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NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT

NCDENR

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February 13, 1998

Commander, Atlantic Division
Naval Facilities Engineering Command
Code 1823
Attention: MCB Camp Lejeune, RPM
Ms. Katherine Landman
Norfolk, Virginia 23511-6287

Commanding General
Attention: AC/S, EMD/IRD
Marine Corps Base
PSC Box 20004
Camp Lejeune, NC 28542-0004

RE: Comments on the Documents Pertaining to OU No. 6, Sites 36, 54, 86
~~Operable Unit No. 10, Site 35 - Camp Geiger Area Fuel Farm~~
Marine Corps Base, Camp Lejeune, North Carolina

Dear Ms. Landman:

The following documents for OU6 have been received and reviewed by the North Carolina Superfund Section:

Draft Feasibility Study Report - Site 36 (Attachment 1)
Draft Feasibility Study Report - Site 54 (Attachment 2)
Draft Feasibility Study Report - Site 86 (Attachment 3)
Letter Report Documenting Post-RI Field Investigations (Attachment 4)

The comments are attached.

Please call me at (919) 733-2801, extension 278 if you have any questions.

Sincerely,

David J. Lown, LG, PE
Geological Engineer
Superfund Section

Attachments

cc: Gena Townsend, US EPA Region IV
Neal Paul, MCB Camp Lejeune
Diane Rossi, DENR - Wilmington Regional Office

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ATTACHMENT 1

North Carolina Superfund Section Comments
Draft Feasibility Study - OU 6, Site 36
Marine Corps Base, Camp Lejeune, North Carolina

1. Page ES-2. Section **RAA 1: No Action**. While the reference to natural attenuation is not wrong, it can give the wrong impression. A "natural attenuation" remedy is not "no action."

2. Page ES-3. First Paragraph. In addition to the Base Master Plan (BMP), other tools will be used to ensure aquifer-use restrictions including the following:

   - Annual certification that the restrictions in the BMP have remained unchanged;
   - Deed recordation as required by N.C.G.S. 130A-310.8(a);
   - Modification of the RCRA Permit Modification under 40 CFR 270.41, which is incorporated by reference in 15A NCAC 13A.0113, imposing the site restriction;
   - And, in the event that the property is transferred out of the United States Marines, MCB Camp Lejeune shall, prior to the transfer, record at the Onslow County register of deeds' office, the site restrictions in the form of restrictive covenants.

3. Page ES-4: **RAA 3: Natural Attenuation.** The institutional controls listed above, would also apply to this remedy.

4. Page 1-11. Section 1.4.3.1 Volatiles. The surface water standard for 1,2-DCE is 7 ug/L.

5. Page 2-4. Chemical-Specific ARARs and TBCs. In addition to the federal and North Carolina groundwater standards, other potential chemical ARARs include the following:

TABLE 1
NORTH CAROLINA POTENTIAL CHEMICAL-SPECIFIC ARARS, CRITERIA, AND GUIDANCE
OU6, SITE 54 DRAFT FEASIBILITY STUDY
MCB CAMP LEJEUNE

Potential State ARAR	Citation	Comment
NC Drinking Water Act	130A NCAC 311-327	Regulates water systems within the state that supply drinking water that may affect the public health.
NC Water Quality Standards	15A NCAC 2B .0100-.0400	Establishes a series of classifications and water quality standards for surface waters.

Potential State ARAR	Citation	Comment
NC Air Pollution Control Regulations	15A NCAC 2D, 2H .0600, 2Q	Regulates ambient air quality and establishes air quality standards for hazardous air pollutants.
NC Hazardous Waste Management Rules	15A NCAC 13A .0009 & .0012	Establishes standards for hazardous waste that is excavated and stored or treated as part of Remedial Action.

6. Page 2-5. Section 2.3.2.2 Location-Specific ARARs. The following state regulations are potential ARARs:

TABLE 2
NORTH CAROLINA POTENTIAL LOCATION-SPECIFIC ARARS, CRITERIA, AND GUIDANCE
OU 6 SITE 36, DRAFT FEASIBILITY STUDY
MCB CAMP LEJEUNE

Potential State ARAR	Citation	Comment
NC Hazardous Waste Management Rules	15A NCAC 13A .0009 & .0012	Location requirements and land disposal restrictions for hazardous waste excavated, stored, and treated onsite.
NC Solid Waste Management Rules	15A NCAC 13B .1600	Siting requirements for solid waste landfill facilities
NC Recordation of Inactive Hazardous Substance or Waste Disposal Sites Statute	N.C.G.S. 130A-310.8	State requirement for recordation of inactive hazardous sites
NC Coastal Management	15A NCAC 7H	State guidelines for areas of environmental concern

7. Page 2-6. Section 2.3.2.3 Action-Specific ARARs. The following state and federal regulations and guidance are potential ARARs or TBCs:

TABLE 3
NORTH CAROLINA AND FEDERAL POTENTIAL ACTION-SPECIFIC ARARS, CRITERIA, AND GUIDANCE
OU 6, SITE 36 DRAFT FEASIBILITY STUDY
MCB CAMP LEJEUNE

Potential State ARAR	Citation	Comment
NC Groundwater Corrective Action	15A NCAC 2L .0106-.0113	Regulations for cleanup of contaminated groundwater including requirements for natural attenuation.
NC 15A NCAC 2L Implementation Guidance	Division of Water Quality Guidance Document	Explains implementation of corrective action at groundwater contamination sites and natural attenuation remedies.
NC Well Construction Standards	15A NCAC 2C .0100	Construction and abandonment requirements for water wells.
NC Injection well construction standards	15A NCAC 2C .0200	Construction requirements for injection wells.
NC Water Quality Discharge Requirements	15A NCAC 2H .0100 & .0200	Waste water requirements for discharges and infiltration galleries.
NC Sedimentation Control Rules	15A NCAC 2H .1000	Establishes requirements for storm-water management
NC Hazardous Waste Management Rules	15A NCAC 13A	Design and treatment requirements for hazardous waste TSDs.
NC Solid Waste Management Rules	15A NCAC 13B	Design and monitoring requirements for solid waste disposal sites
NC Air Pollution Control Requirements	15A NCAC 2D, 2H .0600, 2Q	Regulates air quality and establishes emissions standards.
EPA Draft Interim Final OSWER Monitored Natural Attenuation Policy	OSWER Directive 9200.4-17	EPA guidance document for implementation of Monitored Natural Attenuation Remedy

8. Page 2-13. Sixth Bullet. The maximum soil concentration is 2,680J mg/kg. This is not the same magnitude as the 2 to 20 mg/kg range reported from the literature.
9. Page 2-14. First Bullet. This argues for institutional controls. Unless the levels can be shown to be naturally occurring, institutional controls specifying that the property will not be used for residential, or that additional sampling will be required to show that the property is appropriate for residential, may be indicated.

10. Page 3-4, Section **3.5.3 Restrictions in Base Master Plan**. In addition to modifying the Base Master Plan, the requirements outlined in comment 2 would need to be implemented.

11. Page 4-2, Second Paragraph. In addition to modifying the Base Master Plan, the requirements outlined in comment 2 would need to be implemented.

12. Page 4-4, Next to Last Paragraph. See comment 2.

13. Page 5-3, Third Paragraph. *State Acceptance*. The State will confirm its acceptance of the remedy with a concurrence letter to be included with the ROD.

14. Page 5-3, *Compliance with ARARs*. "No Action" does not comply with the requirements of 15A NCAC 2L, an ARAR for this site.

15. Page 5-4, Section **5.2.2 RAA 2: Institutional Controls**. In addition to Base Master Plan modifications, see the institutional controls discussed in comment 2.

16. Page 5-5, *Compliance with ARARs*. Without a Variance, North Carolina regulation 15A NCAC 2L.0113, this remedy would not comply with North Carolina regulations.

17. Page 5-7, *Compliance with ARARs*. This remedy would have to comply with the requirements of North Carolina regulation 15A NCAC 2L.0106 (l).

18. Page 5-8, *Compliance with ARARs*. In addition to location-specific and action-specific ARARs, this remedy would have to comply with chemical-specific ARARs regulating air and water discharge.

19. Page 5-9, Paragraph 3. In addition to modifying the Base Master Plan, the requirements outlined in comment 2 would need to be implemented.

20. Page 5-11, *Compliance with ARARs*. In addition to location-specific and action-specific ARARs, this remedy would have to comply with chemical-specific ARARs regulating air and water discharge.

21. Page 5-12. Section **5.3 Comparative Analysis**. As outlined in OSWER Directive 9200.4-17 on Monitored Natural Attenuation, before selecting natural attenuation as an Remedial Action Alternative, an evaluation of the effectiveness of natural attenuation is necessary. Rates of natural attenuation should be estimated and compared to estimated rates of active remediation.

22. Appendix D: According to page 1-11, a 1,2-DCE value of 7 ug/L was obtained for the water in Brinson Creek. Since this is the limit, no additional impact on the creek is permissible.

23. The following is David Lilley's comment on the Risk Assessment:

    Table 1-6: In copying from the Final RI to this document, it appears as though the surface soil exposure pathway was dropped. The surface soil exposure pathway should be added to this table.

ATTACHMENT 2

North Carolina Superfund Section Comments
Draft Feasibility Study - OU 6, Site 54
Marine Corps Base, Camp Lejeune, North Carolina

1. Page ES-1, Last Paragraph. The NC Groundwater Standard for lead is 15 ug/L.

2. Page ES-2, Last Paragraph. In addition to the Base Master Plan (BMP), other tools will be used to ensure aquifer use restrictions including the following:

   - Annual certification that the restrictions in the BMP have remained unchanged;
   - Deed recordation as required by N.C.G.S. 130A-310.8(a);
   - Modification of the RCRA Permit Modification under 40 CFR 270.41, which is incorporated by reference in 15A NCAC 13A.0113, imposing the site restriction;
   - And, in the event that the property is transferred out of the United States Marines, MCB Camp Lejeune shall, prior to the transfer, record at the Onslow County register of deeds' office, the site restrictions in the form of restrictive covenants.

3. Page ES-3, Section **RAA 3: Natural Attenuation with Operational Controls**. Last Paragraph. As indicated here, long-term monitoring is an important component of a monitored natural attenuation remedy; however, a treatability study with an evaluation of the effectiveness of natural attenuation at Site 54 is necessary before this remedy is finalized.

4. Section 2.3.2 Chemical-Specific ARARs and TBCs. In addition to the federal and North Carolina groundwater standards, other potential chemical ARARs include the following:

TABLE 1
NORTH CAROLINA POTENTIAL CHEMICAL-SPECIFIC ARARS, CRITERIA, AND GUIDANCE
OU6, SITE 54, DRAFT FEASIBILITY STUDY
MCB CAMP LEJEUNE

Potential State ARAR	Citation	Comment
NC Drinking Water Act	130A NCAC 311-327	Regulates water systems within the state that supply drinking water that may affect the public health.
NC Water Quality Standards	15A NCAC 2B .0100-.0400	Establishes a series of classifications and water quality standards for surface waters.

Potential State ARAR	Citation	Comment
NC Air Pollution Control Regulations	15A NCAC 2D, 2H .0600, 2Q	Regulates ambient air quality and establishes air quality standards for hazardous air pollutants.
NC Hazardous Waste Management Rules	15A NCAC 13A .0009 & .0012	Establishes standards for hazardous waste that is excavated and stored or treated as part of Remedial Action.

5. Section 2.3.2.2 Location-Specific ARARs. The following state regulations are potential ARARs:

TABLE 2
NORTH CAROLINA POTENTIAL LOCATION-SPECIFIC ARARS, CRITERIA, AND GUIDANCE
OU 6 SITE 54, DRAFT FEASIBILITY STUDY
MCB CAMP LEJEUNE

Potential State ARAR	Citation	Comment
NC Hazardous Waste Management Rules	15A NCAC 13A .0009 & .0012	Location requirements and land disposal restrictions for hazardous waste excavated, stored, and treated onsite.
NC Solid Waste Management Rules	15A NCAC 13B .1600	Siting requirements for solid waste landfill facilities
NC Recordation of Inactive Hazardous Substance or Waste Disposal Sites Statute	N.C.G.S. 130A-310.8	State requirement for recordation of inactive hazardous sites
NC Coastal Management	15A NCAC 7H	State guidelines for areas of environmental concern

6. Section 2.3.2.3 Action-Specific ARARs. The following state and federal regulations and guidance are potential ARARs or TBCs:

TABLE 3
NORTH CAROLINA AND FEDERAL POTENTIAL ACTION-SPECIFIC ARARS, CRITERIA, AND GUIDANCE
OU 6, SITE 54, DRAFT FEASIBILITY STUDY
MCB CAMP LEJEUNE

Potential State ARAR	Citation	Comment
NC Groundwater Corrective Action	15A NCAC 2L .0106-.0113	Regulations for cleanup of contaminated groundwater including requirements for natural attenuation.
NC 15A NCAC 2L Implementation Guidance	Division of Water Quality Guidance Document	Explains implementation of corrective action at groundwater contamination sites and natural attenuation remedies.
NC Well Construction Standards	15A NCAC 2C .0100	Construction and abandonment requirements for water wells.
NC Injection well construction standards	15A NCAC 2C .0200	Construction requirements for injection wells.
NC Water Quality Discharge Requirements	15A NCAC 2H .0100 & .0200	Waste water requirements for discharges and infiltration galleries.
NC Sedimentation Control Rules	15A NCAC 2H .1000	Establishes requirements for storm-water management
NC Hazardous Waste Management Rules	15A NCAC 13A	Design and treatment requirements for hazardous waste TSDs.
NC Solid Waste Management Rules	15A NCAC 13B	Design and monitoring requirements for solid waste disposal sites
NC Air Pollution Control Requirements	15A NCAC 2D, 2H .0600, 2Q	Regulates air quality and establishes emissions standards.
EPA Draft Interim Final OSWER Monitored Natural Attenuation Policy	OSWER Directive 9200.4-17	EPA guidance document for implementation of Monitored Natural Attenuation Remedy

7. Page 2-10, Last Bullet. Iron is assumed to be naturally occurring. According to 15A NCAC 2L.0202, where naturally occurring substances exceed the established standard, the standard will be the naturally occurring concentration.

8. Page 3-4, Section **3.5.2 Groundwater Monitoring and Restrictions in Base Master Plan**.

With respect to aquifer-use restrictions being instituted via the Base Master Plan, see comment 2.

9. Page 4-2, First Sentence. In addition to Base Master Plan modifications, see the institutional controls discussed in comment 2.

10. Page 4-3, Paragraph 4. In addition to Base Master Plan modifications, see the institutional controls discussed in comment 2.

11. Page 4-5, First Paragraph. Any air emissions would have to meet the requirements of the NC Air Pollution Control Regulations.

12. Page 4-5, Section Paragraph. In addition to Base Master Plan modifications, see the institutional controls discussed in comment 2.

13. Page 5-3, Third Paragraph. *State Acceptance*. The State will confirm its accepts of the remedy with a concurrence letter to be included with the ROD.

14. Page 5-3, *Compliance with ARARs*. "No Action" does not comply with the requirements of 15A NCAC 2L, an ARAR for this site.

15. Page 5-4, Section **5.2.2 RAA 2: Institutional Controls with Operational Controls**. In addition to Base Master Plan modifications, see the institutional controls discussed in comment 2.

16. Page 5-5, *Compliance with ARARs*. Without a Variance, North Carolina regulation 15A NCAC 2L.0113, this remedy does not comply with North Carolina regulations.

17. Page 5-7, *Compliance with ARARs*. This remedy would have to comply with the requirements of North Carolina regulation 15A NCAC 2L.0106 (l).

18. Page 5-9, *Compliance with ARARs*. In addition to location-specific and action-specific ARARs, this remedy would have to comply with chemical-specific ARARs regulating air and water discharge.

19. Page 5-12, Paragraph 2. In addition to Base Master Plan modifications, see the institutional controls discussed in comment 2.
20. Page 5-14. Section **5.3 Comparative Analysis**. As outlined in OSWER Directive 9200.4-17 on Monitored Natural Attenuation, before selecting natural attenuation as an Remedial Action Alternative, an evaluation of the effectiveness of natural attenuation is necessary.

Rates of natural attenuation should be estimated and compared to estimated rates of active remediation.

21. The Risk Assessment is being reviewed and comments may be submitted at a later date.

ATTACHMENT 3

North Carolina Superfund Section Comments
Draft Feasibility Study - OU 6, Site 86
Marine Corps Base, Camp Lejeune, North Carolina

1. Page ES-1, Third Paragraph. The North Carolina groundwater standard for 1,2-DCE is by its isomers, *cis* and *trans*. The standard is 70 ug/L per isomer.

2. Page ES-2. Section **RAA 1: No Action**. While the reference to natural attenuation is not wrong, it can give the wrong impression. A "natural attenuation" remedy is not "no action."

3. Page ES-2. First Paragraph. In addition to the Base Master Plan (BMP), other tools will be used to ensure aquifer-use restrictions including the following:

   - Annual certification that the restrictions in the BMP have remained unchanged;
   - Deed recordation as required by N.C.G.S. 130A-310.8(a);
   - Modification of the RCRA Permit Modification under 40 CFR 270.41, which is incorporated by reference in 15A NCAC 13A.0113, imposing the site restriction;
   - And, in the event that the property is transferred out of the United States Marines, MCB Camp Lejeune shall, prior to the transfer, record at the Onslow County register of deeds' office, the site restrictions in the form of restrictive covenants.

4. Page ES-3: **RAA 3: Natural Attenuation.** The institutional controls listed above, would also apply to this remedy.

5. Page 2-4. Chemical-Specific ARARs and TBCs. In addition to the federal and North Carolina groundwater standards, other potential chemical ARARs include the following:

TABLE 1
NORTH CAROLINA POTENTIAL CHEMICAL-SPECIFIC ARARS, CRITERIA, AND GUIDANCE
OU6, SITE 86, DRAFT FEASIBILITY STUDY
MCB CAMP LEJEUNE

Potential State ARAR	Citation	Comment
NC Drinking Water Act	130A NCAC 311-327	Regulates water systems within the state that supply drinking water that may affect the public health.
NC Water Quality Standards	15A NCAC 2B .0100-.0400	Establishes a series of classifications and water quality standards for surface waters.

Potential State ARAR	Citation	Comment
NC Air Pollution Control Regulations	15A NCAC 2D, 2H .0600, 2Q	Regulates ambient air quality and establishes air quality standards for hazardous air pollutants.
NC Hazardous Waste Management Rules	15A NCAC 13A .0009 & .0012	Establishes standards for hazardous waste that is excavated and stored or treated as part of Remedial Action.

6. Page 2-4. Section 2.3.2.2 Location-Specific ARARs. The following state regulations are potential ARARs:

TABLE 2
NORTH CAROLINA POTENTIAL LOCATION-SPECIFIC ARARS, CRITERIA, AND GUIDANCE
OU 6 SITE 86, DRAFT FEASIBILITY STUDY
MCB CAMP LEJEUNE

Potential State ARAR	Citation	Comment
NC Hazardous Waste Management Rules	15A NCAC 13A .0009 & .0012	Location requirements and land disposal restrictions for hazardous waste excavated, stored, and treated onsite.
NC Solid Waste Management Rules	15A NCAC 13B .1600	Siting requirements for solid waste landfill facilities
NC Recordation of Inactive Hazardous Substance or Waste Disposal Sites Statute	N.C.G.S. 130A-310.8	State requirement for recordation of inactive hazardous sites
NC Coastal Management	15A NCAC 7H	State guidelines for areas of environmental concern

7. Page 2-4. Section 2.3.2.3 Action-Specific ARARs. The following state and federal regulations and guidance are potential ARARs or TBCs:

TABLE 3
NORTH CAROLINA AND FEDERAL POTENTIAL ACTION-SPECIFIC ARARS, CRITERIA, AND GUIDANCE
OU 6, SITE 86, DRAFT FEASIBILITY STUDY
MCB CAMP LEJEUNE

Potential State ARAR	Citation	Comment
NC Groundwater Corrective Action	15A NCAC 2L .0106-.0113	Regulations for cleanup of contaminated groundwater including requirements for natural attenuation.
NC 15A NCAC 2L Implementation Guidance	Division of Water Quality Guidance Document	Explains implementation of corrective action at groundwater contamination sites and natural attenuation remedies.
NC Well Construction Standards	15A NCAC 2C .0100	Construction and abandonment requirements for water wells.
NC Injection well construction standards	15A NCAC 2C .0200	Construction requirements for injection wells.
NC Water Quality Discharge Requirements	15A NCAC 2H .0100 & .0200	Waste water requirements for discharges and infiltration galleries.
NC Sedimentation Control Rules	15A NCAC 2H .1000	Establishes requirements for storm-water management
NC Hazardous Waste Management Rules	15A NCAC 13A	Design and treatment requirements for hazardous waste TSDs.
NC Solid Waste Management Rules	15A NCAC 13B	Design and monitoring requirements for solid waste disposal sites
NC Air Pollution Control Requirements	15A NCAC 2D, 2H .0600, 2Q	Regulates air quality and establishes emissions standards.
EPA Draft Interim Final OSWER Monitored Natural Attenuation Policy	OSWER Directive 9200.4-17	EPA guidance document for implementation of Monitored Natural Attenuation Remedy

8. Table 2-2. NCWQS for 1,2-DCE is 0.070 mg/L per isomer and the NCWQS for lead is 0.015 mg/L.

9. Page 3-4, Section **3.5.3 Restrictions in Base Master Plan**. In addition to modifying the Base Master Plan, the requirements outlined in comment 3 would need to be implemented.

10. Page 4-1, Last Paragraph. In addition to modifying the Base Master Plan, the requirements outlined in comment 3 would need to be implemented.

11. Page 4-2. Long-term monitoring for natural attenuation should include surface water sampling if appropriate.

12. Page 4-3, Fourth Paragraph. In addition to modifying the Base Master Plan, the requirements outlined in comment 3 would need to be implemented.

13. Page 4-6, First Paragraph. In addition to modifying the Base Master Plan, the requirements outlined in comment 3 would need to be implemented.

14. Page 5-3, Third Paragraph. *State Acceptance*. The State will confirm its accepts of the remedy with a concurrence letter to be included with the ROD.

15. Page 5-3, *Compliance with ARARs*. "No Action" does not comply with the requirements of 15A NCAC 2L, an ARAR for this site.

16. Page 5-4, Section **5.2.2 RAA 2: Institutional Controls**. In addition to Base Master Plan modifications, see the institutional controls discussed in comment 3.

17. Page 5-5, *Compliance with ARARs*. Without a Variance, North Carolina regulation 15A NCAC 2L.0113, this remedy does not comply with North Carolina regulations.

18. Page 5-7, *Compliance with ARARs*. This remedy would have to comply with the requirements of North Carolina regulation 15A NCAC 2L.0106 (l).

19. Page 5-8, *Compliance with ARARs*. In addition to location-specific and action-specific ARARs, this remedy would have to comply with chemical-specific ARARs regulating air and water discharge.

20. Page 5-9, Paragraph 2. See comment 3 for a description of the necessary institutional controls.

21. Page 5-10, *Compliance with ARARs*. In addition to location-specific and action-specific ARARs, this remedy would have to comply with chemical-specific ARARs regulating air and water discharge.

22. The Risk Assessment is being reviewed. We will submit comments at a later date.

ATTACHMENT 4

North Carolina Superfund Section Comments
Letter Report Documenting Post-RI Field Investigations
OU 6, Sites 36, 54, and 86
Marine Corps Base, Camp Lejeune, North Carolina

General Comment: As outlined in OSWER Directive 9200.4-17 on Monitored Natural Attenuation, before selecting natural attenuation as an Remedial Action Alternative, a treatability study evaluating the effectiveness of natural attenuation is necessary. Rates of natural attenuation should be estimated and compared to estimated rates of active remediation.

The OSWER Directive also recommends using a contingency remedy. If the treatability study indicates that natural attenuation will not work, or if other criteria show that the natural attenuation remedy is not working as expected, then the contingency remedy will be triggered. Possible contingency measures and the triggering criteria should be discussed in the Final Feasibility Study Report for each site.

Specific Comment:

Page 3. The screening level for 1,1,2,2-Tetrachloroethane is 52 ug/L in groundwater.