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U S NAVY RESPONSE TO REGULATOR COMMENTS ON DRAFT RECORD OF DECISION
OPERABLE UNIT 16 (OU16) SITE 89 MCB CAMP LEJEUNE NC
8/24/2012
CH2M HILL

Response to Comments
Draft Record of Decision
Site 89 Operable Unit No. 16
Marine Corps Installations East - Marine Corps Base Camp Lejeune, North Carolina

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Introduction

The purpose of this document is to address comments on the Draft Record of Decision (ROD) for Site 89 Operable Unit No. 16 located at Marine Corps Installation East – Marine Corps Base Camp Lejeune (MCIEAST - MCBCAMLEJ). The North Carolina Department of Environment and Natural Resources (NCDENR) Superfund Section and United States Environmental Protection Agency (USEPA) provided the comments listed below. Responses to comments are provided in bold.

EPA Comments Site 89 ROD Text (dated July 31, 2012)

1. Section 1.1

   Define NA in this location since it is the first use of the acronym in this document.

   NA has been defined as Natural Attenuation in this location.

2. Section 2.5.3

   Define NCAC as it is the first time this acronym appears in the document.

   NCAC has been defined as North Carolina Administrative Code in this location.

3. Section 2.5.3:

   Replace the sentence "NCDENR identified NCGWQS as a 'relevant and appropriate' requirement for groundwater remediation" with the following: "NCDENR identified NCGWQS as 'relevant and appropriate' chemical-specific requirements for groundwater remediation of this aquifer. Remedial action at this site has been determined to be necessary due to unacceptable risk from potential human consumption of the contaminated groundwater and exceedance of the NCGWQS or MCLs (measures that define acceptable levels for drinking water)."

   This sentence has been replaced with the recommended statement above.

4. Section 2.6

   Add the following text to the Principal Waste Section: "Although this action is addressing the dissolved phase VOC contaminated groundwater, the earlier NTCRAs at this site using soil mixing and LTTD addressed both DNAPL and high-concentration VOC contaminated soils that were considered principal threat wastes."

The last bullet in this section has been updated to read "NTCRAs at this site using soil mixing and LTTD addressed both DNAPL and high-concentration VOC-contaminated soils that were considered principal threat wastes."

5. Section 2.6

   Remove the sentence "Site access is restricted by a locked gate, and surficial groundwater is not used as a potable water source."

   The sentence has been removed.

6. Section 2.7

   Replace the sentence "In order to be protective of human health and the environment and address potential future risks identified in the HHRA, …" to the following: " The Remedial Action Objectives (RAOs) for Site 89 are based upon the potential of future residential receptors using groundwater as a potable water supply."

   The paragraph now reads:

   "The Remedial Action Objectives (RAOs) for Site 89 are based upon the potential of future residential receptors using groundwater as a potable water supply. The RAOs identified for Site 89 are as follows: "

7. Table 10

   If this statement is correct and the MNA/PRB remedy will reduce time frames, why are the time frames for the MNA and MNA/PRB remedy the same in the cost estimate?

   The purpose of the PRB is to protect Edwards Creek and prevent potential offsite migration in groundwater by treating high concentrations of COCs in groundwater migrating from the former DRMO. Compared to only MNA, this will reduce the amount of time needed for the downgradient groundwater and surface water to meet cleanup goals. However, the COCs in the DRMO area will likely take the longest to attenuate site-wide thus MNA will need to be conducted for the same amount of time.

8. Section 2.9.2 (right under Figure 4)

   "Although the Navy and MCB Camp Lejeune may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Navy and MCB Camp Lejeune shall retain ultimate responsibility for the remedy integrity."

   This sentence has been added.

9. Table 15

   The statement below or a modified version should be added to the LUC's metric. The LUCs are a component of the remedy and should be measured accordingly. It is also important to note that a decision to discontinue or modify the LUCs will be in partnership with EPA and the State of NC.

   "In accordance with LUC objectives, groundwater use will be restricted to monitoring or remedial purposes. LTM will be conducted until each COC in groundwater is at or below its respective remediation goal for four consecutive monitoring events. The Navy and Marine Corps, in partnership with USEPA and the State, will evaluate the discontinuation of monitoring of individual COCs that have met the remediation goals after four rounds based on site conditions. The results of LTM will be documented in an annual monitoring report. When all COCs have achieved their goals for four consecutive sampling events, site closure will be initiated. Once RAOs for this groundwater action have been achieved, the Site 89 area is expected to be suitable for unlimited use and unrestricted exposure for groundwater. Therefore, the Navy, USEPA, and NCDENR may agree for the groundwater LUC component of the Selected Remedy to be terminated at site closeout."

The following was added as a note in the table:

"The Navy and Marine Corps, in partnership with USEPA and the State, will evaluate the discontinuation of monitoring of individual COCs that have met the remediation goals after four rounds based on site conditions. The Navy, Marine Corps, USEPA, and NCDENR may agree for the groundwater LUC component of the Selected Remedy to be terminated at site closeout."

10. Section 2.9.4

    Add this statement as the beginning of the "Protection of Human Health and the Environment" section: *"Because there is unacceptable risk to human health, due contaminated groundwater at this site that is considered a potential drinking water source, a remedial action is required to restore the groundwater to meet drinking water standards (i.e., MCLs or NCGWQS)"*.

    This sentence has been added.

11. Section 1

    Add "and response actions taken when necessary to protect human health and the environment" to the end of the following sentence : The primary purpose of the FFA is to ensure that the environmental impacts associated with past and present activities at the Base are thoroughly investigated.

    This sentence has been added.

12. Section 1.1 – Statutory Determinations

    Use text similar to that in the Site 73 ROD related to FYR.

    Five-Year Review Requirements— This remedy will result in hazardous substances, pollutants, or contaminants remaining on site above levels that allow for unlimited use and unrestricted exposure; therefore in accordance with CERCLA Section 121(c) and the NCP at 40 CFR300.430 (f)(4)(ii) a statutory review will be conducted by the Navy within 5 years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment. If the remedy is determined not to be protective of human health and the environment because, for example, LUCs have failed or treatment is unsuccessful, then additional remedial actions would be evaluated by the FFA parties and the Navy may be required to undertake additional remedial action.

    Text from this excerpt was added to the ROD and the text currently reads: "Because this remedy will result in pollutants or contaminants remaining onsite in groundwater above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within 5 years after the initiation of the remedial action to ensure that the remedy is protective of human health and the environment in accordance with CERCLA Section 121(c) and the NCP at 40 CFR300.430 (f)(4)(ii). If the remedy is determined not to be protective of human health and the environment because, for example, LUCs have failed or treatment is unsuccessful, then additional remedial actions would be evaluated by the FFA parties and the Navy may be required to undertake additional remedial action."

13. Section 2.4 - End of Paragraph 1

    Specify the likely future land use for the area or how it is addressed in the Base Master Plan.

    The following text has been added: "The future land use for Site 89 is unknown. Once RAOs are achieved land use will be unrestricted. "

14. Section 2.4 – Beginning of Paragraph 2

    Add text that addresses SW since it is an impacted resource. Specify designated Use Classification by NC and how Base uses the river or not for training or recreation etc.

The following text has been added: "Edwards Creek is classified as a high quality, nutrient sensitive, salt water body used for aquatic life and secondary recreation (SC;HQW,NSW). The portion of the creek that runs through Site 89 is currently fenced in."

15. Section 2.4 – End of Paragraph 2

    Specify that the gw is part of an aquifer that is used for drinking water and that it is classified by NCDENR as potential drinking water source.

    The text has been updated to read: "Potable water for MCIEAST-MCB CAMLEJ and the surrounding residential area is provided by public water supply wells that pump groundwater from the Castle Hayne aquifer. There are no water supply wells within 1,500 feet of Site 89. Groundwater from the Castle Hayne aquifer at Site 89 is classified by NCDENR as a potential drinking water source but is not expected to impact public water supply because the nearest public supply wells are located upgradient of the site."

16. Section 2.6 – First Bullet

    Earlier text in Table 1 indicates that DNAPL was treated under NTCRA and Pilot test. Correct the inconsistency and include text that takes credit for these actions that addresses PTW.

    The fact that DNAPL removal actions occurred during previous investigations was clarified to the following 3 bullets:

    - **NTCRAs at this site using soil mixing and LTTD addressed both DNAPL and high-concentration VOC-contaminated soils that were considered principal threat wastes.**
    - **DNAPL was not observed during the sampling of IR89-MW53.**
    - **Concentrations of TCE detected in samples collected from nearby monitoring wells screened within the surficial and upper Castle Hayne aquifers were one to two orders of magnitude lower.**

17. Section 2.7 – Item 2 in list

    RAO should address restoration of the SW to meet designated Use and attain NCSWQS which are identified as cleanup levels. Active treatment of both GW and SW should enable this to be achieved in the vicinity where SW impacted.

    The second RAO has been updated to:

    - **Minimize degradation of Edwards Creek from COC-impacted groundwater discharging into surface water until surface water COC concentrations meet the NCSWQS.**

18. Section 2.8 – "Compliance with ARARs"

    Need to add reference to CERCLA 121(d)(2) and the NCP at 40 CFR 300.430(e)(9)(iii)(B) requirements for alternatives to comply with ARARs. [See EPA ROD guidance p. 6-30 and example language in the Site 73 ROD pp.2-23 2-24]

    Similar to the Site 73 ROD, this information is provided in Section 2.9.4.

    Use text similar to that from Site 73 ROD p. 2-17

    The following sentences were added to the beginning of the "Compliance with ARARs" section:

    "The ARARs include any Federal or State standards, requirement, criteria, or limitations that are determined to be legally applicable or relevant and appropriate to a CERCLA site or action and are provided in Appendix A. TBC criteria are non-promulgated advisories or guidance issued by Federal or State government and do not have the status of potential ARARs but are evaluated along with ARARs. The timeframe for compliance with Chemical specific ARARs will vary with different remedial

alternatives. Location-specific ARARS remain the same for each alternative and Action-specific ARARs may vary to some extent with the different remedial alternatives."

19. Section 2.9.1 - Rationale for the Selected Remedy

    Need to add brief description for rationale to use LUCs to prevent unacceptable exposure to contaminated GW and maybe SW while active remedy components underway.

    The following was added to Section 2.9.1 :

    "LUCs were selected to prevent aquifer use, restrict groundwater intrusive activities, and mitigate vapor intrusion until cleanups levels have been reached. LUCs are relatively inexpensive and will protect human health and the environment until active and passive treatment has been completed."

20. Section 2.9.2 – First Paragraph under Figure 4

    Narrative list of the LUCs is OK for intro but should include bulleted list with more detail of each LUC. [Ref Site 73 ROD p. 2-21]

    The following was added to the text:

    To achieve the LUC objectives, the Navy will implement the following LUCs for Site 89:

    - **Aquifer Use Control – To prohibit the withdrawal and use of groundwater, except for environmental monitoring, where groundwater contamination remains in-place above concentrations that allow for unlimited use and unrestricted exposure. This LUC boundary is defined to the northeast by the United States Highway 17 Bypass and encompasses the Camp Geiger area (west of White Street) from 7th Street to the north, D Street to the west, 11th Street to the south, and the boundary of the housing development to the south (east of White Street).**
    - **Industrial and Non-Industrial Use Control (Vapor Intrusion) – To evaluate future buildings and land use for potential vapor intrusion pathways, prior to construction, within the extent of groundwater contamination remaining in-place above concentrations that allow for unlimited use and unrestricted exposure. This LUC boundary encompasses the area within 100 feet of surficial and Castle Hayne groundwater COCs exceeding cleanup levels.**
    - **Intrusive Activities Control (Groundwater) – To restrict intrusive activities within the extent of groundwater contamination. This LUC boundary is defined as the area with concentrations of COCs contributing to construction worker risks and is conservatively assumed to include the area within 100 feet of the entire extent of surficial groundwater COCs exceeding cleanup levels.**

    The Navy will implement the following actions as part of the LUCs for Site 89:

    - **Incorporating land and groundwater use prohibitions into the MCIEAST–MCB CAMLEJ Base Master Plan, including consideration of vapor intrusion for new construction or modification to existing structures foundations within 100 feet of contaminated groundwater**
    - **Recording a Notice of Contaminated Site filed in Onslow County real property records in accordance with North Carolina General Statutes (NCGSs) 143B-279.9 and 143B-279.10**
    - **Maintaining the integrity of any current or future remedial or monitoring system, such as conducting site inspections to verify the integrity of the monitoring wells and to verify compliance with use restrictions**

21. Need to include EPA LUC Checklist text from CL#7 and #8.

    The language was changed to "The LUCs will be implemented, maintained, reported on, and enforced by the Navy and United States Marine Corps until the concentrations of hazardous substances in groundwater are at such levels as to allow for unrestricted use and unlimited exposure." consistent with the EPA LUC Checklist.

22. Section 2.9.2 – First Bullet under Figure 4

    Objectives should be more detailed similar to that used in Site 73 ROD See p. 2-21. Also, how are LUCs going to address SW?

    The bullets were updated to the following:

    - **"To prevent use of the surficial and Castle Hayne aquifers**
    - **To prevent construction worker exposure to COCs in groundwater within the surficial aquifer**
    - **To mitigate exposure of COCs in indoor air from vapor intrusion pathways**
    - **To maintain the integrity of any existing or future monitoring or remediation system at the site"**

    LUCs were not included for the surface water because surface water posed no unacceptable risk to current or future receptors during the HHRA. However, since the chemicals detected in surface water indicate that contaminated groundwater is discharging into Edwards Creek, the HHRA recommended establishing clean up levels and continuing to monitor chlorinated VOC concentrations in surface water. Currently there is a fence located around the portion of Edwards Creek that runs through Site 89 and access is limited. This fence will be maintained as an access control and signs will be posted for notification of site hazards.

    The following sentence was added to Section 2.7:

    "COCs detected in surface water indicate that the contaminated groundwater discharging into Edwards Creek; therefore, cleanup levels were established for surface water."

    The following bullet was added to section 2.9.2 under "The Navy will implement the following LUCs for Site 89":

    - **Access Control –To prevent exposure to surface water in Edwards Creek, fencing and signs around the perimeter of the site will be maintained.**

23. Section 2.9.2 – Last Paragraph on page 2-22

    Add the following text: "within 90 days of the ROD signature." Reference EPA LUC CL #9 and Site 73 ROD

    This has been added. The sentence now reads: "The Navy will submit the LUCIP to USEPA and NCDENR for review and approval pursuant to the primary document review procedures stipulated in the FFA within 90 days of the ROD signature."

24. Section 2.9.3 – First Paragraph

    Provide more detail in narrative form similar to Site 73 ROD p2-22 and 2-23

    The narrative provided in the Site 73 ROD was presented in the embedded Table 15.

25. Section 2.9.4 – "Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable" – Paragraph 2

    Earlier text says not treating DNAPL which is PTW. However, earlier actions have employed treatment of PTW. Correct text to better describe what this remedy accomplishes. Dissolved phase GW contamination is not PTW nor generally considered source material.

    This point has been clarified by referencing the "high concentrations of dissolved phase COCs, or "areas of highest COC concentrations" as opposed to source material.

26. Section 2.9.4 – "Preference for Treatment as a Principal Element

    Elaborate on the three types (ISCO, PRB, and aerators) of treatment deployed in this remedy to address COCs in GW and SW.

The following sentence was added: "The selected remedy includes air sparging to actively treat surficial groundwater in the source area, PRBs in passively treat groundwater downgradient of the source area, and aerators to treat surface water."

27. Section 2.9.4 – " Five-Year Review Requirement"

    Use text similar to that in Site 73 ROD that specifies CERCLA and NCP requirements. [Ref Site 73 ROD p.2-24]

    Added reference to CERCLA Section 121(c) and the NCP at 40 CFR300.430 (f)(4)(ii). Requirements. The section now reads:

    "This remedy will result in hazardous substances, pollutants, or contaminants remaining on site above levels that allow for unlimited use and unrestricted exposure. Until COC concentrations onsite are below these levels, the Navy will maintain LUCs and conduct a statutory remedy review every 5 years after initiating remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment in accordance with CERCLA Section 121(c) and the NCP at 40 CFR300.430 (f)(4)(ii)."

EPA Comments Site 89 ARARs (dated August 6, 2012)

1. Comments were provided for Table A-1 – Chemical Specific ARARs in the form of a redline version of the table. A copy of this red-lined version is attached.

   All changes were accepted.

2. Comments were provided for Table A-2 – Action Specific ARARs in the form of a redline version of the table. A copy of this red-lined version is attached.

   All changes were accepted.

3. Comments were provided for Table A-3 – Locations Specific ARARs in the form of a redline version of the table. A copy of this red-lined version is attached.

   All changes were accepted.

NCDENR Comments Site 89 ROD Text (dated August 6, 2012)

1. The various remedies, as described in the text and tables, recommend active treatment be considered complete when 95 percent reduction of COCs has been achieved. In addition to the 95 % reduction requirement, it is recommended that no source area wells exceed one order of magnitude above the NCAC 2L or MCL Groundwater Standard for the primary groundwater contaminants (PCA, PCE, TCE, and TCA)

   In the FS and PRAP, primary groundwater contaminants were presented as PCA, TCE, and VC. One order of magnitude above the NCGWQS for these COCs would be 2, 30, and 3 µg/L, respectively. The air sparge system is not cost effective to treat to these levels and MNA has been chosen to monitor the continued degradation of these products once the air sparge system is turned off. If rebounding or insufficient natural attenuation is observed, the system may be restarted to further treat the source area. The Five-Year Reviews will evaluate the effectiveness of the remedy and continued protection of human health and the environment.

2. Table 9 and the text on pages 18-20 and throughout the document, indicate that Monitored Natural Attenuation (MNA) and Long Term Monitoring (LTM) will only be done in the down-gradient areas of the site after the source area remedy is considered complete. MNA and LTM should be required in the source area monitoring wells as well as the down-gradient area wells following Active treatment. This is an essential requirement for the remedy to assure long term effectiveness in the source area as well as determining when the remedial action is complete in all areas of the contaminant plume.

   MNA and LTM will occur site-wide both during active treatment and after it has been completed. The text and tables have been updated to clarify these statements.

3. Short term effectiveness for Monitored Natural Attenuation (MNA) in down-gradient groundwater as described in the comparison Table 13 on Page 2-17 and in all related text and tables should have a <u>moderate ranking</u> not a high ranking. Please make appropriate corrections throughout the document

   This change has been made in text and tables.

4. NCDENR provided a list of ARARs to be added to Tables A-1 and A-2. A copy of these comments is attached.

   The following additions were made to Table A-1, Chemical Specific ARARs.

Media	Requirements	Prerequisite	Citation
Protection of adjacent surface water body	**If the groundwater plume is expected to intercept surface waters, the groundwater discharge will not possess contaminant concentrations that would result in violations of standards for surface waters.**	**Groundwater concentrations will not be at concentrations that will cause a violation in the surface water standards at a surface water body – Relevant and Appropriate**	**15A NCAC 2L.0106(k)(5)**

The following additions were made to Table A-2, Action Specific ARARs:

Media	Requirements	Prerequisite	Citation
Implementation of groundwater monitoring system	**Shall be constructed in a manner that will not result in contamination of adjacent groundwaters of a higher quality.**	**Installation of monitoring system to evaluate effects of any actions taken to restore groundwater quality, as well as the efficacy of treatment - Applicable**	**15A NCAC 02L .0110 (b)**

The remaining ARARs were updated per EPA comments.

TABLE A-1
Chemical-Specific ARARs
Record of Decision
Operable Unit No. 16 (Site 89)
MCB CamLej, North Carolina

Federal and North Carolina Chemical-Specific ARARs			
Media	**Requirement**	**Prerequisite**	**Citation**
Classification of contaminated groundwater	Groundwaters in the state naturally containing 250 mg/L or less of chloride are *classified as GA (Existing or potential source of drinking water supply for humans)* under 15A NCAC 02L .0201(1)	Groundwaters located within the boundaries or under the extraterritorial jurisdiction of the State of North Carolina **- Applicable**	15A NCAC 02L .0302(1)
	Groundwaters in the state naturally containing greater than 250 mg/L of chloride are *classified as GSA* under 15A NCAC 02L .0201(2)		15A NCAC 02L .0302(2)
Restoration of contaminated groundwater	Shall not exceed the groundwater quality standards[1] for contaminants specified in Paragraphs (g) or (h) for the site related contaminants of concern. · 1,1,2,2 - PCA (0.2 µg/L) · 1,1,2 - TCA (5 µg/L) · cis-1,2-DCE (70 µg/L) · PCE (0.7 µg/L) · Trans -1,2-DCE (100 µg/L) · TCE (3 µg/L) · Vinyl Chloride (0.03 µg/L)	Class GA or GSA groundwaters with contaminant(s) concentrations exceeding standards listed in 15A NCAC 02L .0202 **- Relevant and Appropriate**	15A NCAC 02L .0202(a), (b), and (g)
	Shall not exceed the Safe Drinking Water Act National Revised Primary Drinking Water Regulations: maximum contaminant levels (MCLs) for organic contaminants specified in 40 CFR 141.61(a).	Groundwaters classified as GA or GSA which are an existing or potential source of drinking water **- Relevant and Appropriate**	40 CFR 141.61(a) 15A NCAC 18C .1518
Protection of adjacent surface water body	Toxic substances: shall not exceed the numerical quality standards (maximum permissible levels) to protect human health from carcinogens through consumption of fish (and shellfish) · 1,1,2,2 - PCA (4 µg/L) · TCE (30 µg/L) · Vinyl Chloride (2.4 µg/L)	Tidal Salt Waters classified as Class SC (under 15A NCAC 02B.0220)with chemical concentrations exceeding 15A NCAC 02B Standards **- Relevant and Appropriate**	15A NCAC 02B .0208(a)(2)(B)
	Monitor and undertake management practices for sources of pollution such that water quality standards and best usage of receiving waters and all downstream waters will not be impaired.	Indirect discharges of waste or other source of water pollution into Tidal Salt Waters classified as Class SC - Relevant and Appropriate	15A NCAC 02B .0203

Notes:

[1] Groundwater quality standards established on the basis of a National secondary drinking water standards are not utilized as remediation goals since these are based on taste, odor and other considerations unrelated to human health.

TABLE A-2 Action-Specific ARARs
Record of Decision Operable Unit No. 16 (Site 89) MCB CamLej, North Carolina

Federal and North Carolina Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
General Construction Standards — All Land-disturbing Activities (i.e., excavation, clearing, grading, etc.)			
Managing storm water runoff from land-disturbing activities	Shall take all reasonable measures to protect all public and private property from damage caused by such activities.	Land-disturbing activity (as defined in N.C.G.S. Ch. 113A-53) of more than 1 acre of land - **Applicable**	15A NCAC 4B.0105
	Erosion and sedimentation control plan must address the following basic control objectives:		15A NCAC 4B.0106
	(1) Identify areas subject to severe erosion, and off-site areas especially vulnerable to damage from erosion and sedimentation.		
	(2) Limit the size of the area exposed at any one time.		
	(3) Limit exposure to the shortest feasible time.		
	(4) Control surface water run-off originating upgrade of exposed areas .		
	(5) Plan and conduct land-disturbing activity so as to prevent off-site sedimentation damage.		
	(6) Include measures to control velocity of storm water runoff to the point of discharge.		
	Erosion and sedimentation control measures, structures, and devices shall be planned, designed, and constructed to provide protection from the run-off of 10 year storm.	Land-disturbing activity (as defined in N.C.G.S. Ch. 113A-53) of more than 1 acre of land - **Applicable**	15A NCAC 4B.0108
	Shall conduct activity so that the post-construction velocity of the ten year storm run-off in the receiving watercourse to the discharge point does not exceed the parameters provided in this Rule.		15A NCAC 4B.0109
	Shall install and maintain all temporary and permanent erosion and sedimentation control measures.		15A NCAC 4B.0113
Monitoring Well Installation, Operation, and Abandonment			
Implementation of groundwater monitoring system	Shall be constructed in a manner that will not result in contamination of adjacent groundwaters of a higher quality.	Installation of monitoring system to evaluate effects of any actions taken to restore groundwater quality, as well as the efficacy of treatment - **Applicable**	15A NCAC 02L .0110 (b)
Construction of groundwater monitoring well(s)	No well shall be located, constructed, operated, or repaired in any manner that may adversely impact the quality of groundwater.	Installation of wells (including temporary wells, monitoring wells) other than for water supply - **Applicable**	15A NCAC 02C .0108(a)
	Shall be located, designed, constructed, operated and abandoned with materials and by methods which are compatible with the chemical and physical properties of the contaminants involved, specific site conditions, and specific subsurface conditions.		15A NCAC 02C .0108(c)
	Monitoring well and recovery well boreholes shall not penetrate to a depth greater than the depth to be monitored or the depth from which contaminants are to be recovered. Any portion of the borehole that extends to a depth greater than the depth to be monitored or the depth from which contaminants are to be recovered shall be grouted completely to prevent vertical migration of contaminants.		15A NCAC 02C .0108(d)

TABLE A-2 Action-Specific ARARs
Record of Decision Operable Unit No. 16 (Site 89) MCB CamLej, North Carolina

Federal and North Carolina Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	Shall be constructed in such a manner as to preclude the vertical migration of contaminants with and along borehole channel.	Installation of wells (including temporary wells, monitoring wells) other than for water supply - **Applicable**	15A NCAC 02C .0108(f)
Construction of groundwater monitoring well(s) con't	The well shall be constructed in such a manner that water or contaminants from the land surface cannot migrate along the borehole annulus into any packing material or well screen area.		15A NCAC 02C .0108(g)
	Packing material placed around the screen shall extend at least one foot above the top of the screen. Unless the depth of the screen necessitates a thinner seal, a one foot thick seal, comprised of chip or pellet bentonite or other material approved by the Department as equivalent, shall be emplaced directly above and in contact with the packing material.		15A NCAC 02C .0108(h)
	Grout shall be placed in the annular space between the outermost casing and the borehole wall from the land surface to the top of the bentonite seal above any well screen or to the bottom of the casing for open end wells. The grout shall comply with Paragraph (e) of Rule .0107 of this Section except that the upper three feet of grout shall be concrete or cement grout.		15A NCAC 02C .0108(i)
	All wells shall be grouted within seven days after the casing is set. If the well penetrates any water-bearing zone that contains contaminated or saline water, the well shall be grouted within one day after the casing is set.		15A NCAC 02C .0108(j)
	Shall be secured with a locking well cap to ensure against unauthorized access and use. Shall be equipped with a steel outer well casing or flush-mount cover, set in concrete, and other measures sufficient to protect the well from damage by normal site activities.		15A NCAC 02C .0108(k) and (l)
	The well casing shall be terminated no less than 12 inches above land surface unless all of the following conditions are met: (1) site-specific conditions directly related to business activities, such as vehicle traffic, would endanger the physical integrity of the well; and (2) the well head is completed in such a manner so as to preclude surficial contaminants from entering the well.		15A NCAC 02C .0108(n)
	Shall have permanently affixed an identification plate. The identification plate shall be constructed of a durable, waterproof, rustproof metal or other material approved by the Department as equivalent and shall contain the following information: (1) well contractor name and certification number; (2) date well completed;		15A NCAC 02C .0108(o)

TABLE A-2 Action-Specific ARARs
Record of Decision Operable Unit No. 16 (Site 89) MCB CamLej, North Carolina

Federal and North Carolina Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	(3) total depth of well; (4) a warning that the well is not for water supply and that the groundwater may contain hazardous materials; (5) depth(s) to the top(s) and bottom(s) of the screen(s); and (6) the well identification number or name assigned by the well owner.		
	Shall be developed such that the level of turbidity or settleable solids does not preclude accurate chemical analyses of any fluid samples collected or adversely affect the operation of any pumps or pumping equipment.		15A NCAC 02C .0108(p)
	Shall be constructed in such a manner as to preclude the vertical migration of contaminants within and along the borehole channel.	Installation of temporary wellsand all other non-water supply wells- **Applicable**	15A NCAC 02C .0108(s)
~~Implementation of groundwater monitoring system~~	~~Shall be constructed in a manner that will not result in contamination of adjacent groundwaters of a higher quality.~~	~~Installation of monitoring system to evaluate effects of any actions taken to restore groundwater quality, as well as the efficacy of treatment - **Applicable**~~	~~15A NCAC 02L .0110 (b)~~
Maintenance of groundwater monitoring well(s)	Every well shall be maintained by the owner in a condition whereby it will conserve and protect groundwater resources, and whereby it will not be a source or channel of contamination or pollution to the water supply or any aquifer.	Installation of wells (including temporary wells and monitoring wells) other than for water supply - **Applicable**	15A NCAC 02C .0112(a)
	Broken, punctured, or otherwise defective or unserviceable casing, screens, fixtures, seals, or any part of the well head shall be repaired or replaced, or the well shall be abandoned pursuant to 15A NCAC 02C .0113		15A NCAC 02C .0112(d)
	All materials used in the maintenance, replacement, or repair of any well shall meet the requirements for new installation.		15A NCAC 02C .0112(c)
	No well shall be repaired or altered such that the outer casing is completed less than 12 inches above land surface. Any grout excavated or removed as a result of the well repair shall be replaced in accordance with Rule .0107(f) of this Section.		15A NCAC 02C .0112(f)
Abandonment of groundwater monitoring and remediation well(s)	~~Shall be abandoned in accordance with the requirements of 15A NCAC 02C .0113(b)(1) and (2)~~ Shall be abandoned by filling the entire well up to land surface with grout, dry clay, or material excavated during drilling of the well and then compacted in place; and	Permanent abandonment of wells (including temporary wells, monitoring wells, and test borings) other than for water supply *less than 20 feet in depth* and which do not penetrate the water table - **Applicable**	15A NCAC 02C .0113(d~~b~~)(1)
	Shall be abandoned by completely filling with a bentonite or cement - type grout.	Permanent abandonment of wells (including temporary wells, monitoring wells, and test borings) other than for water supply *greater than 20 feet in depth* and which do not penetrate the water table - **Applicable**	15A NCAC 02C .0113(d)(2)
	All wells shall be permanently abandoned in which the casing has not been installed or from which the casing has been removed, prior to removing drilling equipment from the site.	Permanent abandonment of wells (including temporary wells) other than for water supply **– Applicable**	15A NCAC 02C .0113(f)

Comment [DB1]: Moved to top of subsection

TABLE A-2 Action-Specific ARARs
Record of Decision Operable Unit No. 16 (Site 89) MCB CamLej, North Carolina

Federal and North Carolina Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
Underground Injection Control (injection of air)			
Construction of wells for the injection of air	The air injected shall not exceed ambient air quality standards set forth in 15A NCAC o2D.0400 and shall not contain petroleum or any constituent that would cause a violation of groundwater standards specified in Subchapter 02L Shall be constructed in accordance with the well construction standards applicable to monitoring wells specified in Rule .0108 of this Subchapter. ~~Air Injection wells will be constructed to meet the requirements for wells other than water supply cited. In addition the requirements related to mechanical integrity shall be adhered to. An injection well has internal mechanical integrity when there is no leak in the casing, tubing, or packer. An injection well has external mechanical integrity when there is no fluid movement into groundwaters through vertical channels adjacent to the injection well bore .~~	Installation of groundwater remediation wells for the subsurface injection of ambient air for the treatment of contaminated soil or groundwater~~.~~ - **Applicable**	15A NCAC 02C.0225(b)(4)(A) and (B) ; ~~15A NCAC 02C .0108(a), (c) - (p), and (s); 15A NCAC 0225(h); 15A NCAC 0207(a) and (b)~~
	No violation of groundwater quality standards specified in Subchapter 02L resulting from the injection shall occur outside the specified portion of the injection zone as detected by a monitoring plan approved by the Division.		15A NCAC 02C.0225(e)(2)
	All permanent injection wells require tests for mechanical integrity, which shall be conducted in accordance with Rule .0207 of this Section. An injection well has internal mechanical integrity when there is no leak in the casing, tubing, or packer. An injection well has external mechanical integrity when there is no fluid movement into groundwaters through vertical channels adjacent to the injection well bore .		15A NCAC 02C.0225(h) 15A NCAC 0207(a) and (b)
~~Abandonment of injection wells~~	~~Injection wells that are less than 20 feet in depth and which do not penetrate the water table shall be abandoned by filling the entire well up to land surface with grout, dry clay, or material excavated during drilling of the well and then compacted in place. Injection wells that are greater than 20 feet in depth or that penetrate the water table shall be abandoned by completely filling with a bentonite or cement - type grout.In those cases when, as a result of the injection operations, a subsurface cavity has been created, the well shall be abandoned in such a manner that will prevent the movement of fluids into or between aquifers.~~	~~Abandonment of any injection well. **Applicable**~~	~~15A NCAC 02C.0113(d); 15A NCAC 02C.0240(a)(4)~~
Monitoring Network for Injection Systems	Monitoring wells shall be of sufficient quantity and location so as to detect any movement of injection fluids, injection process byproducts or formation fluids outside the injection zone in accordance with15A NCAC 02C.0225(e)(2) .	Installation of groundwater remediation wells for any subsurface injection for the treatment of contaminated soil or groundwater~~.~~ - **Applicable**	15A NCAC 02C.0225(e)(9), ~~(j)(1)(D)~~

Comment [DB2]: Abandonment requirements listed above

TABLE A-2 Action-Specific ARARs
Record of Decision Operable Unit No. 16 (Site 89) MCB CamLej, North Carolina

Federal and North Carolina Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	~~The network will be monitored frequently enough to detect any migration of injected fluids from the injection zone~~ NOTE: The Monitoring of the injection wells will be specified in a monitoring plan included as part of a CERCLA Primary document (e.g., Remedial Action Work Plan) that is approved by EPA and NCDENR. Substantive provisions of 15A NCAC 02C.0225(j) including monitoring well location, frequency, sample type and required analysis will be addressed.		15A NCAC 02C.0225(j)
Design criteria for all injection wells	No person shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water if the presence of that contaminant may cause a violation of any applicable groundwater quality standard specified in Subchapter 02L or may otherwise adversely affect human health.	Design, construction, or operation of any injection well. **Applicable**	15A NCAC 02C.0211(c)
~~***Underground Injection Control (injection of substances other than air that are not mixed with contaminated groundwater prior to injection)***~~			
~~Abandonment of injection wells~~	~~Injection wells that are less than 20 feet in depth and which do not penetrate the water table shall be abandoned by filling the entire well up to land surface with grout, dry clay, or material excavated during drilling of the well and then compacted in place. Injection wells that are greater than 20 feet in depth or that penetrate the water table shall be abandoned by completely filling with a bentonite or cement - type grout.In those cases when, as a result of the injection operations, a subsurface cavity has been created, the well shall be abandoned in such a manner that will prevent the movement of fluids into or between aquifers.~~	~~Abandonment of any injection well. **Applicable**~~	~~15A NCAC 02C.0113(d); 15A NCAC 02C.0240(a)(4)~~
~~Construction of injection wells~~	~~Injection wells will be constructed to meet the design criteria cited including siting, design specifications, and mechanical integrity.An injection well has internal mechanical integrity when there is no leak in the casing, tubing, or packer. An injection well has external mechanical integrity when there is no fluid movement into groundwaters through vertical channels adjacent to the injection well bore .~~	~~Installation of wells for the subsurface injection of additives for the treatment of contaminated soil or groundwater. **Applicable**~~	~~15A NCAC 02C.0225(g);15A NCAC 02C.0225(h); 15A NCAC 02C.0207(a) and (b)~~
~~Monitoring Network for Injection Systems~~	~~Monitoring wells shall be of sufficient quantity and location so as to detect any movement of injection fluids, injection process byproducts or formation fluids outside the injection zone. The network will be monitored frequently enough to detect any migration of injected fluids from the injection zone~~	~~Installation of wells for any subsurface injection for the treatmen of contamined soil or groundwater. **Applicable**~~	~~15A NCAC 02C.0225(c)(9), (j)(1)(D)~~
~~Operaton of the injection system~~	~~Pressure at the well head shall be limited to a maximum which will ensure that the pressure in the injection zone does not initiate new fractures or propagate existing fractures in the injection zone, initiate fractures in the confining zone, or cause the migration of injected or formation fluids outside the injection zone or area.~~	~~Operation of an injection well system for the subsurface injection of substances other than air, unless:~~ ~~1 Injections are in conjuntion with a pilot study where the injection zone wells arae located within an area the encomapsses 5% or less of the land surface above the known extent of groundwater contamination and the injectant will not discharge to surface water or~~ ~~2 Injections are in conjunction with operations that remediate contaminant plumes located within a land surface area that does not exceed 10,000 square feet and the injectant will not discharge to surface water.**Applicable**~~	~~15A NCAC 02C.0225(i)(1)~~

Comment [DB3]: Suggest deletion of all of these entries since description of remedy in the ROD only specifies air injection for sparging.

TABLE A-2 Action-Specific ARARs
Record of Decision Operable Unit No. 16 (Site 89) MCB CamLej, North Carolina

Federal and North Carolina Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
~~Design criteria for all injection wells~~	~~No person shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water if the presence of that contaminant may cause a violation of any applicable groundwater quality standard specified in Subchapter 02L or may otherwise adversely affect human health.~~	~~Design, construction, or operation of any injection well.~~ ~~**Applicable**~~	~~15A NCAC 02C.0211(c)~~
~~Operating wells for the injection of substances other than air~~	~~Injection between the outermost casing and the well borehole is prohibited.~~	~~Operation of an injection well system for the subsurface injection of substances other than air.~~ ~~**Applicable**~~	~~15A NCAC 02C.0225(i)(2)~~
~~***Underground Injection Control (substances mixed with contaminated groundwater prior to injection)***~~			
~~Abandonment of all injection wells~~	~~Injection wells that are less than 20 feet in depth and which do not penetrate the water table shall be abandoned by filling the entire well up to land surface with grout, dry clay, or material excavated during drilling of the well and then compacted in place. Injection wells that are greater than 20 feet in depth or that penetrate the water table shall be abandoned by completely filling with a bentonite or cement – type grout.In those cases when, as a result of the injection operations, a subsurface cavity has been created, the well shall be abandoned in such a manner that will prevent the movement of fluids into or between aquifers.~~	~~Abandonment of any injection well.~~ ~~**Applicable**~~	~~15A NCAC 02C.0113(d); 15A NCAC 02C.0240(a)(4)~~
~~Abandonment of an infiltration gallery~~	~~Infiltration galleries shall be closed such that the infiltration gallery will be rendered permanently unusable for the disposal or infiltration of fluids and will not serve as a source or channel of contamination.~~	~~Abandonment of an infiltration gallery associated with an in situ groundwater remediation systems for the injection of substances mixed with contaminated onsite groundwater.~~ ~~**Applicable**~~	~~15A NCAC 02T.1608(b)(2)~~
~~Operation of wells for the injection of substances mixed with contaminated groundwater~~	~~The system must be operated in a manner that does not cause or contribute to the migration of contaminants into previously uncontaminated areas or a violation of the groundwater standards at the compliance boundary.~~	~~Installation of wells for groundwater treatment system that extracts and treats contaminated groundwater and reintroduces the treated groundwater to the contaminated aquifer.~~ ~~**Applicable**~~	~~15A NCAC 02T.1604(d)~~
~~Locaton of Injection wells~~	~~The operation of the infiltration gallery(ies) or injection well(s) at the proposed location(s) will not result in the migration of contaminants into previously uncontaminated areas, and a contravention of groundwater standards beyond the compliance boundary.~~	~~Installation of wells for groundwater treatment system that extracts and treats contaminated groundwater and reintroduces the treated groundwater to the contaminated aquifer.~~ ~~**Applicable**~~	~~15A NCAC 02T.1606~~
~~Design criteria for all injection wells~~	~~No person shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water if the presence of that contaminant may cause a violation of any applicable groundwater quality standard specified in Subchapter 02L or may otherwise adversely affect human health.~~	~~Design, construction or operation of any injection well.~~ ~~**Applicable**~~	~~15A NCAC 02C.0211(c)~~
~~System monitoring for in situ groundwater remediation systems~~	~~The system must be monitored in order to assess the impact of the discharge on groundwater quality.~~	~~Operation of an in situ groundwater treatment systems that extract and treat contaminated groundwater followed by reintroducing treated groundwater to the contaminated aquifer.~~ ~~**Applicable**~~	~~15A NCAC 02T.1607(a)~~

Comment [DB4]: Repeat of entry above

Comment [DB5]: Suggest deletion of all of these entries since description of remedy in the ROD only specifies air injection for sparging.

TABLE A-2 Action-Specific ARARs
Record of Decision Operable Unit No. 16 (Site 89) MCB CamLej, North Carolina

Federal and North Carolina Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
~~Construction of injection wells~~	~~Injection wells will be constructed to meet the design criteria cited including siting, design specifications, and mechanical integrity.An injection well has internal mechanical integrity when there is no leak in the casing, tubing, or packer. An injection well has external mechanical integrity when there is no fluid movement into groundwaters through vertical channels adjacent to the injection well bore .~~	~~Installation of wells for the subsurface injection of additives for the treatment of contaminated soil or groundwater.~~ ~~**Relevant and Appropriate**~~	~~15A NCAC 02C.0225(g);15A NCAC 02C.0225(h); 15A NCAC 02C.0207(a) and (b)~~
~~Construction of injection wells~~	~~The infiltration gallery(ies) or injection well(s) must be designed such that the infiltration gallery(ies) or injection well(s) shall not cause or contribute to (1) the migration of contaminants into previously uncontaminated areas;(2) a violation of the groundwater standards at the compliance boundary (if discharge is within the compliance boundary of the disposal facility); and (3) a violation of the groundwater standards at the point of discharge (if discharge is not within the compliance boundary of the disposal facility). The design shall include a minimum elevation protection of two feet above the 100-year flood elevation.Flow equalization of at least 25 percent of the facility's permitted hydraulic capacity must be provided for facilities with fluctuations in influent flow which may adversely affect the performance of the system~~ ~~The system must be operated to ensure the quality of the treated effluent and hydraulic control of the system at all times when any portion of the system ceases to function (e.g. standby power capability, complete system-off status, or duplicity of system components).~~	~~Design of an in situ groundwater treatment systems that extract and treat contaminated groundwater followed by reintroducing treated groundwater to the contaminated aquifer.~~ ~~**Applicable**~~	~~15 A NCAC 02T.1605~~
Control of Diffuse VOC Emissions from Groundwater Treatment			
Emissions of VOCs from groundwater treatment (e.g., sparging system)	Shall not emit any of the toxic air pollutants listed in the table of the Rule in such quantities that may cause or contribute beyond the premises (adjacent property boundary) to any significant ambient air concentration that may adversely affect human health.	Emissions of toxic air pollutants (e.g., VOCs) from facility into the ambient air – **Applicable**	15A NCAC 02D .1104
	Shall install and operate reasonable available control technology to limit emissions of VOCs.	Air emissions of VOCs from facilities where there is no other applicable emissions control rule - **Relevant and Appropriate**	15A NCAC 02D .0951(c)
	One of the applicable test methods in Appendix M in 40 CFR part 51 or Appendix A in 40 CFR Part 60 shall be used to determine compliance with VOC emission standards.	VOC emission source not covered by 15A NCAC 02D.2613(b) through (e) – **Relevant and Appropriate**	15A NCAC 02D .2613(g)
	Control emissions by meeting limitations and work practice standards reflecting application of the maximum achievable control technology.	Air emissions of organic Hazardous Air Pollutants (e.g.,VOCs) from site remediation – **Relevant and Appropriate**	40 CFR 63 Subpart GGGGG, NESHAPS for Site Remediation
	Periodic inspection of equipment and monitoring are required for the life of the remediation.		
Waste Characterization and Storage — Primary Wastes (i.e., excavated contaminated soils and purge water) and Secondary Wastes (e.g., PPE and used equipment)			
Characterization of solid waste (e.g., well soil cuttings)	Must determine if solid waste is hazardous waste or if waste is excluded under 40 CFR 261.4(b); and	Generation of solid waste as defined in 40 CFR 261.2 and which is not excluded under 40 CFR 261.4(a) – **Applicable**	40 CFR 262.11(a) and (b)

Comment [DB6]: Additional requirements may be needed depending on whether process vents as defined in 40 CFR § 63.7957 used in site remediation of media (e.g., soil and groundwater) that could emit hazardous air pollutants (HAP) listed in Table 1 of Subpart GGGGG of Part 63 and vent stream flow exceeds the rate in 40 CFR § 63.7885(c)(1)

TABLE A-2 Action-Specific ARARs
Record of Decision Operable Unit No. 16 (Site 89) MCB CamLej, North Carolina

Federal and North Carolina Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	Must determine if waste is listed under 40 CFR Part 261; or		15A NCAC 13A .0107
	Must characterize waste by using prescribed testing methods or applying generator knowledge based on information regarding material or processes used.		40 CFR 262.11(c) 15A NCAC 13A .0107
	Must refer to Parts 261, 262, 264, 265, 266, 268, and 273 of Chapter 40 for possible exclusions or restrictions pertaining to management of the specific waste.	Generation of solid waste which is determined to be hazardous – **Applicable**	40 CFR 262.11(d) 15A NCAC 13A .0107
~~Storage of solid waste~~	~~All solid waste shall be stored in such a manner as to prevent the creation of a nuisance, insanitary conditions, or a potential public health hazard.~~	~~Generation of solid waste which is determined *not* to be hazardous - **Relevant and Appropriate**~~	~~15A NCAC 13B .0104(f)~~
	~~Containers for the storage of solid waste shall be maintained in such a manner as to prevent the creation of a nuisance or insanitary conditions.~~	-	~~15A NCAC 13B .0104(e)~~
	~~Containers that are broken or that otherwise fail to meet this Rule shall be replaced with acceptable containers.~~		
Characterization of hazardous waste	Must obtain a detailed chemical and physical analysis on a representative sample of the waste(s), which at a minimum contains all the information that must be known to treat, store, or dispose of the waste in accordance with pertinent sections of 40 CFR 264 and 268.	Generation of RCRA-hazardous waste for storage, treatment or disposal – **Applicable**	40 CFR 264.13(a)(1) 15A NCAC 13A .0109
	~~Must determine the underlying hazardous constituents [as defined in 40 CFR 268.2(i)] in the waste.~~	~~Generation of RCRA characteristic hazardous waste (and is not D001 non-wastewaters treated by CMBST, RORGS, or POLYM of Section 268.42 Table 1) for storage, treatment or disposal - **Applicable**~~	~~40 CFR 268.9(a)~~
	~~Must determine if the waste is restricted from land disposal under 40 CFR 268 *et seq.* by testing in accordance with prescribed methods or use of generator knowledge of waste.~~	-	~~40 CFR 268.7(a)(1)~~
	~~Must determine each EPA Hazardous Waste Number (Waste Code) to determine the applicable treatment standards under 40 CFR 268.40 *et. seq.*~~	-	~~40 CFR 268.9(a)~~
Determinations for management of hazardous waste	Must determine the underlying hazardous constituents [as defined in 40 CFR 268.2(i)] in the waste.	Generation of RCRA characteristic hazardous waste (and is not D001 non-wastewaters treated by CMBST, RORGS, or POLYM of Section 268.42 Table 1) for storage, treatment or disposal - **Applicable**	40 CFR 268.9(a) 15A NCAC 13A .0112
	Must determine if the waste is restricted from land disposal under 40 CFR 268 *et seq.* by testing in accordance with prescribed methods or use of generator knowledge of waste.	Generation of hazardous waste for storage, treatment or disposal – **applicable**	40 CFR 268.7(a)(1) 15A NCAC 13A .0112

Comment [DB7]: Relocated below with other storage entries

TABLE A-2 Action-Specific ARARs
Record of Decision Operable Unit No. 16 (Site 89) MCB CamLej, North Carolina

Federal and North Carolina Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	Must determine each EPA Hazardous Waste Number (Waste Code) to determine the applicable treatment standards under 40 CFR 268.40 *et. seq.*		40 CFR 268.9(a) 15A NCAC 13A .0112
Storage of solid waste	All solid waste shall be stored in such a manner as to prevent the creation of a nuisance, insanitary conditions, or a potential public health hazard.	Generation of solid waste which is determined *not* to be hazardous **– Relevant and Appropriate**	15A NCAC 13B .0104(f)
	Containers for the storage of solid waste shall be maintained in such a manner as to prevent the creation of a nuisance or insanitary conditions. Containers that are broken or that otherwise fail to meet this Rule shall be replaced with acceptable containers.	-	15A NCAC 13B .0104(e)
Temporary storage of hazardous waste in containers	A generator may accumulate hazardous waste at the facility provided that:	Accumulation of RCRA hazardous waste on site as defined in 40 CFR 260.10 **– Applicable**	40 CFR 262.34(a) 15A NCAC 13A .0107
	· waste is placed in containers that comply with 40 CFR 265.171-173; and		40 CFR 262.34(a)(1)(i)
	· the date upon which accumulation begins is clearly marked and visible for inspection on each container		40 CFR 262.34(a)(2) 15A NCAC 13A .0107
	· container is marked with the words "hazardous waste"; or		40 CFR 264.34(a)(3) 15A NCAC 13A .0107
	· container may be marked with other words that identify the contents.	Accumulation of 55 gal. or less of RCRA hazardous waste at or near any point of generation **– Applicable**	40 CFR 262.34(c)(1) 15A NCAC 13A .0107
Storage of hazardous waste in container area	Area must have a containment system designed and operated in accordance with 40 CFR 264.175(b)	Storage of RCRA hazardous waste in containers ***with free liquids* – Applicable**	40 CFR 264.175(a) 15A NCAC 13A .0109
	Area must be sloped or otherwise designed and operated to drain liquid resulting from precipitation, or Containers must be elevated or otherwise protected from contact with accumulated liquid.	Storage of RCRA-hazardous waste in containers that *do not contain free liquids* (other than F020, F021, F022, F023,F026 and F027) – **Applicable**	40 CFR 264.175(c)(1) and (2) 15A NCAC 13A .0109
Closure of RCRA container storage unit	At closure, all hazardous waste and hazardous waste residues must be removed from the containment system. Remaining containers, liners, bases, and soils containing or contaminated with hazardous waste and hazardous waste residues must be decontaminated or removed. [Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with40 CFR 261.3(d) of this chapter that the solid waste removed from the containment system is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of parts 262 through 266 of this chapter].	Storage of RCRA hazardous waste in containers in a unit with a containment system **– Applicable**	40 CFR 264.178 15A NCAC 13A .0109
Waste Treatment and Disposal – Primary Wastes (i.e., excavated contaminated soils and purge water) and Secondary Wastes (e.g., PPE and used equipment)			

TABLE A-2 Action-Specific ARARs
Record of Decision Operable Unit No. 16 (Site 89) MCB CamLej, North Carolina

Federal and North Carolina Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
Disposal of RCRA hazardous waste in a land-based unit	May be land disposed if it meets the requirements in the table "Treatment Standards for Hazardous Waste" at 40 CFR 268.40 before land disposal.	Land disposal, as defined in 40 CFR 268.2, of restricted RCRA waste – **Applicable**	40 CFR 268.40(a) 15A NCAC 13A .0112
	All underlying hazardous constituents [as defined in 40 CFR 268.2(i)] must meet the Universal Treatment Standards, found in 40 CFR 268.48 Table UTS prior to land disposal	Land disposal of restricted RCRA characteristic wastes (D001-D043) that are not managed in a wastewater treatment system that is regulated under the CWA, that is CWA equivalent, or that is injected into a Class I nonhazardous injection well – **Applicable**	40 CFR 268.40(e) 15A NCAC 13A .0112
	To determine whether a hazardous waste indentified in this section exceeds the applicable treatment standards of 40 CFR 268.40, the initial generator must test a sample of the waste extract or the entire waste, depending on whether the treatment standards are expressed as concentration in the waste extract or waste, or the generator may use knowledge of the waste. If the waste contains constituents (including UHCs in the characteristic wastes) in excess of the applicable UTS levels in 40 CFR 268.48, the waste is prohibited from land disposal, and all requirements of part 268 are applicable, except as otherwise specified.	Land disposal of RCRA toxicity characteristic wastes (D004-D011) that are newly identified (i.e., wastes, soil, or debris identified by the TCLP but not the Extraction Procedure) – **Applicable**	40 CFR 268.34(f) 15A NCAC 13A .0112
Disposal of RCRA-hazardous waste in a land-based unit	Must be treated according to the alternative treatment standards of 40 CFR 268.49(c) or according to the UTSs specified in 40 CFR 268.48 applicable to the listed and/or characteristic waste contaminating the soil prior to land disposal	Land disposal, as defined in 40 CFR 268.2, of restricted hazardous soils – **Applicable**	40 CFR 268.49(b) 15A NCAC 13A .0112
Disposal of solid waste (e.g., contaminated soil)	Shall ensure that waste is disposed of at a site or facility which is permitted to receive the waste.	Generation of solid waste intended for off-site disposal – **Relevant and Appropriate**	15A NCAC 13B .0106(b)
Transportation of Wastes			
Transportation of hazardous materials	Shall be subject to and must comply with all applicable provisions of the HMTA and DOT HMR at 49 CFR 171-180.	Any person who, under contract with a department or agency of the federal government, transports "in commerce," or causes to be transported or shipped, a hazardous material – **Applicable**	49 CFR 171.1(c)
Transportation of hazardous waste on-site	The generator manifesting requirements of 40 CFR 262.20-262.32(b) do not apply. Generator or transporter must comply with the requirements set forth in 40 CFR 263.30 and 263.31 in the event of a discharge of hazardous waste on a private or public right-of-way.	Transportation of hazardous wastes on a public or private right-of-way within or along the border of contiguous property under the control of the same person, even if such contiguous property is divided by a public or private right-of-way - **Applicable**	40 CFR 262.20(f)

TABLE A-2 Action-Specific ARARs
Record of Decision Operable Unit No. 16 (Site 89) MCB CamLej, North Carolina

Federal and North Carolina Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
Transportation of hazardous waste *off-site*	Must comply with the generator requirements of 40 CFR 262.20–23 for manifesting, Sect. 262.30 for packaging, Sect. 262.31 for labeling, Sect. 262.32 for marking, Sect. 262.33 for placarding, Sect. 262.40, 262.41(a) for record keeping requirements, and Sect. 262.12 to obtain EPA ID number.	Preparation and initiation of shipment of RCRA-hazardous waste off-site – **Applicable**	40 CFR 262.10(h); 15A NCAC 13A .0107
Transportation of samples (i.e. contaminated soils)	Are not subject to any requirements of 40 CFR Parts 261 through 268 or 270 when: • the sample is being transported to a laboratory for the purpose of testing; or • the sample is being transported back to the sample collector after testing. • the sample is being stored by sample collector before transport to a lab for testing	Samples of solid waste or a sample of water, soil for purpose of conducting testing to determine its characteristics or composition – **Applicable**	40 CFR 261.4(d)(1)(i)-(iii) 15A NCAC 13A .0106
	In order to qualify for the exemption in paragraphs (d)(1)(i) and (ii), a sample collector shipping samples to a laboratory must: • Comply with U.S. DOT, U.S. Postal Service, or any other applicable shipping requirements • Assure that the information provided in (1) thru (5) of this section accompanies the sample. Package the sample so that it does not leak, spill, or vaporize from its packaging.		40 CFR 261.4(d)(2)(i)(A) and (B) 15A NCAC 13A .0106
Institutional Controls for Contamination Left in Place			
Notice of Contaminated Site	Prepare and certify by professional land surveyor a survey plat which identifies contaminated areas which shall be entitled "NOTICE OF CONTAMINATED SITE".	Contaminated site subject to current or future use restrictions included in a remedial action plan as provided in G.S. 143B-279.9(a) **- To-Be-Considered**	NCGS 143B-279.10(a)
	Notice shall include a legal description of the site that would be sufficient as a description in an instrument of conveyance and meet the requirements of NCGS 47-30 for maps and plans.		
	The Survey plat shall identify:		NCGS 143B-279.10(a)(1)-(3)
	• the location and dimensions of any disposal areas and areas of potential environmental concern with respect to permanently surveyed benchmarks;		
	• the type location, and quantity of contamination known to exist on the site; and		
	•any use restriction on the current or future use of the site.		
	The deed or other instrument of transfer shall contain in the description section, in no smaller type than used in the body of the deed or instrument, a statement that the property is a contaminated site and reference by book and page to the recordation of the Notice.	Contaminated site subject to current or future use restrictions as provided in G.S. 143B-279.9(a) that is to sold, leased, conveyed or transferred **- To-Be-Considered**	NCGS 143B-279.10(e)
~~***Discharge of dredge and fill***~~			

TABLE A-2 Action-Specific ARARs
Record of Decision Operable Unit No. 16 (Site 89) MCB CamLej, North Carolina

Federal and North Carolina Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
~~Discharge of dredge and fill~~	~~No discharge of dredged or fill material will be allowed unless appropriate and practicable steps are taken that minimize potential adverse impacts of the discharge on the aquatic ecosystem.~~	~~Discharges of dredged or fill material to surface waters, including wetlands.~~ ~~**Applicable**~~	~~40 CFR 230.10(d); 33 CFR 320.4(a), (b), (d), (p), (r)~~

Comment [DB8]: This entry has been moved to Location-specific ARARs table

TABLE A-3 Location-Specific ARARs

~~Location-Specific ARARs~~
Record of Decision Operable Unit No. 16 (Site 89)

~~*Operable Unit No. 16 (Site 89)*~~
MCB CamLej, North Carolina

Federal and North Carolina Location-Specific ARARs			
Location	**Requirement**	**Prerequisite**	**Citation**
Presence of wetlands	Concentrations or combination of substances, which are toxic or harmful to human, animal, or plant life may not be present in amounts, which individually or cumulatively, can cause adverse impacts on existing wetland uses.	Activities within, wetlands as defined by G.S. 143-212(6) – **Applicable**	15A NCAC 02B.0231(b)(4)
	Standards provided in 15A NCAC 02B.0231(b)(1), (2), (3), (5), and (6) shall be used to ensure the maintenance or enhancement of the existing uses of wetlands identified in 15A NCAC 02B.0231(a)		
~~Presence of wetlands~~	Requires Federal agencies to evaluate action to minimize the destruction, loss or degradation of wetlands and to preserve and enhance beneficial values of wetlands.	Actions that involve potential impacts to, or take place within, wetlands – **To Be Considered**	Executive Order 11990 – *Protection of Wetlands* Section 1.(a)
Location encompassing aquatic ecosystem as defined in 40 CFR 230.3(c)	No discharge of dredged or fill material into an aquatic ecosystem is permitted if there is a practicable alternative that would have less adverse impact on the aquatic ecosystem or if will cause or contribute significant degradation of the waters of the US.	Action that involves the discharge of dredged or fill material into waters of the United States, including jurisdictional wetlands – **Applicable**	40 Part 230.10(a) and (c) Clean Water Act Regulations – Section 404(b) Guidelines
	Except as provided in § 404(b)(2), no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps in accordance with Subpart H at 40 CFR 230.70 *et seq*. have been taken that will minimize potential adverse impacts of the discharge on the aquatic ecosystem		40 CFR 230.10(d) Clean Water Act Regulations – Section 404(b) Guidelines
	Must comply with the substantive requirements of the NWP 38 General Conditions, as appropriate, any regional or case-specific conditions recommended by the Corps District Engineer, after consultation.	On-site CERCLA action conducted by Federal agency that involves the discharge of dredged or fill material into waters of the United States, including jurisdictional wetlands –**Applicable**	Nation Wide Permit (38) Cleanup of Hazardous and Toxic Waste 33 CFR 323.3(b)
Presence of floodplain designated as such on a map	Shall consider alternatives to avoid, to the extent possible, adverse effects on and incompatible development in the floodplain.	Federal actions that involve potential impacts on, or take place within, floodplains—**To Be Considered**	Executive Order 11988 – *Floodplain Management* Section 2(a)(2)
Presence of federally endangered or threatened species, as designated in 50 CFR 17.11 and 17.12 -**or**- critical habitat of such species listed in 50	Actions that jeopardize the existence of a listed species or results in the destruction or adverse modification of critical habitat must be avoided or reasonable and prudent mitigation measures taken.	Action that is likely to jeopardize fish, wildlife, or plant species or destroy or adversely modify critical habitat – **Applicable**	16 USC 1531 *et seq*., Sect. 7(a)(2)

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Comment [DB1]: This entry was added before Track Changes enabled but should be included

TABLE A-3 Location-Specific ARARs

~~Location-Specific ARARs~~
Record of Decision Operable Unit No. 16 (Site 89)

~~*Operable Unit No. 16 (Site 89)*~~
MCB CamLej, North Carolina

Federal and North Carolina Location-Specific ARARs			
Location	**Requirement**	**Prerequisite**	**Citation**
CFR 17.95	Except as provided in the rule, no person may take the specified reptiles.	Action that is likely to jeopardize or adversely modify critical habitat for American alligator, green turtle, and/or loggerhead turtle – **Applicable**	50 CFR 17.42(a) and (b)
Presence of Migratory birds listed in 50 CFR 10.13 ~~area~~	~~Protects almost all species of native birds in the United States from unregulated taking.~~ No person may take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such bird except as may be permitted under the terms of a valid permit issued pursuant to the provisions of this part and part 13 of this chapter, or as permitted by regulations in this part, or part 20 of this subchapter (the hunting regulations).	Action that have potential impacts on, or is likely to result in a 'take' (as defined in 50 CFR 10.12) ~~Presence~~ of migratory birds – **Applicable**	*Migratory Bird Treaty Act*, 16 U.S.C. §703(a) 50 CFR 21.11
Coastal zone as defined in 16 U.S.C.§1453 ~~or area that will affect the coastal zone~~	Federal agency shall determine which of their activities affect any coastal use or resource of States with approved management programs. If agency determines activity has no effects on coastal use or resource, and a negative determination under § 930.35 is not required, then coordination with State Agencies under Section 307 of the Act is not required. ~~activities must be consistent with, to the area that will affect maximum extent practicable, State coastal zone management programs.~~ The State agency and federal agencies may agree to exclude environmentally beneficial agency activities (either on a case-by-case basis or for a category of activities) from further State agency consistency review. NOTE: Consultation is generally considered an 'administrative' requirement and therefore under CERCLA 121(e)(1) a federal agency is not required to perform. However, such consultation is strongly recommended considering under 50 CFR 930.34 Federal agencies ~~must supply the~~ shall provide State(s) with a consistency determination.	Federal agency activity that may have effect on any coastal use or resource as defined in 15 CFR 930.11~~Wetland, flood plain, estuary, beach, dune, barrier island, coral reef, and fish and wildlife and their habitat, within the coastal zone -~~ – **Applicable**	15 CFR 930.33(a)(1), (a)(2), (a)(4); (b)~~; 35(a), (b); 36(a)~~ *Coastal Zone Management Act of 1972*, 16 U.S.C.§1451 *et. seq.*

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Comment [DB2]: Not sure these regulations would be considered environmental standards or limitations under definition of ARAR since largely a consultation process. NC regulations on actions in coastal zones would probably suffice. EPA is amenable to deleting the entry or keeping it as revised.

TABLE A-3 Location-Specific ARARs

~~Location-Specific ARARs~~
Record of Decision Operable Unit No. 16 (Site 89)

~~*Operable Unit No. 16 (Site 89)*~~
MCB CamLej, North Carolina

Federal and North Carolina Location-Specific ARARs			
Location	**Requirement**	**Prerequisite**	**Citation**
Surface Water classified as High Quality Waters	Erosion and sedimentation control measures, structures, and devices within High Quality Water (HQW) zones shall be planned, designed and constructed to provide protection from the runoff of the 25 year storm.	Land-disturbing activity (as defined in N.C.G.S. Ch. 113A-52) of more than 1 acre of land in High Quality Water (HQW) zones – **Applicable**	15A NCAC 4B.0124(b)
	Provisions for ground cover sufficient to restrain erosion must be provided for any portion of the land-disturbing activity with 15 working days or 60 calendar days following completion of the construction or development, which period is shorter.		15A NCAC 4B.0124(e)
	Implement good construction management techniques, best management practices for sediment and erosion controls, and storm water management measures in accordance with 15A NCAC 02H .1008 to ensure storm water discharges are in compliance.	Development activity (otherwise requiring a stormwater permit) within one mile of and draining to waters classified as High Quality Waters (HQW) – **Rrelevant and Aappropriate**	15A NCAC 02H .1006, NC General Permit CNCG 0100000

Comment [DB3]: These requirements are typically included as Action-specific ARARs since the land disturbing is the trigger, not the location in HQW zone. Can remain is this table if Navy preferes

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North Carolina Department of Environment and Natural Resources
Division of Waste Management

Beverly Eaves Perdue
Governor

Dexter R. Matthews
Director

Dee Freeman
Secretary

August 6, 2012

NAVFAC Mid-Atlantic
Attn: Dave Cleland Code: OPQE
USMC NC IPT, EV Business Line
6506 Hampton Blvd
Norfolk, VA 23508

RE: Comments on the Draft Record of Decision (ROD) for OU #16, Site 89
MCB Camp Lejeune, NC
NC6170022580
Jacksonville, Onslow County, North Carolina

Dear Mr. Cleland:

The NC Superfund Section has received and reviewed the Draft Record of Decision (ROD) for OU#16, Site 89 at Camp Lejeune, MCB Superfund Site located in Jacksonville, NC. The following comments are provided for your consideration. The Draft ROD dated July 2012 was received for review by the NC Superfund Section on July 19, 2012. If you wish to discuss these comments please reply to this email or give me a call at (919) 707-8341.

Specific Comments

1. The various remedies, as described in the text and tables, recommend active treatment be considered complete when 95 percent reduction of COCs has been achieved. In addition to the 95% reduction requirement, it is recommended that no source area wells exceed one order of magnitude above the NCAC 2L or MCL Groundwater Standard for the primary groundwater contaminants (PCA, PCE, TCE, TCA).

2. Table 9 and the text on pages 18-20 and throughout the document, indicate that Monitored Natural Attenuation (MNA) and Long Term Monitoring (LTM) will only be done in the down-gradient areas of the site after the source area remedy is considered complete. MNA and LTM should be required in the source area monitoring wells as well as the down-gradient area wells following Active treatment. This is an essential requirement for the remedy to assure long term effectiveness in the source area as well as determining when the remedial action is complete in all areas of the contaminant plume.

3. Short term effectiveness for Monitored Natural Attenuation (MNA) in down-gradient groundwater as described in the comparison Table 13 on page 2-17 and in all related text and tables should have a <u>moderate ranking</u> not a high ranking. Please make appropriate corrections throughout the document

Table A-1 in Appendix A, Chemical-Specific ARARs, should include the following additional ARARs

Media	Requirements	Prerequisite	Citation
Restoration of Contaminated Groundwater	All Sources of Contamination shall be removed or controlled	That all sources of contamination and free product have been removed or controlled -Applicable	15A NCAC 2L .0106(k)(1)
Restoration of Contaminated Groundwater	Contaminants will Degrade or Attenuate to the Standards	Contaminants have the Capacity to degrade or attenuate to the Standards under site specific conditions -Applicable	15A NCAC 2L .0106(L)(2)
Protection of adjacent surface water body	Groundwater discharging to surface waters will not intercept surface waters at concentration that will result in a violation of the Surface Water Quality Standards	Groundwater concentrations will not be at concentrations that will cause a violation in the surface water standards at a surface water body – Applicable	15A NCAC 2L .0106(k)(5)

Table A-2 in Appendix A, Action-Specific ARARs, Should include the following additional ARARs or TBCs

Media	Requirements	Prerequisite	Citation
Implementation of groundwater monitoring system	A Monitoring System shall be constructed to assure that the standards will be met at all down-gradient receptors	A down-gradient groundwater monitoring system shall be installed	15A NCAC 2L .0106(k)(4)
Public notice of request for ground water remediation	The public must be notified of a request for remediation plans	Contaminants have not and will not migrate onto adjacent property	15A NCAC 2L .0106(k)(3) & (k)(6)

If you have any questions or comments, please contact me at (919) 707-8341 or email **randy.mcelveen@ncdenr.gov**

Sincerely,

Randy McElveen
Environmental Engineer
NC Superfund Section

Cc: Dave Lown, NC Superfund Section, Electronic only
Charity Rychak, EMD/IR
Gena Townsend, USEPA
Bryan Beck, NAVFAC