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NIROP FRIDLEY, MN
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LETTER AND RESPONSE TO COMMENTS ON FOURTH FIVE YEAR REVIEW REPORT
NIROP FRIDLEY MN (PUBLIC DOCUMENT)
9/27/2013
TETRA TECH



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PITT-09-13-054

September 27, 2013

Project Number 112G02583

Department of the Navy
Naval Station Great Lakes
NAVFAC MW Code EV
Attn: Mr. Harvey Pokorny
201 Decatur Avenue – Building 1A
Great Lakes, Illinois 60088

Reference: CLEAN Contract No. N624670-08-D-1001
Contract Task Order F27C

Subject: Responses to Comments - Fourth Five-Year Review Report
NIROP Fridley, Fridley, Minnesota

Dear Mr. Pokorny:

Please find enclosed two copies of the Responses to Comments for the Fourth Five-Year Review Report. The redline revisions, revised attachments, and the Quitclaim Deed are also attached to this package per the Responses to Comments. If you have any questions, please contact me at 412-921-8868.

Sincerely,

Stephanie Warino
Project Manager

SAW/stc

Enclosures

- c: Shanna Schmitt, MPCA (2 copies)
- Howard Hickey, NAVFAC Midwest (2 copies)
- Sheila DeSai, USEPA (2 copies)
- John Trepanowski, Tetra Tech (letter only)
- Glenn Wagner, Tetra Tech (1 copy)
- File: CTO F27C (1 copy)

RESPONSES TO COMMENTS

**RESPONSES TO EPA COMMENTS ON THE FOURTH FIVE-YEAR REVIEW
REPORT
DATED MAY 2013**

**NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA**

September 27, 2013

GENERAL COMMENTS

- 1. Comment:** Section 7.1.1 (OU1) indicates that the remedy is functioning as intended by the Record of Decision (ROD) for Ground Water Remediation, Naval Industrial Reserve Ordnance Plant (NIROP), Fridley, Minnesota, dated September 28, 1990 (OU1 ROD); however, Table 4-3 (Detected Concentrations of VOCs in Riverside Wells – OU1 – August 2012 Sampling Event) of the Draft Fourth Five-Year Review Report, Naval Industrial Reserve Ordnance Plant (NIROP), Fridley, Minnesota, dated May 2013 (Fourth 5YRR) indicates that trichloroethene (TCE) at MS-43S [140 grams per liter (g/L)] and MS-44I (535 g/L) exceeded the Minnesota Surface Water Chronic Standard (Class B) criteria [please note, it is assumed the units presented in Table 4-3 are incorrect and should be presented in micrograms per liter ($\mu\text{g/L}$), consistent with the units of measurement presented in other sections of the Fourth 5YRR such as Section 4.2.3 (OU1 Performance Measurement), Table 4-1 (Groundwater Chemicals of Concern and Target Cleanup Levels – OU1 – August 2012 Sampling Event) and Attachment 3 (TCE Isoconcentrations Maps and Approximate Capture Zone Configurations) figures – a specific comment has been prepared to address this issue]. Section 8.1.3 (Uncertainty in Capture Zone Evaluation) states that the adequacy of capture in the shallow zone is uncertain along the northern reaches of the extraction system as evidenced by high TCE concentrations in MS-56S and MS-43, which could be indicative of inconsistent extraction system operation or partial bypass of contaminated groundwater when the extraction system is functioning consistently. Section 8.1.3 also discusses uncertainty of capture extent in the intermediate zone along the northern reaches of the extraction system near MS-34I and MS-35I. While the updates to the extraction system will likely have addressed these inconsistencies in the extraction system operation and partial bypass of contaminated groundwater, revise Section 7.0 (Technical Assessment) to acknowledge these issues as they relate to the remedy functioning as intended by the ROD.

Response: Table 4-3 has been corrected from g/L to $\mu\text{g/L}$. Section 7 has been revised to address uncertainty in capture (see attached, revised Section 7.0 and Table 4-3). However, since the remedy is currently functioning as intended by the ROD, uncertainty in capture is not identified as an “issue” in the Five-Year Review.

- 2. Comment:** The Third Five-Year Review Report, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, dated August 2008 (Third 5YRR) stipulated that a proactive well maintenance program should be identified and implemented for the extraction wells; however, a formal proactive well maintenance program is not currently available or

referenced in the Fourth 5YRR. It should be noted that Section 5.1 (OU1 Progress Since the Last Five-Year Review) indicates that a “well maintenance program for new and existing extraction wells remains in progress,” while Section 9.0 (Recommendations and Follow-Up Actions) indicates that a “proactive well maintenance program was recommended and has been implemented for the extraction wells” and “This proactive program, recommended in the previous five-year review, is in progress and is continually being re-evaluated.” Revise the Fourth 5YRR to provide and/or reference the proactive well maintenance program. If the proactive well maintenance program is still under development, revise Section 9.0 to include the establishment of a formal proactive well maintenance program as a follow-up action.

Response: A formal proactive well maintenance program was not originally required or discussed by the Partnering Team; instead, the general requirements of the plan can be found in the Partnering Team meeting minutes from July 2008, and is also in the 2008 Annual Monitoring Report (AMR), Section 6.0, Extraction System Evaluation (Tetra Tech, 2009). General procedures related to implementing this plan are located in the O&M Plan (BayWest, 2013) The text referenced in the comment will be revised to state “This proactive program, recommended in the previous five-year review, is currently being implemented and is continually being re-evaluated as new conditions arise”.

3. **Comment:** Section 8.1.5 [Vapor Intrusion (VI)] indicates that the site conceptual model (CSM) will be updated as appropriate based on new information and will be used to evaluate whether a complete exposure pathway for VI has resulted; however, Section 9.0 (Recommendations and Follow-Up Actions) makes no commitment to updating the CSM or evaluating whether a complete exposure pathway for VI exists. Based on the Assessing Protectiveness at Sites for Vapor Intrusion: Supplement to the Comprehensive Five-Year Review Guidance, OSWER Directive No. 9200.2-84, dated 2012 (Five-Year Review Guidance Supplement), the conclusions of the Fourth 5YRR should include: 1) an identification of issues; 2) recommendations and follow-up actions; and, 3) a determination of whether the vapor intrusion component and the overall site remedy are, or are expected to be, protective of human health and the environment. Revise Section 9.0 to address VI issues according to available VI guidance. In addition, Section 8.1.5 does not answer the three recommended technical assessment questions provided in Five-Year Review Guidance Supplement. Revise Section 8.1.5 to address these technical assessment questions in order to demonstrate whether an actual or potential VI exposure at the site might affect the ability of the overall site remedy to ensure protectiveness of human health and the environment.

Response: Section 7.0 is the technical assessment where the three recommended technical assessment questions are asked (not in Section 8.1.5), and Section 7.0 has been revised to fully answer those technical assessment questions with regard to VI at the NIROP. Navy is in agreement with U.S. EPA’s comment 4 (below) that since JE model results do not exceed current screening criteria (as stated in Section 7.0), Section 8.0 will not identify VI as an “issue”, but will instead identify VI as a potential future issue that may need to be addressed if the NIROP building is reoccupied and or the NIROP property is redeveloped, and that the site conceptual model will be reviewed following the source investigation, which would include recalculation of the JE model. The text in Section 9 has been revised to state that following the voluntary optimization sampling, the Partnering Team will review the site

conceptual model to evaluate whether a completed VI pathway exists, and if the NIROP building is reoccupied and/or the NIROP property is redeveloped, additional lines of evidence to refute VI potential and vapor mitigation strategies may be necessary.

4. **Comment:** Based on Section 7.2.1 (Exposure Assumptions – OU1), the Johnson & Ettinger Model was utilized to calculate an indoor air concentration; however, this calculated indoor air concentration should be viewed as a gross estimate. At sites where contaminated media concentrations exceed the EPA VI screening criteria, additional scrutiny is required to effectively evaluate VI potential and associated inhalation exposures. Typically, this requirement indicates the need for direct measurement of additional media, such as subslab soil gas or indoor air concentrations. The level of uncertainty associated with the Johnson & Ettinger Model has invalidated its use as a single line of evidence to refute vapor intrusion potential where screening criteria are exceeded. The Johnson & Ettinger Model has its greatest utility in derivation of a priority list of investigation targets where multiple points of exposure exist in a large facility investigation (i.e., multiple buildings). While the levels of excess risk reported in Section 7.2.1 are below the de minimis level of 1×10^{-6} and considers current toxicity criteria, revise Section 9.0 (Recommendations and Follow-Up Actions) to clarify that additional lines of evidence to refute vapor intrusion potential and vapor mitigation strategies may be necessary if the NIROP building is reoccupied and/or the NIROP property is redeveloped.

Response: Please see the response to Comment 3.

5. **Comment:** Several components of the Comprehensive Five-Year Review Guidance, EPA 540-R-01-007, dated June 2001 (Five-Year Review Guidance) are not included in the Fourth 5YRR. For example,
- a. Section 1.0 (Introduction) does not include the purpose of the five-year review specific to the site or portion of the site addressed in the review.
 - b. Section 1.0 does not indicate the date(s) the five-year review analysis was conducted; while the section indicates the review is based on remedial actions conducted as of December 31, 2012, the section does not specifically identify the date of the triggering action (date of signature of previous five-year review).
 - c. Section 1.0 does not identify who conducted the site inspection.
 - d. Section 4.0 (Remedial Actions) does not include a table documenting the total annual system operations/operation and maintenance (O&M) costs during the period preceding the current five-year review.
 - e. While the Annual Monitoring Reports (AMRs) are referenced in Section 6.2 (Document Review), Section 6.3 (Data Review) does not discuss relevant trends and levels, note levels which are not currently compliant and whether future compliance can be expected without additional action, include tables summarizing monitoring and sampling data, or discuss recommended changes for future monitoring programs.
 - f. Section 6.4 (Site Inspection) does not identify who participated in the site inspection or provide a summary of site conditions or conclusions.

- g. Section 6.5 (Interviews) does not include a summary of the interviews or discuss the successes/problems with the system operations/O&M and/or unusual situations or problems at the site identified through the interviews.

See red-line version of Fourth 5YRR for other formatting revisions. Revise the Fourth 5YRR to include the components listed in the Five-Year Review Guidance.

Response: Responses to individual comments are listed below; however, other formatting revisions have not been made at this time as this is the Fourth Five Year Review and previous Five-Year Reviews have been deemed by all parties to meet the 2001 guidance:

- a. The following text has been added to Section 1.0: “The purpose of this Five Year Review is to evaluate the implementation and performance of the remedy in order to determine if the remedy is protective of human health and the environment”.
 - b. The following text was changed from “The triggering action for this fourth review was the date of signature of the previous five-year review” to “The triggering action for this fourth review was October 22, 2008, the date of signature of the previous five-year review”.
 - c. The following text has been added to Section 1.0: “NAVFAC MidWest personnel conducted the site inspection, and EPA and MPCA representatives were in attendance”.
 - d. The Navy has already included costs in Section 4.2.4.
 - e. Paragraphs 3 through 7 of Section 7.1.1 discuss the items listed in EPA comment 5e. This text will be moved to Section 6.3, Data Review.
 - f. The section will be revised to specify that NAVFAC MidWest personnel conducted the inspection. The text states that no significant issues were noted, and the Site Inspection Form summarizes site conditions and is located in Attachment 2 if the reader wishes to see additional detail.
 - g. Any O&M items, unusual situations or problems identified at the site are identified in Section 8.0, Issues. However, no “Issues” have been identified that impact the remedy protectiveness that would require “Recommendations” but there are items listed which have been noted for future discussion or potential future action by the Partnering Team.
6. **Comment:** Several significant submittals and actions taken at the site are not discussed in Section 2.0 (Site Chronology) of the Fourth 5YRR. For example, the United States Geological Survey (USGS) Report Simulation of Containment Well Capture at the Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, dated June 29, 2012 (Draft USGS Report) is not referenced. Similarly, the NIROP O&M “Super Soak” Extraction Well Redevelopment Process Tech Memo, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, dated April 3, 2012 (Super Soak Memo) is not discussed. It should be noted that the Draft USGS Report is referenced on Page 7-2. Revise Section 2.0 to reference all significant submittals and actions.

Response: Section 2.0 has been revised as requested and the References Section has also been updated.

- 7. **Comment:** The interview with Mr. Paul Walz of Bay West, provided in Attachment 2 (Five-Year Review Site Inspection Checklist), indicates that monitoring well caps were stolen from

Anoka County Park (ACP) in 2009. While the Navy was informed and Bay West replaced the well caps, the Fourth 5YRR does not discuss this incident of vandalism. Revise the Fourth 5YRR to discuss this incident of vandalism. In addition, provide the well location(s) where the incident of vandalism occurred and clarify if O&M procedures have been modified to ensure similar incidents are prevented and/or addressed in the future.

Response: Section 6.4, Site Inspection, has been updated to note the incidence of vandalism and repair. However, the Navy considers providing well locations are far too detailed to include in this Five-Year Review, since the incident has only occurred one time in 20 years of remediation. The monitoring wells are inspected during the annual synoptic groundwater sampling event. Monitoring well O&M procedures additional to the annual inspection are not planned or budgeted at this time.

- 8. Comment:** The Fourth 5YRR discusses the ongoing or future investigations/assessments (e.g., source investigation, exit strategy, biological iron fouling assessment and vapor intrusion assessment) which are being conducted or planned for the NIROP site; however, Section 9.0 (Recommendations and Follow-Up Actions) does not include these investigations/assessments as follow-up actions. For example, Page 3 of Section 5.1 (OUI Progress Since the Last Five-Year Review) indicates that an exit strategy will be developed for the NIROP facility; however, the development of this exit strategy is not listed in Section 9.0. Similarly, Section 8.1.2 (Biological Iron Fouling) indicates that the Navy is assessing treatment options available to address biological iron fouling; however, Section 9.0 does not discuss this assessment, or whether the assessment will be conducted as part of the proactive well maintenance program, which should also be discussed in Section 9.0. Revise Section 9.0 to include these items as follow-up actions.

Response: These are maintenance-related items that are being tracked but are not “issues” that currently do impact protectiveness or are expected to impact protectiveness in the future. No issues have been identified for any OU that impact the current or future protectiveness of the remedy. However, text in Section 9.0 has been updated to include the items above. The proactive well maintenance program and biological iron fouling are already included under “Containment and Extraction Remediation System”. The voluntary optimization sampling, vapor intrusion assessment, and exit strategy have been added to this section per EPA’s comment.

- 9. Comment:** Several questions in the Five-Year Review Site Inspection Checklist included in Attachment 2 (Five-Year Review Site Inspection Checklist) are not answered. For example, Subsection A (Access) of Section V [Access and Institutional Controls] questions whether access restrictions (e.g., door locks) were in place at Building 52/53; however, the question is not answered. Similarly, Subsection C [Institutional Controls (ICs)] of Section V questions how frequently the North 40 is monitored and what type(s) of monitoring is being utilized (i.e., inspection visits, drive by visits); however, the questions are not answered. For completeness, ensure all questions on the Five-Year Review Site Inspection Checklist are answered.

Response: The Site Inspection Checklist has been reviewed and missing information has been provided.

10. Comment: The Fourth 5YRR does not include a figure showing the locations where land use controls (LUCs) apply (i.e., Designated Restricted Areas, North 40, or Former Plating Shop). While Figure 3-1 (Site Plan) and Attachment 3 (TCE Isoconcentrations Maps and Approximate Capture Zone Configurations) figures indicate where OU2, OU3 and the approximate location of the East Plating Shop (i.e., Former Plating Shop) are located, a figure showing the specific locations where LUCs apply is not included. Revise the Fourth 5YRR to include a figure showing the specific locations where LUCs apply.

Response: The Five-Year Review does contain this information; it is located in Attachment 2, following the Site Inspection Checklist.

11. Comment: Section 7.1.1 (OU1) indicates that Mann-Kendall trends from the 2006 and 2012 annual monitoring results are comparable. However, the text indicates that data from 120 wells were used in the 2012 analysis and only 113 wells were used in the 2006 analysis. As a result, it is not clear how these monitoring data results were selected for analysis. Revise the Fourth 5YRR to clarify how these results are comparable given the apparent use of different data sets.

Response: The text will be revised to clarify that the relative proportions of downward trends, upward trends, and no trends were similar between the two datasets, even though seven additional wells were sampled during the 2012 analysis.

12. Comment: The Data Review section should include a summary narrative of the data with tables rather than only provide a reference to the Annual Monitoring Reports.

Response: Please see the response to Comment 5e; text from Section 7 was moved to Section 6 to accommodate this request.

13. Comment: The protectiveness statements were revised per the Five Year Review Guidance, but the actions to be taken to be protective over the long term may need to be modified based on the revisions to the issues and recommended actions sections. A site-wide protectiveness statement should also be included. See red-line version of Fourth 5YRR for some revised text regarding protectiveness statements.

Response: A site-wide protectiveness statement has been included in Section 10.0 and in the Five Year Review Summary Form.

14. Comment: The Issues and Recommendations sections should be clarified to clearly specify those which may affect current and/or future protectiveness, and, those which are O&M types of issues which do not affect protectiveness.

Response: The document has been revised to specify which items are O&M related or Navy voluntary actions such as the voluntary optimization sampling, and clarify that no issues have been identified which impact remedy protectiveness.

- 15. Comment:** Groundwater extraction system: The Fourth 5YRR is inconsistent with respect to whether the groundwater extraction system is effectively capturing the full extent of the contaminated groundwater plume. This is identified as an issue in the Issues section. Yet on pages 7-6 and 7-7, and the discussion on pg. 4-7, would seem to indicate that this is an ongoing O&M issue and the extraction system is effectively capturing the plume. The protectiveness statement also indicates this. The narrative on the groundwater data on pgs. 7-6 and 7-7, though, seems to indicate that the extraction system is not effectively capturing the plume. This should be clarified, not only in these sections, but elsewhere in the report, including the Data Review section.

Response: Groundwater capture was identified as an ongoing O&M item and not an issue which affects remedy protectiveness, and text was revised per the comment.

- 16. Comment:** In the Protectiveness Statement in the Five-Year Review Summary Form and some other places in the Report, the Report states that the remedy for OU2 and OU3 is protective of human health and the environment and “in the interim,” exposure pathways that could result in unacceptable risks are being controlled. What does “in the interim” mean? Interim between what and what? Does the Navy think that contaminant levels in the OU2 and OU3 areas will eventually decline, such that ICs will no longer be necessary? If so, by what mechanism? There is no discussion of this in the Report. The implication is that current conditions concerning soil contamination will continue indefinitely. In that case, use of the word, “interim” is not appropriate.

Response: The words “in the interim” will be replaced by the word “currently”.

- 17. Comment:** On page 5-1, the Report states that, “[l]ong term protectiveness requires compliance with land use restrictions that prohibit interference with the limited industrial land use area and groundwater use restrictions.” Where are the groundwater use restrictions? That is, what are the ICs that restrict groundwater use?

Response: There are no ICs in the Groundwater ROD which restrict groundwater use; groundwater use restrictions are included in the deed under “Covenants, Conditions, and Restrictions”, Section A.2, titled “Well Installation/Groundwater Extraction Restriction”, of the Quitclaim Deed dated June 17, 2004. The text Comment 17 refers to is the Protectiveness Statement in the Third Five-Year Review, so it should not be changed; however, text will be added below the Third Five-Year Review Protectiveness Statement to clarify this.

- 18. Comment:** On page 5-3, the Report includes a section entitled, “Exit Strategy.” What does that mean? Please clarify. The natural inference is “Navy exit from the site.” As long as there are ICs to be monitored and maintained, there will be no Navy exit. There is nothing in

the Fourth 5YRR that leads EPA to think that there will be an end to the need for ICs. EPA believes it is unwise to create the impression that an exit is in the offing anytime soon.

Response: The Navy's goal is that the groundwater containment system will not operate in perpetuity; and this is the intent of the exit strategy. The exit strategy is specific to the groundwater containment system operation. The Navy understands that ICs must remain in place.

19. Comment: Evaluating ICs for Five Year Reviews when the IC consists of a covenant or restriction contained in a deed requires that someone look at the records in the Registrar of Deeds' office to check whether any conflicting claims have been filed, e.g., easements, etc. It does not appear that there is any evidence that this was done. Moreover, there is no specific identification of the IC instrument – page 4-9 mentions “the deed” – what deed? Recorded when? The Background section of the Report mentions that the property the Navy owned has gone through two owners and one lessee – FMC, ELT and UDLP (and now Hyde Development). All the more reason to make sure the deeds and lease agreements for these transactions contain the required restrictions with no competing claims.

Response: The Navy included all required Deed restrictions and required CERCLA and MERLA notification in the June 17, 2004 Quitclaim Deed, filed in Ramsey County, between the United States and United Defense, LP. The Navy conveyed the property in an as is condition. The Grantee also gave an express covenant that he was responsible for incorporating all restrictions in any subsequent property sales. The Navy, prior to the most recent property sale, although not required to do so, did confirm that the IC and restrictions were incorporated into the UDLP/BAE/ELT property transfer and were incorporated by reference in the recent Limited Warranty Deed. It is also noted that the original IC's and restrictions run, in perpetuity, with the property. There is no legal process (or requirement) that permits the Navy to be involved with any property transactions after the initial Government sale. Current Landowners or prospective buyers have no legal or regulatory requirement to involve the Navy in any transaction.

20. Comment: During the review of the Fourth 5YRR, the Land Use Control Remedial Design, Operable Unit (OU) 2 and Operable Unit (OU) 3, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, dated March 2004 (LUC RD) was reviewed. Based on the Section 4 (Remedy Implementation Actions) of the LUC RD, the Navy or current property owner was required to provide the EPA and the Minnesota Pollution Control Board (MPCA) with annual land use control (LUC) Compliance Certifications. The Fourth 5YRR and previous five-year review report submittals do not reference these compliance certificates, and only three (for 2005) were located in the Administrative Record.

Response: Section 4 (Remedy Implementation Actions) of the LUC RD (March, 2004) does state that the Navy or current property owner was required to provide the EPA and the Minnesota Pollution Control Board (MPCA) with annual land use control (LUC) Compliance Certifications. However, in June 2004, the Navy conveyed this responsibility in the deed, under "Covenants, Conditions, and Restrictions, 5. Required Notices/Certifications, b. LUC Compliance Certification) to the property owner. As specified in the June 17, 2004

Quitclaim deed, the property owner is to provide, to the EPA, MPCA and Navy, annually, a LUC Certification, exhibit provided in Deed. Since the LUC certifications are post-ROD, they are not required to be in the Administrative Record File. The Navy has requested the property owner/manager verify the annual submittals have been made. Also, during the multiple yearly visits to NIROP, by the Navy, the Navy has verified no LUC violations have taken place over the past several years. As specified in the LUC RD (Section 4.3, the Navy transferred the obligation to provide the certifications to the property owners in the 2004 Deed. In addition, the LUC RD makes provisions to evaluate the necessity of the annual submittal."

21. Comment: EPA uses the terminology *Institutional Controls* to encompass land use controls and other controls such as groundwater controls. EPA requires that an IC section be included in the document according to our model Region 5 FYR. See example in attached FYR Model Template. The IC section of the report must define ICs, explain what ICs are needed for the Site to ensure protectiveness and discusses follow-up actions required. The review should look at not only what ICs are required by the ROD but evaluate all areas where contamination from the Site is currently located which does not allow unlimited use/unrestricted exposure (UU/UE).

Restricted Area or Media (based on current Site conditions areas which are or should be restricted because it does not allow for unlimited use or unrestricted exposure (UU/UE))	Institutional Control Objective /Restriction/Performance Standard	Type of IC (in place, planned or the need for IC is under review)
OU1- groundwater at the NIROP facility. <i>See attached plume map in Figure X</i>	prohibit consumptive and other uses of the groundwater plume area until performance standards are achieved.	NEEDS TO BE COMPLETED WHETHER IN-PLACE, PLANNED OR NEED IS UNDER REVIEW
OU2 and OU3- NIROP facility <i>See Map of NIROP facility in Figure Y</i>	See specific objectives performance objectives from the ROD which includes prohibit interference with contaminated areas of the Site without prior approval and limit use of facility to commercial /industrial.	NEEDS TO BE COMPLETED WHETHER IN-PLACE, PLANNED OR NEED IS UNDER REVIEW
OU1- Area beyond boundary of NIROP facility where the groundwater plume exceeds performance standards <i>See attached plume map in Figure Z</i>	prohibit consumptive and other uses of the groundwater plume area until performance standards are achieved	NEEDS TO BE COMPLETED WHETHER IN-PLACE, PLANNED OR NEED IS UNDER REVIEW

A map is attached (OR WILL BE DEVELOPED) which depicts the current conditions of the site and areas which do not allow for UU/UE.

Response: As per previous responses, the Navy is following the June 2001 OSWER Guidance, which evaluates ICs as a part of the overall remedy assessment. Since ICs are a part of the overall remedy and overall protectiveness are based on the entire remedy, Navy believes that the intent of the Region 5 guidance has been met.

22. Comment: The IC Coordinators recommend that 1) the physical or geographical areas be described, along with maps, of the areas which have residual contamination that does not allow for UU/UE and that an IC table be completed as a first step to ensure that all areas which do not allow for UU/UE are properly considered. Once that analysis is completed, an analysis can proceed to determine the effectiveness of existing ICs and whether additional ICs are needed. Here is an example of how it might be approached.

Response: Please see the response to Comments 5 and 21. ICs are evaluated as a part of the overall remedy protectiveness.

23. Comment: Provide a copy of the deed referred to (page 4-9) along with any other ICs for the Site. These ICs should also be summarized and analyzed in the IC Section of the FYR report.

Response: A copy of the deed is attached to these responses to comments. Also please see the response to Comments 5, 21, and 22. ICs are evaluated as a part of the overall remedy protectiveness.

24. Comment: The Executive Summary should include a description of the remedy selected in each OU including required ICs, if any.

Response: The Executive summary does include ICs for OU2 and OU3, and text was added to the Executive Summary stating that deed restrictions restrict the use of groundwater at the site.

25. Comment: Add the following to the acronym table:

ICs	Institutional Controls
ICIAP	Institutional Controls Implementation and Assurance Plan

Response: An ICIAP was not required per the Federal Facilities Agreement (FFA). Also please see the response to Comment 26.

26. Comment: Include the following statement (or the like) in the protectiveness statement. Long-term protectiveness requires compliance with effective ICs. To that end, effective ICs must be implemented, monitored, maintained and enforced. Long-term stewardship (LTS) must be assured to maintain effective ICs. Compliance with ICs will be accomplished by developing and carrying out (LTS) procedures. Although ICs are in-place, additional review is required to ensure the ICs in-place are effective, to understand whether additional ICs are needed and to ensure that effective LTS procedures are in-place. An ICIAP will be prepared to for conducting additional IC evaluation activities, planning for additional ICs, if needed, and preparing or updating the LTS plan, if needed.

Response: Text was added to Section 10 and the Five-Year Review Summary form to address this comment. The Navy conveyed the responsibility to ensure that effective ICs are implemented, monitored, maintained, and enforced in the deed. Also, an ICIAP was not required per the Federal Facilities Agreement (FFA).

27. Comment: Recommendations. It is recommended that an ICIAP be prepared to review existing ICs and plan for additional ICs as needed to ensure long-term protectiveness. Add this to the Recommendations. Also, see guidance mentioned below which is attached.

Response: Please refer to the response to Comments 25 and 26.

28. Comment: Following are references which should be consulted in conducting IC evaluations during the FYR.

Region 5, *Model FYR Template and Guide*.

OSWER Directive "Recommended Evaluation of Institutional Controls: Supplement to the "Comprehensive Five-Year Review Guidance"; 2011.

OSWER Directive 9355.0-89 EPA-540-R-09-001. "Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites; December 2012.

Response: Comment noted. However, the basis of the Region 5 Five-Year Review template is the June 2001 EPA OSWER Comprehensive Five-Year Review Guidance, and the Region 5 template has included additional steps and guidance to address ICs separately. The original 2001 guidance includes ICs as part of the overall remedy assessment. It is Navy's position that the Five Year Review as written meets the intent of the Region 5 guidance in that it complies with the OSWER June 2001 guidance.

SPECIFIC COMMENTS

1. Comment: Section 2.0, Site Chronology, Page 6 of 7: The 2003 events listed in Section 2.0 do not include the issuance of the Second Five-Year Review Report, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, dated September 11, 2003 (Second 5YRR). Revise Section 2.0 to include the Second 5YRR.

Response: Section 2.0 has been updated as requested.

- 2. Comment: Section 3.0, Background, Page 3 of 5:** The second paragraph on Page 3 of Section 3.0 indicates that risk in one subarea of OU2 was inordinately influenced by a single data point; however, the subarea of OU2 and single data point are not specified. Revise Section 3.0 to clarify the subarea and single data point that influenced the risk at OU2.

Response: The text will be revised as follows: “A risk assessment for OU2 was conducted in 1996. Following a revision of that risk assessment, it was determined that risk in subarea A4 of OU2 was inordinately influenced by a single data point, specifically AB032. Therefore, during summer 2002, the Navy conducted a time-critical removal action to remove approximately 35 cubic yards of soil around location AB032 to a depth of 3 feet.

- 3. Comment: Figure 3-2, Site Plan:** Figure 3-2 includes three arrows to signify the commingled Navy and BAE Plumes; yet sufficient evidence has not been provided at this time to substantiate that the plumes are commingled. Revise Figure 3-2 to remove the arrows from the figure.

Response: These arrows are included because adjacent sites may be contributing contamination to the NIROP plume; the Partnering Team has historically acknowledged the possibility that commingling is occurring or that off-site sources may be contributing contamination to the NIROP plume. MPCA’s recent July 8, 2013 letter regarding “Calendar Year 2013 groundwater Elevation Measurements, Southwest Fridley Groundwater Program” requested all parties, including BAE Systems, to conduct synoptic groundwater elevation measurements within a two-week time period for the purposes of providing all parties information on the entire area, not just their own sites, allowing for a better understanding of plume migration and groundwater hydraulics.

- 4. Comment: Section 4.2.3, OU1 Performance Measurement, Page 4 of 9:** The third paragraph indicates that a subset of 17 monitoring wells located in the ACP nearest the bank of the Mississippi will be used as measurement points for the purpose of identifying groundwater COC concentrations potentially migrating into the river; however, Section 4.2.3 does not specifically reference or identify the locations of the 17 wells. Revise Section 4.2.3 to cite the tables and figures which identify the 17 measurement points and reference the figures that show historical results for monitoring of these wells.

Response: Table 4-3 lists the 17 wells included monitoring wells located in the ACP nearest the bank of the Mississippi will be used as measurement points for the purpose of identifying groundwater COC concentrations potentially migrating into the river. Historical results for these wells can be found in each year’s Annual Monitoring Report. The text was revised as requested.

- 5. Comment: Section 4.2.5, OU1 Vegetable Oil Pilot Testing, Page 8 of 9:** Section 4.2.5 does not reference a figure showing the location of the small area where vegetable oil was applied. Revise Section 4.2.5 to reference Figure 3-2 (Site Plan).

Response: The text has been revised as requested.

- 6. Comment: Section 4.3, OU2 and OU3 Remedial Actions, Page 9 of 9:** The text indicates that “COCs for OU2 and OU3 are identified in Table 4-1;” however, Table 4-1 (Groundwater Chemicals of Concern and Target Cleanup Levels – OU1 – August 2012 Sampling Event) does not provide the COCs for OU2 or OU3. Revise the Fourth 5YRR to include a table providing the COCs for OU2 and OU3.

Response: The text will be revised as follows: “COCs for OU2 and OU3 are the same as the COCs for groundwater”.

- 7. Comment: Table 4-3, Detected Concentrations of VOCs in Riverside Wells – OU1 – August 2012 Sampling Event:** Based on Section 4.2.3 (OU1 Performance Measurement), Table 4-1 (Groundwater Chemicals of Concern and Target Cleanup Levels – OU1 – August 2012 Sampling Event), and the Attachment 3 (TCE Isoconcentrations Maps and Approximate Capture Zone Configurations) figures, the volatile organic compound (VOC) concentrations presented in Table 4-3 appear to be in micrograms per liter ($\mu\text{g/L}$) rather than grams per liter (g/L). Revise Table 4-3 to ensure the correct units are utilized.

Response: The table has been revised to show the correct units.

- 8. Comment: Section 5.1, OU1 Progress Since the Last Five-Year Review, Pages 1 of 5 and 2 of 5:** Section 5.1 indicates that the pump-and-treat system is operational and that the system improvements enhanced performance; however, the text does not provide and/or reference information to substantiate that the system was sufficiently operational or quantify how the improvements enhanced the system. Section 5.1 also states that “The new extraction wells (AT-11, AT-12, and AT-13) and associated equipment and other equipment upgrades, added to the containment system are the outcome of continued operation of the OU1 remedy to meet ROD objectives;” however, the text does not specifically identify the other equipment upgrades or demonstrate that the new extraction wells and associated equipment and other equipment upgrades results in the Operable Unit (OU) 1 remedy meeting ROD objectives. While this information is provided in the AMRs, the Fourth 5YRR does not clarify where in the AMRs this information can be found. Revise Section 5.1 to reference specific sections in the AMRs where quantitative information to support these discussions can be found.

Response: Quantitative information supporting this statement is included in the Five-Year Review on the figures in Attachment 3. The text has been revised to state this.

- 9. Comment: Section 6.1, Community Notification and Involvement, Page 1 of 2:** The text states that “The Draft Fourth Five-Year Review Report will be provided to EPA and MPCA for review and comment in February 2013;” however, the Fourth 5YRR was not provided to EPA until June 2013. Revise the Section 6.1 to clarify that the Fourth 5YRR was provided to EPA in June 2013, not February 2013.

Response: The section has been revised as requested.

10. Comment: Section 7.1.1, OUI, Pages 2 of 9: The text states that “There is some evidence to suggest that PCE [tetrachloroethene] may originate from an off-NIROP source;” however, information to substantiate this assumption is not provided and/or referenced in the Fourth 5YRR. Revise the Fourth 5YRR to provide information to substantiate that PCE may originate from an off-NIROP source.

Response: Text has been added to this section referring to the 2012 AMR.

11. Comment: Section 7.2.4, Cleanup Levels – All OUs, Page 5 of 9: The text states that “The updated surface water criteria and standards identified in the first Five-Year Review Report changed per a letter from the MPCA on December 15, 2009.” Since this letter documents a change in the cleanup levels established in the OUI ROD, the letter should be included in the Fourth 5YRR as an attachment. Revise the Fourth 5YRR to include the referenced letter as an attachment.

Response: The letter has been included as Attachment 5. Text has been added to refer to the attachment.

12. Comment: Section 7.2.5.1, Problem B: Effectiveness of the Capture Well System, Page 7 of 9: The last sentence of Section 7.2.5.1 references Attachment 3 as support that the system continues to show significant improved performance; however, Attachment 3 (TCE Isoconcentration Maps and Approximate Capture Zone Configurations) includes TCE isoconcentration maps and the approximate capture zone configurations. These do not show significant improved performance of the system. Revise Section 7.2.5.1 to reference figures and tables which support that the system continues to show significant improved performance.

Response: The following text has been added just before the reference to Attachment 3: “and effectiveness in capturing contaminated groundwater”. The figures are meant to show substantial capture of contaminated groundwater.

**RESPONSES TO MINNESOTA POLLUTION CONTROL AGENCY
COMMENTS ON FOURTH FIVE-YEAR REVIEW REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT, FRIDLEY, MINNESOTA
DATED MAY 30, 2013**

September 27, 2013

General Comments:

- 1. Comment:** The Minnesota Pollution Control Agency (MPCA) generally agrees with the protectiveness conclusion reached by this Five-Year Review and believes that the document satisfies the intent and purpose of a Five-Year Review. However, MPCA believes that additional clarification and information requested by specific comments listed below would better serve to inform the public and document the remarkable progress achieved at the site over the past five years.

Response: Comment noted, specific comments are addressed below.

- 2. Comment:** The MPCA recommends that interviews with the City of Fridley be conducted and discussed to provide background of recent community concerns expressed by both the city and the residents. Community involvement with respect to groundwater quality within the city of Fridley has dramatically increased during this review period and should be documented in the Five-Year Review.

Response: Although interviews with city of Fridley personnel were not conducted, there were public meetings conducted during this Five-Year Review period in which information was exchanged.

- 3. Comment:** The Five-Year Review refers to the 2012 Annual Monitoring Report in several instances. The 2012 AMR has not been submitted to MPCA (and the U.S. Environmental Protection Agency (EPA)). The MPCA recommends that this fact be noted in the Five-Year Review for clarification.

Response: The AMR was submitted to MPCA and U.S. EPA on July 10, 2013. The 2012 AMR reference was updated in the Five-Year Review text. Please see the attached Five-Year Review sections and references.

Specific Comments:

Five Year Review Summary Form

- 1. Comment:** The MPCA recommends that this Five-Year Review document include the most recent version of the Five-Year Review Summary Form developed by U.S. EPA. The new summary form aids in tracking progress of issues and recommendations identified in the Five-Year Review.

Response: The most recent version of the Five-Year Review Summary Form has been used. Please see the attached, revised Five-Year Review Summary Form.

Section 2.0 – Site Chronology

2. **Comment:** This section contains multiple references to events which are not administratively linked to the Naval Industrial Reserve Ordnance Plant (NIROP) facility. For example: the second item in June 1986, and the second item in September 1987. The MPCA recommends that all references not specific to the historic or remedial chronology for NIROP be removed or provide an explanation why it should be included.

Response: These items are included because adjacent sites may be contributing contamination to the NIROP plume; the Partnering Team has historically acknowledged the possibility that commingling is occurring or that off-site sources may be contributing contamination to the NIROP plume. MPCA's recent July 8, 2013 letter regarding "Calendar Year 2013 groundwater Elevation Measurements, Southwest Fridley Groundwater Program" requested all parties, including BAE Systems, to conduct synoptic groundwater elevation measurements within a two-week time period for the purposes of providing all parties information on the entire area, not just their own sites, allowing for a better understanding of plume migration and groundwater hydraulics. Navy agrees with MPCA that a holistic approach to understanding the sites is the most efficient path forward.

3. **Comment:** Besides the date a given document was submitted to the Regulators, the MPCA believes the chronology should include the date a given document was finalized. The current version only includes when draft document was submitted by the Navy.

Response: Section 2 contains a general chronology; adding a finalized version for each document in this section, given the long history at NIROP, would significantly lengthen this section. Navy recently established the Administrative Record (AR) online at <http://go.usa.gov/DyNY>, so the public can access all versions of relevant documents.

4. **Comment:** Please correct the installation and pumping test dates for AT-11, AT-12, and AT-13. These wells were installed during 2011.

Response: The date has been changed to 2011. Refer to the attached, revised Section 2.

Section 3.0 - Background

5. **Comment: Page 1, Paragraph 3:** The site property boundary is a lot less than 2000 feet from the Mississippi River as stated in the text in Section 3.0. The MPCA recommends that Navy check the distance from the Mississippi River to the western NIROP boundary and revise the text in this section to better reflect the location of the site.

Response: The text will be changed from "...and 2,000 feet east of the Mississippi River..." to "...and between 750 and 900 feet east of the Mississippi River...". Please refer to the attached, revised Section 3.

6. **Comment: Page 3, Paragraph 5:** Please clarify the first sentence of this paragraph to provide a reference to the technology evaluated during the pilot test.

Response: The text "...this technology..." will be changed to "...addition of refined soybean oil to enhance reductive dechlorination...". Please refer to the attached, revised Section 3.

Section 4.0 – Remedial Actions

7. **Comment: Page 1, Paragraph 1:** Please use the OU-1 definition as described in the Record of Decision (ROD), which includes all groundwater contaminated due to NIROP.

Response: The text will be changed from "Groundwater is identified as OU1" to "OU1 is identified as contaminated groundwater from the NIROP", as stated in the ROD. Please refer to the attached, revised Section 4.

Section 5.0 – Progress Since the Last Five-Year Review

8. **Comment: Page 5-3, Item 4. Exit Strategy:** The MPCA recommends that this section includes the text of the Vision statement/Exit Strategy.

Response: The NIROP Vision and Goals, adopted during the Tier I and Tier II meeting in Chicago on June 22, 2011, and edited during the Tier I and Tier II meeting in St. Paul on December 8, 2011, will be added to the Exit Strategy section. Please refer to the attached, revised Section 5.

Section 6.0 – Five-Year Review Process

9. **Comment: Section 6.1 Community Notification and Involvement:** Please update this section, specifically the date which the draft document was submitted for review to the U.S. EPA and MPCA.

Response: The date was updated from February 2011 to May 30, 2011. The date of this response to comments letter and the date of the U.S. EPA's response to comments letter was also be added to Section 6.1. Please refer to the attached, revised Section 6.

10. **Comment: Section 6.4 Site Inspection:** The MPCA recommends that the damage to monitoring wells noted during the site inspection be included in this section.

Response: The following text was added to Section 6.4, at the end of the paragraph: "Monitoring well 8-IS was missing its cover during the site inspection, and in 2009, monitoring well caps were stolen from some monitoring wells in Anoka County Park. The Navy was informed and BayWest replaced the caps. The cover will be replaced for monitoring well 8-IS." Please refer to the attached, revised Section 6.

11. **Comment: Section 6.5 Interviews:** The MPCA believes the reference to Restoration Advisory Board (RAB) are not appropriate as NIROP does not have an active RAB. The RAB has not met in the last seven years. However, the MPCA recommends that this

section include a reference to community involvement and concerns which have occurred during the previous five years, for example formation of a Community Action Group for Fridley Superfund Sites and the concerns expressed by the city of Fridley with regard to increasing use of nearby Fridley Municipal Well 13 (Attachment 1).

Response: Attachment 1, referred to by MPCA in their Specific Comment 11, above, was not included in the pdf. Although there have not been RAB meetings for some time, one RAB member still remains on Navy's document distribution list. The RAB member should continue to receive documents until they request otherwise. Navy encourages RAB and other community involvement. The section has been updated as follows: "A Community Action Group for Fridley Superfund Sites was formed during this Five-Year Review Period to exchange information about site activities and local concerns. The city of Fridley has also expressed concerns during Partnering Team meetings about the NIROP plume with regard to their intent to increase use of municipal well Fridley Well 13. Currently, the city of Fridley's water is supplied by the Mississippi River and excess water from New Brighton. Water from New Brighton is supplied from the groundwater treatment plant at the Twin Cities Army Ammunition Plant (TCAAP). Groundwater from the TCAAP TCE plume is pumped and treated to residential drinking water standards and supplied for municipal use. According to city of Fridley Water Works personnel, reductions in TCAAP plume contaminant concentrations will result in decreased pumping, decreasing the water supply available to the city of Fridley and increasing the demand on Fridley's municipal wells." Please refer to the attached, revised Section 6.

Section 7: Technical Assessment

- 12. Comment: Section 7.1.1 – OU-1, Last Paragraph:** The Draft USGS groundwater model is not previously discussed in this document. The MPCA recommends that Navy discuss the genesis of and the current status of the USGS model, as well as the expected completion date for the Model.

Response: Per U.S. EPA General Comment 5e, the data discussion in this section was moved to Section 6.3, Data Review, and the following text has been added to this section: "The United States Geologic Survey (USGS) was contracted to construct a numerical model intended to be used as a tool by the Partnering Team to evaluate contaminant concentrations, groundwater flow pathways, and probable capture zones for extraction well pumping under different scenarios. The purpose of this model is that it be used to determine the most effective pumping rate/pumping well configuration to ensure that maximum capture of the contaminant plume is achieved. The modeling is complete and a draft report has been prepared and peer reviewed. The draft report is currently being revised, then the USGS supervisory review process will begin and the report will be published. Report approval is anticipated by the end of fiscal year 2013." Please refer to the attached, revised Section 6.

- 13. Comment: 7.2.1 – Exposure Assumptions, Page 7-4, Second Paragraph:** Parameters discussed in the Johnson-Ettinger model do not consider the known soil impacts below the building slab. The MPCA believes that the vapor intrusion evaluation provided

should be discussed as a preliminary assessment as only groundwater concentrations were considered as potential vapor intrusion sources. Since all potential sources for vapor intrusion were not evaluated, the MPCA recommends that Vapor Intrusion from soils be identified as an issue and have a corresponding recommendation for further evaluation.

Response: A preliminary evaluation for soil under the building has been conducted and included in the Five-Year Review, and a discussion of the results was added in the exposure assumptions section for OU2 and OU3. Since the evaluation results are below EPA's target risk level, it is unnecessary to identify vapor intrusion as an issue with an associated recommendation. However, the voluntary optimization sampling will yield additional soil data which will then be used to update the Johnson-Ettinger model, if the Partnering Team determines that is necessary. The following text has been added to Section 7.2.1: "The presence of TCE and other VOCs in surface and subsurface soil also renders the compounds potentially viable to volatilize and migrate into the indoor air of a building. Using the maximum detected soil concentrations of each detected VOC at depth intervals of 0 to 4 feet, 4 to 8 feet, and 8 to 12 feet from samples collected in 1997 (as reported in the 2002 Remedial Investigation), indoor air concentrations were predicted. The indoor air concentrations were determined using the Johnson-Ettinger Model and were based on the same assumptions listed for OU-1. The maximum exposure concentration and risk from each depth interval for each VOC were used to conservatively estimate potential risk associated with exposure to indoor air concentrations (Attachment 4). The exposure concentrations correspond to a carcinogenic risk of 1×10^{-7} and a hazard index of 0.1, below EPA's target risk levels". Please see the attached, revised Section 7.

- 14. Comment: 7.2.4 – Clean Up Levels – All OUs:** Discussion of the proposed changes to the surface water standard referencing the MPCA letter dated December 2009 should note that the proposed changes to the applicable surface water standard are conditional. The 2009 letter required the Navy to implement a surface water sampling plan in order to document that the proposed change of the surface water standard will be protective of human health and the environment. A surface water sampling plan was not submitted or implemented by the Navy during this review period. The MPCA recommends the Five-Year Review identify the proposed change to this applicable standard as an issue and provide a corresponding recommendation to implement a surface water sampling plan.

Response: The Minneapolis Water Works Intake is located just downstream from the site in the Mississippi River, and samples are collected regularly by Minneapolis Water Works. Samples from this intake have not shown any detection in several years, and Navy feels that the sampling being conducted currently is adequate to evaluate surface water in the Mississippi River. The proposed change to this applicable standard is not an "issue" that affects remedy protectiveness; therefore it will not be noted as an "issue" with an associated recommendation.

- 15. Comment: 7.2.5.1 – Problem B: Effectiveness of Capture Well System:** Discussion in this section does not define Problem B or discuss what criteria are utilized to evaluate Problem B. The discussion provided requires that the reader have previous knowledge of

the contents of the RAWP. Discussion in the Five-Year Review should be understandable to the general public without requiring review of additional documents. The MPCA recommends that summary of RAWP be included in this section.

Response: A full summary of the RAWP might be too extensive for this section; the Navy suggests adding text explaining each problem statement. For Problem Statement B, the following text has been added after the first sentence in Section 7.2.5.1: “Each “problem” is defined by stating a problem or asking a question as a part of the project planning/design process, which is then used to develop decision rules. The study question for Problem B is: “Is the capture system with the newly installed wells effective at preventing groundwater contamination from passing through the capture system?” The criteria used to evaluate Problem B are the following:

- Hydraulic heads
- Chemical concentrations
- Physical parameters
- Stratigraphy
- Removal rate
- Drawdown
- Historical data
- Pumping rate
- Borehole flow velocity
- Tracer study
- 3-dimensional numerical model
- Plume dimension and location
- Concentrations that constitute contamination and delineate the plume

16. Comment: 7.2.5.2 – Problem C: Groundwater Monitoring for Overall Contamination at NIROP Fridley (Effectiveness of the Groundwater Monitoring Network): See comment regarding Problem B.

Response: A full summary of the RAWP might be too extensive for this section; the Navy suggests adding text explaining each problem statement. For Problem Statement C, the following text will be added before the first sentence in Section 7.2.5.2: “Each “problem” is defined by stating a problem or asking a study question as a part of the project planning/design process, which is then used to develop decision rules. The problem statement for Problem C is: “...to optimize the groundwater monitoring program while providing sufficient data to determine whether the following are being achieved:

1. contaminated groundwater is prevented from leaving the site,
2. contaminated groundwater is prevented from reaching the Mississippi River,
3. change in the shape, size, and location of plume are being tracked,
4. contaminant levels are being evaluated relative to surface water and groundwater standards,

5. performance of remedial system is assessed (system = existing ongoing remedial actions and any future remedial actions which are implemented)
6. practicability of achieving complete remediation is assessed (won't completely address this under groundwater optimization)

17. Comment: Paragraph following Decision Rule 5: This paragraph references the document as an AMR rather than a Five-Year Review. Is the Navy referring to the 2012 AMR? The Navy may want to review the draft Five-Year Review to correct similar references.

Response: The document was reviewed and other similar errors were corrected. The word "...this..." in the second paragraph were changed to "...the 2012..." and a document reference was added to the end of the sentence.

Section 8.0 - Issues

18. Comment: 8.0 – Issues: All issues identified in this section should provide discussion of whether the issue affects current or future protectiveness of the remedial action for the site. MPCA suggests inclusion of a table similar to those provided in U.S. EPA Five-Year Review template for this section.

Response: Comment noted. However, the basis of the Region 5 Five-Year Review template is the June 2001 EPA OSWER Comprehensive Five-Year Review Guidance, and the Region 5 template has included additional steps and guidance to address ICs separately. The original 2001 guidance includes ICs as part of the overall remedy assessment. It is Navy's position that the Five Year Review as written meets the intent of the Region 5 guidance in that it complies with the OSWER June 2001 guidance. The text in Section 8 will state that these are maintenance-related items that are being tracked but are not "issues" that currently do impact protectiveness or are expected to impact protectiveness in the future. No issues have been identified for any OU that impact the current of the remedy; text to this effect has been added to Section 8.0, and therefore; no table will be needed.

19. Comment: 8.1.4 – Source Remediation: The MPCA is unclear as to the purpose of the discussion of the veggie oil pilot study, how it relates to source remediation and why source remediation is listed as an issue in the first place. The Site team has not had serious discussions regarding potential source remediation technologies and the Navy has been very clear in the past that the main reason it is conducting the source investigation under the building is for internal Navy purposes. Therefore, the MPCA recommends that Navy provide more details and clarity to this section. Please note that MPCA continues to believe source remediation has the ability to shorten the lifespan of the pump and treat system and therefore should be evaluated.

Response: Navy agrees that source remediation would shorten the timeline of the pump and treat system, but source remediation is not an "issue" in terms of a Five-Year Review, but a follow-up action that has potential to shorten the remedial timeframe. Text has been added to Section 8 to clarify this.

20. Comment: 8.2 OU2 and OU3 Issues: The MPCA recommends that the Vapor Intrusion be listed as an OU3 (unsaturated soils under the building) issue as some of the highest levels of Trichloroethene (TCE) were found in the unsaturated soils under or near the East Plating Shop.

Response: The text “No issues affecting remedy protectiveness have been identified for OU2 or OU3” is correct, because the Johnson-Ettinger model results for both soil and groundwater were below U.S. EPA screening levels.

21. Comment: The MPCA recommends that damaged monitoring wells observed during the site inspection should be identified as an issue and have a corresponding recommendation to repair the damage.

Response: Damaged monitoring wells have not been listed as an issue, because they do not affect remedy protectiveness, but have been noted in the Five-Year Review as a maintenance item. The Navy will follow up on this item by repairing the damage to monitoring wells.

Section 9.0 - Recommendations

22. Comment: 9.0 – Recommendations: Many issues identified in this Five-Year Review do not have corresponding recommendations which address protectiveness or future protectiveness of the selected remedies. MPCA recommends that Navy include a table similar to those provided in the U.S. EPA Five-Year Review template.

Response: No issues have been identified in this Five-Year Review which affect remedy protectiveness; therefore, a table will not be required.

23. Comment: The MPCA recommends that Navy include in the current Five-Year Review, the recommendations from the previous Five-Year Review that are yet to be completed or listed as ongoing.

Response: Recommendations from the previous Five-Year Review that are yet to be completed or listed as ongoing are already listed in Section 9 as maintenance items. These items do not affect remedy protectiveness, and are not “issues” that require “recommendations”. However, these items do support the Navy in confirming remedy protectiveness. Text to this effect has been added to this section.

24. Comment: Please include recommendations to repair and document repairs to damaged monitoring wells.

Response: Monitoring wells will be repaired but this is not an issue that affects remedy protectiveness.

Attachment 3 – Figures

25. Comment: OU-1 as presented in the figures should match the ROD defined boundaries of OU-1. The ROD definition includes the aerial extent of the groundwater plume and is not confined to the limits of the former NIROP property boundary as depicted in the figures. Please revise all figures in the Five-Year Review to accurately reflect the ROD defined OU boundaries.

Response: Comment noted. However, MPCA, U.S. EPA, and the Navy have discussed the issue of potential upgradient sources and commingled plumes many times in the past. Portrayal of the NIROP plume to include off-site portions of the plume, which may or may not be the Navy's responsibility, would not accurately represent the site to the general public.

26. Comment: No discussion of the BAE site or groundwater plume is provided in this Five-Year Review. The MPCA requests that all references to the BAE site should be removed from the figures unless further discussion is provided which clearly supports the references in the figures.

Response: Please see the response to Specific Comment 25.

27. Comment: The hash marks utilized to represent OU-2 and OU-3 do not match those provided in the legend of the figures. Please revise the figure for accuracy in the event this figure is reproduced in black and white.

Response: The figures have been revised (see attached) and they will be included in the Final Five-Year Review.

28. Comment: The MPCA recommends that Attachment 3 includes a figure with PdC TCE levels during the review period, including the Fridley Well 13.

Response: Attachment 3 will include a figure of the Prairie du Chien monitoring wells and their TCE concentrations (see attached figure).

QUITCLAIM DEED