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April 6, 1992
ESE # 490-2036

Mr. Byron Brandt
Commander, Code 1822, Bldg IAA
Atlantic Division
Naval Facilities Engineering Command
Norfolk VA 23511-6287

RE: EPA Comment Responses

Dear Mr. Brandt:

Transmitted with this letter are ESE's responses to the EPA comments on the RI report for Hadnot Point. I have also provided a disk copy (Word Perfect) with the comments and responses. Please look these over and see if they are in line with current Navy strategy. Following your approval, ESE will revise the reports for reissue.

If you have any questions, please feel free to contact me at (407) 240-1288.

Sincerely,

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

Michael J. Geden, P.G.
Project Manager

404/E:MJG/eh

EPA REVIEW OF THE DRAFT FINAL REMEDIAL INVESTIGATION REPORT
FOR THE SHALLOW SOILS/DEEP AQUIFER AT THE
HADNOT POINT INDUSTRIAL AREA
DECEMBER 1991

GENERAL COMMENTS

1. The document does not conform to current guidance. While overall a rather minor point, it seems odd that a document prepared in December 1991 under the federal facilities agreement does not conform with guidance published in 1988. Many of the sections provide only a cursory overview of activities while not adequately addressing the substantive requirements of a remedial investigation report.

This document is in general accordance with the recommended format. It is the latest in, and serves to summarize, a series of reports (dating to the mid-80's) which have been issued for the site. The contents of each preceding document has been reviewed by the concerned agencies. Many portions of this document serve to summarize these previously accepted documents, and therefore do not go into a great detail of methodology.

2. The overall conclusion reached in review of this document is that insufficient information is available to reach decisions concerning the horizontal and vertical extent of contamination in the shallow soils and deep aquifer at the subject site. The information gathered on the shallow aquifer contamination is currently provided in an RI report to support an Interim action and, therefore, is irrelevant except to demonstrate a possible source of deep aquifer contamination and to demonstrate the source action of the soils to the shallow aquifer. Additional information must be collected on the shallow soils and deep aquifer. In light of this, EPA recommends this document be considered an initial report with a plan to collect the additional information and produce a "final" remedial investigation report when the contamination has been characterized to determine the horizontal and vertical extent sufficiently to reach a decision.

This report will be issued as an Interim Final Report. Additional investigations at the site are planned.

3. Many of the discussions provided in Chapter Five would be greatly simplified by a more liberal use of tables. The current presentation is difficult to follow and it is difficult to visualize the areas affected.

Tabulation of the analytical hits will be completed.

4. The exclusion of areas within the site from the Remedial Investigation (RI) is acceptable. However, these areas must be addressed prior to the approval of the Risk Assessment document.

It is anticipated that all sites of concern will be addressed during future investigations.

5. The RI states that the RA shows no ecological threat. This is due to exclusion of significant sources is the BRA. The BRA is inadequate for the purposes of assessing environmental risk.

This comment is very general in nature making a response difficult. We do not feel that sources were excluded.

6. Raw aquifer test data should be submitted to EPA for review. This data includes raw draw-down and recovery data, draw-down versus time and draw-down versus distance plots, matches made with theoretical curves, and a description of conditions during the test, i.e., fluctuations in pumping rate, weather conditions, etc.

The data requested has been previously submitted and reviewed by EPA in the Characterization Step Report (ESE, 1988). The text as provided was a summary of this report.

7. Several wells are not plotted on figures 2-1 and 3-4. These wells include HPGW17-3 and water supply wells 603, 637 and 652. All monitoring and water supply wells should be plotted in a figure for the final draft.

Water Supply wells 603 and 637 will be added to Figure 2-1. Water supply well 652 is not within the bounds of the area of investigation. Groundwater monitor well HPGW17-3 will be added to Figure 3-4.

8. The following intermediate wells contained contaminants above MCLs. These wells include HPGW30-2 (vinyl chloride 0.012 mg/L, 1,2 DCE 0.012 mg/L); HPGW32-2 (benzene 0.027 mg/L); and HPGW9-2 (1,2 DCE 0.022 mg/L). Additional intermediate monitoring wells should be installed in the Hadnot Point Industrial Area to delineate the extent of the contaminant plume in the Castle Hayne Aquifer.

Additional investigations are currently scoped for this area.

SPECIFIC COMMENTS

1. Page ES-1, 2nd paragraph - The sentence "...As a result of Marine operations and activities, wastes that contain hazardous and toxic organic compounds are generated the base..." is misleading. Several samples indicated the presence of elevated concentrations of inorganic elements such as lead and chromium. Please revise the sentence.

The work "organic" will be deleted from the text.

2. Page ES-1, 2nd paragraph - The last part of the last sentence should be deleted.

Comment incorporated.

3. ES-1, 3rd paragraph - This paragraph is an appropriate location to provide the reader with the specific areas/media covered in this RI report.

Text has been added stating which areas within the operable unit which have been investigated.

4. Page ES-2, 3rd paragraph - Spell out NACIP.

This acronym has been spelled out (Navy Assessment and Control of Installation Pollutants).

5. Page ES-4, 1st paragraph - Please remove this paragraph. It is subjective and is more appropriately discussed in the risk assessment where supporting information is available to the reader.

Text has been deleted as requested.

6. Page ES-4, 3rd paragraph - The conclusions presented in this paragraph should be removed or revised in accordance with the revised baseline risk assessment.

The revised RA supports these statements.

7. Page 1-3, Section 1.3, last paragraph - This RI report is not "final".

The word "interim" has been added to the text.

8. Page 1-4, top of page - Why were no background wells installed?

No background wells were scoped during any investigation.

9. Page 1-4, Section 1.4 - Why doesn't this report follow the published RI/FS guidance? Information provided in this format is repetitive without providing significant new information.

The report generally follows the suggested format while trying to summarize the results of multiple previously released reports.

10. Page 3-1, Section 3.0 - The record search is part of the scoping for the RI/FS work plan not a field investigation.

This section should describe any deviations from the Region IV SOP and/or the work plans. It should also describe any unusual results or situations encountered during the field work.

The record search as performed was a physical building by building inspection to determine site activities and potential sources for

contamination. This work was scoped in the work plan and did not lead to work plan development.

No major deviations or unusual activities occurred which are not detailed in the section.

11. Page 3-2, top of the page - Why weren't any samples collected from the pits and tanks during this investigation? These would seem to be obvious starting points for determining sources and the full range of contaminants present at the sites.

The pits were discovered during the investigation so no samples were scoped as a part of the investigation.

12. Page 3-3, Section "Soil Gas Sampling Grids" - Were the "initial samples" screening or confirmatory samples?

All soil gas samples collected were analyzed the same. No samples were collected for screening only.

13. Page 3-4 - What was the rationale for collecting soil gas samples at 4-foot depths?

The depth selected was such that no surface interference (air) was a factor, and ground water was not likely to be encountered.

14. Page 3-5, 2nd paragraph - The variation to the water table is extremely significant. Some information as to where the 1.5 feet occurred as to the 14 feet and as to the trend should be included.

The text as presented describes the investigative methodology. Results of investigation are presented in Section 5.0.

15. Page 3-5, 3rd paragraph - Were the samples also analyzed for the Target Analyte List (TAL)? If not, why not? Why wasn't the TCLP run on organics if the levels are high enough?

All analytical parameters were presented in the Work Plan which was approved by EPA prior to the start of the work.

16. Page 3-6, Section 3.3 - More information should be provided on the geology in the HPIA. Failure to provide this information when discussing the locations and depths of these wells renders it somewhat meaningless.

The information requested is presented in Section 4.0.

17. Figure 3-4 - Separate maps showing wells installed in different water bearing zones would go a long way toward simplifying what is obviously a complex hydrogeologic situation.

The complexity of the hydrology would not be better explained by showing well locations (Figure 3-4) on different maps.

18. Page 3-8, List of samples - What happened to the investigation derived wastes?

The decontamination procedure given here was not as per the ECB SOPOAM. The correct procedure is given in the ECB SOPOAM Appendix E, Section E.9.

The drilling mud, unchlorinated water, bentonite, etc. used in the borehole should have been sampled to insure that these materials were not a possible source of contaminants.

Investigation derived wastes were drummed on-site and disposed of by the Navy.

The drilling mud was sampled during the investigation. EPA stated no requirement for sampling other materials during project scoping and review of the work plan.

19. Page 3-9, Section "Drilling Techniques" - Were the intermediate wells and deep wells in different depths of the same water bearing zone? Please provide more information for clarification.

The intermediate and deep wells were set into the Castle Hayne aquifer. This will be clarified in the text.

20. Page 3-11, "Well Construction" - Considering that organics are of primary concern for this site, why was PVC chosen over more inert materials for well casing/screen? In the 2-11-91 ESD memo, it was recommended that a more inert material be used instead of PVC.

The use of PVC was stated in the Work Plan which was approved by EPA.

Was a sieve analysis performed to choose the correct sand pack size?

No sieve analysis was conducted prior to well construction.

How long was the bentonite allowed to hydrate?

The bentonite was typically allowed to hydrate at least 15 minutes.

21. Page 3-13, Section 3.3.3 - Full TCL/TAL scans are necessary for the baseline risk assessment. It will be necessary to collect these during the supplemental RI.

Agreed. This work will be scoped in the future.

22. Page 3-13, "Supplemental Characterization" - The depth of the supply wells should be included to determine how they relate to the additional wells.

The water supply well construction details are presented in Table 5-35.

23. Page 3-14, 2nd paragraph - Were the samples also analyzed for the Target Analyte List?

As per the EPA approved Work Plan, the samples were analyzed as stated.

24. Page 3-14, "Sampling Procedures" - pH, conductivity and temperature should be monitored constantly during well purging and recorded. Stabilization of these parameters can be an important indicator of adequate purging. Were total depths of the wells measured?

Field parameters are measured throughout the purging. Those presented are the final readings. The text will be revised to reflect this information. Well depths were not measured; every attempt was made to pump all silt out of the bottom of well casings.

25. Page 3-16, 4(a) - PVC bailers should not be used to sample wells. All future plans should require teflon or stainless steel.

(b) - How were the pump and hoses decontaminated between uses?

All equipment was decontaminated following procedures listed in Appendix A. This appendix will be referenced in the text.

26. Page 3-17, (g) - Please remove the sentence beginning "...While this may result..."

Analysis of unfiltered samples typically shows higher contaminant concentrations for metals analysis due to the breakdown of silt sized soil particles. This text emphasizes the conservative nature of the Risk Assessment by using these typically higher results.

27. Page 3-19, top of page - These two water level measurements would not provide significant data as to variations in water level. Water levels should also be measured in June/July during peak rainfall variations.

It is necessary that water levels be collected during the wet and the dry season so that local trends of groundwater flow and changes in the vertical and horizontal hydraulic gradients may be determined.

Also what impact, if any, is tidal influence believed to have on water levels? Water levels in the semi-confined Castle Hayne Aquifer should be measured over a 24-hour period to determine if the water levels are affected by tidal fluctuations.

Repeat monitoring of water levels within the study area has been accomplished over the three investigations completed at the site. Little variation has been observed in respect to the flow direction or gradient. Only the most recent data was provided in this report, and text will be added to clarify this.

28. Page 3-19, Section 3.4 - This section states that part of the objective of the aquifer test was to determine the interconnection between the Castle Hayne and surficial aquifers. However, the text does not indicate that observation wells that penetrate the surficial aquifer were monitored during the aquifer test. The shallowest observation well monitored was 90 feet deep. All wells monitored during the aquifer test should be clearly listed.

More details on the 4-87 pumping test should have been included in the test. The depth of the pumping well and the screen interval should be provided in the aquifer test discussion.

All shallow monitor wells in the vicinity of the pump test were monitored during the pump test with no drawdown observed. This information will be added to the text.

Full details of the pump test were provided to the EPA in the Characterization Step report (ESE, 1988).

29. Page 3-20, Section 3.5 - PVC bailers are not in accordance with EPA Region IV's SOP.

As stated previously, the drilling mud, unchlorinated water, bentonite, etc. used in the borehole should have been sampled to insure that these materials were not a possible source of contaminants - not just the drilling mud.

A request to deviate from Region IV's SOP to allow the use of PVC bailers was discussed during the work plan development. EPA at that time allowed for the usage.

The drilling mud was sampled during the investigation. EPA stated no requirement for sampling other materials during project scoping and review of the work plan.

30. Page 3-21, top of page - Were samples also analyzed for the TAL?

I believe the Region IV SOP requires "organic-free" water for use in decontamination. Only organic-free water is acceptable for blanks.

These samples were analyzed as proposed in the EPA approved work plan.

The procedure listed for decontamination of field equipment in the ECB SOPQAM Appendix B, Section B.9 specifies the use of deionized water. The blanks referenced in the text are samples of the DI water which were analyzed for contaminants of concern (TCL)

31. Page 3-23, Table 3-2 - Does Full TCL" mean TCL/TAL?

Samples were analyzed for the Full TCL as stated.

My copy of this report begins Chapter 4 on page 4-5. Comments on Chapter 4 will assume this is corrected in the revised document.

32. Figure 4-1 - The North arrow is pointing South.

The figure will be corrected.

33. Page 4-2, top of page - Can't an estimate of average annual runoff be calculated?

This is background information and is not necessary for the report.

34. Page 4-2, 3rd paragraph - How do these classifications affect the ARARs for these areas? What about federal ambient water quality criteria?

Surface water usage is considered when developing ARARs for a site.

35. Figure 4-2 - Please identify the source areas on this map.

The Hadnot Point Area will be shaded on the map.

36. Page 4-3, top of page - The relationship of these 10 aquifers to the studies underway should be more completely explained.

This information is presented in the section describing Regional Hydrology (Section 4.3.1) and Hadnot Point Industrial Area Hydrology (Section 4.3.2).

37. Page 4-3, Section 4.2.2 - Is the Castle Hayne aquifer the aquifer directly underlying the shallow aquifer? If so, this should be clearly stated.

The text will be modified to reflect this information.

38. Figure 4-3 - This figure would be a great deal more helpful if some information as to the different depths of these formations were also included on the figure.

This is a very general presentation of the regional hydrogeologic and geologic units, some of which may not occur at the base. As shown in Figure 4-4, the depth and thickness of the units which do occur is highly variable and dependent on location.

39. Page 4-4, top of page - Please provide the names of the aquifers described here.

The text will be revised to reflect that these are the surficial and Castle Hayne aquifers.

40. Page 4-4, Section 4.3.1, 3rd paragraph - Is this also true for the formations underlying HPIA?

This information is presented in Section 4.3.2 Hadnot Point Industrial Area Hydrology.

41. Figure 4-5 - Where are the wells in the upper regions of the surficial aquifer (1.5-14 feet)?

The shallow wells provide little lithologic data for the creation of a cross-section such as this. The wells shown are those that were used to develop this figure.

42. Page 4-5, Section 4.3.2, 3rd paragraph - If "seasonal water level fluctuations range from 1 to 4 feet", why were water levels collected in

January and February? Wouldn't a wider distribution have provided better information?

Repeat monitoring of water levels within the study area has been accomplished over the three investigations completed at the site. Little variation has been observed in respect to the flow direction or gradient.

43. **Figure 4-6 - Are all the wells depicted here screened in the same interval in the aquifer.**

All shallow wells are screened in the surficial aquifer.

44. **Page 4-8, top of page - What samples were collected in this drainage feature? What might have potentially drained into this feature that could also be a source for additional groundwater contamination?**

No samples were collected from this ditch.

45. **Page 4-9, 2nd paragraph - This conclusions should be stated as being very preliminary and the additional information to be collected will provide a better estimate of the gradient in these zones.**

The text explains the shortcomings and states the dates of the data being used.

46. **Page 4-9, third paragraph - If water levels in the Castle Hayne aquifer fluctuate with the tides then the vertical hydraulic gradients should be calculated during high and low tide.**

This is an option for future consideration.

47. **Page 4-9, 4th and 5th paragraphs - Don't these paragraphs contradict one another as to the upward or downward gradient in cluster 24?**

Gradients between aquifers can be variable based on location at a site. One end of this site is affected by pumping from the Castle Hayne aquifer

which lowers the water elevation in the Castle Hayne to a point where there is a downward gradient.

48. Page 4-10, Section 4.3.4, 2nd paragraph - Could this information be used to estimate the volume of contaminated water to be remediated?

Clensing of an aquifer is dependent on more than just the volumetric calculation of water within a specified area. Water entering into the effected area will continue to pick up contamination through mixing and release of contaminants which adhere to the soil particles. The determination of water within the area would grossly underestimate the amount of water which must be treated.

49. Page 4-10, third paragraph. The units given for transmissivity and storage coefficient values are incorrect. It is assumed that the value for transmissivity is 9600 gpd/ft and the storage coefficient is 0.00088.

The text will be revised to switch gpd/ft from 0.00088 to 9600.

50. Page 5-2, top of page - All of these potential sources should have been sampled as part of this investigation. These should definitely be included in the supplemental RI work plan.

This is an option for future consideration.

51. Page 5-2 and throughout the following pages - All sample results should be provided in tabular form. Not only does this simplify the RI report and makes the information readily available for inclusion in the Record of Decision. Another useful method of simplifying sample results would be maps projecting isoconcentration lines.

Tabulation of data will be completed as possible.

52. Page 5-4 - EPA concurs that these areas warrant further study.

No response necessary.

53. Figure 5-2 - This map is very hard to read. Perhaps overlays or some other method of simplication can be employed to provide the reader with a better picture of the results.

The data is presented in a very simple form which is not difficult to interpert.

54. Page 5-5, "Bldgs. 1709 and 1710" - The status of these "waste" tanks must be determined in the supplemental study.

The situation described in the last paragraph must be resolved.

This is an option for future consideration.

55. Page 5-6, 3rd paragraph - Were the samples also analyzed for the Target Analyte List? Also, I believe the author is referring to the "Target Compound List" here.

The word "toxic" will be changed to "target". This was the scoped analysis.

56. Page 5-7, "Building 902" - Once again, presenting the results in tabular form would be more effective.

Full TCL/TAL scans should be collected in the supplemental RI study.

This will be addressed during scoping of the supplemental work plan.

EPA concurs with the implied recommendation that additional work will be necessary to determine the horizontal and vertical extent of contamination.

No comment necessary.

57. Page 5-8, "Building 1202" - The contamination identified at a depth of 8-10 feet illustrates the need for an assessment of the soils continuing threat to the shallow aquifer.

Identification of future sampling will be accomplished in the supplemental work plan.

58. Page 5-8, last sentence - "4 to 4 feet"? This must be a typographical error.

Text will be corrected.

59. Page 5-10, 2nd paragraph - Were these pesticides evaluated in the baseline risk assessment?

Yes. All detected compounds were taken into account during preparation of the BRA.

60. Page 5-10, Section 5.3 - Samples must also be analyzed for the Target Analyte List. Is the reference here to the Target Compound List?

Samples were analyzed for TCL as scoped.

61. Table 5-1 - This table is "busy" and difficult to read and interpret. Reorganization by sampling date and interval sampled will simplify the data and provide good tables for use in the Record of Decision.

Grouping by well has been done to provide a comparison of analytical results for each well to detect trends in contaminant levels.

Are the "MCL"s listed here federal or state standards? This should be clarified in the footnotes and the missing standards should be included.

These are State standards.

62. Page 5-13, Table 5-1 - What is "T Smpld"?

Not Sampled. A better acronym will be inserted.

63. Page 5-14, top of page - Is this a reference to the TCL/TAL?

The term TCL means TCL as scoped in the EPA approved work plan.

64. Page 5-14, 3rd paragraph - Tabulating these results would be much more effective.

Tables will be generated as possible.

65. Page 5-14, last paragraph - Care must be used in discussing the appropriateness of unfiltered samples. MCLs and risk assessments are based on unfiltered samples. This discussion may confuse the reader as to the usefulness of the data. This discussion should be revised to reflect the use of the data.

The text states that the data is used for the risk calculations and provides a very conservative approach.

66. Page 5-15, Section 5.3.1 - The aquifer use classification is extremely important and should be included here.

It will be stated that the aquifer has no potable use.

67. Page 5-15, "Hadnot Point Fuel Tank Farm" - Was the TAL also included?

No.

68. Page 5-16, 3rd paragraph - Once again, a tabular representation of the data is recommended.

Tabular data will be presented as possible.

69. Page 5-17, 3rd paragraph - What is the source for the conclusions reached in this paragraph? What is meant by "adjusted for drinking water only"? What is the source of the conclusion of risk level?

That is a conclusion derived in a previously submitted report which should have been, and will be deleted.

70. Page 5-18, 1st paragraph - When the text refers to the "applicable water quality standard/guideline" what is the source? Federal and state guidelines should be presented in a clear and forthright manner.

This will be clarified.

71. Page 5-25, 1st paragraph - Here and everywhere else in the document where data is presented, EPA recommends a tabular format.

This will be completed as possible.

72. Page 5-27, Section 5.3.2 - The Castle Hayne Aquifer has not been adequately characterized to reach any conclusions as to the horizontal and vertical extent of contamination. These data gaps must be addressed in the supplemental RI work plan.

These issues will be addressed in the supplemental work plan.

73. Page 5-28, 4th paragraph - Carbon disulfide appears to be a legitimate contaminant. Has this compound been evaluated as a threat in the baseline risk assessment?

Its presence in the blanks indicates that it is a laboratory problem.

74. Page 5-29, 2nd paragraph - What are the state and federal ARARs pertaining to these compounds?

This section of the RI report deals with presentation of the results. How these results relate to health based criteria is covered in the Risk Assessment

"Deep Wells" - What about the TAL?

Samples were analyzed for TCL only.

75. Page 5-35, Table 5-4 - Were these wells really screened in eleven different intervals? If so, where is the discussion of the potential impact of the

information received about contamination in relation to the many potential "zones" of contamination?

According to MCB records, the wells are screened as described. This is not an unusual well construction in an area with interbedded production zones.

I did not understand the rest of the comment.

76. **Page 5-37 - The equipment blanks with the cyanide, high sodium, zinc and other metals contamination indicate a severe QA/OC problem either in the field and/or the lab. How will this QA/OC problem be rectified before future sampling/analytical work is to be performed?**

This problem will be rectified with the appropriate lab prior to initiation of additional sampling.

77. **Page 5-39 - The DI water blanks analyses indicate that this is not an acceptable source for preparing blanks.**

The DI water was not used for trip blanks as the reviewer seems to indicate. The DI water was used in decontamination and was being sampled as such.

78. **Page 5-40 - The error in collecting the drilling mud sample is noted.**

No response necessary.

79. **Page 5-42 - Considering the problems with the pump test of 4-13-87, will another pumping test be performed to determine the hydrogeologic properties of the Castle Hayne aquifer as it is now, five years later?**

No where is it assumed that the pump test is not valid, and all results have previously been submitted to EPA without comment. All necessary data was collected by either data loggers or by hand. The pump test was scheduled to be shut down at steady state, and recovery was rapid being nearly complete prior to the rain event.

80. Page 6-3 - The "conclusions" reported here are based on very limited data and should be discussed with that in mind. EPA does not concur that soil contamination is not "heavily contaminated". Data reported in this document do not really support this contention. In addition, no clays or other "clean" soils were analyzed to support the conclusion that the metals detected were indicative of soil conditions.

Additional sampling is scheduled and conclusions will be readdressed following collection and analysis.

81. Page 6-5, Section 6.3.3 - If the extent of contamination has been delineated in the shallow aquifer, why is an "interim action" being proposed, instead of the final remedy?

Due to the interaction with the soils and Castle Hayne aquifer, this can not be a final remedy until actions are proposed for the entire site.

82. Page 6-6, 3rd paragraph - The discussion concerning the metals present in groundwater is conjecture and should be removed. Any metals above primary or secondary drinking water standards must be considered for remediation.

Without background information, a blanket cleanup can not be mandated. One can not be expected to clean up what is naturally occurring.

83. Page 6-6, "Castle Hayne Aquifer" - EPA does not believe sufficient information is available to draw any conclusions concerning this aquifer.

Additional studies are scoped for this aquifer.

84. Page 6-7, "Deep Wells" - EPA does not believe sufficient information is available to draw any conclusions concerning this zone.

Additional studies are scoped for this aquifer.