewed the *Background Review Report for Lower Subase Remedial Investigation, Naval Submarine Base New London, Groton, Connecticut* dated January 1997. EPA's review focused on identifying data gaps needed for remedy selection and adequate characterization of the nature and extent of contamination. As discussed, I trust that the issues raised herein will be resolved by subsequent investigations as described in the forthcoming work plan. Detailed comments are provided in Attachment A.

Numerous data gaps exist. The sources of contamination for most of the zones, including Zone 1, have not been identified. Video inspection of pipelines and integrity testing will need to be performed to assist in identifying sources of TPH contamination. The extent and volume of free product needs to be evaluated. In order to assess options to prevent future migration of contaminants to the Thames River, preferential flow pathways should be further characterized.

The Lower Subase is an area of concern from an ecological risk perspective as a potential source of contamination to the Thames River. Sampling of soil and groundwater exhibited contamination with metals, primarily lead, and various petroleum components. Evidence of contamination was also found in the drainage systems. Sources of this contamination appear to be fuel storage and transport systems associated with the Lower Subase operations. This report also confirms that the Lower Subase is likely to be a source of contamination to the Thames River. Because of the high level of contamination found in soils at the site, further action recommendations are offered to prevent possible future migration of contaminants to the Thames River. Elimination of source areas will limit contaminant transport to the Thames River.

The report recommends further study for areas not fully characterized, including the storm water drainage system, to identify sources of contamination. Consistent with the findings of the Phase II Remedial Investigation ecological risk assessment, EPA concurs with the need for additional sediment and surface water sampling for SVOCs. Because of the high concentrations of lead,

sediment and surface water analyses should include lead as well. Further characterization of any impacts to shellfish should be included in the work plan for the Lower Subase RI.

In Section 2.0 tables pertaining to COPC screening contain metals values that were detected during the simultaneously extracted metals ("SEM") evaluation. Comparison of these values to bulk sediment concentration criteria for the purpose of COPC screening is less effective than their comparison to corresponding acid volatile sulfide ("AVS") concentrations. Identification of these metals as COPCs would best be performed through the use of SEM/AVS ratio data. If SEM/AVS ratios for these metals at specific sediment locations are less than one, EPA recommends that they be eliminated from the tables. Additionally, if inorganics are shown to be greater than background - but less than conservative benchmark values - such contaminants should be dropped from the list of COPCs for ecological concern.

To assess potential data gaps in the river, sediment sample locations need to be correlated with preferential flow pathways to the Thames River. Also, source area related contaminants need to be cross referenced with Thames River contaminants of potential concern. All additional sediment samples collected should be analyzed for SEM/AVS, TOC, and grain size in addition to chemical analytical parameters.

Sanitary, utility, fuel, and storm sewer lines leaving primary or secondary source areas need to be identified as preferential flow pathways and correlated with existing sampling locations. For example in Zone 5, the former UST location could be given an identifier such as Source Area 5-A. Media contamination (soil and groundwater) should be depicted on the figure. All preferential flow pathways from Source Area 5-A and areas of detected contamination would also be shown on the figure. Sampling locations could then be correlated with preferential flow pathways from each source. The current Figure 7-1 does not depict the location of the former UST and the scale of Figure 7-1 is not conducive to evaluate whether the storm sewer line or sanitary line could act as a preferential flow pathway.

The Report gives the following recommendation within several of the zone specific recommendation sections, "focused effort toward the evaluation of potential remedial options to prevent possible migration of petroleum products and oily substances to the Thames River is required/determined to be necessary." A compilation of data parameters (*e.g.*, soil permeability, soil texture, free product thickness) needed to evaluate remedial options could be compared with existing data to identify data gaps.

Although Drawings 1-7 well illustrates hot spots in the Lower Subase, a legend providing the number of samples in each zone should be included.

All screening tables in this document should explain how contaminants were screened. Analytes with no screening criteria should be retained.

Soils in all Zones should be analyzed for semivolatile compounds and these results should be integrated into a human health risk assessment.

Typically, three or fewer soil samples from an area are not sufficient to determine contamination levels accurately, or to be sure that no contaminants of concern have been missed. As described in EPA guidance, at least 10 samples per exposure area are preferable to characterize an area. At a minimum, additional soil samples from the following areas are needed for the following zones. All samples should be analyzed for full TCL/TAL analytes. Zones needing additional sampling include: *Zone 1*- Shallow soils and Deep soils (no SVOCs analyses have been performed on deep soils); *Zone 2* - Shallow and Deep soils; *Zone 3*- Shallow and Deep soils; *Zone 4*- Shallow and Deep soils; *Zone 5*- hot spots require further investigation; *Zone 6*- Shallow and Deep soils; *Zone 7*- hot spots require further investigation.

The resolution of EPA General Comment 34 on the Phase II RI specified that the Navy would provide recommendations in the *Background Review Report for the Lower Subase Remedial Investigation* on viable remedial alternatives. The recommendations provided within the report appear to be too general. The same list of potential remedial alternatives is provided for each zone. Source areas need to be identified and provided in the report. Evaluation of viable remedial alternatives per source area is better suited for a feasibility study. The focus should be on the sources of contamination and the extent of migration from these sources not on previously identified zones.

I look forward to reviewing the forthcoming work plan and to working with you toward completing a remedial investigation for the Lower Subase. Please do not hesitate to contact me at (617) 573-5777 should you have any questions.

Sincerely,

Kymberlee Keckler, Remedial Project Manager
Federal Facilities Superfund Section

Attachment

cc: Mark Lewis, CTDEP, Hartford, CT
Andy Stackpole, NSBNL, Groton, CT
Patti Lynne Tyler, USEPA, Boston, MA
Ken Finkelstein, NOAA, Boston, MA
Jennifer Hayes, Gannett Fleming, Harrisburg, PA
Matthew Cochran, Brown & Root, Pittsburgh, PA

ATTACHMENT A

Page	Comment
p. 1-5 *et seq.*, §1.2.4.1	Please explain how the zones were delineated.
p. 1-5, §1.2.4.1	Please expand the description of Zone 2. Describe historical and present activities, and the portion of the river in Zone 2. Identify the number of buildings and the piers within the zones and activities conducted at the piers. In Zone 5, include the stormwater culvert draining streams 1, 2, and 6. Potential impacts to the Thames river from this culvert draining Area A Downstream Watercourses should be assessed in this Lower Base Background review.
p. 1-18, §1.4.3.2	Please provide a figure that shows wells that have free product and the thickness of the free product. Such a figure would assist in assessing the extent of contamination.
p. 1-19, §1.4.4	Expand the discussion of the decision process. Analytical data are compared to criteria to identify COPCs. After COPCs are identified, how is it determined that there are sufficient data for identifying nature and extent of contamination, assessing human health risks, and, assessing ecological risks? How will the additional Thames River sediment data be evaluated? What analysis is being performed per source area to decide whether remedial action is necessary?
p. 1-26, Table 1-1	According to Table 1-1 the analytical data for the quay wall (Report entitled *Removal Site Evaluation for Quay Wall for Naval Submarine Base New London* - Halliburton NUS Corporation May 1995) were not included in this report's database. However, in Appendix 1, pages 77 through 84 (sample numbers QW-1 through QW-5), it appears that these data have been included in the database.
p. 1-32, Figure 1-3	This figure is not consistent with the CERCLA process. For example, ARARs and remedial alternatives should be identified in a feasibility study and a risk assessment should be prepared as part of a remedial investigation. Such a risk assessment should be used to determine whether an imminent threat to human health or the environment exists. Removal actions may be taken at any point to address imminent and substantial

endangerment or to minimize the toxicity, mobility, or volume of contaminants.

Secondly, as outlined in EPA's letter dated November 4, 1996, No Further Action Decision Documents are not appropriate for sites that have completed a remedial investigation. Such decisions must be embodied in a No Action ROD. The feasibility study may be excluded only if an actionable risk has not been demonstrated.

Revise this figure to incorporate specific decision points relevant to Lower Subase.

p. 2-5, §2.2.4	Please indicate whether chronic and acute benchmark values were exceeded.
p. 2-7, §2.3.2	Stormwater runoff pathways (*e.g.*, sheet flow, culverts, point source discharges) should be described. A description of culverted streams passing through Lower Subase, including those draining other areas of NSB, should be included in this section. The description should include potential contaminant migration from sites in and outside of Lower Subase.
p. 2-10 *et seq.*, §2.4	The Thames River has been divided into zones that correspond to adjacent land zones. This has resulted in some zones with limited (three or fewer) samples. COPCs have been determined for each river zone. Additional sediment and surface water samples should be collected for each zone to improve the statistical accuracy of the COPC screening process. Samples from additional locations will also contribute to determining where contaminants from Lower Subase are migrating into the Thames River.
p. 2-10, §2.4.1	Only one surface water sample from the Thames River was collected in the vicinity of the Lower Subase. This is not sufficient to characterize the surface water of the River. In addition, surface water sampling should be performed near storm water outfalls during a storm event to evaluate contaminant loading to the Thames from upgradient sources.
pp. 2-17 & 2-18, §2.5.1	Dispersion of contaminants from sediments to the water column through biotic movements could also be a transport pathway.
pp. 2-18 & 2-19, §2.5.3	This section summarizes the results of the ecological risk assessment for the Lower Subase of NSBNL. Sections 3 through 9 of this report cite Section 2.5.3 and state that the Lower Subase has minimal impact on the Thames River. However, the summary of the ecological risk assessment of

the Thames River presented in Section 2.5.3 is too vague to confirm this claim. The following changes would strengthen this section:

• Ecological receptors and exposure pathways should be summarized.

• The HQs that have the greatest contribution to ecological risks should be quantified. Stating that an HI exceeds unity does not provide sufficient information on the magnitude of specific ecological risk.

• The claim that actual risks to waterfowl from consuming prey are "...likely to be much less than those predicted..." should be further substantiated or eliminated. It is inappropriate to disregard calculated risk values because conservative assumptions were used in the risk assessment.

• This section states that the results of the ecological risk analyses indicate that the Thames River near NSB poses a minimal risk to ecological receptors. This does not appear to be consistent with the 1) impacts to benthic macroinvertebrates that were measured from several locations, 2) HIs in excess of 100 that were obtained for double-crested cormorants and herring gulls from eating on shellfish, and 3) COPC screening of sediment concentrations that indicate the presence of many chemicals at concentrations exceeding screening levels. The ecological risk analyses indicate that several ecological receptors associated with the Thames River adjacent to the Lower Subase could be impacted from site-related sources. However, impacts appear to be limited to macroinvertebrates in localized areas adjacent to the Lower Subase, and to the double-crested cormorants and herring gulls from prey ingestion. Please revise the last sentence of Section 2.5.3 to provide a more balanced summary of the ecological risk assessment.

p. 2-37, Table 2-8 — Only one sediment sample was collected for Zone 6 in the Thames River. This is not sufficient to characterize a zone.

p. 2-40, Table 2-9 — The data for Zone 7 of the Thames river were based on one sample that was analyzed for a subset of all relevant analytes. This sample was not analyzed for VOAs and was analyzed for only a limited number of semivolatiles, pesticides, and metals. The sediments in Zone 7 have not been adequately characterized.

In performing screening of sediments, analytes lacking a benchmark value were eliminated as COPCs. This resulted in the elimination of the analytes Aroclor-1248, Aroclor-1260, beta-BHC, endosulfan sulfate, and heptachlor epoxide. These analytes all have surrogates for which criteria are available.

	The screening should take surrogates into account when establishing benchmark values for screening (*e.g.*, screen beta-BHC on gamma-BHC values, endosulfan sulfate on endosulfan, heptachlor epoxide on heptachlor).
p. 2-42, Table 2-10	Only one sediment sample was collected for Zone 1 of the Thames river. This is not sufficient to characterize a zone.
p. 2-48, Table 2-12	Sediment samples were collected from only one location for Zone 4 of the Thames river. This is not sufficient to characterize a zone.
Figures 3-1, 4-1, 5-1, 6-1, 7-1, 8-1, & 9-1	Though storm sewer lines are depicted on these figures, outfalls or point source discharges are not clearly shown. Each point source discharge should be described in light of potential contamination within the discharge, including the drainage area, discharges from buildings, and connections to underground drains.
p. 3-6, §3.2.7, ¶2	Were integrity inspections performed? If so, what were the results?
pp. 3-11 to 3-13, §3.4.2	Please specify when and where free product was identified. The last paragraph on page 3-12 states, "...No. 2 fuel oil was detected in groundwater in the vicinity of Tank 54-H during a previous investigation....Additionally, a mixture of diesel fuel and heavy residual fuel oil...was identified...." Was this free product?
p. 3-16, §3.5.5, 2nd bullet	TPH was detected at 51,600 mg/kg in deep soil in a tidally influenced water table, and free petroleum product and oily substances have entered the Thames River. It is therefore unclear why the report concludes that no imminent threat to the environment was identified. The report also states that no significant risks to ecological receptors exist. Considering the current data gaps (no SVOA data), it is premature to conclude that no significant risks to ecological receptors exist.
p. 5-15, §5.6; p. 6-16, §6.6; & p. 9-14, §9.6	The recommendations for Zones 3, 4, and 7 for lead are limited to further evaluations on the nature and extent of lead in soils and continued groundwater sampling and analysis to monitor contamination levels. In addition to these efforts, it is important to quantify the amount of lead entering the Thames River. Cumulative ecological impacts should also be evaluated.
p. 7-1, §7.1.1	The description of possible sources of TPH contamination in Zone 5 should be enhanced. The sixth sentence in the first paragraph, states, "...There are no known or reported spills from the storage tanks or transfer system...."

While true, it is important to note that TPH was detected in deep soil samples in concentrations exceeding 6000 ppm and shallow soil samples exceeding 2000 ppm in the vicinity of the former UST adjacent to the western side of Building 175.

Drawing 1

It is misleading to color contour the datum point on Drawing 1 since only one shallow soil sample was analyzed for Zone 5. Please only show the pink color corresponding to the 6800 ppm detected in the one sample.