

Baker

03.01- 7/20/94- 00631

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

July 20, 1994

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-2699

Attn: Ms. Katherine Landman
Code 1823

Re: Contract N62470-89-D-4814
Navy CLEAN District III
Contract Task Order (CTO) 0160
Final Interim RI/FS Report and PRAP
Draft Final Interim ROD
Operable Unit No. 10 (Site 35)
MCB, Camp Lejeune, North Carolina

Dear Ms. Landman:

Baker is pleased to submit three copies of the Operable Unit No. 10 (Site 35) Final Interim Remedial Investigation/Feasibility Study (RI/FS) Report and Final Interim Proposed Remedial Action Plan (PRAP) for your files. In addition, enclosed please find three copies of the Draft Final Interim Record of Decision for your review and comment.

Copies of these documents have been forwarded to Mr. Neal Paul (MCB, Camp Lejeune), Ms. Gena Townsend (USEPA Region IV), Mr. Patrick Watters (NC DEHNR), and to members of the Technical Review Committee (TRC) as indicated on the transmittal letters included as Attachment A.

These documents have been revised based on comments received from LANTDIV, USEPA, NC DEHNR, and Camp Lejeune. The comments and responses are included as Attachment B of this letter. Also enclosed is a disc with the responses included under the file name of "comments".

Since the comments did not result in significant revisions to the Final Interim RI/FS Report, only replacement pages have been submitted. Instructions for inserting the replacement pages are included as Attachment C.

It is worth noting that the cost estimates associated with Remedial Action Alternatives 2 through 6 have been revised and increased over the cost estimates provided in previous versions of the Interim RI/FS Report, PRAP, and ROD. The cost estimate increase can be attributed to the additional contaminated soil associated with the former UST at Building G-480 that was not previously included. In addition, Baker revised the cost estimates in lieu of our review of recent cost estimates for remediation projects prepared by LANTDIV's remediation contractor, O.H. Materials, Inc.



A Total Quality Corporation

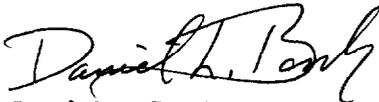
Baker

Ms. Katherine Landman
July 20, 1994
Page 2

If you have any questions regarding this submittal, please contact me at (412) 269-2063 or Mr. Raymond Wattras (Activity Coordinator) at (412) 269-2016.

Sincerely,

BAKER ENVIRONMENTAL, INC.



Daniel L. Bonk, P.E.
Project Manager

DLB/dri

cc: Ms. Beth Hacie, Code 02115 (w/o attachments)
Ms. Lee Anne Rapp, Code 183 (w/o attachments)
Mr. Neal Paul (two copies)

ATTACHMENT A

TRANSMITTAL LETTERS

Baker

Baker Environmental, Inc.

Baker Environmental, Inc.

Consulting Engineers

Airport Office Park - Bldg. 3

420 Rouser Road

Coraopolis, PA 15108

(412) 269-6000

LETTER OF TRANSMITTAL

To: Colonel (Retired) Jack Mader S.O. No. 62470-160-SRN
1216 Country Club Road Project: CTO-0160
Jacksonville, NC 28540 Date: July 20, 1994

Attn. Colonel (Retired) Jack MaderWe are forwarding the following: Attached Under Separate Cover

| DWG. NO. | NO. COPIES | TITLE OR DESCRIPTION | COMMENTS |
|----------|------------|---|--|
| | 1 | OPERABLE UNIT NO. 10 (SITE 35) MCB CAMP LEJEUNE, NORTH CAROLINA Final Interim Remedial Action RI/FS Report | Instructions for inserting replacement pages for RI/FS Report are attached |
| | 1 | Final Interim Proposed Remedial Action Plan | |
| | 1 | Draft Final Interim Record of Decision | ROD comments due to Ms. Katherine Landman (LANTDIV) no later than August 16, 1994 |

THESE ARE TRANSMITTED as checked below:

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| <input type="checkbox"/> As requested | <input type="checkbox"/> No exception taken | <input type="checkbox"/> Revise and resubmit |
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GENERAL COMMENTS:

cc: Katherine Landman, (LANTDIV)

BAKER ENVIRONMENTAL, INC.By: Mr. Daniel L. Bonk, P.E.Title: Project ManagerPage 1 of 1



Baker Environmental, Inc.
Consulting Engineers
 Airport Office Park - Bldg. 3
 420 Rouser Road
 Coraopolis, PA 15108
 (412) 269-6000

LETTER OF TRANSMITTAL

To: Mr. Ray Humphries S.O. No. 62470-160-SRN
514 Brynn Marr Road Project: CTO-0160
Jacksonville, NC 28540 Date: July 20, 1994

Attn. Mr. Ray Humphries

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GENERAL COMMENTS:

cc: Katherine Landman, (LANTDIV)

BAKER ENVIRONMENTAL, INC.

By: Mr. Daniel L. Bonk, P.E.

Title: Project Manager

Page 1 of 1

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Baker Environmental, Inc.

Consulting Engineers
 Airport Office Park - Bldg. 3
 420 Rouser Road
 Coraopolis, PA 15108
 (412) 269-6000

LETTER OF TRANSMITTAL

To: Jacksonville City Manager S.O. No. 62470-160-SRN
PO Box 128 Project: CTO-0160
Jacksonville, NC 28541 Date: July 20, 1994

Attn. Mr. Jerry BittnerWe are forwarding the following: Attached Under Separate Cover

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GENERAL COMMENTS:

cc: Katherine Landman, (LANTDIV)

BAKER ENVIRONMENTAL, INC.

By: Mr. Daniel L. Bonk, P.E.Title: Project ManagerPage 1 of 1

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Baker Environmental, Inc.

Baker Environmental, Inc.**Consulting Engineers**

Airport Office Park - Bldg. 3

420 Rouser Road

Coraopolis, PA 15108

(412) 269-6000

LETTER OF TRANSMITTAL

To: National Oceanic & Atmospheric Adm. S.O. No. 62470-160-SRN
c/o EPA Region IV, 345 Courtland St. NE Project: CTO-0160
Atlanta, GA 30365 Date: July 20, 1994

Attn. Mr. Waynon JohnsonWe are forwarding the following: Attached Under Separate Cover

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GENERAL COMMENTS:

cc: Katherine Landman, (LANTDIV)

BAKER ENVIRONMENTAL, INC.By: Mr. Daniel L. Bonk, P.E.Title: Project ManagerPage 1 of 1



Baker Environmental, Inc.
Consulting Engineers
 Airport Office Park - Bldg. 3
 420 Rouser Road
 Coraopolis, PA 15108
 (412) 269-6000

LETTER OF TRANSMITTAL

To: Mr. Cameron Lanier S.O. No. 62470-160-SRN
612 College Street Project: CTO-0160
Jacksonville, NC 28540 Date: July 20, 1994

Attn. Mr. Cameron Lanier

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GENERAL COMMENTS:

cc: Katherine Landman, (LANTDIV)

BAKER ENVIRONMENTAL, INC.

By: Mr. Daniel L. Bonk, P.E.
 Title: Project Manager
 Page 1 of 1

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Baker Environmental, Inc.

Baker Environmental, Inc.

Consulting Engineers
 Airport Office Park - Bldg. 3
 420 Rouser Road
 Coraopolis, PA 15108
 (412) 269-6000

LETTER OF TRANSMITTAL

To: NC Div. of Env. Mgmt. S.O. No. 62470-160-SRN
Groundwater Section Project: CTO-0160
Archdale Bldg., 512 N. Salisbury St. Date: July 20, 1994
Raleigh NC 27604-1148
 Attn. Mr. Arthur Mouberry, Section Chief

We are forwarding the following: Attached Under Separate Cover

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GENERAL COMMENTS:

cc: Ms. Katherine Landman, (LANTDIV)
 Mr. Patrick Watters, (NC DEHNR)

BAKER ENVIRONMENTAL, INC.

By: Mr. Daniel L. Bonk, P.E.
 Title: Project Manager
 Page 1 of 1



Baker Environmental, Inc.
 Consulting Engineers
 Airport Office Park - Bldg. 3
 420 Rouser Road
 Coraopolis, PA 15108
 (412) 269-6000

LETTER OF TRANSMITTAL

To: NC Div. of Environmental Mgmt. S.O. No. 62470-160-SRN
127 Cardinal Drive Ext. Project: CTO-0160
Wilmington NC 28405-3845 Date: July 20, 1994

Attn. Mr. Rick Shiver, Regional Supv.

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GENERAL COMMENTS:

cc: Ms. Katherine Landman, (LANTDIV)
 Mr. Patrick Watters, (NC DEHNR)

BAKER ENVIRONMENTAL, INC.

By: Mr. Daniel L. Bonk, P.E.
 Title: Project Manager
 Page 1 of 1

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Baker Environmental, Inc.

Baker Environmental, Inc.**Consulting Engineers**

Airport Office Park - Bldg. 3

420 Rouser Road

Coraopolis, PA 15108

(412) 269-6000

LETTER OF TRANSMITTAL

To: NC Div. of Env. Mgmt.
Water Quality Section
Archdale Bldg., 512 N. Salisbury St.
Raleigh NC 27604-1148

S.O. No. 62470-160-SRNProject: CTO-0160Date: July 20, 1994Attn. Mr. Stephen Tedder, Section ChiefWe are forwarding the following: Attached Under Separate Cover

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GENERAL COMMENTS:

cc: Ms. Katherine Landman, (LANTDIV)
 Mr. Patrick Watters, (NC DEHNR)

BAKER ENVIRONMENTAL, INC.By: Mr. Daniel L. Bonk, P.E.Title: Project ManagerPage 1 of 1



Baker Environmental, Inc.
Consulting Engineers
 Airport Office Park - Bldg. 3
 420 Rouser Road
 Coraopolis, PA 15108
 (412) 269-6000

LETTER OF TRANSMITTAL

To: Dept. of Environmental Health S.O. No. 62470-160-SRN
and Natural Resources Project: CTO-0160
PO Box 27687, 401 Oberlin Road Date: July 20, 1994
Raleigh, NC 27611
 Attn. Mr. Patrick Watters, Superfund Section

We are forwarding the following: Attached Under Separate Cover

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GENERAL COMMENTS:

cc: Katherine Landman, (LANTDIV)

BAKER ENVIRONMENTAL, INC.

By: Mr. Daniel L. Bonk, P.E.
 Title: Project Manager
 Page 1 of 1



Baker Environmental, Inc.
Consulting Engineers
 Airport Office Park - Bldg. 3
 420 Rouser Road
 Coraopolis, PA 15108
 (412) 269-6000

LETTER OF TRANSMITTAL

To: Naval Environmental Health Center S.O. No. 62470-160-SRN
2510 Walmer Avenue Project: CTO-0160
Norfolk, VA 23513-2617 Date: July 20, 1994

Attn. Commander Gary Williams

We are forwarding the following: Attached Under Separate Cover

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GENERAL COMMENTS:

cc: Katherine Landman, (LANTDIV)

BAKER ENVIRONMENTAL, INC.

By: Mr. Daniel L. Bonk, P.E.
 Title: Project Manager
 Page 1 of 1



Baker Environmental, Inc.
 Consulting Engineers
 Airport Office Park - Bldg. 3
 420 Rouser Road
 Coraopolis, PA 15108
 (412) 269-6000

LETTER OF TRANSMITTAL

To: US Dept. of the Interior S.O. No. 62470-160-SRN
Regional Environmental Office Project: CTO-0160
75 Spring Street SW Date: July 20, 1994
Atlanta, GA 30303
 Attn. Mr. James H. Lee

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BAKER ENVIRONMENTAL, INC.

By: Mr. Daniel L. Bonk, P.E.
 Title: Project Manager
 Page 1 of 1

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Baker Environmental, Inc.

Baker Environmental, Inc.

Consulting Engineers
 Airport Office Park - Bldg. 3
 420 Rouser Road
 Coraopolis, PA 15108
 (412) 269-6000

LETTER OF TRANSMITTAL

To: US Fish and Wildlife Service S.O. No. 62470-160-SRN
PO Box 33726 Project: CTO-0160
Raleigh, NC 27636-3726 Date: July 20, 1994

Attn. Mr. Tom Augspurger

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BAKER ENVIRONMENTAL, INC.

By: Mr. Daniel L. Bonk, P.E.

Title: Project Manager

Page 1 of 1

Baker

Baker Environmental, Inc.

Baker Environmental, Inc.**Consulting Engineers**

Airport Office Park - Bldg. 3

420 Rouser Road

Coraopolis, PA 15108

(412) 269-6000

LETTER OF TRANSMITTAL

To: US EPA, Region IV S.O. No. 62470-160-SRN
Waste Management Div. Project: CTO-0160
345 Courtland Street Date: July 20, 1994
Atlanta, GA 30365

Attn. Ms. Gena Townsend

We are forwarding the following: Attached Under Separate Cover

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GENERAL COMMENTS:

cc: Katherine Landman, (LANTDIV)

BAKER ENVIRONMENTAL, INC.

By: Mr. Daniel L. Bonk, P.E.Title: Project ManagerPage 1 of 1

ATTACHMENT B

COMMENTS AND RESPONSES TO COMMENTS

**Atlantic Division
Naval Facilities Engineering Command
Environmental Quality Division**

FACSIMILE TRANSMISSION

TOTAL # OF PAGES: 2

DATE: 14 June 1995

TO: Dan Bonk

FROM: Kate Landman, Code 1823

COMPANY: Baker Environmental, Inc.

PHONE #: (804) 322-4818

PHONE #: (412) 269-2063

DSN: 262-4818

FAX #: (412) 269-2002

FAX #: (804) 322-4805

REMARKS: CTO-0160
Draft Interim Remedial Action ROD
OU#10, Site 35 Soils
MCB Camp Lejeune

Dan,

Attached are my comments on the ROD. Very minor - looks great as usual. I'll forward any other comments as soon as they filter in. Don't work too hard. Other things are more important.

-Kate

LANTDIV Comments
CTO-0160 Draft Interim ROD
OU10, Site 35-Camp Geiger Area Fuel Farm
MCB Camp Lejeune

K. Landman, 6/14/94

1. Page 2, Figure 1
Please use revised location map that includes the correct designation for Main Service Drive (identified incorrectly as River Road on this map).
2. Page 11, Figure 3
Please be sure that buildings are correctly identified. For example, bldg G480 (EOD Armory) is incorrectly identified as TC480. This is true on all previous versions of site maps pertaining to Site 35 that I have seen. Please verify correct bldg numbers with CLEJ personnel and try to make other Baker personnel who may be working on other documents pertaining to Site 35 aware of the change.
3. Page 11, Figure 3
Since we have just determined that the UST adjacent to bldg G480 will be turned over to Site 35 IR program for further investigation, it is appropriate to include updates as needed to the text and diagrams such as this. This is true for other Site 35 documents both for the interim action and the full investigation).
4. Pages 15-16, Table 1
Under the heading "Compliance with ARARs", each alternative except RAA #1 indicates that NCDEHNR guidelines for TPH and O&G will be met. I didn't notice this before (even though it's included) in similar tables in previous documents (FS, PRAP), but I'm wondering if this wording is misleading since we are only addressing soils with high TPH contamination (which happens to correspond with much, but not all, of the O&G problem), but not specifically soils which exhibit only the O&G problem without TPH. (Reference text on page 12 of Draft ROD). Thus, we have effectively removed O&G from the ARARs list by the justification that it is not appropriate. Any ideas on better wording?
5. Page 24, Table 3
Typo, # instead of \$ under Total Capital Cost, RAA3.

**RESPONSE TO COMMENTS SUBMITTED BY
MS. KATHERINE LANDMAN, LANTDIV ON THE
DRAFT INTERIM REMEDIAL ACTION RECORD OF DECISION
DATED JUNE 14, 1994**

RESPONSES

1. Page 2, Figure 1

The road designated on the figure as River Drive has been renamed Main Service Road as per the comment.

2. Page 11, Figure 3

This figure has been checked against the available base maps for correctness. The designation of Building TC480 has been changed to Building G480.

3. Page 11, Figure 3

This figure has been modified to include the former UST area adjacent to Building G480 as per comment. In addition, the text has been modified to account for this additional area.

4. Pages 15-16, Table 1

This table has been modified with references to oil and grease deleted. As indicated in the comment, the argument for not considering oil and grease was made sufficiently in the text.

5. Page 24, Table 3

This table has been modified to correct the typo.

INSTALLATION RESTORATION DIVISION

UNITED STATES MARINE CORPS
ENVIRONMENTAL MANAGEMENT DEPARTMENT
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA



| | | | |
|------|--|----------------------|----------------|
| | Post-It™ brand fax transmittal memo 7671 | | # of pages ▶ 8 |
| ATTN | To DAN BONK | From KATE LANDMAN | |
| FAI | Co. BAKER | Co. LANTDIV | |
| FR | Dept. | Phone # 804-322-4158 | |
| | Fax # 412-269-2002 | Fax # -9805 | |

IV Code 1823

(ENGINEERING TECHNICIAN)

COMMENTS: HERE ARE OUR COMMENTS ON THE "DRAFT INTERIM REMEDIAL ACTION ROD" FOR OU-10.

THANKS
JOM

IF THERE IS A PROBLEM WITH THIS TRANSMISSION, PLEASE CALL (910) 451-5068, EXT 404 (DSN 484-5068). OUR FAX NUMBER IS (910) 451-5997 (DSN 484-5997).

DRAFT

**INTERIM REMEDIAL ACTION
RECORD OF DECISION**

**PETROLEUM HYDROCARBON
CONTAMINATED SOIL**

**OPERABLE UNIT NO. 10
(SITE 35 - CAMP GEIGER AREA FUEL FARM)**

**MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA**

CONTRACT TASK ORDER 0160

JUNE 5, 1994

Prepared For:

**DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
Norfolk, Virginia**

Under:

**LANTDIV CLEAN Program
Contract N62470-89-D-4814**

Prepared By:

**BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania**

1.0 SITE LOCATION AND DESCRIPTION

Camp Lejeune is a training base for the U.S. Marine Corps, located in Onslow County, North Carolina. The Base covers approximately 236 square miles and includes 14 miles of coastline. MCB Camp Lejeune is bounded to the southeast by the Atlantic Ocean, to the northeast by State Route 24, and to the west by U.S. Route 17. The town of Jacksonville, North Carolina is located north of the Base (See Figure 1).

Camp Geiger is located at the extreme northwest corner of MCB, Camp Lejeune, ~~Onslow County~~. The main entrance to Camp Geiger is off U.S. Route 17, approximately 3.5 miles southeast of the City of Jacksonville, North Carolina. Operable Unit (OU) No. 10, Site 35, the Camp Geiger Area Fuel Farm, refers primarily to five, 15,000-gallon aboveground storage tanks (ASTs), a pump house, and a fuel unloading pad situated within Camp Geiger just north of the intersection of Fourth and "G" Streets (See Figure 2). To date, the Site 35 study area has been roughly bounded to the west by D Street, to the north by Second Street, to the east by Brinson Creek, and to the south midway between Fourth and Fifth Streets. OU No. 10 is one of 13 operable units within MCB Camp Lejeune. An "operable unit" as defined by the National Contingency Plan (NCP) is a discrete action that comprises an incremental step toward comprehensively addressing site problems.

NATIONAL OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLAN

The surface topography at Site 35 is generally flat to the south and west of the ASTs. The ground surface dips rapidly to the north and east in the direction of Brinson Creek. Overland surface drainage is toward Brinson Creek.

The shallow soil stratigraphy at Site 35 consists of fine to medium-grained sands (15 to 30 feet thick), underlain by colitic, fossiliferous limestone (6 to 20 feet thick), which in turn is underlain by a unit of silty sand.

Shallow groundwater flow direction is generally west to east across the site in the direction of Brinson Creek. The top of groundwater is encountered roughly 8 to 10 feet below the ground surface (bgs) across the flat portion of the site and at lesser depths as the surface topography converges with Brinson Creek.

A geophysical investigation was conducted by NUS as part of the FFS in an attempt to identify underground storage tanks (USTs) at the site of the former gas station. The results indicated the presence of a geophysical anomaly to the north of the former gas station.

Comprehensive Site Assessment

Law Engineering, Inc. (Law) conducted a Comprehensive Site Assessment (CSA) during the fall of 1991 (Law, 1992). The CSA involved the drilling of 18 soil borings to depths ranging from 15 to 44.5 feet. These soil borings were ultimately converted to nested wells that monitor the water table aquifer along two zones. The shallow zone, or water table zone, generally extends from 2.5 to 17.5 feet bgs. The deeper zone monitored by the nested wells generally ranges from 17.5 to 35 feet bgs. Five additional soil borings were drilled and nine soil borings were hand-augered to provide data regarding soil contamination in the vadose zone. Additional groundwater data was provided via 21 drive-point groundwater or "Hydropunch" samples. A "Tracer" study was also performed to investigate the integrity of the active ~~USTs~~ and underground distribution piping.

ASTs

Soil and groundwater samples obtained under the CSA were analyzed for both organic and inorganic compounds. Groundwater analyses included purgeable hydrocarbons (EPA 601), purgeable aromatics and methyl-tertiary butyl ether (MTBE) (EPA 602), polynuclear aromatic hydrocarbons (EPA 610), and unfiltered lead (EPA 239.2). Soil analyses were limited to total petroleum hydrocarbons (TPH) (SW846 3rd Edition, 5030/3550) and lead (SW846 3rd Edition, 6010). Ten soil samples were analyzed for ignitability by SW846 3rd Edition, 1010.

The results of the CSA identified areas of impacted soil and groundwater. The nature of the contamination included both halogenated (i.e., chlorinated) organic compounds (e.g., trichloroethene, trans-1,2-dichloroethene, and vinyl chloride) and nonhalogenated, petroleum-based constituents (e.g., TPH, MTBE, benzene, toluene, ethylbenzene, and xylene). The contamination encountered was typically identified in both shallow (2.5 to 17.5 feet bgs) and deep (17.5 to 35 feet bgs) wells.

The soil contamination identified under the CSA was located northwest of the Fuel Farm ASTs along a pear-shaped area extending from the Explosive Ordnance Disposal Armory, Office and Supply Building (G-480) northeast toward Brinson Creek.

In general, contaminant concentrations in soil were greatest in those samples taken at or below the water table. Law concluded that this soil contamination at Site 35 was likely due to the presence of a dissolved phase groundwater plume and seasonal fluctuations of the water table.

Law also identified several plumes of shallow groundwater contamination including two plumes comprised primarily of petroleum-based constituents (e.g., BTEX) and two plumes comprised of halogenated organic compounds (e.g., TCE). The plumes are all located north of Fourth Street and east of E Street except for a portion of a TCE plume that extends southwest beyond the corner of Fourth and E Streets.

A follow-up to the CSA was conducted by Law in 1992. Reported as an Addendum to the CSA (Law, 1993), it was designed to provide further characterization of the southern extent of the petroleum contamination in shallow groundwater. Three monitoring wells were installed ~~including~~ from which additional soil samples were obtained for TPH analysis. As part of the follow-up, a pump test was performed to estimate the hydraulic characteristics of the surficial aquifer. This test was designed to determine performance characteristics of a designated pumping well and to estimate hydraulic parameters of the aquifer. An approximate hydraulic conductivity of 100 feet/day was determined for the surficial aquifer.

Interim Remedial Action Remedial Investigation/Feasibility Study

Based on the results of previous investigations at Site 35 and occasional reports of fuel-like odors along an adjoining section of Brinson Creek, Baker Environmental, Inc. (Baker) was retained to conduct an Interim Remedial Action Remedial Investigation/Feasibility Study (RI/FS) in December of 1993. An additional seven soil borings were located within and around groundwater contaminant plume areas identified during the CSA. In addition to the soil borings, 13 shallow soil samples were taken along Brinson Creek to determine the extent of contamination emanating from Site 35. Two of these shallow soil samples were situated upstream along Brinson Creek to provide background information on TPH and oil and grease.

In addition to soil sampling, a second round of groundwater level measurements were obtained for comparison to those presented in the CSA.

The most prevalent contaminants detected in soil samples taken during the Interim Remedial Action RI were benzene, toluene, ethylbenzene xylenes, naphthalene, and 2-

methylnaphthalene. These constituents are commonly associated with fuel contain... TPH (gasoline and diesel) and oil and grease were also observed, in addition to sporadic occurrences of chromium, vanadium, and arsenic.

Analytical results, in general, confirm the Law findings that contamination in the majority of the identified soil is associated with a dissolved petroleum hydrocarbon contaminant plume in shallow groundwater. Oil and grease results observed in shallow soil samples obtained from the Brinson Creek area may be influenced by the presence of naturally occurring organics in soils. This is supported by elevated background concentrations of oil and grease in surface soil samples obtained along the banks of Brinson Creek approximately 1/2-mile upstream of the site.

Comprehensive Remedial Investigation/Feasibility Study

Concurrent with the Interim Remedial Action RI/FS which is focused on petroleum hydrocarbon contaminated soil at Site 35, Baker is conducting a comprehensive RI/FS as a separate study to evaluate other potentially impacted site media including groundwater, surface water, sediment, and soil contaminated with constituents other than petroleum hydrocarbons. Field activities for the full RI/FS were initiated in April 1994.

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Final Interim Remedial Action RI/FS Report and the Final Interim Remedial Action Proposed Remedial Action Plan (PRAP) for Site 35 were released to the public in _____, 1994. These documents were made available to the public at the information repository maintained at the Onslow County Public Library. ^{AND BLDG 67, MCB, CAMP LEJEUNE.} The notice of availability of these documents was published in the "Jacksonville Daily News" during the period _____, 1994. A public comment period was held from ___ to ___, 1994. In addition, a public meeting was held on _____, 1994. At this meeting, representatives from DON/Marine Corps discussed the remedial action alternatives (RAAs) currently under consideration and addressed community concerns. Response to the comments received during the comment period is included in the Responsiveness Summary, which is part of this ROD (Section 11.0).

This decision document presents the three RAAs (3, 5, and 6) which have been selected for the remediation of petroleum hydrocarbon contaminated soil at Site 35. These RAAs have been chosen in accordance with the Comprehensive Environmental Response, Compensation and

Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) and, to the extent practicable, the NCP. The selected RAAs for Site 35 is based on the Administrative Record. ??

4.0 SCOPE AND ROLE OF THE INTERIM REMEDIAL ACTION

The response action presented in this document is termed an Interim Remedial Action because it represents only one phase of a comprehensive investigation and remediation program at Site 35. This interim phase is limited to soil at Site 35 contaminated with petroleum hydrocarbons. The full range of possible contaminants in soil as well as other site media including groundwater, surface water, and sediments are concurrently being addressed as part of a comprehensive site-wide RI/FS.

The results of the environmental investigations performed to date at Site 35 indicate the presence of soil areas contaminated with petroleum hydrocarbons at levels in excess of current state of North Carolina guidelines. The purpose of the selected remedy is to comply with existing state guidelines and to mitigate the contaminated soil areas as potential sources of future contamination of other media including groundwater, surface water, and sediment.

5.0 SITE CHARACTERISTICS

This section of the Interim Remedial Action ROD presents an overview of the nature and extent of petroleum hydrocarbon soil contamination at Site 35. The analytical data generated as part of the Interim Remedial Action RI and data generated during previous investigations conducted at Site 35 identified the presence of TPH contaminated soil in the vicinity of the Fuel Farm ASTs and to the north and northwest of the Fuel Farm in a broad area extending from the former UST adjacent to the Explosive Ordnance Disposal Building to the vicinity of monitoring well MW-25. In general, the analytical data suggests that the majority of the petroleum hydrocarbon contaminated soil is present along a narrow zone that begins just above the top of the shallow groundwater table. In essence, this contaminated soil is an extension of groundwater contamination which has been identified under the previous investigations and, particularly under the CSA conducted by Law. It can be assumed that seasonal fluctuations in the contaminated groundwater table has resulted in the contamination of soil just above the groundwater table. This is supported by data which shows very little contamination present in soil located more than a foot or two above the shallow groundwater table as measured on two separate dates by Law and Baker.

Oil and grease was subsequently excluded from the remediation goals because it was detected in background surface soil samples (BCSB11 and BCSB1B) located approximately 1/4 to 1/2 mile upstream of the Fuel Farm at levels on the order of 1610 mg/kg and 1110 mg/kg, respectively, or more than twice the remediation goal based on the SSE. Stream level measurements indicate the locations of the upstream surface soil samples to be beyond the reach of tidal influences and, consequently, indicate that high levels of naturally-occurring hydrocarbons are present in the soil adjacent to Brinson Creek. Although other surface soil samples obtained under the Interim Remedial Action RI indicated the presence of oil and grease at levels as high as 7,500 mg/kg, only one of the surface soil samples (BSCB01) exhibited both detectable concentrations of TPH (60 mg/kg) and oil and grease (3,000 mg/kg). The discrepancy is likely due to the fact that oil and grease is a gravimetric analysis which is highly subject to interferences and influences such as those presented by many naturally-occurring organic chemicals that could be expected to be present in the frequently flooded soils adjacent to Brinson Creek. ??

Based on the remediation goals, soils exhibiting TPH levels in excess of 40 mg/kg as measured by EPA Method 5030/8015 and 160 mg/kg as measured by EPA Method 3550/8015 will be subject to remediation.

7.0 DESCRIPTION OF ALTERNATIVES

Various technologies and process options were screened and evaluated under the Interim Remedial Action FS. Ultimately, six Remedial Action Alternatives (RAAs) were developed and are listed as follows:

- RAA 1 - No Action
- RAA 2 - Source Removal and Off-Site Landfill Disposal
- RAA 3 - Source Removal and Off-Site Biotreatment
- RAA 4 - Source Removal and On-Site, Ex-Situ Soil Aeration
- RAA 5 - Source Removal and Off-Site Soil Recycling
- RAA 6 - Source Removal and On-Site Low Temperature Thermal Desorption

A brief description of each alternative as well as the estimated cost and timeframe to implement the alternative are as follows:

**RESPONSE TO COMMENTS SUBMITTED BY
MR. TOM MORRIS, MCB CAMP LEJEUNE
DRAFT INTERIM REMEDIAL ACTION RECORD OF DECISION
FAX DATED JUNE 29, 1994**

RESPONSES

1. Page 1

The term National Contingency Plan has been changed to National Oil and Hazardous Substances Pollution Contingency Plan.

2. Page 6

The acronym USTs has been changed to ASTs as per the comment.

3. Page 7

The word "including" has been deleted from the text.

4. Page 8

The text has been modified as per the comment.

5. Page 9

The sentence in question is standard in all of the RODs prepared by Baker. It has been modified slightly by changing RAAs to RAA.

6. Page 12

The text has been modified to provide additional clarification to the argument regarding naturally-occurring hydrocarbons and their to oil and grease results obtained under the Interim Remedial Action RI. Additional information on this topic is presented in Section 4.3 of the RI.

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| | |
|----------------------|------------------------|
| To TOM MORRIS | From KATE LANDMAN |
| Co. MCB CLEJ | Co. LANTDIV |
| Dept. EMD/IR | Phone # (804) 322-4818 |
| Fax # (910) 451-5997 | Fax # (804) 322-4805 |



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

June 30, 1994

DAN,
LOOKS LIKE WE HAVE A
PROBLEM HERE PLEASE
GIVE ME A CALL TO
DISCUSS.

- KATE

4WD-FFB

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Katherine Landman
Department of the Navy - Atlantic Division
Naval Facilities Engineering Command
Code 1823
Norfolk, Virginia 23511-6287

SUBJ: MCB Camp Lejeune
Draft Interim Record of Decision
Operable Unit No. 10 - Site 35

Dear Ms. Landman:

EPA has completed its review of the "Draft Interim Record of Decision for Operable Unit #10, Site 35, dated June 5, 1994. EPA does not agree with the selected course of action. A remedy must be evaluated and selected in the context of the Record of Decision. A more detailed discussion is included in the enclosed comments.

If you have any questions or comments, please call me at (404) 347-3016 or voice mail, (404) 347-3555, x-6459.

Sincerely,

Gena D. Townsend
Gena D. Townsend
Senior Project Manager

Enclosure

cc: Patrick Waters, NCDEHNR
Neal Paul, MCB Camp Lejeune

| | | |
|--|----------------------|-----------------|
| Post-It™ brand fax transmittal memo 7671 | | # of pages ▶ 24 |
| To DAN BONK | From KATE LANDMAN | |
| Co. BAKER | Co. LANTDIV | |
| Dept. | Phone # 804-322-4818 | |
| Fax # 404-244-2002 | Fax # 4805 | |

Comments

- 1. Change the name of the document to "Interim Record of Decision, Contaminated Soil, Operable Unit 10....."
- 2. Page vi - "Statutory Determinations"
This section should be re-titled and the context of this section changed. (see attachment "Exhibit 9-8").
- 3. A table should be included to identify the contaminants of concern and the detected concentrations relating to this Interim Action.
- 4. The ARAR discussion should only focus on the ARARs that pertain to the Interim Action and should be listed individually. (see the Revised Draft Final, Operable Unit 1, Record of Decision, dated 6/17/94).
- 5. The intent of the Record of Decision is to select a remedial action, and propose it to the public for comment. The selection of "three choices", that will be narrowed down during contract bidding, is not acceptable. An action should be selected with its appropriate cost at the writing of the Record of Decision.

OSWER Directive 9355.3-02

9-13

EXHIBIT 9-8**Documenting Interim Action Decisions****OUTLINE FOR THE ROD**

The guidance for preparing RODs in Chapter 6 should be followed for preparing a ROD documenting the selection of an interim action remedy, with the following modifications.

1. The Declaration

- Site Name and Location
- Statement of Basis and Purpose
- Assessment of the Site
- Description of Selected Remedy
- ~~Statutory Determination~~
- Declaration - The declaration statement should read as follows:

This interim action is protective of human health and the environment, complies with Federal and State applicable or relevant and appropriate requirements directly associated with this action, and is cost-effective. This action utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable, given the limited scope of the action. Because this action does not constitute the final remedy for the [site/operable unit], the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element [will not be satisfied by this interim action (or will be addressed at the time of the final response action)]. Subsequent actions are planned to address fully the principal threats posed by this [site/operable unit].

- Signature and Support Agency Acceptance of the Remedy

2. Decision Summary

- Site Name, Location, and Description
- Site History and Enforcement Activities
- Highlights of Community Participation
- Scope and Role of Operable Unit - This section provides the rationale for taking the limited action. To the extent that information is available, the section should detail how the response action fits into the overall site strategy. The point should be made that the interim action will be consistent with any planned future actions, to the extent possible.
- Site Characteristics - This section should focus on the description of site characteristics to be addressed by the interim remedy.

OSWER Directive 9355.3-02

9-14

EXHIBIT 9-8 (continued)**Documenting Interim Action Decisions****OUTLINE FOR THE ROD****2. Decision Summary (continued)**

- **Summary of Site Risks** - This section should focus on risks addressed by the interim action and should provide the rationale for the limited action. This could be supported by facts that indicate that action is necessary to stabilize the site, prevent further degradation, or achieve significant risk reduction quickly. Qualitative risk information may be presented if quantitative risk information is not yet available, which will often be the case.
- **Description of Alternatives** - This section should describe only the limited alternatives that were considered for the interim action. The ARARs discussion should be incorporated, as appropriate, given the limited nature of the action.
- **Summary of Comparative Analysis of Alternatives** - The comparative analysis should be presented in light of the limited scope of the action. Criteria not relevant to the evaluation of interim actions need not be addressed in detail. Rather, their irrelevance to the decision should be noted briefly.
- **Statutory Determinations** - The interim action should protect human health and the environment from the exposure pathway or threat it is addressing, any releases generated, or the waste material that is managed. The ARARs discussion should focus only on those ARARs specific to the interim action - those related to any final disposition of waste, off-site treatment or disposal, or releases caused during implementation. An interim remedy waiver may be necessary in some situations. However, if an interim waiver is needed, the final remedy must comply with the requirement. The discussion of the use of treatment should indicate that the selected remedy represents the best balance of tradeoffs with respect to pertinent criteria, given the limited scope of the action. The discussion under the preference for treatment section should note that the preference will be addressed in the final decision document for the site or operable unit.
- **Explanation of Significant Changes**

3. The Responsiveness Summary

**RESPONSE TO COMMENTS SUBMITTED BY
MS. GENA TOWNSEND, USEPA, REGION IV ON THE
DRAFT INTERIM REMEDIAL ACTION RECORD OF DECISION
DATED JUNE 30, 1994**

RESPONSES

1. Cover

The title of this document has been revised to read "Interim Record of Decision, Contaminated Soil, Operable Unit No. 10 ..."

2. Page iv - Statutory Determinations

This section has been retitled "Declaration" and the context changed as per Exhibit 9-8 from OSWER Directive 9355.3-02.

3.

The first paragraph of Section 6.0 (Summary of Site Risks) has been revised to include an identification of the Contaminants of Potential Concern (COPCs) and their detected concentrations. The COPCs for this Interim Action included benzene and arsenic.

4.

A table has been added to the "Compliance With ARARs" subsection of Section 8.0 (Summary of Comparative Analysis of Alternatives) to address this comment.

5.

The Draft Final version of the Interim Record of Decision ~~has~~ will present RAA 5: Source Removal and off-site Soil Recycling as the selected remedy. ← see response to Patrick.

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

| | | |
|--|----------------------|----------------|
| Post-It [®] brand fax transmittal memo 7671 | | # of pages ▶ 2 |
| To DAN BONK | From KATE LANDMAN | |
| Co. BAKER | Co. LANTDIV | |
| Dept. | Phone # 801-222-4615 | |
| Fax # 412-269-2002 | Fax # 4905 | |

June 30, 1994

Commander, Atlantic Division
Naval Facilities Engineering Command
Code 1823-2

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: Draft Interim Remedial Action Record of Decision
for Operable Unit 10 (Site 35), MCB Camp Lejeune.

Dear Ms. Landman:

The referenced document has been received and reviewed by the
North Carolina Superfund Section. Our comments are attached.
Please call me at (919) 733-2801 if you have any questions about
this.

Sincerely,

Patrick Watters

Patrick Watters
Environmental Engineer
Superfund Section

Attachment

cc: Gena Townsend, US EPA Region IV
Neal Paul, MCB Camp Lejeune
Bruce Reed, DEHNR - Wilmington Regional Office

North Carolina Superfund Comments
Draft Interim Remedial Action Record of Decision

General

The Record of Decision (ROD) indicates that either Remedial Action Alternative (RAA) 3, 5, or 6 be the selected remedy based on the lowest available price as can be documented by the Remedial Action Contractor (RAC). The Superfund Section concurs that RAAs 3, 5, and 6 are the better alternatives however, the purpose of the ROD as defined in the National Contingency Plan (NCP) is to document the final remedy selected by the lead agency. This ROD does not meet the intent of the NCP because three different alternatives were selected instead of only one. This ROD could possibly be structured with contingency clauses to allow the use of an alternate remedy if the selected method proves to be inappropriate.

Since cost is apparently the deciding factor and part of the NCP evaluation criteria, this should be more definitively addressed in the ROD and not by the RAC. Also, it may be appropriate to revisit the other decision criteria to determine the best remediation alternative.

**RESPONSES TO COMMENTS SUBMITTED BY
MR. PATRICK WATTERS, NORTH CAROLINA DEHNR ON THE
DRAFT INTERIM REMEDIAL ACTION RECORD OF DECISION
DATED JUNE 30, 1994**

RESPONSES

1. General

The Draft ROD has been modified as per the comment. RAA 5 (Source Removal and Off-Site Soil Recycling) was selected as the final remedy for the subject site. It was chosen over RAA 6 (Source Removal and On-Site Low Temperature Thermal Desorption) because it is anticipated it will be more cost effective. RAA 3 (Source Removal and Off-Site Biotreatment) was originally identified as an alternate but, although it is estimated to be roughly equal to RAA 5 in cost, RAA 3 was not selected as the preferred alternative because there are more off-site commercial soil recycling facilities (RAA 5) than biotreatment facilities (RAA 3) and, consequently, RAA 5 should be easier to implement. However, if a suitable soil recycling facility is not available at the time of remediation, a biotreatment facility may be substituted as an alternative, subject to the approval of a modification to the Interim ROD.

**Atlantic Division
Naval Facilities Engineering Command
Environmental Quality Division**

FACSIMILE TRANSMISSION

TOTAL # OF PAGES: 2

DATE: 05 July 1995

TO: Dan Bonk

FROM: Kate Landman, Code 1823

COMPANY: Baker Environmental, Inc.

PHONE #: (804) 322-4818

PHONE #: (412) 269-2063

DSN: 262-4818

FAX #: (412) 269-2002

FAX #: (804) 322-4805

REMARKS: CTO-0160
Draft: Final Interim Remedial Action RI/FS & PRAP
OU#10, Site 35 Soils
MCB Camp Lejeune

Dan,

Attached are my comments on the Draft Final RI/FS & PRAP. No surprises.

Also, I'm working up a list of items to go into a tentative agenda for the meeting with NC DOT next Thursday. I figure we'll meet first to discuss our concerns and then head out for a visit to Site 35. Here are some areas that I think we need to be ready to discuss:

- Current Status
 - a) Interim Action (soils)
 - b) Full RI/FS
- Schedule
 - a) Interim Action (soil removal)
 - b) Groundwater remediation
 - c) Fuel Farm dismantling (Tom Morris will be able to address this)
- Concerns
 - a) soil backfill requirements
 - b) schedule
 - c) impact of groundwater remediation plans on road construction.

- NC DOT issues - Ms. Stepney has indicated that she has a list of items to address. I will try to get this from her in advance so we can be somewhat prepared to respond to her questions.

Please let me know what else you can think of to be included. In a few days, I will prepare a tentative agenda for review by everyone.

-Kate

LANTDIV Comments
CTO-0160 Draft Final Interim RA RI/FS
OU#10, Site 35-Camp Geiger Area Fuel Farm
MCB Camp Lejeune

K. Landman, 7/5/94

RI REPORT

No comments.

FS REPORT

1. Page 1-7, Section 1.2.6, Paragraph 4
Last sentence is meant to illustrate the meaning of the 3×10^{-6} ICR estimated for this site. Sentence should be modified to match the correction to the reported ICR value made in Sentence 1, i.e. change last sentence to read "An ICR value of 3×10^{-6} means that three additional cancer cases per million exposed individuals may occur."
2. Page 1-7, Section 1.2.6, Paragraph 5
Last sentence reports calculated HI value of 0.005. This was reported as 0.05 in the RI report on pages 6-29 & 6-30. (This appears to be an error made while correcting the value based on my comment 3 from Draft FS.)
3. Page 4-17, Section 4.2.5.2, Paragraph 1
Typo in last sentence, "site".
4. Page 4-17, Section 4.2.5.2, Paragraph 3
Typo in last sentence, "... because the contaminated soil is treated...".
5. Page 4-18, Section 4.2.6.2, Paragraph 1
Typo in last sentence, "site".

PRAP

1. General
It is assumed that changes will be made to the Final PRAP to reflect the comments submitted by EPA and NC DEHNR on the Draft Interim ROD concerning the selection of a specific Preferred Alternative. It is also assumed that the specified alternative will be RAA-5, Source Removal and Off-Site Soil Recycling, as discussed in telephone conversations during the week of June 27.
2. Page 11, Human Health Risk Assessment, Paragraph 3
The ICR in sentence 1 should be 3×10^{-6} , not 6×10^{-6} . Also, the example in the last sentence was only partially corrected - the ICR of 3×10^{-6} means that three additional cancer cases per million exposed individuals may occur. For consistency, since the summary in the RI report rounded the calculated 3.3×10^{-6} to 3×10^{-6} , the PRAP should report the ICR as 3×10^{-6} also.

**RESPONSES TO COMMENTS SUBMITTED BY
MS. KATHERINE LANDMAN, LANTDIV ON THE
DRAFT FINAL INTERIM REMEDIAL ACTION RI/FS AND PRAP
DATED JULY 5, 1994**

RESPONSES

RI REPORT - NO COMMENTS

FS REPORT

1. Page 1-7, Section 1.2.6, Paragraph 4

The text has been modified as per the comment.

2. Page 1-7, Section 1.2.6, Paragraph 5

The reported HI value of 0.005 has been changed to the correct value of 0.05.

3. Page 4-17, Section 4.2.5.2, Paragraph 1

The typo has been corrected.

4. Page 4-17, Section 4.2.5.2, Paragraph 3

The typo has been corrected.

5. Page 4-18, Section 4.2.6.2, Paragraph 1

The typo has been corrected.

PRAP

1. General

The text has been modified as per the comment. See response to the only comment made by Mr. Patrick Watters, North Carolina DEHNR.

2. Page 11, Human Health Risk Assessment, Paragraph 3

The text has been modified as per the comment.

ATTACHMENT C

INSERT/REPLACEMENT INSTRUCTIONS FINAL INTERIM RI/FS REPORT OPERABLE UNIT NO. 10 (SITE 35) MCB, CAMP LEJEUNE, NORTH CAROLINA

| Insert/ Replacement No. | Title/Description | Comments |
|-------------------------------|---|--|
| 1 | Report Cover and Spine | Replace Draft Final Cover and Spinal with Final version |
| 2 | Inside Cover Sheet | Replace Draft Final cover sheet located directly in front of tab titled "Remedial Investigation" |
| 3 | Inside Cover Sheet | Replace Draft Final cover sheet located directly behind tab titled "Feasibility Study" |
| 4 | FS Executive Summary, pages ES-5 through ES-13 | Replace with attached pages <i>ES-6, 7?</i> |
| 5 | Section 1, pages 1-1 and 1-7 | Replace with attached pages |
| 6 | Section 2, Figure 2-3 and 2-4 <i>Pages</i> | Replace with attached pages |
| 7 | Section 2, Figure 2-1 (page 2-6) | Replace with the attached figure |
| 8 | Section 3, page 3-1 | Replace with the attached page |
| 9 | Section 4, pages 4-1 through 4-19 | Replace with the attached pages 4-1 through 4-20 |
| 10 | Section 5, pages 5-6, 5-7, 5-9, 5-10, 5-12, 5-13, 5-15, 5-16, 5-18, 5-19, 5-21 through 5-26 | Replace with the attached pages |