

Minnesota Pollution Control Agency

August 4, 1995

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Scott Glass, Code 1862
Commanding Officer
Southern Division
Naval Facilities Engineering Command
P.O. Box 190010
North Charleston, South Carolina 29419-9010

RE: Naval Industrial Reserve Ordnance Plant

Dear Mr. Glass:

The Minnesota Pollution Control Agency (MPCA) staff has reviewed the "Plan of Action for OU3 Remedial Investigation, Feasibility Study, Proposed Plan, and Record of Decision for Naval Ordnance Plant, Fridley, Minnesota" (POA), dated May 15, 1995, for Operable Unit 3 for the Naval Industrial Reserve Ordnance Plant Site. The POA was submitted pursuant to the Federal Facility Agreement (FFA), dated March 27, 1991, between the MPCA, the U.S. Environmental Protection Agency, and the U.S. Navy.

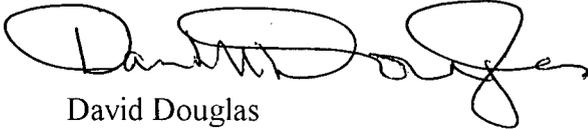
The MPCA staff hereby approves the POA as modified by Attachment 1 to this letter. The MPCA staff also has comments to the POA as identified in Attachment 2 to this letter. The Navy does not need to respond to the comments in Attachment 2.

The MPCA staff's response to the POA does not waive the MPCA staff's rights under the FFA to modify or comment on other secondary and primary documents that will be produced as a result of the POA.

Mr. Scott Glass
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If you have any questions regarding this letter, please contact me at (612) 296-7818.

Sincerely,

A handwritten signature in black ink, appearing to read "David Douglas". The signature is fluid and cursive, with the first name "David" and last name "Douglas" clearly distinguishable.

David Douglas
Project Manager
Response Unit 1
Site Response Section
Ground Water and Solid Waste Division

DD:ch

Enclosure

cc: Sidney Allison, Navy, Southern Division
Ruthann Baur, Brown & Root Environmental
Thomas Bloom, U.S. Environmental Protection Agency

Attachment 1

Modification to

“Plan of Action for OU3 Remedial Investigation, Feasibility Study, Proposed Plan, and Record of Decision for Naval Ordnance Plan, Fridley, Minnesota,” dated May 15, 1995, for Operable Unit 3

- OK
1. Page 3-2, TASK 3.0 - The Site Evaluation Report shall be made available to the regulatory agencies for their review. This evaluation will include the justification for including or excluding certain areas of the facility for further remedial investigation (RI) work. The justification for these decisions are the basis for the investigation and shall be made available to the agencies for their review to determine that the investigation has been thorough and inclusive. Since the information contained in this document is an integral part of the rationale for the RI investigation it must be made available to the agencies before the final work plan can be approved.

The Site Evaluation Report shall identify all potential areas where solvents may have been placed, stored, leaked or spilled including degreaser pits, storage basins, disposal pits, pipes, leaky sewerage lines, tanks or spill areas. All such areas shall be identified in the Site Evaluation report and located on detailed building maps. A narrative which describes the purpose, use, processes used, materials used, volumes and disposal of solvents within each of the identified areas shall be included in the report. The Site Evaluation report shall also include as a potential area the locations in the North 40 where barrels of spent degreaser solvents have been removed. A number of the barrels recovered were corroded and empty, indicating that the contents had been released into the environment. The potential for the presence of dense, nonaqueous phase liquid (DNAPL) beneath these areas is high.

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2. Page 3-2, TASK 4.0 - The NAVY shall have a contingency plan in the event that the number of sites to be evaluated exceeds the five sites assumed in the scope of work. It is entirely possible that more than five sites will be identified as areas which require investigation in the Remedial Site Evaluation.
 3. Page 3-5, TASK 5.0 - FIELD INVESTIGATION - The NAVY shall consider the use of 3-Dimensional Acoustic Imaging techniques for the Operable Unit 3 (OU3) investigation. This tool can be used to investigate the geology beneath the building, using noninvasive techniques, and could be very useful in delineating the site stratigraphy including fine grained (clay) layers that are known (from the Metals Plating investigation and from drilling outside the building imprint) to exist at the site. A detailed understanding of the site wide geology is very important, in conjunction with information concerning where releases may have occurred, in determining DNAPL migration paths and DNAPL accumulation areas. This information will greatly help in determining the most optimal areas for locating DNAPL. The

information can be used to construct a picture of the geologic controls which determine DNAPL collection and migration before expensive drilling occurs, thereby maximizing the information gathered by drilling and well placement. The imaging should be done before the Soil Gas Survey and before any major drilling effort occurs and should be used, in conjunction with historical information on potential TCE spill areas, to aid in determining the location of test borings and monitoring wells to delineate DNAPL. The survey should include the entire site to determine if any geologic features exist that might cause DNAPL from under the building to migrate outside of the building imprint to areas outside of the building.

Upon completion of the acoustic imaging report the report shall be delivered to the regulatory agencies and a meeting shall be convened to present the results to the NAVY, its consultants and the regulatory agencies. The meeting shall take place before any additional work proceeds in the OU3 investigation. The results of the Site Evaluation shall also be presented at this meeting before further work proceeds.

4. Page 3-6, TASK 5.0 - SOIL BORING/WELL INSTALLATION - Great care should be taken during drilling to eliminate unnecessary breaching of natural layers which may be preventing further DNAPL migration. DNAPL may be trapped or perched by fine grained (clay) layers which are holding DNAPL; preventing it from migrating further. Such layers may serve as barriers to further DNAPL migration, but if perforated during drilling may allow DNAPL to migrate deeper. The potential for fine grained layers to either hold or transmit TCE by capillary tension shall also be evaluated in the investigation.

The number, locations and depths of borings and monitoring wells shall be determined by the geologic, hydrogeologic conditions as well as the potential location of DNAPL at the site. Information from acoustic imaging work, done prior to drilling, would be very helpful in determining the location and depth of test borings and monitoring well locations.

5. Page 3-7, TASK 5.0 - FIELD INVESTIGATION, Ground water sampling, Paragraph 4: In addition to the laboratory analysis for the listed analytes, the NAVY shall test a subset of soil and ground water samples for populations of methanotrophic bacteria. This will provide insight into the potential for bioremediation of TCE *in-situ*.
6. Page 3-9, TASK 6.0 - LABORATORY ANALYSIS, Table 3-1: In addition to the analytes listed, the NAVY shall test for oxygen, sulfate, and reduced iron concentrations (if these are not in the cations/anions list).

7. Page 3-11, TASK 8.0 - RISK ASSESSMENT AND RA REPORT - The baseline risk assessment shall include an evaluation of human health impacts should the building be demolished and the property developed and shall include assumptions consistent with the previous OU2 soil risk assessment. An evaluation of the risks to human exposure to contaminated ground water shall be evaluated as well as the environmental impacts of ground water to surface water discharge.
8. Page 3-11, TASK 9.0 - REMEDIAL INVESTIGATION REPORT, Fate and Transport Modeling: Modeling to predict leaching of contaminants from the vadose soils to ground water shall be required by the Minnesota Pollution Control Agency.
9. Page 3-12, TASK 9.0, REMEDIAL INVESTIGATION REPORT - The list of seven assumptions on page 3-12 shall include DNAPL below the water table as a contaminant source media contributing to ground water contamination.
10. Page 3-12, TASK 9.0 - REMEDIAL INVESTIGATION REPORT, Fate and Transport Modeling, number 5: The Navy shall clarify: 1) what analytical models will be adopted, and 2) the reference to surface waters at the site. The inclusion of surface water in analytical models is confusing.
11. Page 3-13, TASK 11.0, FEASIBILITY STUDY - The list of overall assumptions shall include the assumption that DNAPL occurs beneath the building which is a source for continued ground water contamination.
12. Page 3-13, TASK 11.0, FEASIBILITY STUDY - Treatability studies and/or pilot scale tests are recommended to insure that a workable remedy can be selected for remediation of unsaturated soils and DNAPL at the site.
13. Page 3-19, TASK 12.0, DECISION DOCUMENTS - It is recommended that the NAVY allow regulator comments to the draft fact sheet and news release. In the event this review is not incorporated the regulatory agencies may issue separate fact sheets and press releases concerning the OU3 plan and Record of Decision.

Attachment 2

Comments to

“Plan of Action for OU3 Remedial Investigation, Feasibility Study, Proposed Plan, and Record of Decision for Naval Ordnance Plan, Fridley, Minnesota,” dated May 15, 1995, for Operable Unit 3

1. TASK 9.0 - REMEDIAL INVESTIGATION REPORT, Fate and Transport Modeling, number 4: The by-products of concern listed (e.g., vinyl chloride) will result from the anaerobic degradation of trichloroethene (TCE) or perchloroethylene (PCE). Any aerobic biodegradation of TCE or abiotic degradation will result in different daughter products.
- * 2. TASK 11.0, FEASIBILITY STUDY - In the Feasibility Study (FS), the NAVY shall evaluate the role of dense, nonaqueous phase liquid (DNAPL) identified in the remedial investigation as a “source” for ground water (Operable Unit 1) contamination at the NAVY/NIROP site. The NAVY shall estimate the mass of TCE contained in DNAPL and make an evaluation of how DNAPL contributes to the ground water plume observed at the site. The NAVY shall determine the amount of time that it will take to remediate the site ground water with the current pumpout system assuming that the remediation of DNAPL source areas is not addressed. The DNAPL source in place as well as the NAVY shall also evaluate the time in which the remediation of ground water at the site might be accomplished if the DNAPL sources are actively remediated and removed as a source to ground water contamination. The short and long terms costs for ground water remediation under both scenarios shall be evaluated.
- * 3. As a result of the concern expressed by Mr. John Flora of the city of Fridley about the TCE contamination of monitoring well PC-2, the NAVY shall investigate the potential mechanisms that have caused TCE to be observed in this well. One mechanism may be that the well is contaminated by DNAPL that has resulted from barrel disposal and leakage from the barrel disposal areas in the North 40 upgradient of the well or other DNAPL sources. The NAVY has been asked, in these modifications (modification #1), to include the barrel disposal locations in the North 40 in the DNAPL investigation. Acoustic imaging would be helpful in evaluating the geologic conditions in this area and making this evaluation. It is appropriate to evaluate the potential sources of contamination to monitoring well PC-2 in this investigation as DNAPL may be a potential source of contamination to well PC-2.

The NAVY shall also investigate, using downhole geophysical or other appropriate methods, the grout integrity of well PC-2 to determine that the annulus is properly sealed. An improper grout seal of the well annulus may be another mechanism for TCE to migrate into the screened interval in the bedrock at the site. The NAVY shall also evaluate the potential for TCE DNAPL to enter bedrock units at the site through

* Should be part of Att. 1 per MPCA letter of 9, Aug 1995

the three abandoned production wells at the site. If these wells have a likely potential to transfer TCE contamination from the shallow glacial fluvial aquifer into the bedrock aquifers the wells should be properly abandoned according to Minnesota Department of Health well abandonment procedures.

4. At the Savannah River Site (SRS), South Carolina plant valuable information was gathered in the field using a cone penetrometer. This field method was utilized to gather detailed lithologic and chemistry information in a TCE DNAPL investigation. The NAVY may investigate the use of this sampling method at the NAVY/NIROP.

In addition SRS has researched and published encouraging results on several innovative remedial technologies that may have direct application at OU3. These include horizontal well drilling, bioremediation of chlorinated solvents, soil vapor extraction, and air sparging. The MPCA staff encourages Navy to: 1) collect information during the field investigation for OU3 that will allow an assessment of how these promising clean-up technologies can be applied at NIROP; and 2) actively pursue more information on these technologies from SRS staff.