UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

DEC 19 1996

Mr. John Kolicius
Remedial Project Manager
Naval Facilities Engineering Command
Northern Division
10 Industrial Highway, Mailstop #82
Lester, PA 19113-2090

Re: EPA Comments on the Draft *Feasibility Study for Site 26*, November, 1996, for NWS Earle, Colts Neck, New Jersey

Dear Mr. Kolicius:

In accordance with Chapter XV of the Federal Facilities Agreement (FFA) between the Environmental Protection Agency (EPA) and the Navy, EPA has reviewed the draft *Feasibility Study for Site 26* for Naval Weapons Station (NWS) Earle which was submitted to EPA on November 18, 1996. Our comments are attached.

If you have any questions, please call me at (212) 637-4320.

Sincerely,

Jeffrey Gratz, Project Manager
Federal Facilities Section

Attachment

cc: B. Marcolina, NJDEP (w/attach.)
L. Welkom, NJDEP (w/attach.)
G. Goepfert, NWS Earle

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EPA Comments on NWS Earle's
Draft *Feasibility Study for Site 26*

Page	Comment
41	Site 26: Currently a description of the site is found in the preceding Section 1.2. The main area of concern (the leach tank) is relegated to the last sentence in the paragraph. The discussion should be expanded to include a description of the process leach tank (dimensions, use, contaminants, relation to watertable...). A conceptual model of the contamination problem should be presented here or just before the Contaminant Fate and Transport section, along with a cross-section showing the leach pit, soil contamination and migration of a contaminant plume, groundwater table and clay confining layer. (It would be helpful to include the visual representation of the conceptual model in the proposed plan as well.)
43	¶2: Include the "final data" in the next draft of this report. Geology: Include a figure or figures showing cross-sectional representations of the subsurface stratigraphy. Preferably one would be north/south and the other east/west. Show the groundwater surface, contaminant plume, etc. Hydrogeology: State the depth to groundwater.
48	¶4: Characterize the leach pit (dimensions, where holes were, relation to the water table...).
50	Table 1: Define "CRQL" and "ug/l."
55	Discuss the evidence for or against the presence of DNAPL. Reference should be made to the groundwater modeling effort in the appendix. Assumptions should be explicitly stated. For example, state whether the source is assumed to be removed, to slowly diminish through remediation, or remain. See our comments on the model. Baseline Human Health Risk Assessment: Revise to include latest data.
1	Section 2.9.1 (Human Health Protection Considerations): The first paragraph under this heading would be more appropriate in the "site discussion" section. This is the first place where an in depth discussion of contamination is discussed.

2 ¶2: The Navy states that arsenic and beryllium are not of concern at the site because the levels are below background. Also state that there is no information suggesting that beryllium and arsenic were disposed of in the area; furthermore, sampling has not shown any evidence of a source area.

3 Soils: Change to read, "The soil analytical results *outside the immediate tank area* indicate that virtually all...." Change to read, "...no remediation of soils are warranted, *except for the area immediately adjacent to the leach tank*. It is anticipated that source control would be employed to address the process leach tank and *associated* contaminated soils."

Groundwater: Include a discussion of background groundwater conditions that are relevant to the constituents found at this site.

4 ¶2: The meaning of the sentence which begins, "The apparent lack of lateral distribution..." is unclear. The text should be changed. A cross-section of the site would aid in this discussion.

Change to read, "...approximately 25 feet below ground surface) *appears to* be limiting the vertical migration... Review of available data indicates that the plume *is* migrating with groundwater towards the southwest." Change to read, "*However,* watershed samples taken in surface waters downgradient...."

¶4: Delete the sentence, "If source control measures are implemented...." It does not belong in this section.

5 Section 2.9.2. ¶1: In the last sentence, change "affiliated" to "associated."

Section 2.9.2 ¶2: Delete "analytical detection limits" in the middle of the paragraph.

6 Table 2-34: Do carbon tetrachloride or tetrachlorethane pose a human health risk based on the hydropunch numbers. If so, it should be in the table with the appropriate footnote.

7 Table 2-35: Delete the CRDL/CRQL column from the table. Also, the maximum detected concentration of tetrachloroethane should be 56, not 5, in the last column.

8 Table 2-36: Some of the PRGs are too high. They should not be based on CRDL/CRQLs. They should be based on PQLs and MCLs, which are ARARs.

9 Section 2.9.3: In-situ treatment should be included as a general response action.

11 Table 2-37: The in-situ treatment technology (under Remedial Technology Types) should not fall under the "Collection, Treatment, and Discharge" General Response Action.

14 Table 2-38: Delete the "Natural Attenuation" technology. It is incorporated in the limited action, long-term monitoring option.

It may be more logical to divide the Treatment general response actions into "in-situ" and ex-situ". In-situ treatment does not currently seem to fit in the treatment column.

Air-sparging should not be eliminated. We have not seen sparging contaminate overlying soils. In coordination with SVE, this may be a very promising option. Also evaluate outside-of-the-well sparging vs. in-well sparging (This could be detailed further in design if this is the chosen alternative.).

21 Table 2-39: Delete the "Natural Attenuation" row. This would be part of "limited action - long-term monitoring".

What happened to air-sparging as an in-situ technology?

On the last page of the table, the Navy should consider upgradient discharge of treated groundwater as well.

28 Include air-sparging as an in-situ treatment technology.

3-5 Section 3.4.2.2: Remove "natural attenuation" as part of the title of this alternative. Change the first paragraph to read, "...and groundwater *is assumed to naturally attenuate.*"

Section 2.4.2.2, ¶2: A more rigorous monitoring program would be necessary.

3-6 Table 3-7: Delete "natural attenuation from the title of alternative 2.

3-6 Top of page: Initial groundwater modeling results should be presented here to give a general timeframe for remediation. Assumptions should be stated.

3-7 Natural Attenuation: Delete this paragraph.

3-10 ¶3: What are the anticipated breakdown products anticipated with the barrier wall system.

3-15 Groundwater Extraction: 2 gallons seems to be a very low pumping rate to have any effect on the aquifer.

3-18 Long-term Monitoring: A more rigorous monitoring program would be necessary.

3-20 Air Sparging and SVE: In-well air-sparging should be considered as well.

3-22 ¶3: Figure 3-10, which is referenced here, is actually air-sparging with pump and treat. The figure should be modified. A more rigorous long-term monitoring program would be necessary.

3-28 Table 3-8: Delete the reference to "natural attenuation" in the title of alternative 2.

1 Section 4.4: A more rigorous monitoring program would be necessary. See our comments on the groundwater model with respect to the 50 year remediation timeframe. We believe this number is overly optimistic.

2 Long-Term Effectiveness: The risk numbers may change based on latest sampling results.

4 Section 4.4.2: Delete reference to natural attenuation in the title of this alternative. A more rigorous monitoring program would be necessary. See our comments on the groundwater model with respect to the 45 year remediation timeframe (Table 4-4 shows 50 years).

8 ¶2: The time necessary to meet this alternative is currently unknown. Time estimates should be made.

9 Cost: A more rigorous sampling program would raise these costs (although VOC sampling costs may be lower than estimated).

10 ¶1: There is no evidence to suggest that a "significant portion of the groundwater contaminants will naturally attenuate before they pass through the reactive wall."

¶3: Delete "in concert with natural attenuation" in the first sentence. The assumptions in the 45 year remediation timeframe should be stated.

15 ¶1: How long is the "initial period of treatment"?

18 Section 4.4.4: It would be more efficient to place a groundwater extraction well or wells in the area of highest groundwater contamination. Even as currently written, however, there is no evidence to suggest that a "significant portion of the groundwater contaminants will naturally attenuate" prior to reaching the well.

¶2: The timeframe estimated for groundwater remediation (45 years?) would be significantly reduced if groundwater pumping well locations are optimized (placed *in* the plume). Something is wrong with the conceptual design when the pump and treatment alternative takes as long as the "no action" alternative to remediate the site.

22 ¶4: The 2880 gallon/day flow rate is the same as for "passive" treatment. One would assume that an active pumping system would increase the flow of groundwater being treated.

25 Costs: The costs don't appear to include the design of different pumping scenarios or design optimization.

26 ¶1: What is the basis for the 5 year remediation timeframe?

32 Costs: If remediation is expected in 5 years, a 30 year cost estimate would be inappropriate.

32 Section 4.4.6, Overall Protection: Timeframes for remediation should be discussed.

Compliance with ARARs: Alternative 2 may not meet ARARs in a reasonable timeframe. The plume could also expand and migrate past sentinel monitoring wells. (See our comments on the groundwater model.) While alternative 3 would take a long period of time, plume migration would be controlled.

33 Long-Term Effectiveness and Performance: Alternative 4 (active pump and treat) could be designed much more efficiently to reduce the time necessary to remediate groundwater if pumping wells were placed in the plume, and pumping rates were increased.

Also, **a combination of alternatives should be considered.** For example a barrier wall (to inhibit downgradient contaminant migration) with a sparge system (to quickly remediate the core of the plume).

35 ¶1: More information should be provided to support the remediation timeframes mentioned. Again we believe that the timeframe for alternative 4 can be significantly reduced.

Implementability: Alternatives 3 and 4 appear to be reversed.

Costs: Cost data for alternative 5 (sparging/SVE) has not been presented. We would estimate, however, that it would cost less than alternative 4 (active pump and treat).

36 Table 6: This table should be modified to address our concerns raised in the preceding sections.

Appendix A: It is unclear why cancer risks at 1 x 10E-6, E-5 and E-4 are listed along with HQ's of 0.1, 1 and 3. Calculation of risks at 1 x 10E-6 for the chemicals of concern were 0.15 for chloroform, 1.6 for trichloroethane and 0.019 for vinyl chloride. For non-cancer risks the levels for 1,2-dichloroethene was 55, and for barium was 2,600. It is also unclear whether the non-cancer health effects were evaluated based on similar organs effected. The presentation of risk tables should include text describing the exposure assumptions.

It is also unclear why the calculation for childhood exposure to groundwater was based on a residential child for 6 years. RAGS - Part B indicates that the non-cancer health evaluation should be based on an 30 year exposure that includes an age weighted exposure of 6 years as a child and 24 years as an adult.

Modeling: We believe that the half-life for TCE may be overly optimistic. The Navy should perform a sensitivity analysis for different degradation rates (from no degradation to 4.5 years). Using a degradation rate for TCE to model degradation of the VOC plume further complicates matters since the degradation rate of each compound within the decay chain from the original pure product to the final breakdown products (CO_2, ethane, or alcohol) must be considered. The half-life for the entire chlorinated VOC chain would be significantly greater than the half-life of any of the species within the breakdown chain.

The source of the VOC plume is also a significant uncertainty. The lack of concentration data as a function of time makes it difficult to estimate the time required for contaminant source depletion. The sensitivity to variations in the source lives should be considered. We have not been given enough contaminant information to concur that contaminant loading ended 10 years ago. The Navy infers from the hydopunch data that the "hot spot" has moved a few hundred feet downgradient of the source. First, we are somewhat handicapped since we do not yet have all the information (especially cross-sections). Second, 1995 sample results from 26MW-01 (which is very close to the leach pit) show very high concentrations of TCE and 1,2 DCE. We would consider this to be part of a hot spot and evidence that the source is not yet depleted.

The above issues could lead to substantial underestimation of cleanup timeframes.