EPA/ROD/R04-99/023
1999

EPA Superfund
Record of Decision:

MARINE CORPS LOGISTICS BASE
EPA ID: GA7170023694
OU 04
ALBANY, GA
04/02/1999

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA

UNIT IDENTIFICATION CODE: N67004
CONTRACT NO.: N62467-89-D-0317/086

FEBRUARY 1999

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORTH CHARLESTON, SOUTH CAROLINA
29418

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA

Unit identification Code: M67004

Contract No.: N62467-89-D-0317/086

Prepared by:

Harding Lawson Associates
2590 Executive Center Circle, East
Tallahassee, Florida 32301

Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418

Joel Sanders, Code 1868, Remedial Project Manager

February 1999

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

APR 0 2 1999

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

4WD-FFB

Larry P. Cole, Colonel
Commanding Officer
Marine Corps Logistics Base-Albany
Albany, Georgia 31704-1128

SUBJ: Record of Decision
Operable Unit 4 (including PSC 6, PSC 10, PSC 12, PSC 13 and PSC 22)
MCLB-Albany NPL Site
EPA ID# GA7170023694
Albany, GA 31704

Dear Sir:

The U.S. Environmental Protection Agency (EPA) Region 4 has reviewed the above subject decision document and concurs with the remedy of Land Use Controls at PSC 6 and No Action at PSC 10, PSC 12, PSC 13, and PSC 22 within Operable Unit 4. This remedy is supported by the previously completed Remedial Investigation, Feasibility Study and Baseline Risk Assessment Reports. The combined remedy of Land Use Controls and No Action is protective of human health and the environment.

As specified in the Land Use Control Implementation Plan, PSC 6 is restricted from having any residential development. The Land Use Control Implementation Plan for PSC 6 further describes that any proposed changes in use of the site "are subject to approval by USEPA Region IV and GEPD." EPA will review the need for future remediation, monitoring, or changes in Land Use Controls under all applicable statutes, if any changes in use are proposed. In addition, it is imperative that the current excellent coordination between the MCLB Environmental personnel and the MCLB Construction personnel continue and that all proposed projects that could impact the area encompassed by PSC 6 be reviewed by the MCLB Environmental office. These measures will result in the elimination of any inadvertent noncompliance with the Land Use Control requirements. Also, as stated in earlier correspondence (Pope to Sanders, August 14, 1999) the Land Use Control Assurance Plan is now required to be finalized within 90 days of the date of this concurrence letter.

EPA appreciates the coordination efforts of MCLB Albany and the level of effort that was put forth in the documents leading to this decision. EPA looks forward to continuing the exemplary working relationship with MCLB Albany and southern Division Naval Facilities Engineering Command as we move toward final cleanup of the NPL site.

Sincerely,

Richard D. Green
Director
Waste Management Division

cc: Sid Allison, SOUTHDIV

Captain Ference, MCLB-Albany

Jerry Wallmeyer, REC (NASJAX)

Daniel Owens, SOUTHDIV

Harold F. Reheis, GAEPD

Madeleine Kellam, GAEPD

~~Kelley Dreyer, USMC~~ Bob Warren, USMC / REC

bcc: Scott Gordon, EAD

Allison Abernathy, FFRRO/OSWER

David Levenstein, FFEO/OECA

3/19/99

Pope 3/19/99 | Bozeman 3/19/99 | Johnston 3/19/99 | Green 4/2/99

TABLE OF CONTENTS

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Chapter	Title	Page No.
1.0	DECLARATION FOR THE RECORD OF DECISION	1-1
1.1	SITE NAME AND LOCATION	1-1
1.2	STATEMENT OF PURPOSE AND BASIS	1-1
1.3	ASSESSMENT OF THE SITE	1-1
1.4	DESCRIPTION OF THE SELECTED REMEDY	1-2
1.5	STATUTORY DETERMINATIONS	1-3
1.6	SIGNATURE AND SUPPORT AGENCY ACCEPTANCE OF THE REMEDY	1-3
2.0	DECISION SUMMARY	2-1
2.1	SITE NAME, LOCATION, AND DESCRIPTION	2-1
2.2	SITE HISTORY AND ENFORCEMENT ACTIVITIES	2-8
2.3	HIGHLIGHTS OF COMMUNITY PARTICIPATION	2-9
2.4	SCOPE AND ROLE OF THE FINAL RESPONSE AT OU 4	2-9
2.5	SUMMARY OF SITE CHARACTERISTICS	2-10
2.6	NATURE AND EXTENT OF CONTAMINANTS	2-14
2.6.1	Contaminant Delineation at OU 4	2-15
2.7	SUMMARY OF SITE RISKS AND RESPONSE ACTIONS	2-27
2.7.1	OU 4 BRA	2-31
2.7.2	Applicable or Relevant and Appropriate Requirements and Remedial Alternatives	2-40
2.7.2.1	Evaluation of Remedial Alternatives	2-40
2.7.3	Response Action	2-43
2.8	EXPLANATION OF SIGNIFICANT CHANGES	2-43

REFERENCES

APPENDICES

Appendix A: Community Relations Responsiveness Summary
Appendix B: Land-Use Control Implementation Plan for Potential Source of Contamination 6

LIST OF FIGURES

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Figure	Title	Page No.
2-1	Vicinity Map	2-2
2-2	PSC 10, Depot Maintenance Area (DMA)	2-3
2-3	PSC 22, DMA Old 90-Day Storage Area	2-4
2-4	PSC 13, Industrial Wastewater Pipeline	2-5
2-5	PSC 12, Industrial Wastewater Treatment Plant	2-6
2-6	PSC 6, Industrial Discharge Drainage Ditch and Sanitary Sewer Line	2-7
2-7	Location Map for Geologic Section (Shown on Figure 2-8)	2-11
2-8	Geologic Section of the Albany Area	2-12
2-9	Potentiometric Surface of the Upper Floridan Aquifer in the Albany, Georgia, Area, November 1985	2-13
2-10	Risk Summary, Base Worker, PSC 6	2-37
2-11	Risk Summary, Child Transient, PSC 6	2-38
2-12	Risk Summary, Resident, PSC 6	2-39

LIST OF TABLES

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Table	Title	Page No.
2-1	Analytes Detected in Subsurface Soil, PSC 10	2-16
2-2	Analytes Detected in Subsurface Soil, PSC 22	2-17
2-3	Analytes Detected in Subsurface Soil, PSC 13	2-20
2-4	Analytes Detected in Subsurface Soil, PSC 12	2-23
2-5	Analytes Detected in Subsurface Soil, PSC 6	2-24
2-6	Analytes Detected in Surface Soil, PSC 6	2-25
2-7	Chemicals of Potential Concern at PSCs 10, 13, and 22	2-28
2-8	Chemicals of Potential Concern at PSC 12	2-28
2-9	Chemicals of Potential Concern at PSC 6	2-29
2-10	Risk Summary for PSCs 10, 13, and 22	2-33
2-11	Risk Summary for PSC 12	2-33
2-12	Risk Summary for PSC 6	2-34
2-13	Applicable or Relevant and Appropriate Requirements	2-41

GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
ARAR	applicable or relevant and appropriate requirement
bls	below land surface
BRA	baseline risk assessment
COPC	chemical of potential concern
DCA	dichloroethane
DCE	dichloroethene
DMA	Depot Maintenance Activity
DWTP	domestic wastewater treatment plant
ERA	ecological risk assessment
GEPD	Georgia Environmental Protection Division
HHRA	human health risk assessment
HI	hazard index
HLA	Harding Lawson Associates
IWP	industrial wastewater pipeline
IWTP	industrial wastewater treatment plant
LUC	land-use control
LUCAP	land-use control assurance plan
LUCIP	land-use control implementation plan
MCLB	Marine Corps Logistics Base
mg/kg	milligrams per kilogram
NA	no action
NCP	National Oil and Hazardous Substances Contingency Plan
OU	operable unit
PCB	polychlorinated biphenyl
PSC	potential source of contamination
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
RI/FS	remedial investigation and feasibility study
RI/BRA	remedial investigation/baseline risk assessment
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SOUTHNAV-FACENGCOM	Southern Division, Naval Facilities Engineering Command
SVOC	semivolatile organic compound

1.0 DECLARATION FOR THE RECORD OF DECISION

1.1 SITE NAME AND LOCATION. Operable Unit (OU) 4 is composed of the potential sources of contamination (PSC) that are directly or geographically associated with the Depot Maintenance Activity (DMA), which is located on the southeastern side of Broom Boulevard. OU 4 consists of five PSCs, including PSC 10, DMA; PSC 22, DMA Old 90-Day Storage Area; PSC 13, Industrial Wastewater Pipeline (IWP); PSC 12, Industrial wastewater Treatment Plant (IWTP); and PSC 6, Industrial Discharge Drainage Ditch/Sanitary Sewer line.

1.2 STATEMENT OF PURPOSE AND BASIS. This Record of Decision (ROD) document presents the final response for OU 4 at the Marine Corps Logistics Base (MCLB), Albany. It was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act as amended by the Superfund Amendments and Reauthorization Act, and to the extent practicable, the National Contingency Plan (NCP). This decision is based on the site's Administrative Record, which is on file at the Environmental Branch Office, Installations and Logistics Division, Building 5501, MCLB, Albany, Georgia, 31704, and at the information repository in the Dougherty County Public Library, Albany, Georgia. The U.S. Environmental Protection Agency (USEPA) Region IV and State of Georgia concur with the selected remedy.

1.3 ASSESSMENT OF THE SITE. A remedial investigation and baseline risk assessment (RI/BRA) was conducted at OU 4 between April 1993 and May 1994. The BRA examined a current land-use scenario, in which base workers are likely to be exposed to contaminated media, and a hypothetical future residential land use of OU 4, in which residential and transient individuals could be exposed. Child and adult resident exposure scenarios were evaluated to estimate potential exposures in the event housing is built very near the ditch. These hypothetical situations represent the most sensitive receptor and conservative risk estimates for OU 4. The BRA evaluated both cancer and noncancer risks. The ecological portion of the BRA was completed only for PSC 6, the Industrial Discharge Drainage Ditch, due to lack of habitat (animals, plants, birds, mammals, fish and reptiles) at the other PSCs.

According to the NCP for Superfund sites, the acceptable cancer risk range is from 1 in 10, 000 ($1x10^{-4}$) to 1 in 1 million ($1x10^{-6}$), depending on site-specific conditions. Although the estimated risk of $1x10^{-6}$ is the point of departure in determining the need for a response action, site-specific conditions at OU 4 indicate that application of the acceptable risk range is appropriate. The site specific condition supporting the use of the risk range includes the base perimeter fence, which restricts public access to surface and subsurface soil, surface water, and sediment at OU 4. The site-specific conditions for OU 4 are such that most of the samples evaluated for cancer risk were below the ranges prescribed by the NCP. This means that for several of the PSCs that make up OU 4, no response action was required. For noncancer risks, the similar point of departure is a hazard index (HI) of 1. If the total estimated noncancer risk exceeds this value, then site-specific conditions and effects from individual compounds are evaluated to determine whether or not a response is necessary.

The BRA conducted for subsurface soil at PSCs 10, 13, and 22 resulted in risks acceptable to the USEPA Region IV for carcinogens ($4x10^{-}$) and noncarcinogens (HI of 0.02). There was no surface water or sediment present at any of these sites. The BRA for PSC 12 included subsurface soil only; the BRA results were also acceptable to USEPA Region IV ($4x10^{-}$, HI of 0.008) such that no treatment, containment, or restricted access is required for PSCs 10, 12, 13, and 22. No surface soil, surface water, or sediment samples were collected at PSCs 10, 12, 13, and 22 due to the areal extent of concrete surface cover at each PSC and absence of these media.

Human health and ecological risks associated with exposure to the surface soil, surface water, and sediment at PSC 6 were evaluated and compared to the cancer and noncancer risk criteria ($1x10^{-}$ to $1x10^{-}$, HI greater than 1). For current and potential future land use, child transient cancer risks for potential exposures to surface water, sediment, and surface soil are within the USEPA acceptable cancer risk range, and noncancer risks are below the USEPA threshold HI of 1. The total resident (i.e. , child and adult resident combined) cancer risk for potential future exposures to industrial discharge drainage ditch surface soil, surface water, and sediment is $6x10^{-}$, which is within the USEPA acceptable cancer risk range. Total child resident noncancer risk for potential future surface soil, surface water, and sediment exposure is an HI of 3, which exceeds the USEPA threshold HI of 1. Therefore, a response action is deemed necessary.

1.4 DESCRIPTION OF THE SELECTED REMEDY. There are six OUs at MCLB, Albany, and OU 4 is the fifth of the six OUs to have completed RODs. The completed RODs for OUs 1, 2, 3 and 5 address surface and subsurface soil, surface water, and sediment. Groundwater will be addressed under a continuing basewide investigation within OU 6 and is the principal potential threat remaining at MCLB, Albany. This OU is currently in the remedial investigation (RI) phase.

A No Action (NA) remedy was selected for PSCs 10, 12, 13, and 22. Under this alternative, no treatment, containment, or additional restricted access is planned for these PSCs. The selected remedy for PSC 6 is Land-Use Controls (LUCs) as outlined in the Land-Use Control Implementation Plan (LUCIP), presented in Appendix B of the ROD. The LUCIP for PSC 6 has been developed for the protection of human health and the environment under existing and potential future conditions.

The LUCIP will prohibit residential development within the drainage ditch and will require the evaluation of the risk to the public and environment and/or grading or covering the drainage ditch if residential housing is ever constructed in the ditch. The term "LUCIP," as required by recent USEPA Region IV policy, is equivalent to the term "institutional control plan," which has been used in previous MCLB, Albany decision documents.

Also required by recent USEPA policy is the development of a Land-Use Control Assurance Plan (LUCAP). The LUCAP agreed to by the USEPA and MCLB, Albany sets in place basewide periodic site inspection, condition certification, and agency notification procedures.

These procedures are designed to ensure the continued maintenance by MCLB, Albany personnel of those site-specific LUCs deemed necessary for future protection of human health and the environment. A fundamental premise underlying execution of

that agreement was that through the Navy's compliance with the procedures, reasonable assurances would be provided to USEPA as to the permanency of the remedy to be selected in reliance upon the use of specific LUCs.

Although the terms and conditions of the LUCAP are not specifically incorporated or made enforceable herein by reference, it is understood and agreed by the Navy and USEPA that the permanence of the contemplated remedy reflected herein shall be dependent upon the Base's substantial good-faith compliance with the specific LUC maintenance commitments reflected therein. Should such compliance not occur or should the LUCAP be terminated, it is understood that the protectiveness of the remedy concurred may be reconsidered and that additional measures may need to be taken to adequately ensure necessary future protection of human health and the environment. If the property is excessed by the Federal Government, the Navy will pursue deed restrictions on the area encompassed by PSC 6, unless it is determined at that time that the property is suitable for unrestricted use.

1.5 STATUTORY DETERMINATIONS. The final response actions selected for OU 4 address the surface and subsurface soil, surface water, and sediment. Specifically, the final response for PSCs 10, 12, 13 and 22 is NA because no remedial action is necessary to protect human health or the environment.

The final response action for PSC 6 requiring the implementation of LUCs will be protective of human health and the environment. The response action at PSC 6 complies with Federal and State requirements that are legally applicable or relevant and appropriate to the response action, and are cost effective.

The remedy at PSC 6 will allow hazardous substances to remain on site in PSC 6 surface soil, surface water, and sediment above health-based levels. Therefore, a review will be conducted within 5 years to ensure that this remedy continues to provide adequate protection of human health and the environment.

1.6 SIGNATURE AND SUPPORT AGENCY ACCEPTANCE OF THE REMEDY

L. P. Cole

Signature Larry P. Cole
Colonel
Commanding Officer, MCLB, Albany

990209

Date

2.0 DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND DESCRIPTION. MCLB, Albany is an active facility occupying 3,579 acres east-southeast of the city of Albany, Georgia (Figure 2-1). Land bordering MCLB, Albany, to the south, east, and northeast is primarily agricultural or recreational open space. Most of the land to the northwest and west of the base is residential and commercial.

MCLB, Albany currently serves as a military logistics center, controlling the acquisition, storage, maintenance, and distribution of combat and support material for the Marine Corps. In addition, the base is used for military training and other functions as directed by the Commandant of the Marine Corps.

PSC 10. PSC 10 (DMA) is located on the southeastern side of Broom Boulevard (Figure 2-2). The DMA (Building 2200) consists of several buildings (approximately 450,000 total square feet) and maintenance areas, all involved in the maintenance and refurbishment of military vehicles. The area between the buildings is covered by a concrete slab with a relatively uniform thickness of 8 inches. The surface area covered by concrete is approximately 45 acres. The entire 45-acre area is fenced, and access is restricted.

PSC 22. PSC 22 (DMA Old 90-Day Storage Area) is located within the fenced area of the DMA (PSC 10) along its southwest side (Figure 2-3). PSC 22 consists of a metal-fabricated roofed shed approximately 30 feet by 180 feet in dimension. The sides of the shed are not enclosed; however, access is limited by a chain-link fence fixed to the pillars of the roof. The floor of the shed is concrete.

PSC 13. PSC 13 (IWP) carries industrial wastes from the DMA to the IWTP (Figure 2-4). The pipeline is gravity-drained. As such, the depth of the pipeline varies from approximately 6 feet below land surface (bls) on the west side of the DMA to 12 feet bls just before entering the IWTP. The diameter of the pipeline varies from 6 inches (west side of DMA) to 12 inches just before entering the IWTP.

PSC 12. PSC 12 (IWTP) is located at the intersection of Broom Boulevard and West Matthews Boulevard (Figure 2-5). In 1957, a gravity separator and 25,000-gallon holding tank were installed at the present IWTP site for partial waste treatment prior to discharge to the industrial discharge drainage ditch. By 1977, the IWTP was constructed and in operation, treating the waste stream for metals and pH stabilization.

A Resource Conservation and Recovery Act (RCRA) corrective action was implemented at the IWTP as required in MCLB, Albany's Hazardous Waste Facility Permit. In compliance with the permit, a six-well pump-and-treat remedial system is currently in operation at PSC 12 to address chlorinated volatile organic compounds (VOCs) and inorganic analytes detected in the groundwater. The first recovery well in the system began groundwater extraction in 1990.

PSC 6. PSC 6 (Industrial Discharge Drainage Ditch and Sanitary Sewer) consists of the industrial discharge drainage ditch that runs from the IWTP to the Marine Canal, and the sanitary sewer line that runs from the IWTP to the Domestic Wastewater Treatment Plant (DWTP) (Figure 2-6). The industrial discharge drainage ditch is a man-made drainage canal that originates at Covella Pond in the central

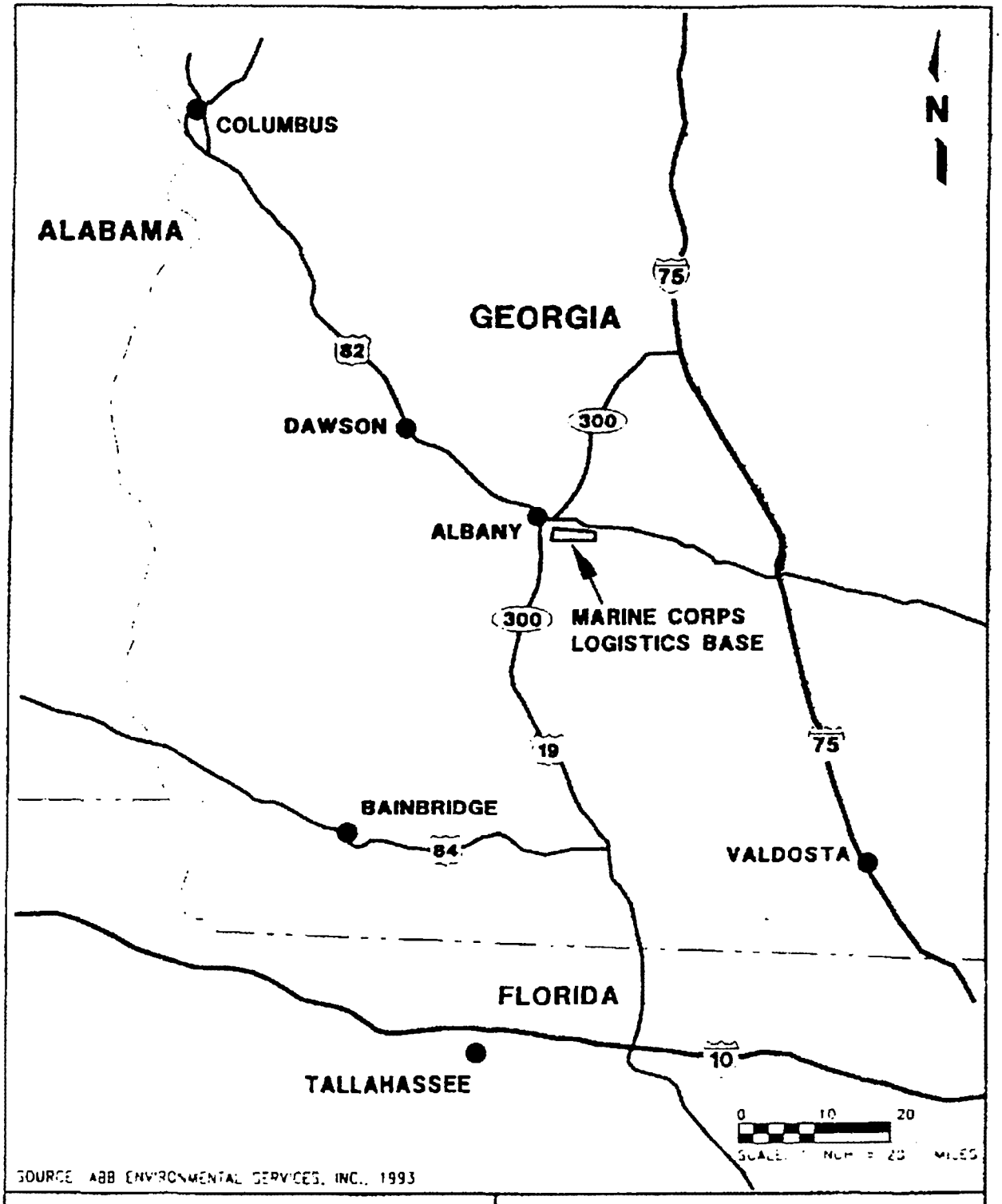
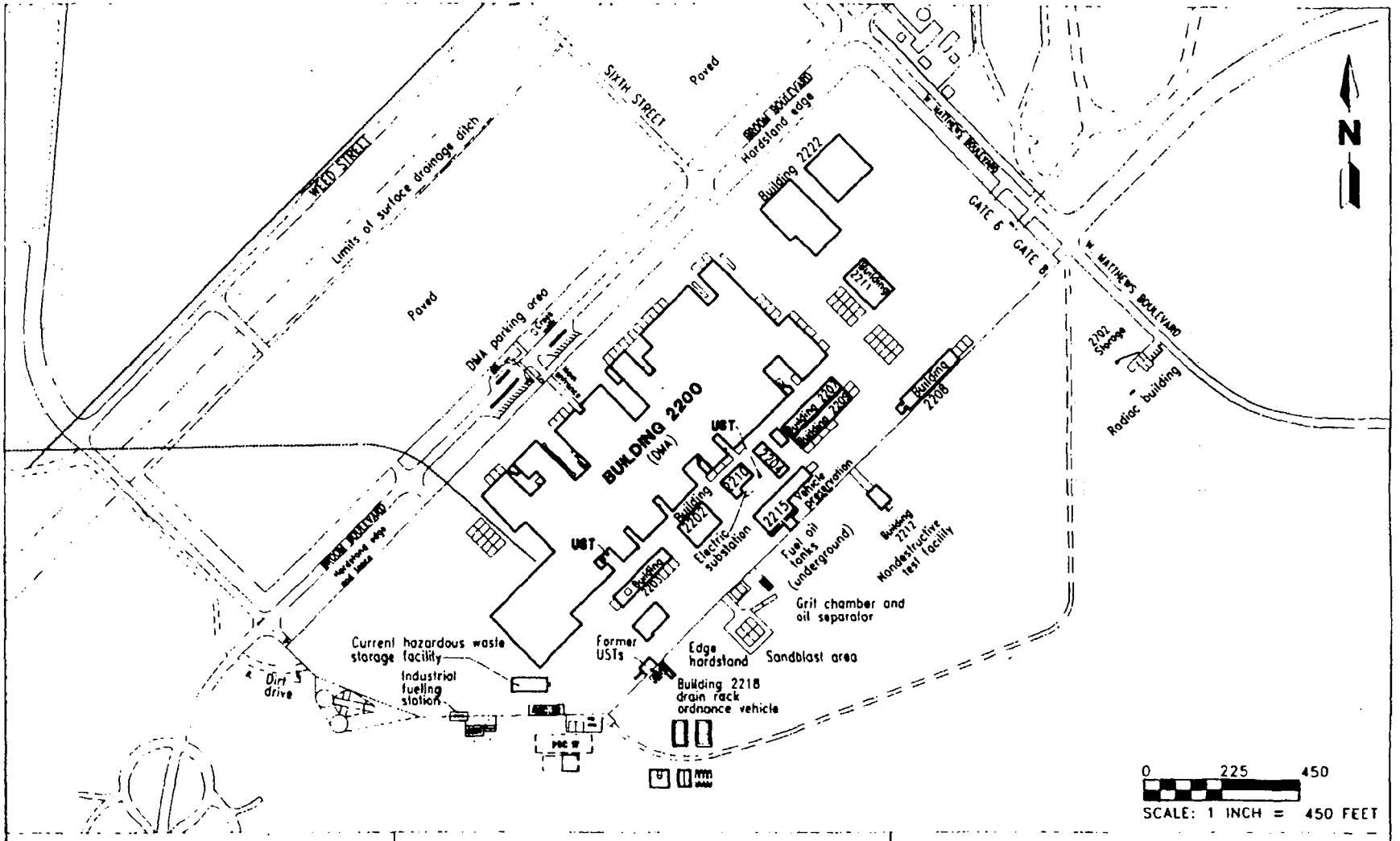


FIGURE 2-1
VICINITY MAP

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA



LEGEND

UST ■ Underground storage tank

Potential Source of Contamination (PSC) 10 study area

FIGURE 2-2
PSC 10
DEPOT MAINTENANCE AREA (DMA)

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA

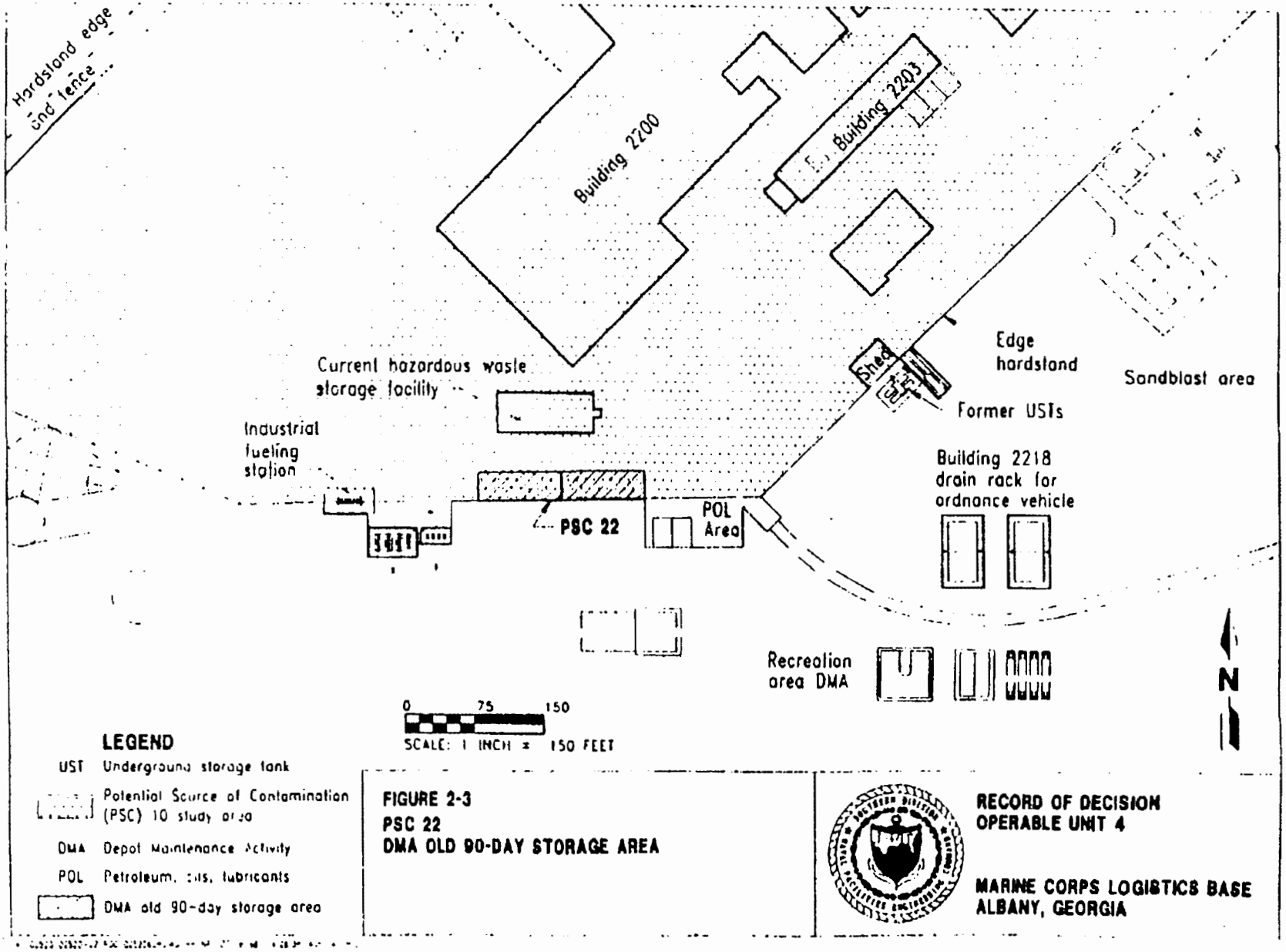


FIGURE 2-3
PSC 22
DMA OLD 90-DAY STORAGE AREA

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA

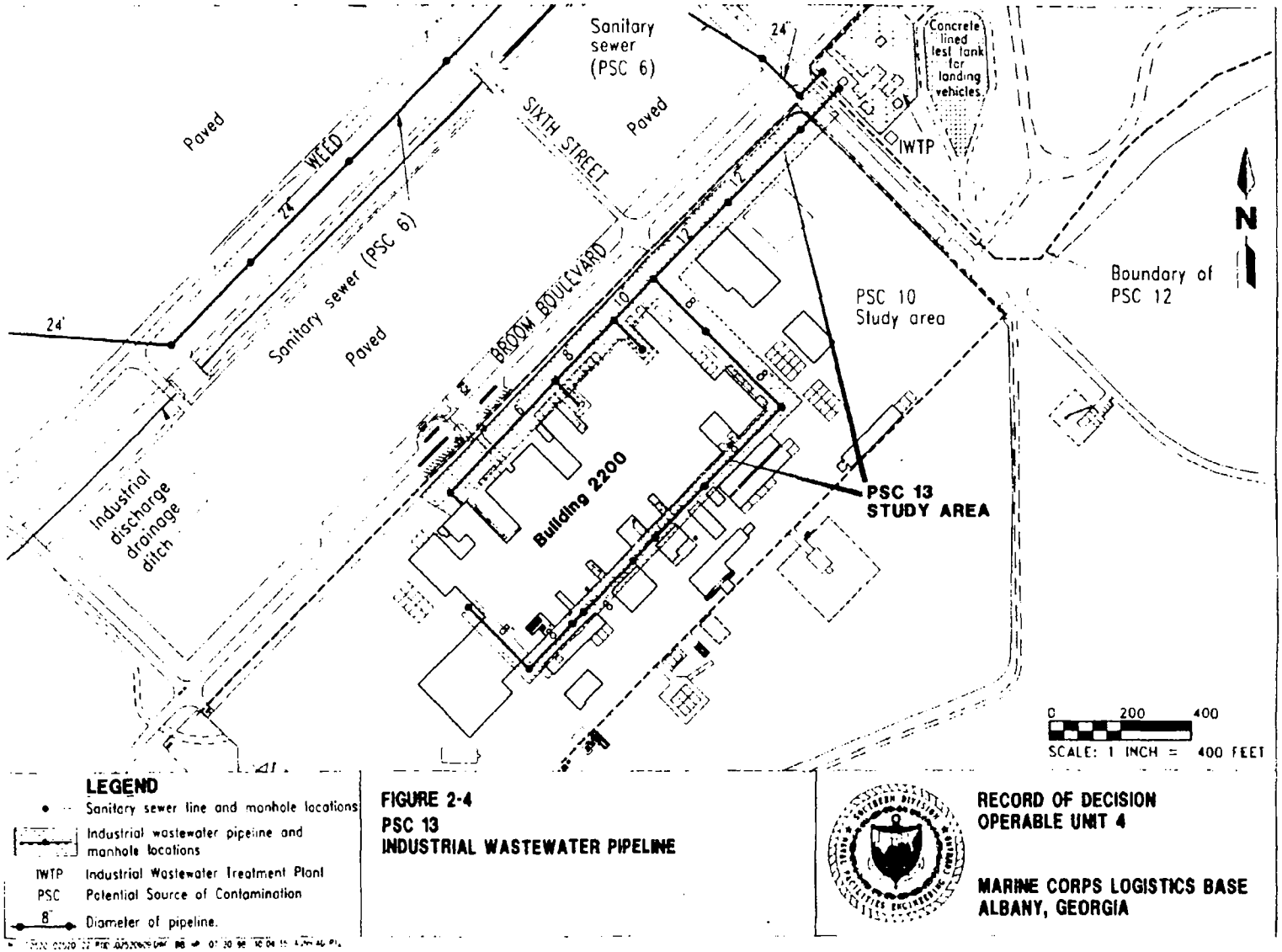


FIGURE 2-4
PSC 13
INDUSTRIAL WASTEWATER PIPELINE

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA

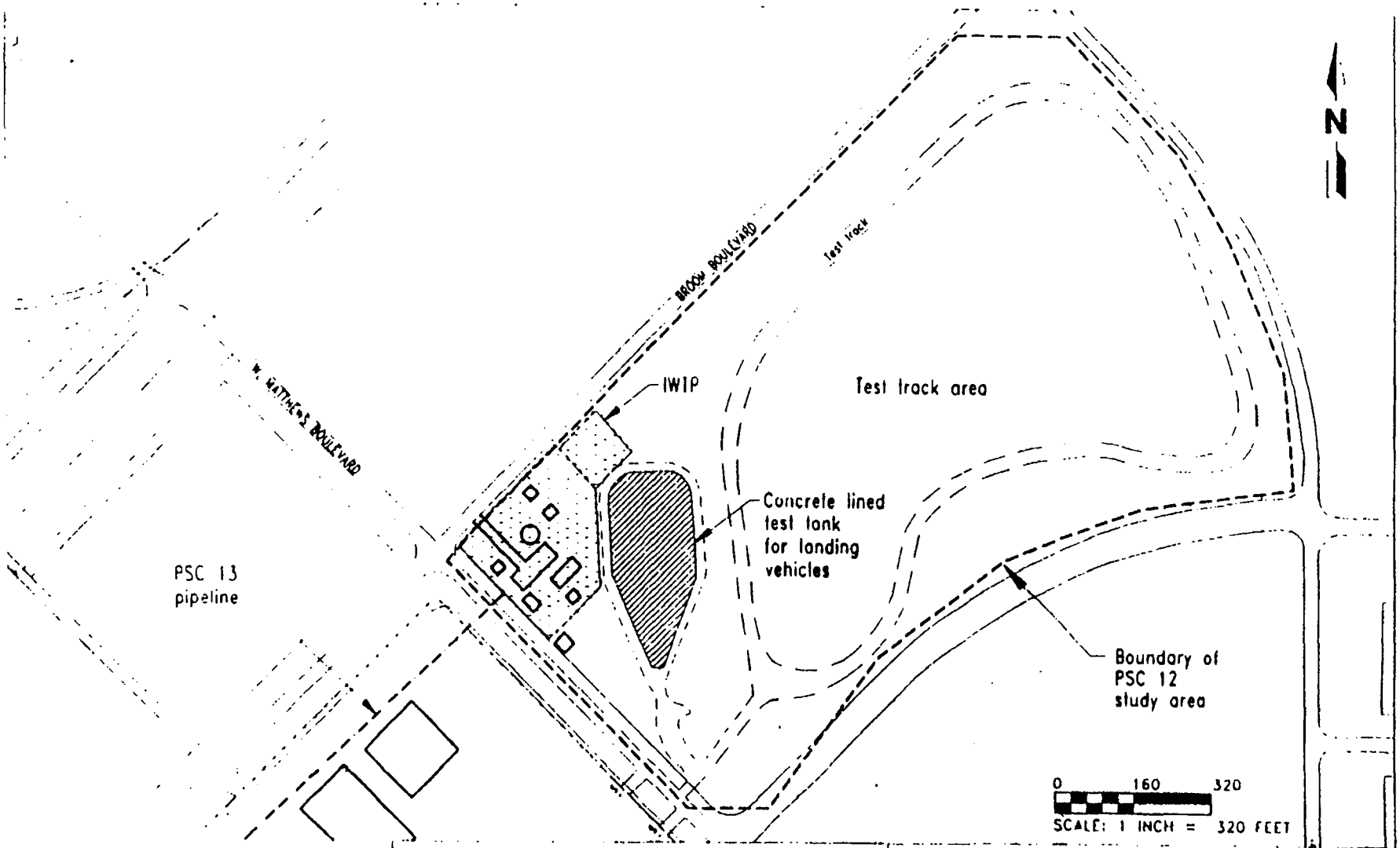
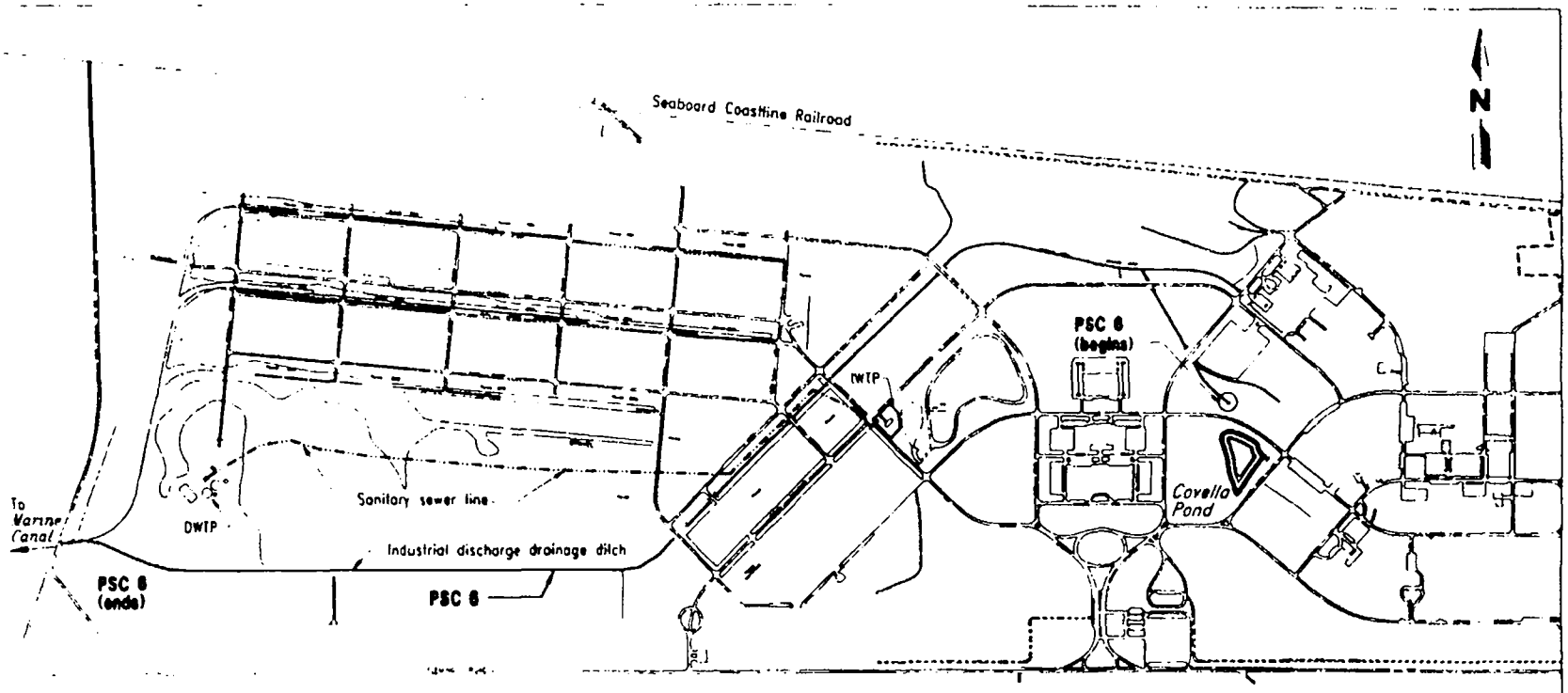


FIGURE 2-5
PSC 12
INDUSTRIAL WASTEWATER TREATMENT PLANT

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA



LEGEND

PSC	Potential source of contamination
DWTP	Domestic wastewater treatment plant
IWTP	Industrial wastewater treatment plant

Source: Marine Corps Logistics Base General Base Development Map and USGS 7.5 Minute Quadrangle

0 1,000 2,000
SCALE: 1 INCH = 2,000 FEET

FIGURE 2-6
PSC 6
INDUSTRIAL DISCHARGE DRAINAGE DITCH
AND SANITARY SEWER LINE

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA

portion of the base and extends downstream to its intersection with West Shaw Road. Typically, water levels through the ditch are less than 1 foot in depth while water levels during storm events can exceed 10 feet in depth. An underflow weir and sedimentation basin are located at the downstream end of the ditch. These structures prevent miscellaneous trash and debris from leaving the base property.

The sanitary sewer line carried the treated effluent of the IWTP approximately 7,500 linear feet to the now inoperable base DWTP. Currently, the effluent bypasses the DWTP and discharges directly into the city of Albany's publicly owned treatment works. The pipeline is a 24-inch-diameter gravity-drained pipeline that varies in depth from approximately 12 feet bls at the IWTP to 40 feet bls at the DWTP.

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES. MCLB, Albany has generated various types of solid and liquid wastes over the years, including hazardous wastes. The hazardous wastes include electroplating wastes containing heavy metals, organic solvents from stripping and cleaning operations, and waste fuel and oil.

The DMA (PSC 10) used solvents and other potential contaminants during routine operations. Typically, when these compounds were no longer usable they were either containerized and stored temporarily at the DMA Old 90-Day Storage Area (PSC 22) before disposal, or were drained into the pipeline (PSC 13) for disposal. Prior to 1957, the effluent from the pipeline was discharged into the industrial discharge drainage ditch (PSC 6). In 1957, minimal treatment was performed prior to discharge to the drainage ditch. In 1977, the IWTP began operation. and effluent from the IWTP was directed into the sanitary sewer line (PSC 6) for additional treatment at the DWTP prior to off-site discharge.

Environmental investigations of OU 4 began in 1985. The following reports describe the results of investigations at OU 4 to date:

- *Initial Assessment Study* (Envirodyne Engineers, 1985);
- *Confirmation Study Verification Step Report* (McClelland Engineers. Inc., 1987);
- *RCRA Facility Investigation Phase One Confirmation Study*(Applied Engineering and Science, Inc., 1989);
- *UST Investigation Building 2200, Shop 712* (Sirrine Environmental Consultants, Inc., 1992);
- *UST Investigation Building 2210* (Roy F. Weston, Inc., 1992);
- *UST Investigation Building 2218* (SEC Donohue, Inc., 1992 and 1993);
- *Remedial Investigation Feasibility Study Workplan, Operable Unit 4* (ABB Environmental Services, Inc. [ABB-ES], 1993);
- *Remedial Investigation and Baseline Risk Assessment Report, Operable Unit 4* (ABB-ES, 1998); and

- *Proposed Plan for Operable Unit 4* (Harding Lawson Associates [HLA], 1998).

2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION The Proposed Plan for OU 4 recommended NA for PSCs 10, 12, 13, and 22, and LUCs for PSC 6. This document was made available to the public in the Information Repository located at the Dougherty County Public Library and in the Administrative Record located at the Environmental Branch Office, Building 5501, MCLB, Albany, Georgia, 31704-1128. The public notice of the Proposed Plan was published in the *Albany Herald* on October 13, 1998, and meeting notices were mailed to the MCLB, Albany Installation Restoration community mailing list. A public meeting was held on October 22, 1998, to present the results of the RI and BRA, the preferred remedy, and to solicit comments from the community. At this meeting, representatives from Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), MCLB, Albany, USEPA Region IV, Georgia Environmental Protection Division (GEPD), and HLA were available to discuss all aspects of OU 4 and the response actions under consideration. The Community Relations Responsiveness Summary is included in Appendix A of this decision document.

2.4 SCOPE AND ROLE OF THE FINAL RESPONSE AT OU 4 MCLB, Albany contains 26 PSCs. Of these PSCs, 14 were in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process, 10 PSCs required preliminary screening activities, and 2 PSCs were addressed under RCRA. The 14 PSCs in the CERCLA process were divided into 5 individual OUs to address surface and subsurface soil, surface water, and sediment. The list below identifies the PSCs within each OU and presents the regulatory status of each.

- OU 1, composed of PSCs 1, 2, 3, and 26 (signed ROD in August 1997)
- OU 2, composed of PSC 11 (signed ROD in September 1996)
- OU 3, composed of PSCs 16 and 17 (signed ROD in August 1997)
- OU 4, composed of PSCs 6, 10, 12, 13, and 22 (Proposed Plan completed in July 1998)
- OU 5, composed of PSCs 8 and 14 (signed ROD in December 1997)
- OU 6, basewide groundwater (currently in RI phase)

The proposed response for OU 4 consists of two remedies: NA for PSCs 10, 12, 13, and 22, and LUCs for PSC 6. Under the NA response, no treatment, containment, or restricted access is required at PSCs 10, 12, 13, and 22 to protect human health and the environment.

LUCs will be implemented at PSC 6. The human health BRA conducted at PSC 6 determined that exposure to surface soil posed an unacceptable risk to a potential future resident. Therefore, LUCs are required to prohibit potential future residential development of PSC 6. The LUCIP for PSC 6 is presented in Appendix B of this ROD and will also become part of MCLB, Albany's Master Plan document. If the property is excessed by the Federal Government, the Navy will pursue deed

restrictions on the areas encompassed by PSC 6, unless it is determined at that time that the property is suitable for unrestricted use.

Groundwater beneath OU 4 will be addressed under a separate and ongoing basewide groundwater investigation, which has been designated as OU 6.

2.5 SUMMARY OF SITE CHARACTERISTICS. This section summarizes the regional geology, hydrogeology, and ecology in the vicinity of MCLB, Albany. The nature and extent of contaminants for OU 4 is presented in Section 2.6. A more detailed presentation of this information is available in the RI/BRA report for OU 4 (ABB-ES, 1998).

Geology. MCLB, Albany is located in the Coastal Plain Physiographic Province, which is made up of layers of sand, clay, sandstone, and limestone. These layers of soil and rock extend to a depth of at least 5,000 feet b1s. Each layer has been identified and named by geologists according to its composition and physical properties.

The soil and rock layers at MCLB, Albany, in descending order, are the clayey overburden, the Ocala Limestone, and the Lisbon Formation. The overburden layer is made up mostly of clay with some silt and sand. The Ocala Limestone is divided into an upper unit and a lower unit. The upper unit is a lime mud or chalk. The lower unit is hard, dense rock that has been dissolved by the movement of water along fractures to form underground caves and springs. The Lisbon Formation is a hard, clayey limestone. These are the soil and rock layers that control the movement of underground water in the first 350 feet bls at MCLB, Albany. Figures 2-7 and 2-8 present a generalized geologic section of the Albany area.

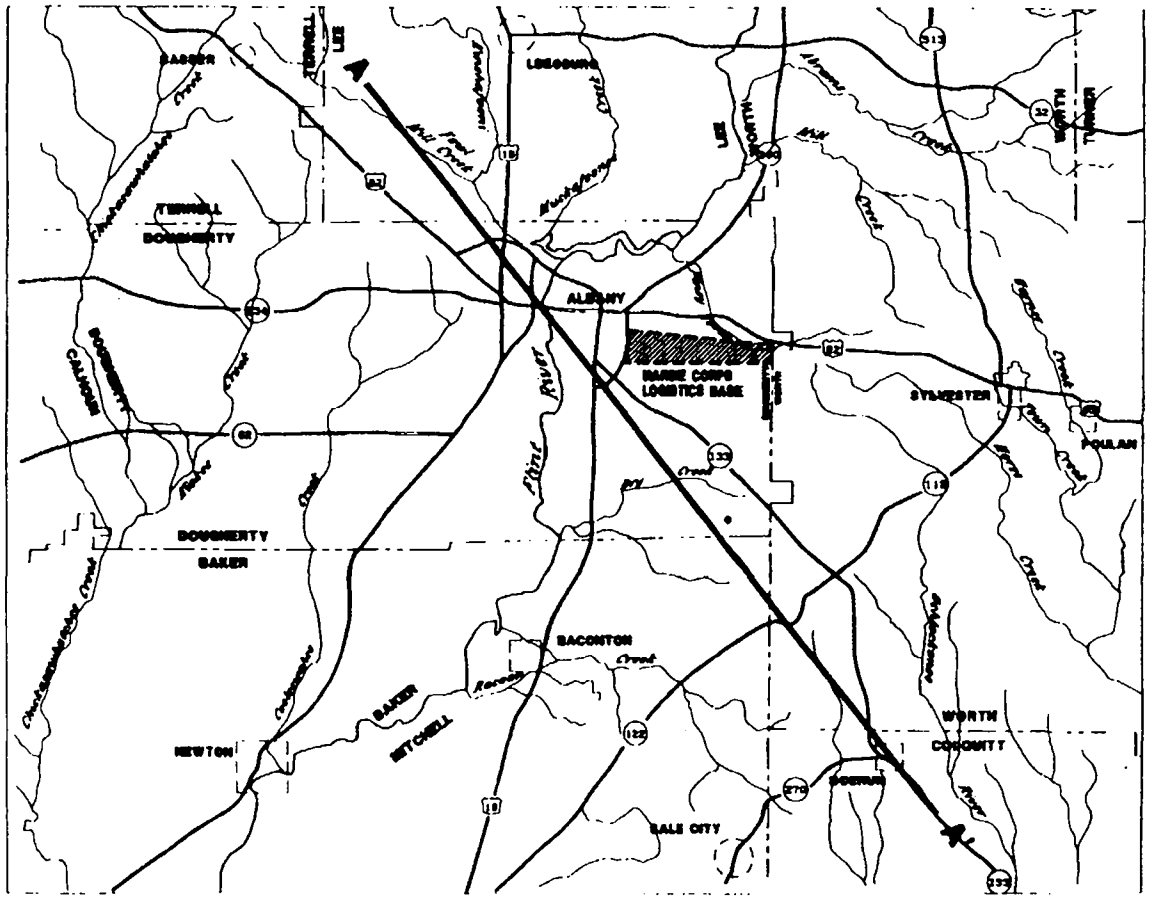
Hydrogeology. Soil and rock layers are also grouped and named according to how water moves through them. Layers that bear water to wells are called aquifers, and layers that cannot bear water are called confining layers. The clayey overburden and the upper unit of the Ocala Limestone are considered together to be a confining layer. The lower unit of the Ocala Limestone is the major water-bearing zone of the Floridan aquifer. The Lisbon Formation forms a confining layer beneath the Floridan aquifer.

The Floridan aquifer is recharged by rainfall that slowly percolates down through the confining units and through sinkholes. Movement of water in the Floridan aquifer is generally west toward the Flint River, where it discharges to the river through springs (Figure 2-9).

Most irrigation wells and household water wells near MCLB, Albany draw water from the Floridan aquifer. City water wells may also draw water from the Floridan aquifer, although most of the city water is produced from deeper aquifers.

Ecology. The majority of forested land in the vicinity of the base is vegetated with longleaf pine flatwoods, the most extensive plant community in the southern coastal plain. Pine flatwoods grow in Florida, Georgia, South Carolina, and North Carolina.

The pine flatwoods habitat commonly found at MCLB, Albany supports diverse plant and animal life, including invertebrates (e.g., insects and worms), reptiles, and



Source: ABB Environmental Services, Inc., 1993, from Hicks and others, 1987

FIGURE 2-7
LOCATION MAP FOR GEOLOGIC SECTION (SHOWN ON FIGURE 2-8)

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA

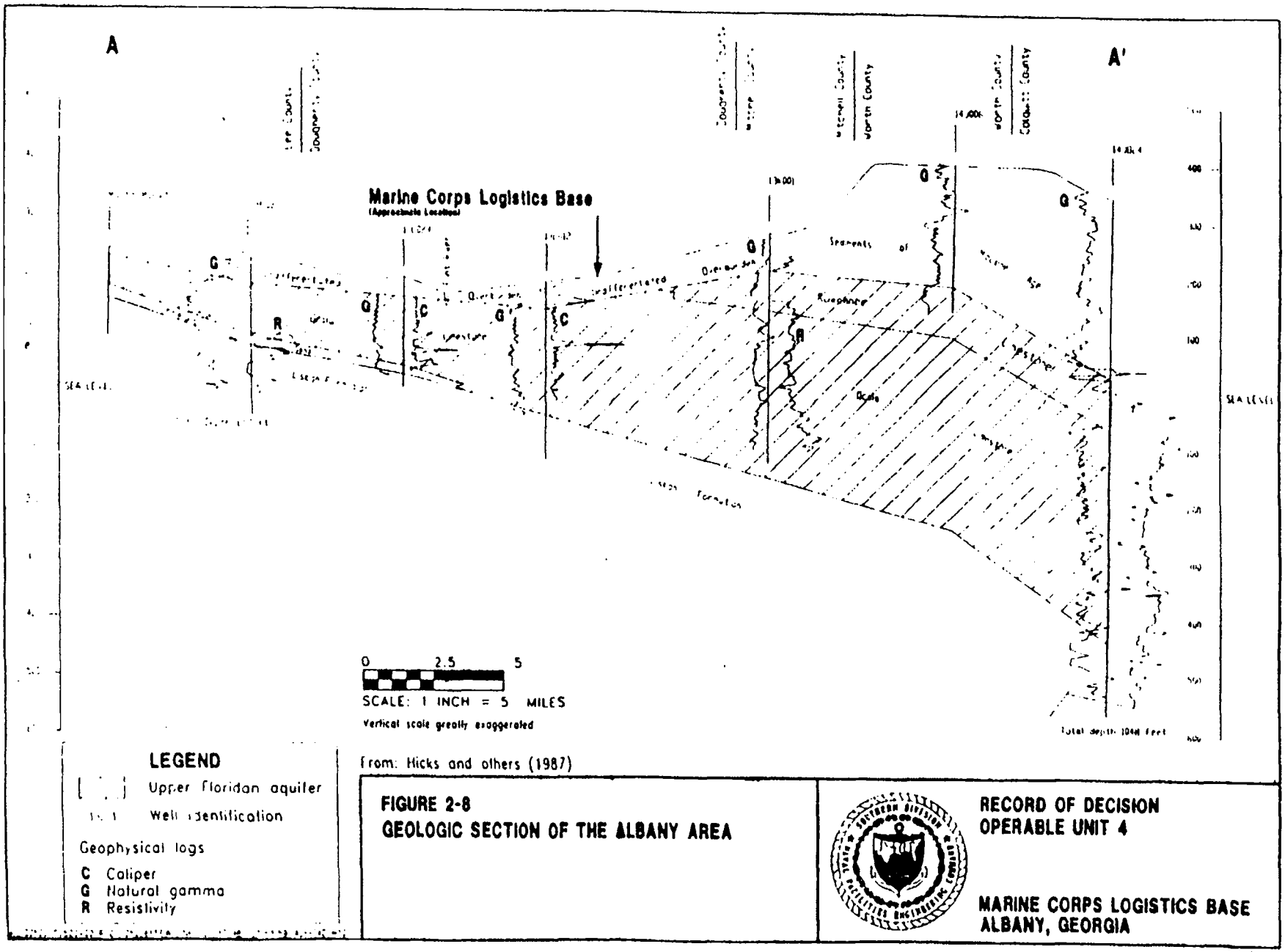
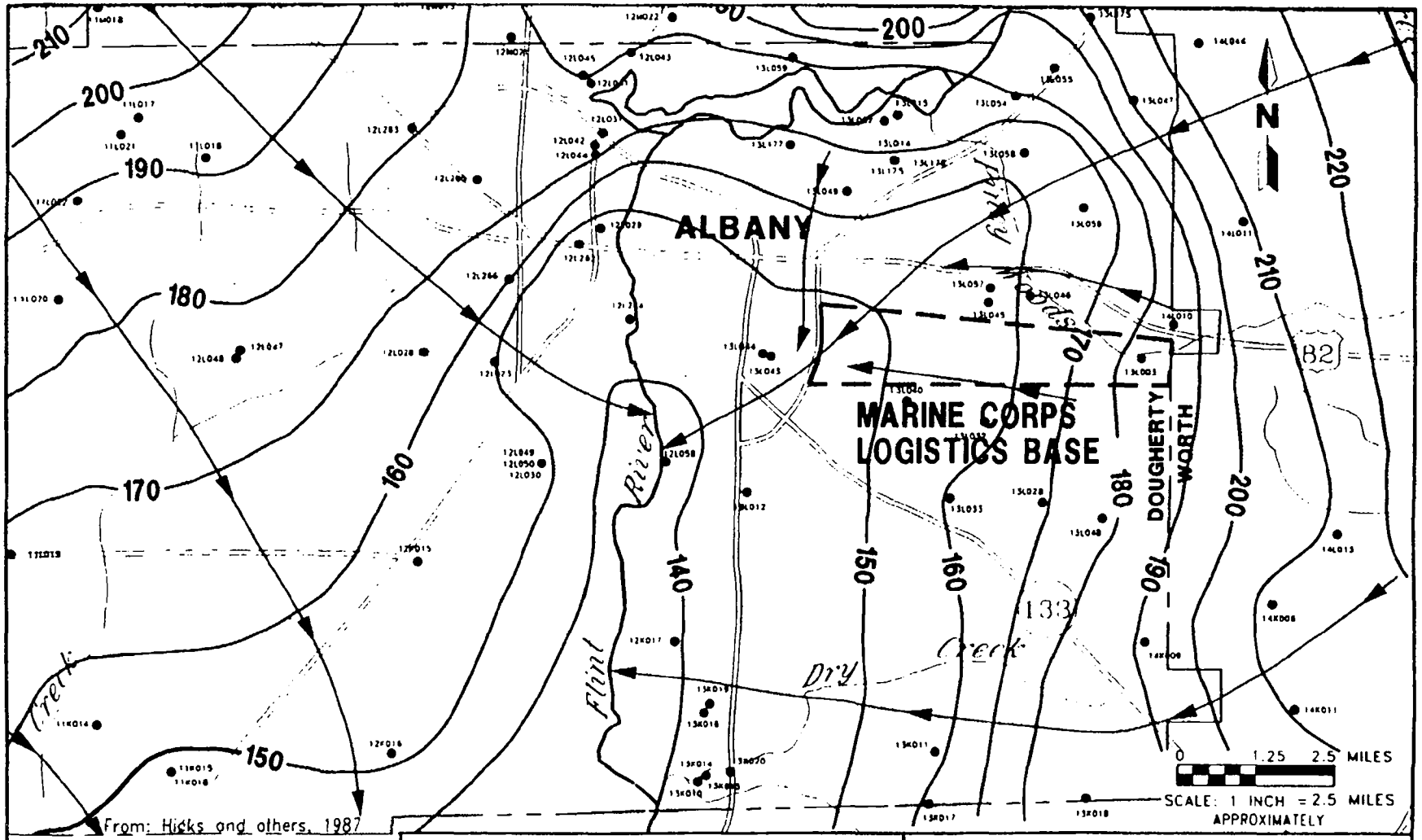


FIGURE 2-8
GEOLOGIC SECTION OF THE ALBANY AREA

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA



LEGEND

— 150 Potentiometric isopleth shows altitude at which water would have stood in tightly cased wells. Contour interval is 10 feet. Datum is National Geodetic Vertical Datum of 1929.

Direction of groundwater flow

Well location

FIGURE 2-9
POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER IN THE ALBANY, GEORGIA, AREA NOVEMBER 1985

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA

amphibians. A number of mammals inhabit the pine flatwoods community, although no mammal is exclusive to this habitat. Pine flatwoods also provide habitat for a variety of birds, including seed- and insect-eaters, flycatchers, and aerial predators (e.g., owls and hawks).

The presence of two rare and threatened species has been confirmed at the base. The American alligator (*Alligator mississippiensis*), now classified as threatened, has been documented in wetland habitats at the base; this semiaquatic species is present throughout the southeast. Bachman's sparrow (*Aimophila aestivalis*), a State and federally listed "rare" species, is also a possible resident of the dry, open pine forests at MCLB, Albany; this large, secretive sparrow is a year-round resident of southern Georgia. The red-cockaded woodpecker (*Picoides borealis*), a federally listed endangered species, occurs almost exclusively within this pine flatwoods habitat; however, there are no known records for this species at MCLB, Albany.

2.6 NATURE AND EXTENT OF CONTAMINANTS. The nature, extent, and concentration of hazardous substance contamination at OU 4 was studied during the RI conducted between 1993 and 1994. Concentrations of analytes detected by laboratory analyses are reported in micrograms per kilogram or milligrams per kilogram (mg/kg) for soil samples and micrograms per liter for water samples. For instance, a concentration of 8,600 mg/kg for iron means that 8,600 milligrams of iron are present in each kilogram of soil. A kilogram is a unit measure of weight equal to about 2.2 pounds. One thousand micrograms equal 1 milligram, 1,000 milligrams equal 1 gram, and 1,000 grams equal 1 kilogram. A liter is a unit measure of volume roughly equal to a quart.

Source of Contamination. The source of contaminants at PSC 10 appears to be discharges that may have occurred at locations within the DMA. The RI investigated the potential for releases of contaminants onto paved surfaces and subsequent runoff into the industrial discharge drainage ditch. Contaminants discharged to unpaved surfaces or to subsurface soil (e.g., from leaking floor drains or pipelines) would likely migrate through the vadose zone, potentially affecting the groundwater. In paved areas, this transport would be governed by gravity drainage of the host fluid (wastewater). In unpaved areas, infiltration of precipitation water would accelerate this migration.

The source of contaminants at PSC 22 appears to be releases of contaminants from the drums onto the paved surfaces and subsequent runoff into the industrial discharge drainage ditch. Analytical results further indicate that these releases did migrate into the subsurface soil (through possible cracks in the concrete floor), thereby impacting groundwater in the area by leaching from precipitation.

PSC 13 consists of an underground pipe-line that carries liquid industrial wastes from the DMA to the IWTP. The results of a routine maintenance inspection indicated several cracks at various locations along the pipeline. Upon further inspection it was determined that releases from the pipeline had occurred; however, restoration of the pipeline was performed by installing a resin-impregnated, flexible tube into the, existing pipeline to prevent continuing releases. Soil immediately beneath the pipeline in the vicinity of releases may have been affected. Because the pipeline runs underneath the concrete of the DMA, it is unlikely that these contaminants leached to the groundwater by infiltration

of precipitation. However, releases could have been sufficient in volume for the contaminants to affect the groundwater in the area.

PSC 12 consists of a limited area surrounding the IWTP. No areas within the boundaries of the IWTP were investigated. The IWTP has been in operation since 1977 and has been treating industrial wastes from the DMA since that time. The IWTP was designed as a primary treatment facility (for pretreatment) and currently operates in that manner. A groundwater remediation system consisting of groundwater extraction and discharge into the IWTP is currently in operation.

Several potential sources for the constituents observed in the PSC 6, industrial discharge drainage ditch, are known. These are primarily the covered DMA areas that drain storm water runoff to PSC 6. Prior to 1957, the effluent from the pipeline (PSC 13) was directed into an overflow weir, which subsequently was discharged into the industrial discharge drainage ditch. However, these sources do not account for the constituents observed upstream of these areas.

2.6.1 Contaminant Delineation at OU 4 This subsection is a summary of contaminants detected at OU 4, listed by PSC.

PSC 10. Sampling results for PSC 10 subsurface soil are presented in Table 2-1. VOCs were detected in the unsaturated subsurface soil (approximately 45 feet bls.) at three locations. However, the distribution of VOCs at this depth is attributed to partitioning of compounds into groundwater during high water table conditions onto the highly organic, clayey soil that is present at the base of the overburden. The presence of these compounds in the groundwater is being addressed under the ongoing basewide groundwater investigation, designated as OU 6. The detection of one semivolatile organic compound (SVOC) at approximately 45 feet bls is not believed to be associated with a contaminant release in this area. Instead, detection of this compound is interpreted to be a sampling and/or analysis artifact. The absence of this compound in the shallow subsurface soil samples further supports this interpretation. Pesticide and polychlorinated biphenyl (PCB) concentrations were below method detection limits in all samples. In accordance with USEPA Region IV guidance, inorganic analytes with concentrations that exceeded twice the average of detected concentrations in the background subsurface soil samples have been included in the human health risk assessment (HHRA).

PSC 22. Sampling results for PSC 22 subsurface soil are presented in Table 2-2. Results of the laboratory organic analyses indicated the presence of VOCs, SVOCs, pesticides, and PCBs in the samples collected between 2 and 12 feet bls and VOCs, SVOCs, and pesticides in the samples collected at approximately 45 feet bls. Two of the detected VOCs, acetone and methylene chloride, are believed to be sampling and/or analysis artifacts. This conclusion is supported by the random distribution of the detections for these compounds and the lack of historical records indicating that these compounds were stored at PSC 22. The VOCs toluene, trichloroethene (TCE), 1,2-dichloroethene (1,2-DCE) (total), and 1,2-dichloroethane (1,2-DCA) were detected more frequently and at higher concentrations in the samples collected at the overburden-limestone interface, which is an intermittently unsaturated zone, than the samples collected between 2 and 12 feet bls. Further, because 1,2-DCE (total) and 1,2-DCA are degradation products of TCE and trichloroethane (TCA), it is likely that they were never released and are present only as a byproduct of the degradation of TCE and TCA. The distribution of these compounds in the samples collected at the overburden-limestone interface

Table 2-1
Analytes Detected in Subsurface Soil, PSC 10

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Sample with Maximum Concentration
Volatile Organic Compounds (µg/kg)				
1,2-Dichloroethene (total)	2/8	3 to 4	4	10B0440
Acetone	2/8	8 to 12	10	10B0140
Carbon disulfide	3/8	2 to 3	2	10B0440
Methylene chloride	2/8	3 to 6	5	10B0140
Toluene	1/8	2 to 2	2	10B0140
Trichloroethene	2/8	32 to 58	45	10B0440
Semivolatile Organic Compounds (µg/kg)				
bis(2-Ethylhexyl)phthalate	1/8	70 to 70	70	10B0440
Pesticides and PCBs (µg/kg)				
Concentrations were below detection limits in all PSC 10 subsurface soil samples.				
Inorganic Analytes mg/kg)				
Aluminum	8/8	2,.060 to 24.900	11,325	10B0210
Antimony	2/8	4.8 to 5.8	5.3	10B0240
Arsenic	7/8	0.47 to1.1	0.71	10B0400
Barium	8/8	3.9 to 936	198.3	10B0240
Beryllium	4/8	0.14 to 9	6.26	10B0240
Cadmium	4/8	0.76 to 19.7	11.8	10B0240
Calcium	8/8	241 to 3.990	1,586	10B0140
Chromium	8/8	4.2 to 68.6	19.3	10B0210
Cobalt	3/8	63.4 to 123	84.2	10B0240
Copper	8/8	2.1 to 46.4	18.2	10B0140
Iron	8/8	1,160 to 61,200	27,456	10B0440
Lead	8/8	2.5 to 40.4	12.8	10B0140
Magnesium	8/8	50.1 to 868	320.5	10B0440
Manganese	8/8	14.1 to 10.000	2.842.5	10B0240
Mercury	3/8	0.16 to 0.21	0.18	10B0440
Nickel	3/8	51 to 117	86	10B0240
Potassium	4/8	96.5 to 1,030	619.1	10B0140
Sodium	8/8	145 to 258	196	10B0240
Thallium	3/8	1.5 to 2	1.7	10B0440
Vanadium	8/8	6.7 to 448	112.1	10B0210
Zinc	8/8	3.5 to 208	74.9	10B0140

Notes: PSC = potential source of contamination.
µg/kg = micrograms per kilograms.
PCB = polychlorinated biphenyl.
Mg/kg = milligrams per kilogram.

Table 2-2
Analytes Detected in Subsurface Soil, PSC 22

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Sample with Maximum Concentration
Volatile Organic Compounds (µg/kg)				
1,2-Dichloroethene	1/19	4 to 4	4	22B0230
1,2-Dichloroethene (total)	2/19	6 to 16	11	22B0645
2-Butanone	2/19	2 to 4	3	22B0101
Acetone	8/19	3 to 33	11	22B0101
Methylene chloride	2/19	3 to 4	4	22B0101
Toluene	4/19	1 to 5	2	22B0875
Trichloroethene	5/19	6 to 20	10	22B0444
Semivolatile Organic Compounds (µg/kg)				
Di-*n*-butylphthalate	2/19	53 to 280	167	22B0704
Diethylphthalate	1/19	43 to 43	43	22B0504
bis(2-Ethylhexyl)phthalate	2/19	54 to 85	70	22B0875
Pesticides/PCBs (µg/kg)				
4.4'-DDD	1/20	0.99 to 0.99	0.99	22B0504
4.4'-DDE	2/20	0.31 to 2.7	1.51	22B0504
Methoxychlor	5/20	0.85 to 23	14.97	22B0540
alpha-Chlordane	4/20	0.4 to 0.79	0.55	22B0704
gamma-Chlordane	5/20	0.26 to 1.1	0.64	22B0504
Aroclor-1248	1/20	40 to 40	40	22B0504
Inorganic Analytes (mg/kg)				
Aluminum	19/19	2,550 to 24,100	7,651	22B0230
Antimony	1/19	4.2 to 4.2	4.2	22B0140
Arsenic	17/19	0.13 to 3	1.04	22B0205
Barium	19/19	1.3 to 465	34.5	22B0540
Beryllium	6/19	0.16 to 7.9	2.96	22B0540
Cadmium	9/19	0.17 to 13.3	2.65	22B0540
Calcium	19/19	124 to 281,000	15,629	22B0140
Chromium	19/19	2.5 to 23.3	11.7	22B0205
Cobalt	6/19	1.3 to 82.4	26.4	22B0230
Copper	18/19	2.1 to 28.6	7.3	22B0230
Iron	19/19	174 to 97,200	15,781	22B0230
Lead	19/19	1.2 to 28.5	6.3	22B0540
Magnesium	19/19	35.3 to 962	186.3	22B0140
Manganese	19/19	2 to 6,770	492.9	22B0540
Mercury	6/19	0.03 to 0.15	0.06	22B0540

See notes at end of table.

Table 2-2 (Continued)
Analytes Detected in Subsurface Soil, PSC 22

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Sample with Maximum Concentration
Inorganic Analytes (mg/kg) (continued)				
Nickel	6/19	1.6 to 65.6	25.7	22B0230
Potassium	10/19	81 to 545	228.7	22B0540
Selenium	1/19	0.19 to 0.19	0.19	22B0804
Sodium	19/19	123 to 238	199	22B0140
Thallium	3/19	0.22 to 1.2	0.62	22B0540
Vanadium	19/19	12 to 84.9	51.6	22B0402
Zinc	19/19	2.3 to 136	20.5	22B0540

Notes: PSC = potential source of contamination.
µg/kg = micrograms per kilogram.
PCB = polychlorinated biphenyl.
DDD = dichlorodiphenyldichloroethane.
DDE = dichlorodiphenylchloroethene.
mg/kg = milligrams per kilogram.

is interpreted to be the result of partitioning of the compounds in the groundwater during high water table conditions onto the highly organic, clayey soils that are present at the base of the overburden. The presence of these compounds in the groundwater is being investigated under OU 6 Basewide Groundwater.

Analytical results also indicated the presence of SVOCs, which may be attributable to laboratory contamination. This interpretation is supported by the random distribution of the detections and the lack of historical records indicating that these compounds were stored at PSC 22. Pesticides were detected randomly and typically only in the samples collected between 2 and 12 feet b1s. The detection of pesticides is interpreted to be the result of historical routine application of pesticides at the facility and not due to a release of these compounds.

The concentration of inorganic analytes that exceeded twice the average of detected concentrations in the background subsurface soil samples is included in the HHRA, in accordance with USEPA Region IV guidance.

PSC 13. Sampling results for PSC 13 subsurface soil are presented in Table 2-3. Analytical results indicated the presence of VOCs, SVOCs, pesticides, and PCBs at varying depths. Of the 11 VOCs present in subsurface soil samples, three of the VOCs (acetone, 2-butanone, and 2-hexanone) are believed to be sampling and/or analysis artifacts.

Two of the VOCs (benzene and xylenes [total]) are common constituents in fuel products. These compounds were detected in only one sample. This sample was collected in the area of a former underground storage tank (UST) not associated with PSC 13. The remaining six VOCs (chlorinated solvents) typically occurred in the samples at the overburden-limestone interface for each location. Samples collected from the invert of the pipeline and between 2 and 12 feet US did not contain these compounds, with the exception of one sample. This suggests that the observed compounds in the samples at the overburden-limestone interface could not have originated from the shallow and intermediate sample depths in the areas investigated. The presence of TCE and tetrachloroethene in the samples collected at the overburden limestone interface, which is an intermittently unsaturated area, is interpreted to be the result of these compounds partitioning from the groundwater during high water table conditions onto the highly organic, clayey soils that are present at the base of the overburden. The presence of these compounds in the groundwater is being investigated under OU6 Basewide Groundwater.

Of the seven SVOCs detected, three are phthalate esters that were present in samples collected above the invert of the pipeline. This indicates that the phthalate esters are not associated with releases from the pipeline but may be attributed to sampling artifacts. The remaining SVOCs are common constituents in fuel- and waste-oil products. These compounds were detected in a single sample, which was collected in the area of a former UST. Therefore, it is likely that detection of these compounds in the subsurface soil is the result of a release from the UST and not associated with a release from PSC 13.

The detection of pesticides in PSC 13 subsurface soil samples are in low concentrations and randomly distributed. These pesticides are likely the result of routine pesticide application procedures at the site. The detection of two

Table 2-3
Analytes Detected in Subsurface Soil, PSC 13

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Sample with Maximum Concentration
Volatile Organic Compounds(µg/kg)				
1,1-Dichloroethane	1/53	6 to 6	6	13B0830
1,1-Dichloroethene	2/53	9 to 54	32	13B0330
1,2-Dichloroethane	1/53	4 to 4	4	13B0830
1,2-Dichloroethene (total)	3/53	23 to 280	133	13B0135
2-Butanone	3/53	3 to 14	7	13B0925
2-Hexanone	1/53	30 to 30	30	13B0925
Acetone	19/53	4 to 490	45	13B02304
Benzene	1/53	16 to 16	16	13B0925
Tetrachloroethene	1/53	18 to 18	18	13B0330
Trichloroethene	8/53	3 to 940	256	13B0330
Xylenes (total)	1/53	48 to 48	48	13B0925
Semivolatile Organic Compound (µg/kg)				
2-Methylnaphthalene	1/54	1,300 to 1,300	1,300	13B0915
Di-*n*-butylphthalate	12/54	240 to 800	585	13B02835
Di-*n*-octylphthalate	3/54	58 to 63	61	13B1025
Flourene	1/54	53 to 53	53	13B0915
Naphthalene	1/54	280 to 280	280	13B0915
Phenanthrene	1/54	150 to 150	150	13B0915
bis(2-Ethylhexyl)phthalate	21/54	50 to 5,300	1,259	13B1025
Pesticides and PCBs (µg/kg)				
4,4'-DDD	1/53	0.96 to 0.96	0.96	13B0435
4,4'-DDE	4/53	0.33 to 0.89	0.56	13B0104
Aldrin	3/52	1.1 to 2.8	1.7	13B1104
Endrin	1/52	0.5 to 0.5	0.5	13B0915
Heptachlor	1/53	1.1 to 1.1	1.1	13B0715
Methoxychlor	15/54	1 to 8.1	2.6	13B0415
alpha-Chlordane	3/53	1.2 to 10	6.4	13B0435
gamma-Chlordane	6/53	0.29 to 13	4.62	13B0435
Aroclor-1248	1/53	37 to 37	37	13B0435
Aroclor-1260	1/53	21 to 21	21	13B0204
Inorganic Analytes (mg/kg)				
Aluminum	54/54	1,780 to 20,700	10,946	13B0330
Antimony	5/54	3 to 5.8	4.3	13B1015
Arsenic	45/54	0.15 to 5	1.53	13B02410

See notes at end of table.

Table 2-3 (Continued)
Analytes Detected in Subsurface Soil, PSC 13

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Sample with Maximum Concentration
Inorganic Analytes (mg/kg) (continued)				
Barium	54/54	1.2 to 1.200	75.4	13B02735
Beryllium	30/54	0.21 to 11.1	1.76	13B03030
Cadmium	34/54	0.17 to 75.6	5.96	13B1125
Calcium	54/54	85.3 to 3,880	701.5	13B02735
Chromium	54/54	2.5 to 85.3	16.9	13B02604
Cobalt	23/54	0.49 to 477	52.39	13B1125
Copper	44/54	1.3 to 75.3	12.3	13B1125
Iron	54/54	984 to 95,500	29,446	13B1125
Lead	54/54	1 to 172	18.7	13B1025
Magnesium	54/54	30 to 1,270	207.6	13B0330
Manganese	54/54	1.7 to 22,300	1,331.2	13B1125
Mercury	11/54	0.03 to 0.32	0.14	13B0535
Nickel	22/54	2.1 to 398	55	13B1125
Potassium	30/54	90 to 1,450	347.6	13B0330
Selenium	20/53	0.2 to 3.6	1.07	13B02410
Silver	8/35	0.46 to 1.3	0.66	13B0230
Sodium	40/54	15.8 to 300	194.7	13B0330
Thallium	15/54	0.17 to 10.6	1.91	13B0535
Vanadium	54/54	11.2 to 272	84	13B1125
Zinc	38/54	2.1 to 528	49.4	13B1125

Notes: PSC = potential source of contamination.
µg/kg = micrograms per kilogram.
PCB = polychlorinated biphenyl.
DDD = dichlorodiphenyldichloroethane.
DDE = dichlorodiphenyldichloroethene.
mg/kg = milligrams per kilogram.

PCBs is unclear. However, their detection is interpreted to be the result of historical use of waste oils for dust suppression at the site rather than a release of contaminants into the subsurface soil.

In accordance with USEPA Region IV guidance, inorganic analytes with concentrations that exceeded twice the average of detected concentrations in the background subsurface soil samples have been included in the HHRA.

PSC 12. Sampling results for PSC 12 subsurface soil are presented in Table 2-4. Results of the laboratory analyses indicated the presence of VOCs, SVOCs, and pesticides in the subsurface soils. The presence of the VOCs detected are interpreted to be sampling and/or analysis artifacts rather than release. This interpretation is supported by the random distribution and low concentrations at which these compounds were detected in the subsurface soil samples. The VOCs detected in subsurface soil samples resulted in a lack of comparability between samples and their duplicates. This is interpreted to be sampling and/or analysis artifacts. The detection of one pesticide in a single subsurface soil sample is interpreted to be the result of routine pesticide application at the site, rather than a release of compounds into the subsurface soil. No PCB concentrations were detected above method detection limits in any samples.

The inorganic analytes with concentrations that exceeded twice the average of detected concentrations in the background subsurface soil samples are included in the HHRA.

PSC 6. Sampling results for PSC 6 subsurface soil are presented in Table 2-5. Because the RI was conducted separately for the drainage ditch and the sanitary sewer line, the analytical results will be discussed separately. The analytical results indicated that one VOC (acetone) was present in subsurface soil samples. The random distribution, low-level detections, and absence of any historical evidence of a release of acetone suggest that acetone may not be related to the site, but may be a sampling and/or analysis artifact.

Two SVOCs detected at low concentrations within subsurface soil samples appear to be widespread; however, the levels do not exceed USEPA soil screening levels for subsurface soil. Pesticides were detected in subsurface soil samples collected from PSC 6; however, these pesticide detections appear to be isolated in nature and not associated with a release. PCB concentrations were below method detection limits in all samples.

Any inorganic analytes with concentrations that exceeded twice the average of detected concentrations in the background subsurface soil samples have been included in the HHRA.

The investigation of the industrial discharge drainage ditch resulted in the detection of several organic compounds (Table 2-6). Analytical results indicated the presence of VOCs, SVOCs, pesticides, and PCBs. The low-level VOCs, SVOCs, and pesticides detected in the surface soil are significantly less than USEPA surface soil screening levels and are isolated in nature.

Analytical results indicated the presence of two PCBs in PSC 6 surface soil samples. The detections are random in distribution; however, the values exceed the screening levels for these compounds. As a result, additional investigations were conducted in these areas. Of the 22 samples collected, only a single sample

Table 2-4
Analytes Detected in Subsurface Soil, PSC 12

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Sample with Maximum Concentration
Volatile Organic Compounds (µg/kg)				
2-Butanone	1/25	2	2 of 2	12B0704
Acetone	2/25	2	9 to 6	12B1020
Methylene chloride	2/25	3	5 of 4	12B1020
Semivolatile Organic Compound (µg/kg)				
Di-n-octylphthalate	1/25	71	71 of 71	12B1104
bis(2-Ethylhexyl)phthalate	24/25	48	12,000 of 1,813	12B0304
Pesticides and PCBs (µg/kg)				
4,4'-DDE	1/25	2.7	2.7 of 2.7	12B0104
Inorganic Analytes (mg/kg)				
Aluminum	25/25	3,630	28,100 of 12,044	12B0225
Arsenic	22/25	0.47	3.4 of 1.35	12B0704
Barium	25/25	2	456 of 56.5	12B0125
Beryllium	20/25	0.15	4.3 of 0.97	12B0225
Cadmium	21/25	0.25	10.4 of 2.17	12B0625
Calcium	25/25	142	2,350 of 554	12B0225
Chromium	25/25	2.7	58.8 of 27.1	12B0304
Cobalt	20/25	1.3	69.1 of 15.1	12B0625
Copper	22/25	2.6	58.1 of 13.6	12B0225
Iron	25/25	1,590	54,200 of 30,020	12B0725
Lead	25/25	3.8	36.1 of 13.3	12B0625
Magnesium	25/25	31.5	1,230 of 228.9	12B0225
Manganese	25/25	5.7	4,960 of 1,006.4	12B0625
Mercury	24/25	0.03	0.18 of 0.08	12B0225
Nickel	22/25	1.9	125 of 18.9	12B0625
Potassium	22/25	87.8	1,300 of 285.1	12B0225
Selenium	4/25	0.17	0.24 of 0.2	12B1104
Silver	4/25	0.59	0.96 of 0.7	12B0125
Sodium	25/25	175	304 of 223	12B0225
Thallium	13/25	0.16	1.3 of 0.38	12B0225
Vanadium	25/25	17.3	175 of 77.7	12B0225
Zinc	25/25	2.5	169 of 30.1	12B0225

Notes: PSC = potential source of contamination.
µg/kg = micrograms per kilogram.
PCB = polychlorinated biphenyl.
DDE = dichlorodiphenyldichloroethene.
mg/kg = milligrams per kilogram.

Table 2-5
Analytes Detected in Subsurface Soil, PSC 6

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Sample with Maximum Concentration
Volatile Organic Compounds (µg/kg)				
Acetone	11/16	4 to 11	5	06B0118
Semivolatile Organic Compound (µg/kg)				
Di-*n*-octylphthalate	3/16	50 to 65	56	06B0235
bis(2-Ethylhexyl)phthalate	16/16	350 to 5,500	1,795	06B0425
Pesticides and PCBs (µg/kg)				
Aldrin	6/15	0.13 to 1.7	0.89	06B0404
Endosulfan sulfate	1/15	1.9 to 1.9	1.9	06B0604
alpha-Chlordane	5/15	0.87 to 1.9	1.33	06B0130
gamma-Chlordane	6/15	0.51 to 3	1.72	06B0130
Inorganic Analytes (mg/kg)				
Aluminum	16/16	3,850 to 21,700	9,614	06B0321
Antimony	2/16	3.5 to 4.6	4.1	06B0235
Arsenic	13/16	0.13 to 2	1.04	06B0604
Barium	16/16	3.4 to 786	95.1	06B0420
Beryllium	11/16	0.19 to 7.2	2.01	06B0321
Cadmium	11/16	0.21 to 33.7	6.96	06B0321
Calcium	16/16	232 to 5,860	970	06B0321
Chromium	16/16	2.9 to 235	31.3	06B0235
Cobalt	10/16	1.3 to 182	33	06B0420
Copper	16/16	2.1 to 83.3	18.9	06B0420
Iron	16/16	2,780 to 193,000	36,036	06B0235
Lead	16/16	2 to 58.8	14.6	06B0219
Magnesium	16/16	74.7 to 1,970	280.2	06B0321
Manganese	16/16	2.7 to 13,600	1,886.4	06B0420
Mercury	7/16	0.04 to 0.11	0.07	06B0420
Nickel	10/16	2.4 to 138	34.8	06B0321
Potassium	9/16	78.7 to 2,090	467.1	06B0321
Selenium	3/16	0.18 to 0.24	0.2	06B0604
Silver	4/16	0.44 to 1.6	1	06B0235
Sodium	16/16	183 to 376	247	06B0420
Thallium	6/16	0.16 to 2.9	1.08	06B0321
Vanadium	16/16	15.5 to 226	83.9	06B0219
Zinc	16/16	4.2 to 309	49.5	06B0321

Notes: PSC = potential source of contamination.
µg/kg = micrograms per kilogram.
PCB = polychlorinated biphenyl.
mg/kg = milligrams per kilogram.

Table 2-6
Analytes Detected in Subsurface Soil, PSC 6

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Sample with Maximum Concentration
Volatile Organic Compounds (µg/kg)				
Acetone	5/18	2 to 39	19	06S09
Methylene Chloride	4/18	2 to 34	18	06S09
Toluene	2/18	2 to 2	2	06S03
Trichloroethene	2/18	1to 3	2	06S03
Semivolatile Organic Compound (µg/kg)				
Acenaphthene	2/20	79 to 86	83	06S15
Anthracene	2/20	94 to 96	95	06S03
Benzo(a)anthracene	8/20	81 to 460	214	06S03
Benzo(a)pyrene	8/20	77 to 380	205	06S03
Benzo(b)fluoranthene	11/20	37 to 570	207	06S12
Benzo(g,h,i)perylene	9/20	60 to 240	118	06S03
Benzo(k)fluoranthene	8/20	100 to 520	259	06S03
Carbazole	4/20	65 to 140	104	06S03
Chrysene	9/20	43 to 530	240	06S03
Di-n-butylphthalate	4/20	77 to 610	308	06S11
Dibenzo(a,h)anthracene	3/20	56 to 87	67	06S15
Fluoranthene	12/20	35 to 1,000	388	06S03
Fluorene	2/20	52 to 71	62	06S15
Indeno(1,2,3-cd)pyrene	8/20	57 to 280	118	06S03
Phenanthrene	10/20	37 to 660	270	06S03
Pyrene	11/20	45 to 680	298	06S12
bis(2-Ethylhexyl)phthalate	6/20	61 to 410	177	06S04
Pesticides/PCBs (µg/kg)				
4,4'-DDD	2/20	5 to 10	8	06S14
4,4'-DDE	17/20	0.99 to 220	60.72	06S04
4,4'-DDT	14/20	1.5 to 570	107	06S04
Aldrin	1/20	0.18 to 0.18	0.18	06S35
Dieldrin	1/20	32 to 32	32	06S04
Endosulfan II	1/20	0.67 to 0.67	0.67	06S36
Endosulfan sulfate	1/20	0.38 to 0.38	0.38	06S36
Endrin	1/20	0.35 to 0.35	0.35	06S36
Endrin ketone	1/20	0.13 to 0.13	0.13	06S36
Heptachlor	1/20	13 to 13	13	06S12
Heptachlor epoxide	3/20	7.8 to 25	15.6	06S16

See notes at end of table.

Table 2-6 (Continued)
Analytes Detected in Subsurface Soil, PSC 6

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Analyte	No. of Samples in Which the Analyte is Detected/Total No. of Samples	Range of Detected Concentrations	Mean Concentration	Sample with Maximum Concentration
Pesticides/PCBs (µg/kg) (continued)				
alpha-Chlordane	8/20	0.77 to 21	9.72	06S14
gamma-Chlordane	10/20	0.73 to 74	18.49	06S04
Aroclor-1254	1/42	6,300 to 6,300	6,300	06S04
Aroclor-1260	10/42	45 to 1,800	555	06S04
Inorganic Analytes (mg/kg)				
Aluminum	20/20	3,460 to 23,100	8,352	06S02
Antimony	9/20	3.4 to 46.2	10.8	06S04
arsenic	20/20	0.75 to 15.7	3.22	06S14
Barium	20/20	4.5 to 178	38.3	06S04
Beryllium	18/20	0.1 to 1.4	0.33	06S04
Cadmium	9/20	0.31 to 25.5	4.32	06S04
Calcium	19/20	140 to 37,700	2,736	06S04
Chromium	20/20	4.3 to 186	42.4	06S09
Cobalt	16/20	0.98 to 4.6	2.3	06S12
Copper	20/20	1.8 to 33.4	10.5	06S12
Iron	20/20	3,540 to 114,000	21,218	06S09
Lead	20/20	5.4 to 743	73.3	06S04
Magnesium	20/20	57 to 5,360	398.7	06S04
Manganese	20/20	16.8 to 740	273.5	06S01
Mercury	16/20	0.04 to 0.09	0.06	06S03
Nickel	14/20	1.6 to 10.7	3.5	06S04
Potassium	5/20	34 to 777	243.7	06S04
Selenium	12/15	0.2 to 1.3	0.47	06S35
Silver	6/20	0.75 to 3.4	1.79	06S09
Sodium	19/20	33.1 to 393	124.1	06S04
Thallium	1/20	0.2 to 0.2	0.2	06S01
Vanadium	20/20	11 to 342	76.9	06S09
Zinc	20/20	0.62 to 542	71.77	06S04

Notes: PSC = potential source of contamination.
µg/kg = micrograms per kilogram.
PCB = polychlorinated biphenyl.
DDD = dichlorodiphenyldichloroethane.
DDE = dichlorodiphenyldichloroethene.
DDT = dichlorodiphenyltrichloroethane.
mg/kg = milligrams per kilogram.

indicated the presence of a low-level PCB compound along the top of the industrial discharge drainage ditch. This detection and location may be associated with the maintenance dredging of the ditch. After submittal of these data to GEPD and USEPA, all parties agreed that delineation of PCB contamination at PSC 6 had been achieved.

In accordance with USEPA Region IV guidance, inorganic analytes with concentrations that exceeded twice the average of detected concentrations in the background surface soil samples have been included in the HHRA.

Surface water sampling was conducted at eight locations along the industrial discharge drainage ditch. Analytical results indicated the presence of VOCs, one SVOC, and one pesticide. The presence of VOCs detected (acetone, methylene chloride, and 2-butanone) are significantly less than the USEPA surface water screening levels. Furthermore, the VOCs are interpreted to be sampling and/or analysis artifacts rather than a release of compounds into the surface water. One SVOC, (bis(2-ethylhexyl)phthalate), was detected in a single surface water sample; however, this resulted in a lack of comparability between the sample and its duplicate. This is interpreted to be a sampling and/or analysis artifact. The detection of one pesticide in a single surface water sample is interpreted to be the result of routine pesticide application at the site, rather than a release of compounds into the surface water. No PCB concentrations were detected above method detection limits in any surface water samples. Because no background screening values are available for surface water, the inorganic analytes that were selected as chemicals of potential concern (COPCs) were retained as such because maximum concentrations exceeded the selected risk-based screening concentrations.

Sixteen sediment samples were collected along the industrial discharge drainage ditch. Analytical results indicated the presence of VOCs, SVOCs, pesticides, and PCBs. The random distribution of acetone and methylene chloride, low-level detections, and absence of any historical evidence of release of these compounds suggest that these analytes may not be related to the site and are isolated in nature. Total polycyclic aromatic hydrocarbons and di-*n*-butylphthalate were detected at concentrations exceeding the sediment screening values. Eight pesticides were detected in sediment samples collected along the drainage ditch. Heptachlor epoxide was the only compound that had a single detected concentration above sediment screening values. One PCB (Aroclor-1260) was detected in 12 sediment samples. These detections are widespread in distribution and exceeded the sediment screening values for this compound. Because no background screening values are available for sediment, the inorganic analytes that were selected as COPCs were retained as such because maximum concentrations exceed the selected risk-based screening concentrations.

2.7 SUMMARY OF SITE RISKS AND RESPONSE ACTIONS. The OU 4 RI analytical data were evaluated to determine whether or not the substances found on site occur naturally or resulted from past waste disposal. Based on this evaluation, a list of COPCS was developed for each environmental medium (e.g. , surface soil, subsurface soil, etc.) sampled at OU 4. Tables 2-7 through 2-9 present the COPCs grouped as the following data sets:

- PSC 10, 13, and 22 subsurface soil;
- PSC 12 subsurface soil; and
- PSC 6 surface water, surface soil, and sediment.

Table 2-7
Chemicals of Potential Concern at PSCs 10, 13, and 22

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Chemicals	Human Health
	Subsurface Soil
Inorganic Analytes	
Arsenic	X
Chromium	X
Vanadium	X

Notes: No surface soil, surface water, or sediment samples were evaluated at PSCs 10, 13, and 22; therefore, an ecological risk assessment was not completed for these PSCs.

PSC = potential source of contamination.

Table 2-8
Chemicals of Potential Concern at PSC 12

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Chemicals	Human Health
	Subsurface Soil
Inorganic Analytes	
Arsenic	X
Chromium	X

Notes: No surface soil, surface water, or sediment samples were evaluated at PSC 12; therefore, an ecological risk assessment was not completed for this PSC.

PSC = potential source of contamination.

Table 2-9
Chemicals of Potential Concern at PSC 6

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Chemicals	Human Health			Ecological		
	Surface Soil	Surface Water	Sediment	Surface Soil	Surface Water	Sediment
Volatile and Semivolatile Organic Compounds						
2-Butanone					x	
Acetone				x	x	x
Trichloroethene				x		
Methylene chloride				x	x	x
Toluene				x		
Acenaphthene		x		x		x
bis(2-Ethylhexyl)phthalate				x	x	x
Anthracene				x		x
Benzo(a)anthracene	x		x	x		x
Benzo(a)pyrene	x		x	x		x
Benzo(b)fluoranthene	x		x	x		x
Benzo(g.h.i)perylene				x		x
Benzo(k)fluoranthene	x		x	x		x
Butylbenzylphthalate						x
Carbazole				x		x
Chrysene	x		x	x		x
Di-*n*-butylphthalate				x		x
Naphthalene				x		x
Fluoranthene				x		x
Fluorene				x		x
Indeno(1,2,3-cd)pyrene	x		x	x		x
2-Methylnaphthalene				x		x
Phenanthrene				x		x
Dibenzofuran						x
Pyrene				x		x
Dibenz(a,h)anthracene	x		x	x		x
Pesticides and PCBs						x
4,4'-DDD				x		x
4,4'-DDE				x		x

See notes at end of table.

Table 2-9 (Continued)
Chemicals of Potential Concern at PSC 6

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Chemicals	Human Health			Ecological		
	Surface Soil	Surface Water	Sediment	Surface Soil	Surface Water	Sediment
Pesticides and PCBs (continued)						
4,4'-DDT		x		x	x	x
Aroclor-1260	x		x	x		x
Aroclor-1254	x			x		
Dieldrin				x		x
alpha-Chlordane				x		x
gamma-Chlordane				x		x
Heptachlor				x		
Heptachlor epoxide				x		x
Inorganic Analytes						
Aluminum	x	x	x	x	x	x
Antimony	x		x	x		x
Arsenic	x	x	x	x	x	x
Barium				x	x	x
Beryllium	x	x	x	x	x	x
Cadmium	x		x	x	x	x
Chromium	x		x	x	x	x
Cobalt						x
Copper				x	x	x
Cyanide				x		x
Iron	x	x	x		x	x
Lead	x		x	x	x	x
Manganese			x		x	x
Mercury						x
Nickel				x		x
Silver					x	x
Thallium			x	x	x	x
Vanadium	x		x	x	x	x
Zinc				x	x	x

Notes: PSC = potential source of contamination.
PCB = polychlorinated biphenyl.
DDD = dichlorodiphenyldichloroethane.
DDE = dichlorodiphenyldichloroethene.
DDT = dichlorodiphenytrichloroethane.

The development of these data sets was based on the nature and extent of contamination and fate and transport analyses. The subsurface soil contamination identified at PSCs 10, 13, 22, and 12 consists of similar chemicals and may be related to similar sources. The close proximity of PSCs 10, 13, and 22 necessitates evaluation as one area of contamination, whereas the geographically distinct location of PSC 12 necessitates evaluation as a separate area. Surface soil, surface water, and sediment at PSC 6 are geographically separated from other areas at OU 4; therefore, PSC 6 is evaluated separately.

COPCs are chemicals that need further evaluation to determine if in fact the concentrations found at the site pose a risk to human health and the environment.

2.7.1 OU 4 BRA A BRA was prepared for OU 4 in accordance with the USEPA Risk Assessment Guidance (USEPA, 1988). This guidance reflects a conservative approach to the BRA to ensure that subsequent cleanup decisions are protective of human health and the environment. The BRA estimates or characterizes the potential current and future risks to human health and the environment. Three factors were considered when evaluating the potential risks associated with OU 4.

- The extent of contamination present at the site and surrounding areas.
- The pathways through which people and the environment are or may potentially be exposed to contaminants at the site.
- The potential toxic effects of site contaminants on humans and the environment.

Exposure pathways considered for the human health portion of the BRA include incidental ingestion, skin contact, and inhalation of fugitive dust generated during excavation activities. These pathways were then applied to a current land-use scenario in which base workers and child trespassers could possibly be exposed to contaminated media. Although trespassers have not been observed at the site, child trespassers could obtain access to the site. These pathways were also applied to a future land-use scenario in which a child transient and a child and adult resident could potentially be exposed to contaminated media.

There is no current land-use exposure to subsurface soils at PSCs 10, 12, 13, and 22 due to the concrete surface. For future land use at PSCs 10, 12, 13, and 22, excavation worker exposures to subsurface soil were evaluated. For this exposure scenario, both cancer and noncancer risk estimates are below the USEPA point of departure such that no response was required.

The ecological portion of the BRA was completed only for PSC 6, the Industrial Discharge Drainage Ditch, due to a lack of habitat (animals, plants, birds, mammals, fish, and reptiles) at the other PSCs. Both terrestrial and aquatic organisms were considered during the ecological assessment at PSC 6.

The human health portion of the BRA evaluated both cancer and noncancer risks. According to the NCP for Superfund sites, the acceptable cancer risk range is from 1 in 10,000 ($1X10^{-4}$) to 1 in 1 million ($1X10^{-6}$), depending on site-specific conditions. Although the estimated risk of $1X10^{-5}$ is the point of departure in determining the need for a response action, site-specific conditions at OU 4 indicate that application of the acceptable risk range is appropriate. A site-specific condition supporting the use of the risk range is the base perimeter

fence, which restricts public access to soil, surface water, and sediment at all PSCs. In addition to the base perimeter fence, which restricts public access, there are fences around PSC 12 and the DMA (PSC 10). For noncancer risks, the similar point of departure is an HI of 1. If the total estimated noncancer risk is greater than 1, site-specific conditions and effects from individual compounds are evaluated to determine if a response action is necessary.

PSCs 10, 13, and 22. As part of the HHRA, data were evaluated and summarized, medium-specific COPCs were selected, and potential human receptor exposures to those COPCs were evaluated. Human health risks for each receptor were then characterized for exposure to the medium evaluated. A summary of total risks for each receptor, by pathway and medium, is presented in Table 2-10. There are no exposures to subsurface soil under current land-use conditions due to the concrete surface over the 45-acre site; therefore, potential risks for current land use were not evaluated. For future land use, excavation worker exposures to subsurface soil were evaluated. For this exposure scenario, both cancer and noncancer risk estimates were below the USEPA point of departure such that no response action was required.

PSC 12. Data were evaluated and summarized, medium-specific COPCs were selected, and potential human receptor exposures to those COPCs were evaluated for the PSC 12 HHRA. Human health risks for each receptor were then characterized for exposure to the medium evaluated. A summary of total risks for each receptor, by pathway and medium, is presented in Table 2-11. There are no exposures to subsurface soil under current land-use conditions because 50 percent or more of the site is covered by a concrete surface; therefore, potential risks for current land use were not evaluated for future land use, excavation worker exposures to subsurface soil were evaluated. For this exposure scenario, both cancer and noncancer risk estimates were below the USEPA point of departure; therefore, no response action was required.

PSC 6. COPCs were selected, and potential human receptor exposures to those COPCs were evaluated for the PSC 6 drainage ditch. Human health risks for each receptor were then characterized for exposure to the medium evaluated. A summary of total risks for each receptor, by pathway and medium, is presented in Table 2-12. For current land-use assumptions, base worker cancer risks for potential exposures to surface water, sediment, and surface soil were within the USEPA acceptable cancer risk range of $1X10^{-}$ to $1X10^{-}$, and noncancer risks were below the USEPA point of departure. with HIs of less than 1 (Figure 2-10). For current and potential future land use, child transient cancer risks for potential exposures to surface water, sediment, and surface soil are within the USEPA acceptable cancer risk range, and noncancer risks are below the USEPA threshold HI of 1 (Figure 2-11). Total resident (i.e., child and adult resident combined) cancer risks for potential future exposures to industrial discharge drainage ditch surface soil, surface water, and sediment are $6x10^{-}$, which is within the USEPA acceptable cancer risk range. Total child resident noncancer risk for potential future surface soil, surface water, and sediment exposure is an HI of 3, which exceeds the USEPA threshold HI of 1 (Figure 2-12). The results of the risk assessment indicate that uses of the industrial drainage ditch for purposes other than residential development are not associated with risks above USEPA acceptable levels. However, use of the PSC 6 drainage ditch for residential development may pose unacceptable noncancer risks to children. Therefore, based on the potential noncancer risk for a future child resident, a response action at PSC 6 is necessary.

Table 2-10
Risk Summary for PSCs 10, 13 and 22

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Land Use	Exposure Route	HI	ELCR
Future Land Use			
Excavation Worker:			
Subsurface Soil	Incidental ingestion	0.02	4×10^{-9}
	Dermal contact	0.004	5×10^{-11}
	Inhalation of fugitive dusts	ND	1×10^{-11}
	Total:	**0.02**	**4×10^{-9}**

Notes: PCS = potential source of contamination.
HI = hazard index.
ELCR = excess lifetime cancer risk.
ND = not calculated because toxicity data were not available to quantitatively evaluate risks.

Table 2-11
Risk Summary for PSC 12

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Land Use	Exposure Route	HI	ELCR
Future Land Use			
Excavation worker:			
Subsurface Soil	Incidental ingestion	0.008	4×10^{-9}
	Dermal contact	0.0003	5×10^{-11}
	Inhalation of fugitive dusts	ND	3×10^{-11}
	Total:	**0.008**	**4×10^{-9}**

Notes: PCS = potential source of contamination.
HI = hazard index.
ELCR = excess lifetime cancer risk.
ND = not calculated because toxicity data were not available to quantitatively evaluate risks.

Table 2-12
Risk Summary for PSC 6

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Land Use	Exposure Route		HI	ELCR
Current Land Use				
Base Worker:				
Surface Water	Incidental ingestion		0.0007	1×10^{-7}
	Dermal contact		0.01	9×10^{-7}
		Total:	**0.01**	**1×10^{-6}**
Sediment	Indigestion		0.01	1×10^{-6}
	Dermal contact		0.01	5×10^{-7}
		Total:	**0.02**	**2×10^{-6}**
Surface Soil	Incidental ingestion		0.01	7×10^{-7}
	Dermal contact		0.03	5×10^{-7}
		Total:	**0.04**	**1×10^{-6}**
	Total Base Worker Risk (Surface Water, Sediment, and Surface Soil)		**0.07**	**4×10^{-6}**
Child Transient:				
Surface Water	Incidental ingestion		0.02	1×10^{-6}
	Dermal contact		0.01	5×10^{-6}
		Total:	**0.1**	**6×10^{-6}**
Sediment	Incidental ingestion		0.09	3×10^{-6}
	Dermal contact		0.2	4×10^{-6}
		Total:	**0.03**	**7×10^{-6}**
Surface Soil	Incidental ingestion		0.07	1×10^{-6}
	Dermal contact		0.01	2×10^{-6}
		Total:	**0.02**	**3×10^{-6}**
	Total Child Transient Risk(Surface Water, Sediment, and Surface Soil)		**0.6**	**2×10^{-6}**

See notes at end of table.

Table 2-12 (Continued)
Risk Summary for PSC 6

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Land Use		Exposure Route		HI	ELCR
Future Land Use					
Child Transient:					
	Surface Water	Incidental ingestion		0.02	1×10^{-6}
		Dermal contact		0.1	5×10^{-6}
			Total:	**0.01**	**6×10^{-6}**
	Sediment	Indigestion		0.09	3×10^{-6}
		Dermal contact		0.2	4×10^{-6}
			Total:	**0.09**	**6×10^{-6}**
	Surface Soil	Incidental ingestion		0.07	1×10^{-6}
		Dermal contact		0.1	2×10^{-6}
			Total:	**0.2**	**3×10^{-6}**
		Total Child Transient Risk (Surface Water, Sediment, and Surface Soil)		**0.6**	**2×10^{-6}**
Child Resident					
	Surface Water	Incidental ingestion		0.05	4×10^{-6}
		Dermal contact		0.1	3×10^{-6}
			Total:	**0.1**	**7×10^{-5}**
	Sediment	Incidental ingestion		0.5	8×10^{-6}
		Dermal contact		0.2	2×10^{-6}
			Total:	**0.7**	**1×10^{-5}**
	Surface Soil	Incidental ingestion		1	1×10^{-5}
		Dermal contact		0.6	4×10^{-6}
			Total:	**2**	**1×10^{-5}**
		Total Child Resident (Surface Water, Sediment, and Surface Soil):		**3**	**3×10^{-6}**

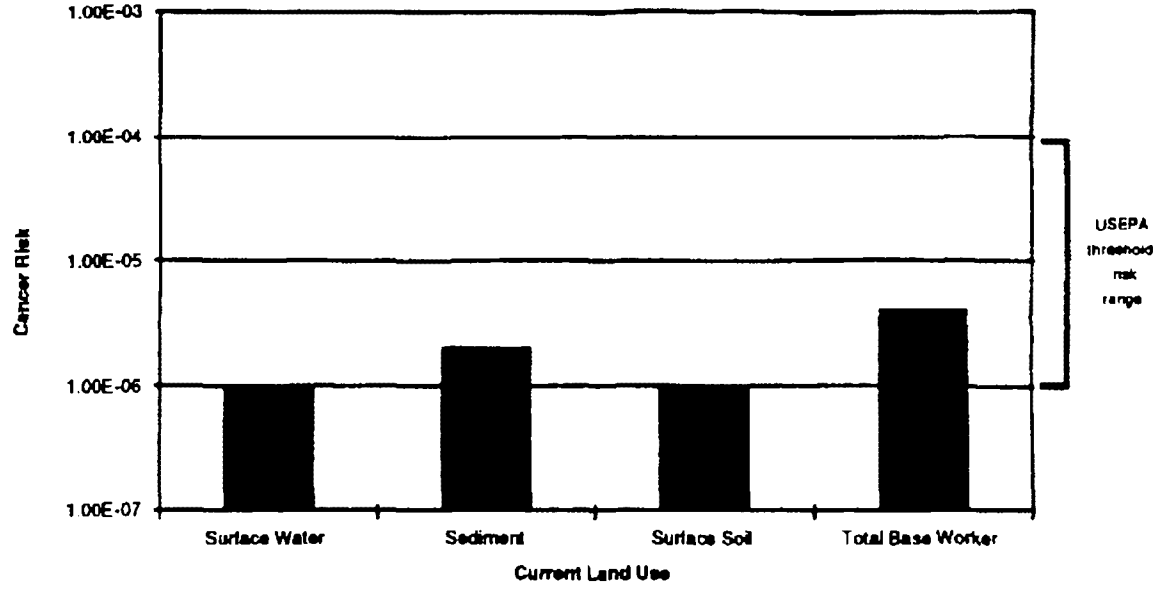
See notes at end of table.

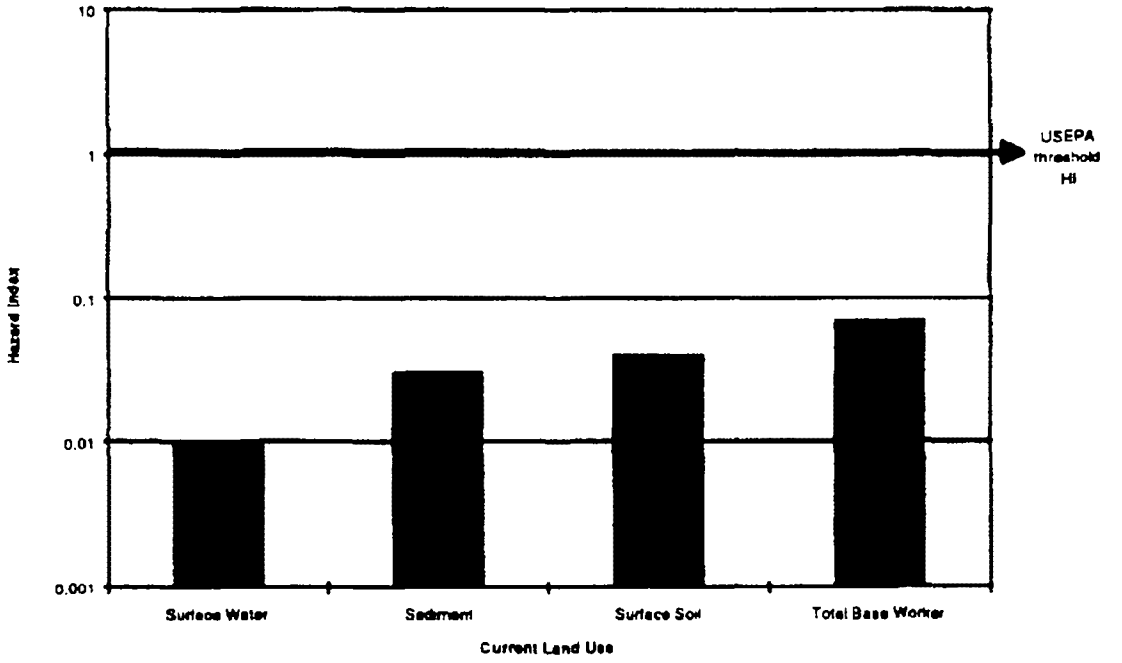
Table 2-12 (Continued)
Risk Summary for PSC 6

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Land Use		Exposure Route		HI	ELCR
Future Land Use (continued)					
Adult Resident					
	Surface Water	Incidental ingestion		0.01	2×10^{-6}
		Dermal contact		0.04	3×10^{-6}
			Total:	**0.06**	**5×10^{-6}**
	Sediment	Incidental ingestion		0.05	4×10^{-6}
		Dermal contact		0.04	2×10^{-6}
			Total:	**0.09**	**6×10^{-6}**
	Surface Soil	Incidental ingestion		0.1	6×10^{-6}
		Dermal contact		0.4	1×10^{-6}
			Total:	**0.5**	**2×10^{-6}**
		Total Adult Resident (Surface Water, Sediment, and Surface Soil):		**0.6**	**3×10^{-6}**
		Total Resident Risk (Child and Adult Resident)		**NC**	**6×10^{-6}**

Notes: PSC = potential source of contamination
HI = hazard index.
ELCR = excess lifetime cancer risk.
NC = not calculated because child and adult His are not additive.



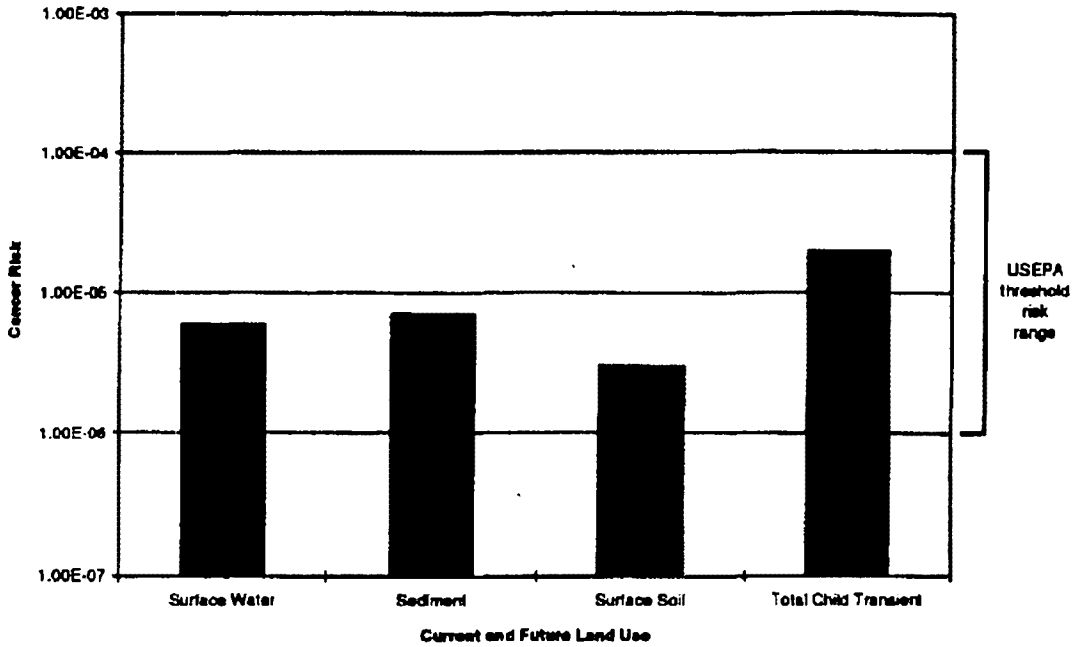


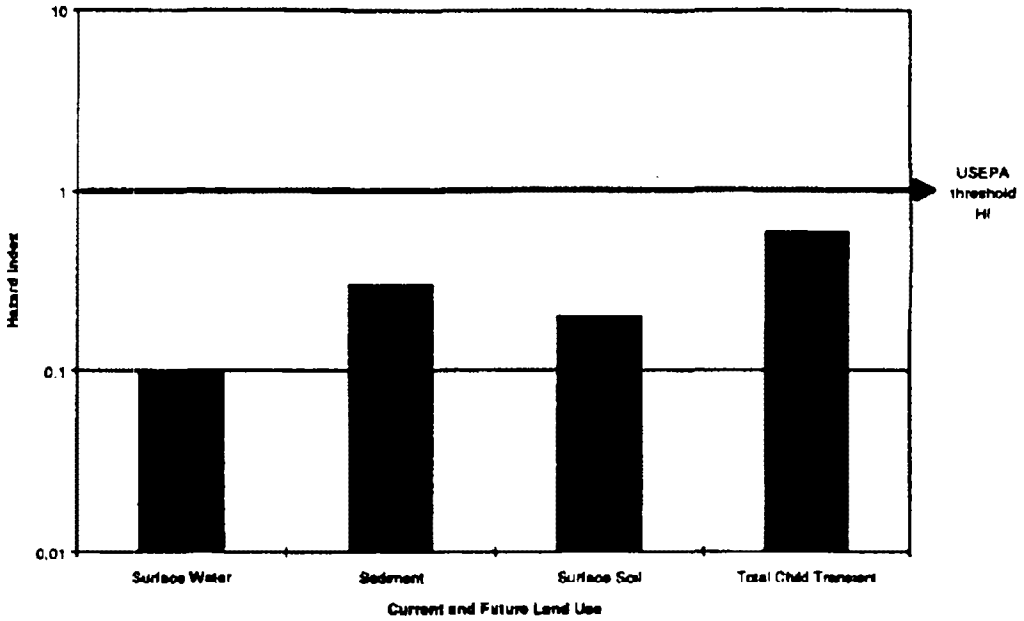
NOTES:
USEPA = U.S. Environmental Protection Agency
PSC = Potential source of contamination
HI = Hazard index

FIGURE 2-10
RISK SUMMARY, BASE WORKER, PSC 6

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA



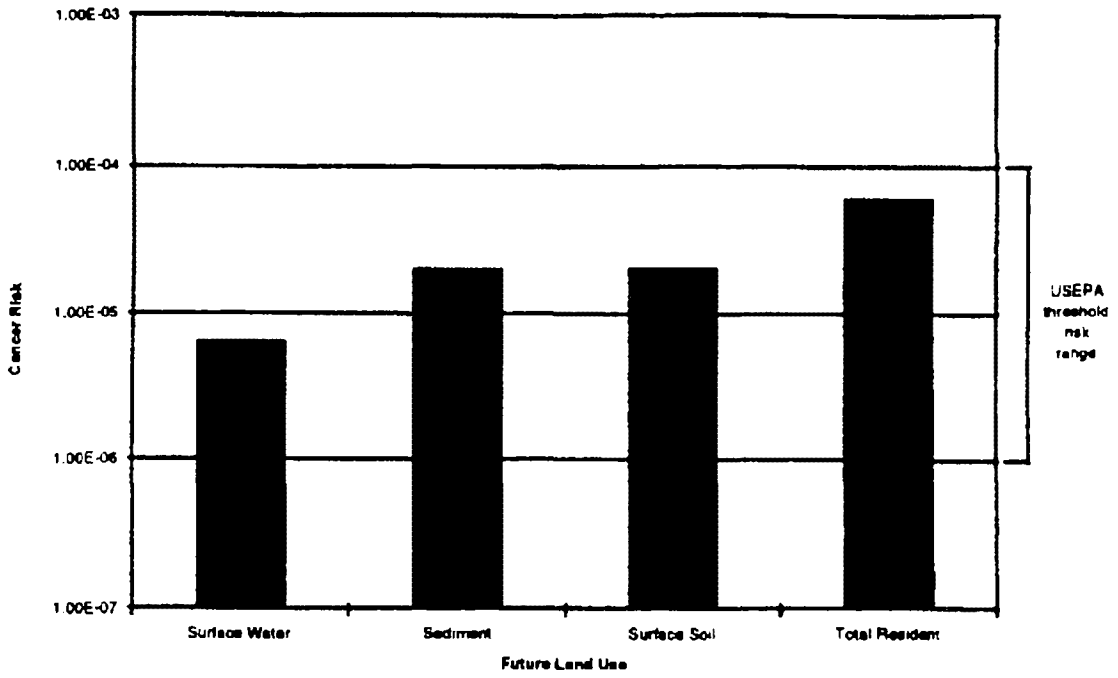


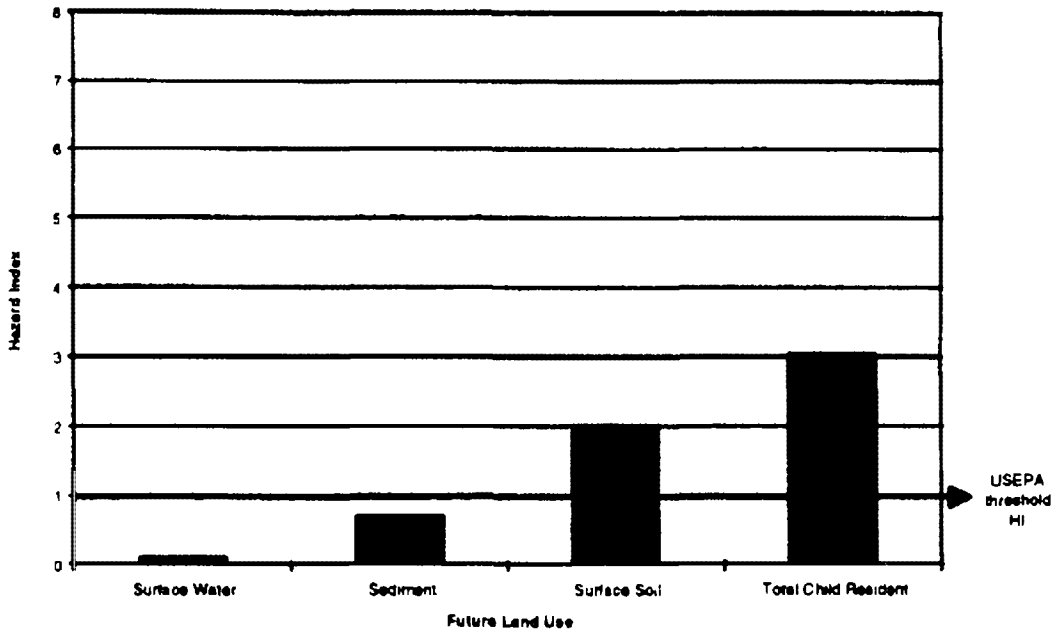
NOTES:
USEPA = U.S. Environmental Protection Agency
PSC = Potential source of contamination
HI = Hazard index

FIGURE 2-11
RISK SUMMARY, CHILD TRANSIENT, PSC 6

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA





NOTES:
USEPA = U.S. Environmental Protection Agency
PSC = Potential source of contamination
HI = Hazard index
Hazard index values are for the child resident.

FIGURE 2-12
RISK SUMMARY, RESIDENT, PSC 6

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA

The results of the PSC 6 ERA suggest that terrestrial receptors are not likely to be at risk from exposure to organic or inorganic analytes in PSC 6 surface soil, sediment, or surface water. Populations of aquatic receptors in the PSC 6 industrial discharge drainage ditch are not likely to be at risk from exposure to analytes in the PSC 6 ditch surface water or sediment.

2.7.2 Applicable or Relevant and Appropriate Requirements and Remedial Alternatives The Superfund Amendments and Reauthorization Act (SARA) requires that all remedial actions meet applicable or relevant and appropriate requirements (ARARs), the NCP, and associated guidance documents. Preferred SARA remedial actions involve treatment that permanently and significantly reduces the toxicity, mobility or volume of the hazardous contaminants. In accordance with SARA, a list of ARARs was prepared to determine the appropriate extent of cleanup for surface water, sediment, and surface soil at PSC 6 and to develop remedial action alternatives. The ARARs, presented in Table 2-13, include both Federal and State regulations and guidance criteria.

The combined media of surface water, sediment, and surface soil at PSC 6 were found to pose an unacceptable risk to a potential future child resident due to elevated concentrations of inorganics in the surface soils. Remedial alternatives identified to reduce this potential future risk include NA (in accordance with the NCP), LUCs, and Limited Action, such as fencing and signs at PSC 6. These remedial alternatives were then evaluated for compliance with the USEPA screening criteria.

2.7.2.1 Evaluation of Remedial Alternatives The three remedial alternatives under consideration for PSC 6 were evaluated based on nine criteria, in accordance with USEPA guidance (USEPA, 1988). These criteria are identified below.

1. Overall protection of human health and the environment.
2. Compliance with ARARs.
3. Long-term effectiveness and performance.
4. Reductions in toxicity, mobility or volume through treatment.
5. Short-term effectiveness.
6. Implementability.
7. Cost.
8. State acceptance.
9. community acceptance.

Overall Protection of Human Health and the Environment. The LUCs and Limited Action will provide the necessary protection at PSC 6 to prevent exposure to the COPCs in the surface water, sediment and surface soil of PSC 6. The NA alternative does not meet these criteria.

Compliance with ARARs. None of the alternatives will satisfy all of the ARARs because no treatment is proposed for the surface water, sediment, and surface soil of PSC 6. However, the potential unacceptable risk is limited to long-term residential use of the site.

Long-Term Effectiveness and Permanence. Both the LUCs and Limited Action will provide the long-term protection from the COPCs in surface water, sediment, or surface soil at PSC 6. The NA alternative will not meet these criteria.

Table 2-13
Applicable or Relevant and Appropriate Requirements

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Standards, Requirements, Criteria, or Limitations	Citation
Federal	
Clean Air Act (CAA), National Ambient Air Quality Standards (NAAQS) and National Emissions Standards for Hazardous Air Pollutants	40 CFR 50, 40 CFR 61
USEPA Regulations on Approval and Promulgation of Implementation Plans	40 CFR 52, Subpart L - Georgia
Occupational Health and Safety Act (OSHA) Regulations for Air Contaminants	29 CFR 1910.1000
RCRA General and Location Standards for Permitted Hazardous Waste Facilities	40 CFR 264, Subparts A through F
USEPA Rules for Controlling PCBs under the Toxic Substances Control Act (TSCA)	40 CFR 761.125, Subpart D, G, and K
Endangered Species Act	16 USC 1531, 50 CFR Parts 81, 225, and 402
RCRA Facility Location Regulations	40 CFR 264.18
RCRA Closure and Postclosure Requirements	40 CFR 264, Subpart G
RCRA Regulations for Generation of Hazardous Waste	40 CFR 262
RCRA Transportation Regulations and DOT Standards	40 CFR 263, 49 CFR, Parts 171 through 179
RCRA Subtitle D Solid Waste Regulations	40 CFR 241 and 257
CAA - NAAQS's for Particulates	40 CFR 50
RCRA Standards for Environmental Performance of Miscellaneous Units	40 CFR 264, Subpart X
RCRA Regulations on Land Disposal Restrictions (Land Ban)	40 CFR 268
RCRA Regulations for Use and Management of Containers	40 CFR 264, Subpart I
RCRA Regulations for Waste Piles	40 CFR 264, Subpart L
RCRA Incinerator Standards	40 CFR, Subpart O
OSHA - General Industry Standards, Recordkeeping and Reporting, and Standards for Hazardous Waste Site Operations	29 CFR Part 1926, 29 CFR Part 1904, 29 CFR Part 1910
USEPA Rules for Controlling PCBs under TSCA	40 CFR 761, Subparts D, G, and K
USEPA Solid Waste Management Act	40 CFR 258, Subpart F
Federal Insecticide, Fungicide, and Rodenticide Act (FFRA) and Regulations	40 CFR 165
Fish and Wildlife Coordination Act and FWS and NFWS Advisories	16 USC 661
Fish and Wildlife Conservation Act of 1980	16 USC 2901, 50 CFR Part 83
National Historic Preservation Act	16 USC 470
Archaeological Resources Protection Act	32 CFR Part 229, 43 CFR Parts 107 through 171.500
Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup	USEPA-560/5-86-017

See notes at end of table.

Table 2-13 (Continued)
Applicable or Relevant and Appropriate Requirements

Record of Decision
Operable Unit 4
Marine Corps Logistics Base
Albany, Georgia

Standards, Requirements, Criteria, or Limitations	Citation
State	
Georgia Air Quality Control Law, and Georgia Air Quality Control Rules	Code of Georgia, Title 12, Chapter 9 DNR, Chapter 391-3-1
Georgia Hazardous Waste Management Act	Code of Georgia, Title 12, Chapter 8, Articles 3 and 60
Georgia Hazardous Waste Management Rules	Rules and Regulation of the State of Georgia, Title 391, Article 3, Chapter 11
Georgia Comprehensive Solid Waste Management Act	OCGA Section 12-8-20 et seq. and Rules, Chapter 391-3-4
Endangered Wildlife and Wildflower Preservation Act of 1973	OCGA Section 12-6-172 et seq. and Rules, Chapter 391-4-10

Notes: CFR = Code of Federal Regulations.
DNR = Department of Natural Resources.
DOT = Department of Transportation.
NFWS = National Fish and Wildlife Service.
OCGA = Official Code of Georgia Annotated.
PCB = polychlorinated biphenyl.
RCRA = Resource Conservation and Recovery Act.
USEPA = U.S. Environmental Protection Agency.
USC = U.S. Code.
FWS = Fish and Wildlife Service.

Reduction of Toxicity, Mobility or Volume. None of the proposed remedial alternatives will reduce the toxicity, mobility or volume of contaminated surface water, sediment, or surface soil at PSC 6.

Short-Term Effectiveness. LUCs and Limited Action will be effective over the short-term in restricting residential development and land use of PSC 6. The NA alternative will not satisfy this criteria.

Implementability. LUCs can be readily implemented through the LUCIP for PSC 6. This LUCIP is provided as an attachment to this document as well as within MCLB, Albany's Master Plan and within the LUCAP. There is no implementation required for the NA alternative. The Limited Action alternative will require the installation of a security fence and signs along the length of PSC 6. The length of PSC 6 is 14,000 feet, but fencing is required on both sides of the ditch (for a total of 28, 000 feet). This alternative would also restrict the accessibility of the site, i.e., the types of maintenance equipment that could be used at the site.

Cost. There are no capital or operational costs associated with the NA and LUC alternatives. The estimated cost for this fence and signage is approximately $10 per linear foot. This would result in a capital cost of approximately $280,000 for PSC 6. Estimated maintenance cost would be approximately $2,000 per year for the replacement of damaged or vandalized fencing. This results in a total estimated cost of $340,000 for PSC 6 over a 30-year period.

State and Community Acceptance. The USEPA guidance also requires that the remedial alternatives be evaluated for regulatory acceptance and public acceptance (total of nine criteria). These evaluations were addressed through the release of the OU 4 Proposed Plan on October 13, 1998, and the 30-day public comment period, ending November 11, 1998. Comments were received from the public during the public meeting held on October 22, 1998. A summary of the comments received is included in the Responsiveness Summary, Appendix A.

2.7.3 Response Action.

PSCs 10, 12, 13, and 22. Based on the results of the BRA, a NA decision is proposed for PSCs 10, 12, 13, and 22. This alternative does not require any treatment, containment, or land-use restrictions for these PSCS.

PSC 6. The noncancer risk (HI of 3) associated with the future child resident exceeded the USEPA point of departure (HI greater than 1) thereby requiring a response action. As a result of the remedial alternative evaluation, LUCs will be implemented at PSC 6 prohibiting future residential development of the site. A review will be conducted in 5 years after commencement of response action to ensure that the remedy continues to provide adequate protection of human health and the environment. Other activities required to ensure adequate protection of human health and the environment may still be conducted at PSC 6 under the attached LUCIP (see Appendix B).

2.8 EXPLANATION OF SIGNIFICANT CHANGES. As the lead agency, SOUTHNAVFACENGCOM prepared and issued the Proposed Plan for OU 4 on October 5, 1998 (HLA, 1998). This Proposed Plan described the rationale for a final response of NA at PSCs 10, 12, 13, and 22, and LUCs at PSC 6. The GEPD, USEPA Region IV, and public concur

with this final response. Therefore, no significant changes were made to the Proposed Plan. This response action may be reevaluated in the future if conditions at OU 4 indicate that an unacceptable risk to public health or the environment may exist at this site.

REFERENCES

ABB Environmental Services, Inc. (ABB-ES). 1993. *Remedial Investigation/Feasibility Study Workplan, Operable Unit 4, Marine Corps Logistics Base, Albany, Georgia* . Prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), North Charleston, South Carolina (April).

ABB-ES. 1998. Remedial Investigation and Baseline Risk Assessment Report for Operable Unit 4, Marine Corps Logistics Base, Albany, Georgia. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (May).

Applied Engineering and Science, Inc. 1989. RCRA *Facility Investigation, Phase One, Confirmation Study.*

Envirodyne Engineers. 1985. *Initial Assessment Study of Marine Corps Logistics Base, Albany, Georgia*. Naval Energy and Environmental Support Activity 13065 (September).

Harding Lawson Associates. 1998. *Proposed Plan for Operable Unit 4, Marine Corps Logistics Base, Albany, Georgia* . Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (July).

McClelland Engineers, Inc. 1987. Final Report, *Confirmation Study Verification Step Report, Marine Corps Logistics Base, Albany, Georgia* . Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina.

Roy F. Weston, Inc. 1992. *Initial Site Characterization Report, UST Release, Buildings 2210 and 9700, Marine Corps Logistics Base, Albany, Georgia* . Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina.

SEC Donohue, Inc. 1993. *Corrective Action Plan, Building 2218, Marine Corps Logistics Base, Albany, Georgia*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina.

Sirrine Environmental Consultants, Inc. 1992.*UST Investigation Building 2200, Shop 712.*

U.S. Environmental Protection Agency. 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* . Office of Emergency and Remedial Response. Washington, D.C. (October).

ATTACHMENT A-1

TRANSCRIPTS OF THE
PUBLIC HEARING ON OPERABLE UNIT 4,
MARINE CORPS LOGISTICS BASE, ALBANY, GEORGIA

1.0 OVERVIEW

Based on the results of the Remedial Investigation and Baseline Risk Assessment, Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) recommended a response action for the five Potential Sources of Contamination (PSCs) that make up Operable Unit (OU) 4. SOUTHNAVFACENGCOM's recommended alternatives consisted of No Action at PSCs 10, 12, 13, and 22, and Land-Use Controls (LUCs) at PSC 6.

Following the 30-day public comment period and the Public Meeting held on the evening of Thursday, October 22, 1998, on the OU 4 Proposed Plan, this responsiveness summary was prepared to summarize public comments and provide written responses. This responsiveness summary includes:

- Background on Community Involvement

- Summary of Comments Received During the Public Comment Period and Agency Responses
  - Part I: Summary and Response to Local Community Concerns
  - Part II: Comprehensive Response to Specific Legal and Technical Questions

A Record of Decision will be prepared for OU 4 based on a review of these comments by the Navy and regulatory agencies.

2.0 BACKGROUND ON COMMUNITY INVOLVEMENT

An active community relations program providing information and soliciting input has been conducted by MCLB, Albany for the entire National Priority List (NPL) site. Interviews of citizens on base and in the city of Albany were conducted in the winter of 1990 to identify community concerns. No significant concerns that required focused response were identified. Most comments received were concerning the potential for contamination of water resources. However, those interviewed indicated that they place great trust in MCLB, Albany and their efforts to rectify past waste disposal practices. In addition, the base has formed a Technical Review Committee (TRC) that includes members representing the city of Albany, Dougherty County, and the local academic community. These TRC community members were contacted in July 1996 to determine their continued interest in serving in serving on the committee. Each member confirmed his or her interest in serving on the TRC. In addition, parties on the MCLB, Albany Environmental Branch mailing list were contacted to solicit new community members for the TRC. Since this solicitation, the TRC has grown from 10 to 17 members. Since September 1996, the MCLB, Albany Environmental Branch has held several meetings with the TRC to update them on the status of the investigation, remediation, and closure of the 26 PSCs. The local media have also been kept informed since MCLB, Albany was placed on the NPL. Installation Restoration Program fact sheets have been prepared and made available at the Environmental Office of MCLB, Albany. Documents concerning Operable Unit (OU) 4 are located in the Information Repository at Dougherty County Public Library and the Administrative Record at the Base Environmental Branch office. Public interest in operations and environmental restoration at MCLB, Albany has increased recently. The MCLB, Albany Environmental Branch staff is responding to that interest through increasing their accessibility to the public.

3.0 SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND RESPONSES

The public comment period on the final Proposed Plan for OU 4 was held from October 13 to November 11, 1998. This includes a Public Meeting that was held on the evening of Thursday, October 22, 1998. Comments received during this time are summarized below. Part I of this section addresses community concerns and comments that are non-technical in nature. Comprehensive responses to specific regulatory and technical comments and questions are provided in Part II. Comments in each Part are categorized by relevant topics.

The responses to public comments are presented below. Responses are not presented for each individual comment received. Rather, individual public comments have been organized into subject areas, and responses have been prepared for each subject. This approach is consistent with USEPA guidance for preparing Responsiveness Summaries as described in the USEPA's *Community Relations in Superfund: A Handbook* (1992).

PART I - SUMMARY AND RESPONSE TO LOCAL COMMUNITY CONCERNS

Remedial Alternative Preferences

(1) Regarding the LUC proposed for PSC 6, a citizen asked what is being done to "correct" the situation at the site (i.e., address contamination) and if something can be done now rather than having to revisit the remedial decision in the future.

Response: The LUC proposed for PSC 6 does not include active cleanup activities for the site. The LUC does prohibit future residential development along the ditch to ensure that prolonged exposure to site contaminants that could pose unacceptable health risks do not occur. Current site conditions do not pose risks to workers, a child trespasser, or future adult resident.

A number of responses could have been considered to actively address contamination at PSC 6, but given the limited risk (i.e., for potential future child residents), the cost of implementing these actions exceeds their benefits. Prohibiting future residential development of the site will eliminate unacceptable future risks at the sites.

(2) A citizen stated that the proposed LUCs imply that PSC 6 is contaminated; however, the contamination will remain in place. Confusion remains as to whether or not contamination is present.

Response: Contaminants are present at PSC 6. This determination is based on the collection and analysis of soil, sediment and surface water samples during RI activities at the site. The analytical results were compared to Federal and State standards for the detected compounds. If the concentration of a compound detected at the site exceeded those standards, it was considered a contaminant of concern requiring further evaluation. The contaminants of concern at PSC 6 include chromium, vanadium and arsenic.

The risk assessment component of the RI evaluated whether or not the contaminants of concern pose unacceptable risks to human health and the environment. This evaluation considers exposure to site contaminants under both existing site conditions (e.g., periodic exposure by maintenance workers) and potential future site conditions (e.g., residential use of the site including children who might live at PSC 6 and play in contaminated soil, surface water, or sediment). The risk assessment for PSC 6 resulted in the identification of an unacceptable risk to a hypothetical future child resident who may live at PSC 6 and play in the drainage ditch. Therefore, land use controls prohibiting future residential usage of PSC 6 are proposed to address this risk.

(3) A generic information sheet on LUCs was distributed at the public meeting. The sheet stated that signs and fencing are examples of physical means for implementing LUCs at some sites. Some community members felt this implied that all LUC sites receive signs and fencing, and recommended them for PSC 6.

Response: The information sheet listed a range of potential measures for LUC implementation, including physical methods as well as legal means such as those proposed for PSC 6. The specific plan to implement LUCs at PSC 6 are included in the OU 4 Proposed Plan. These site-specific LUCs were selected based on the potential future risk to a child resident and the site's geographic location. The information sheet will be revised based on the public comment.

Remedial Alternative Safety Concerns

(1) Is wildlife affected by contamination at OU 4? If so, how does the Proposed Plan address these impacts?

Response: An ecological risk assessment was conducted for PSC 6 (wildlife are not exposed to the contaminated subsurface soil at other OU 4 PSCs) and is presented in the OU 4 RI/BRA Report available in the Dougherty County Public Library. This risk assessment evaluated potential impacts to wildlife exposed to the contaminants in PSC 6 surface soil, sediment, and surface water. The assessment concluded that the contaminated media do not pose unacceptable risks to wildlife and therefore no response action is needed to protect wildlife.

(2) If maintenance activities such as lawn mowing are performed in or around the ditch, how will contamination of equipment be prevented?

Response: Equipment used in routine maintenance activities at PSC 6 will be handled and stored in accordance with standard practices to minimize the amount of contaminated material remaining on that equipment. Also, it is not expected that residual contaminated material on equipment poses any health risk to workers. The adult worker scenario was considered in the risk assessment, which found that an adult worker would not be exposed to an unacceptable risk by working at PSC 6.

(3) What type of controls will be implemented to keep people away from PSC 6? Will the site be fenced or posted with warning signs?

Response: There are no plans to erect fences or warning signs at PSC 6 because a base perimeter fence restricts public access onto MCLB, Albany. Because MCLB controls land use and development on the installation, land use restrictions on residential development will prevent child residents from playing in the drainage ditch. Furthermore, there is not an unacceptable risk for a child who simply passes through the ditch, but risk exists for a child resident who may live at PSC 6 and play in contaminated soil, surface water, or sediment. Under current conditions, the distance between PSC 6 and base housing, and the fact that children do not play in the western portion of the base and are not authorized to be there also mitigates against prolonged exposure that could result in unacceptable risks. Based on these site-specific conditions, land use controls are a protective response to the potential risks.

Public Participation Process

(1) A notice on the OU 4 Proposed Plan public meeting was posted at the northern end of Ramsey Road. Why wasn't this done for previous meetings?

Response: During IR site tours conducted in September 1998 for Ramsey Road area residents and TRC members, it was determined that MCLB was not meeting the community's communication needs. One way to improve communication with residents in this neighborhood was to post an OU 4 meeting notice on Ramsey Road.

To publicize past public meetings, MCLB published legal notices in the*Albany Herald*, mailed notices to the TRC members and the community mailing list, and sent public service announcements to local media. However, public interest in operations and environmental restoration at MCLB has recently increased, and the Marine Corps posted the OU 4 meeting notice to respond to that interest.

(2) We appreciate the sign for our neighborhood, but there are also neighbors to the west and to the south. Were they also informed of the meeting?

Response: As previously noted, the OU 4 public meeting and similar meetings were publicized through mailings to the community mailing list, paid legal notices in the *Albany Herald*, and public service announcements to local media. The OU 4 meeting notice was published on October 13, 1998. Based on public input, MCLB will look to expand public meeting publicity efforts to better serve communities in the immediate vicinity of the base.

(3) Do you plan to conduct the next TRC meetings as a public availability session, similar to the public meeting on the OU 4 Proposed Plan?

Response: A Proposed Plan public meeting has requirements (such as preparation of an official transcript) that do not apply to TRC meetings. The next Proposed Plan public meeting will be for OU 6 and will use the public availability format.

As for the TRC meetings, they are open to the public and typically include updates on recent restoration activities. A period is also provided for questions and comments from the TRC and the general public attending the meeting. Specific meeting formats, agendas, times, and locations are decided

by the TRC members themselves. MCLB will continue to facilitate TRC meetings as needed.

Decision Process

(1) Will you explain the process and schedule for the Proposed Plan and Record of Decision?

Response: The OU 4 Proposed Plan was released on October 13, 1998 for a 30-day public comment period. At the end of this comment period, all comments received including those expressed at the October 22, 1998 public meeting were consolidated and responded to in this respons0iveness summary. Based on this public input, the base and regulatory agencies determined that the proposed response actions for OU 4 are protective of health and the environment. The ROD was then prepared to document the response action(s) to be implemented. The ROD will be reviewed and signed by the MCLB Commanding Officer, and letters of concurrence will be submitted by the USEPA and GEPD. It is expected that the OU 4 ROD will be signed within two months of the public comment period close.

(2) One citizen was concerned that her preference for fencing and warning signs along the PSG 6 drainage ditch was being ignored.

Response: Public input is encouraged as community acceptance is required in the proposed plan/ROD process. During the OU 4 public comment period, MCLB solicited public comments at the public meeting, by electronic mail, regular mail and by telephone. As stated above, the MCLB and regulatory agencies consider all comments received and determine whether the proposed response action is appropriate or if modifications are required.

(3) Can a vote be taken on whether or not the public would like to see signs and fences posted at PSC 6?

Response: The Marine Corps acknowledges that several community members recommend fencing and warning signs as part of LUCs at PSC 6. However, the response actions selected under CERCLA address potential risks identified during the remedial investigation and risk assessment for the site, and are protective of human health and the environment. In this case the additional cost of constructing fences and signs is not warranted to protect human health because the potential risks are associated with residential development at PSC 6. These risks can be effectively addressed through implementation of land use controls that restrict residential development.

PART II - COMPREHENSIVE RESPONSE TO SPECIFIC LEGAL AND TECHNICAL QUESTIONS

Legal Applications

(1) The LUCs proposed are for PSC 6 specifically. Does this mean that PSC 6 has to be cleaned up if the base is sold, and what area is covered under the LUCs?

Response: If a new land use is considered for PSC 6, either by the Marine Corps or a future property owner, the ROD would be re-evaluated to determine

if response actions that actively address site contamination are needed under the proposed land use. The LUCs at PSC 6 cover the portion of the drainage ditch from Covella Pond in the central portion of MCLB extending west to the Marine Canal at the western base boundary.

(2) Have environmental samples been collected from the Marine Canal?

Response: Yes, samples were collected from the Marine Canal. These included surface water samples collected upstream and downstream of the underflow weir in September 1996. The samples were analyzed for pesticides, base neutrals acid extractables, pH, TCLP [toxicity characteristic leaching procedure] volatiles, and TCLP metals. All results indicated no compounds detected above method detection limits except barium (0.74 ppm [parts per million] upstream and 0.82 ppm downstream). Additionally, two composite soil samples were collected near Mock Road and five soil samples were collected further downstream in 1994. The samples were analyzed for base neutrals acid extractables. All results indicated that no compounds were detected above method detection limits. The Marine Canal downstream (west) of the Base is beyond the control of the Marine Corps.

(3) Has USEPA ever collected samples from the Marine Canal and if not, would they consider sampling the Marine Canal?

Response: The USEPA representative at the public meeting could not recall any such sampling, nor was such sampling done for the IR program at MCLB. The USEPA representative indicated that sample collection and analysis of the Marine Canal can be considered.

Enforcement

(1) In the event of an ownership transfer of MCLB property, who will enforce environmental stipulations such as LUCs for that property?

Response: If the Base were to either close or be realigned such that the property encompassing OU 4 would be made available for community reuse, MCLB, Albany, USEPA, and GEPD would need to evaluate the continued need for any form of LUC in light of intended reuse (e.g., residential versus industrial or recreational). If LUCs are necessary, it is anticipated that such controls would be included as restrictions in the transfer deed for the property and be enforceable as such under State property law.

Remedial Investigation/Baseline Risk Assessment

(1) When estimating potential health risks for the residential land-use scenarios for a child resident, exposure periods of 6 years, 30 days, and 350 days out of the year were used. How were these periods established and who established them?

Response: The health risk assessment methodology used in CERCLA was developed by USEPA in the 1980s in coordination with the scientific community and after public comment. For the OU 4 risk assessment, risk assessors for the State of Georgia and USEPA worked with MCLB to identify potential contaminant exposure pathways to humans and the environment, for both existing and future site conditions. The risk assessment methods are inherently conservative

to ensure that receptors with the greatest potential exposure and risk are protected. For example, if a worker is digging in the soil daily for 30 days is protected, then other receptors with less potential exposure are also protected.

(2) Do you follow up with public health assessments of people who may have been exposed to site contaminants? Are elderly persons taking medication considered?

Response: No, public health studies of specific populations have not been conducted at MCLB. Rather, the human health risk assessments consider exposures to contaminants of concern at the site for various populations under existing and future conditions. This requires the establishment of a reference dose, which is the amount of contamination an individual can be exposed to without experiencing adverse health effects. Calculation of the reference dose considers sensitive subpopulations, including children, newborns, unborn children, the elderly, and the infirm.

(3) Have activities taken place at PSC 6 to remove contaminants from the ditch? When and why were groundwater monitoring wells installed in the vicinity of OU 4?

Response: No removal actions or interim remedial actions have been conducted to remove contaminants at PSC 6. Monitoring wells were installed in the vicinity of OU 4 during the spring and early summer of 1998 as part of the ongoing basewide groundwater study designated as OU 6.

(4) A member of the public noted a report that approximately 950,000,000 gallons of water flows into the PSC 6 drainage ditch. Is this correct and does this water flow at any time into the Marine Canal?

Response: The commenter was referring to the OU 4 RI/BRA report, Paragraph 1.2.1.5 which states "from 1955 to 1977, an estimated 950,000,000 gallons of rinse, stripping, cleaning, and plating solutions were discharged from the DMA into the Industrial Discharge Drainage Ditch." Prior to 1990, this wastewater was treated at the Domestic Wastewater Treatment Plant (DWTP). Currently, the source water generated at the DMA is pretreated at the industrial wastewater treatment plant and discharges directly to the City of Albany publicly owned treatment works.

(5) Could rinse water and other wastewater from maintenance of equipment returning from the Desert Storm mission have been transported by surface runoff into the drainage ditch? If so, what are the potential health effects from exposure to this wastewater?

Response: Due to the Marine Corp's intensive decontamination procedures for vehicles returning from field engagements including Desert Storm, it is unlikely that contaminants were imported to the base. Additionally, any solid material removed during vehicle maintenance at OU 4 sites is handled in accordance with existing solid waste disposal procedures, and liquid waste is treated as industrial wastewater. This precludes contaminant transport by surface runoff into the drainage ditch. The purpose of the OU 4 RI was to determine the extent and nature of contamination associated with historic hazardous waste disposal or releases at those sites.

(6) Did the PSC 6 drainage ditch flood during the flood of 1994?

Response: No, water from the Flint River did not back-up on base. However, there was standing water in the Marine Canal west of MCLB.

(7) Regarding arsenic, chromium, and vanadium detected at OU 4, at what levels do they become a human health threat and is this information accessible to the general public?

Response: This information is presented in Chapter 6 of the OU 4 RI/BRA Report available in the Dougherty County Library. The contaminants of concern identified in the RI were used to calculate potential health-based cleanup goals for the site.

(8) Will PSC 6 ever be considered non-contaminated without active cleanup. In other words, will the drainage ditch cleanse itself naturally over time?

Response: Many metals occur naturally in the soil at MCLB. However, soil at PSC 6 was found to contain concentrations of chromium, vanadium and arsenic exceeding natural (or background) levels. These will likely remain in the PSC 6 soil. Land use controls proposed for the site will prevent prolonged human exposure to the site soil that could pose health risks. The site soil and land use controls would be re-evaluated if the Marine Corps were to transfer the property or to change the land use.

(9) How long was the RI at OU 4?

Response: The investigation began in 1993. A draft OU 4 RI/BRA report was submitted to USEPA and GEPD in 1994. Comments received from these agencies required additional data collection, and the document was revised accordingly. A final draft was then issued, and the final OU 4 RI/BRA was released in September 1998.

(10) Are the three chemicals shown in the OU 4 meeting materials (arsenic, chromium, and vanadium) naturally occurring?

Response: Arsenic, chromium, and vanadium are naturally occurring. However, the concentrations of these substances detected at PSC 6 suggest that they are associated with past waste disposal at the site.

ATTACHMENT A-1

TRANSCRIPTS OF THE PUBLIC HEARING ON OPERABLE UNIT 4, MARINE CORPS LOGISTICS BASE, ALBANY, GEORGIA

Public Meeting Held October 22, 1998
Operable Unit 4 Proposed Plan

Good evening, ladies and gentlemen. On behalf of the Commanding General, Marine Corps Logistics Base, I want to welcome you to our Operable Unit 4 proposed plan public meeting. My name is Captain Tony Ference. I am the Installation Restoration Program Manger, essentially the environmental cleanup program.

With us tonight we have the Environmental Protection Agency personnel representative, we have Georgia Environmental Protection Division, we have Southern Division, Naval Facilities Command, who are all part of this team that is working on the cleanup on base. In addition, we have members of the Technical Review Committee, also members of the team.

The objectives for the meeting - I'd like to review the Operable Unit 4 background and site history, present the proposed action for those sites for Operable Unit 4 and get your input - that is the main purpose of this public meeting - get your input, community input, on this proposed plan.

Operable Unit 4 is comprised of 5 potential sources of contamination, generally located on the western edge, excuse me, western side of the base; from the center of the base on west. Potential Source of Contamination 6, the long feature; that is our drainage canal as well as an old domestic wastewater treatment plant pipeline. Potential Source of Contamination 13 is an industrial waste pipeline which connects PSC 10 and PSC 12. PSC 10 is the Maintenance Center; that's the main hub where we break down equipment and refurbish equipment and move it off to the Marine Corps and PSC 12 is the industrial wastewater treatment plant. So that pipeline moves industrial waste from the Maintenance Center over to the Industrial Waste Treatment Plant. And finally PSC 22, which is an old 90-day hazardous waste storage facility.

Currently, this is what those sites look like today. PSC 6, the drainage canal. This is the maintenance center area; PSC 10 is approximately 45 acres under concrete. PSC 22 is an old 90-day hazardous waste storage facility. PSC 12 is the Industrial Waste treatment plant and PSC 13 is an underground pipeline so that is not pictured here.

The process at Operable Unit 4: first, was an initial assessment study which was conducted on board the base to identify areas for further studies - areas of past waste disposal practices that we need to investigate to find out if there has been any adverse contamination taking place. The confirmation came in—the confirmation study was to confirm areas which need further study. We are a resource conservation recovery act permit holder. We hold a permit for hazardous waste generation. We are required to do a resource conservation recovery act facility investigation to help us determine the nature and extent of contamination, identify potential contaminant movement, and all that moves us toward, after we were listed on the national priorities list, we are now part of the superfund program and we get into the RI, remedial investigation, process. And this is where we do our specific investigation for the areas.

Once that is completed, you take the investigation information and conduct a risk assessment to determine what risks do these contaminants pose. That comes under the Baseline Risk Assessment, evaluate the investigation and the risk assessment,

determine what you plan on doing, publish that in a proposed plan, there is a 30-day public comment period which began the 13th of October and runs through the 11th of November. That is what period we are in right now, this is part of that public comment period, public meeting. And then finally, after we have addressed the public's concerns, we move on to a record of decision. This is what we're doing and we move on and make that happen.

The remedial investigation findings: analytical results from the subsurface sampling at the Operable Unit 4 site, they were tabulated and chemicals of potential concern were identified. For PSC's 10, 12, 13, and 22, that's the Maintenance Center, the Industrial Wastewater Treatment Plant, the pipeline, and the old 90-day hazardous waste storage facility, they included arsenic, chromium, and vanadium. There was no surface water or sediment present at these sites to be evaluated. For example, the Maintenance Center which covers 10, 13, and 22 is 45 acres of concrete covered area. And the Industrial Wastewater Treatment plant is also an area of concrete that covers a significant portion of that area.

Chemicals of potential concern for Potential Source of Contamination 6, for our drainage canal, included volatile and semi-volatile organic compounds such as TCE, most of you have probably heard of trichloroethylene (TCE); polychlorinated biphenyl (PCBs); pesticides and metals. And these compounds were actually in the surface soil, surface water, and sediment in the areas in PSC 6, the drainage canal, as well as the old pipeline. There is a complete list for chemicals of potential concern for all of the PSC's found in the proposed plan. Once you find- once you complete your investigation and determine what is out there, you need to conduct a risk assessment and determine what you found, what type of risk does this pose to the public.

For all of the sites except the drainage canal, the current risks as well as potential future risks, for potential future uses of the areas, from its subsurface soil, those risks met EPA standards to protect human health. And these risk elements do not consider the fact that the base is 100 fenced in with restricted access. The Maintenance Center is much more tightly controlled than that. That entire 45 acre, and then some, Maintenance Center area is fenced in and restricted only to Maintenance Center workers for access. And the Industrial Wastewater Treatment Plant is also completely fenced in and that access is restricted to workers. And the risk assessment along with these issues of the fencing and the restricted access moves towards a conservative approach, which we want, so we can make risk estimates extra protective. Because that's the main goal, let's look at the risk in a worst case scenario.

For the drainage canal, Potential Source of Contamination 6, the risks from exposure to surface soil, surface water, and sediment did not meet the USEPA standards to protect human health, when we looked at current and potential future uses. One of those future uses was a residential area; a child resident. And that's one that sticks in my mind that, in particular, showed as him not meeting the standards. Now this area is far from any residential area on base, 3 to 5 miles, I would say, for the drainage canal. But we have to evaluate that. It is not fenced in; it is not restricted. So let's look at it as a potential

residential area. And that took place; it did not meet the standards. And again, this includes risks from hypothetical resident use of the area. So if it does not meet the standards, then what should we do about that?

For the drainage canal, Potential Source of Contamination 6, what we are proposing is land use controls which will prohibit and prevent any future residential development. And by doing that, it will protecting human health and the environment from the existing conditions and also under potential future site conditions.

For the other Potential Sources of Contamination, currently the only exposure to any of those sites is to workers in the Maintenance Center or the Industrial Wastewater Treatment Plant, and even when the risk assessment for those areas was conducted, they met the standards for the - the EPA risk standards. They found that the potential health risks are within the range, therefore, proposing no treatment, no containment, and no additional restricted access as being necessary or planned for these areas.

Some things to consider when looking at this proposed plan and the second being especially important to the community, I know. First the proposed plan addresses only sail, surface water and sediment. This will not address the ground water beneath these sites; and we are not ignoring the ground water underneath these sites. We are addressing the groundwater on the base as one entire unit, because you can't set up boundaries and say we are going to treat this portion of the groundwater or this portion of the groundwater. It is all interconnected and essentially one body of water. We need to look at that, study it, and determine what to do with that as one unit, And so groundwater, which we are not forgetting about, is being addressed in an ongoing study under Operable Unit 6. I am sure there are some questions as to the status of that. Right now on my desk, I am reviewing, and I started about a day ago, reviewing the first preliminary draft of the remedial investigation and risk assessment for Operable Unit 6, with the goal of having my input back to the contractor if not tomorrow then Monday so that by the week of the 16th of November, we can have our preliminary draft to the EPA and EPD regulators for their review.

And finally, we get to the meat of the presentation, the main point, the main purpose of the presentation is to have your involvement. And you can provide your comments at tonight's meeting during the question and answer period. What I would like to do is focus all of the questions on Operable Unit 4 specifically, because those are the legally required portions that we must identify - the person who made the question, identify the question, have them properly recorded, and then once we have finished with questions pertaining to Operable Unit 4, we can conduct a more informal session about other questions that you may have. But if possible, you can provide your comments at tonight's meeting, through regular mail, we have some comments sheets in the back; you can email myself or Ms. Hegwood who is from the public affairs office, some of you know her. There are two phone numbers down there. The first one is the public affairs office and the second one is my phone number from Environmental. And the proposed plan, on the 13th when we published that this public comment period was beginning, the proposed plan as well as the

remedial investigation risk assessment were delivered to the library for review, open to the public to read for your further information.

With that said, I would open the floor to any questions pertaining to Operable Unit 4.

Carl Buckhalter: In your conditions of human health risk assessment findings on PSC 22, you say they are within the USEPA rules and regulations, then why are you offering to pay the employees over there hazardous pay?

Captain Ference: Sir, I am not familiar with the hazardous pay for employees over at the Maintenance Center. I am not familiar with that, but I would say that it is not related to PSC 22, the former 90-day hazardous waste facility.

Carl Buckhalter: How about PSC 12?

Captain Ference: I am not sure. Industrial Wastewater Treatment plant workers, I'm not sure. That is not a part of this program. I'm not trying to push off that question. I don't have the answer to that question.

Carl Buckhalter: With your land use restriction on the canal, which is PSC 6, you are intending to do a land use restriction in the way of if you leave the area, that land will be dedicated back to the federal government and you will have control over it, and if anybody were to try and sell it, it would have to be cleaned up, is that correct?

Captain Ference: In a land use control, there are deed restrictions, but the main thing with land use control is it prevents a change of land use. If there is going to be a change of land use, whether it be transfer or ownership or whether it be that we want to build some residential housing in that area, then the decision has to be reviewed and action may need to take place before something along those lines would take place.

Carl Buckhalter: In this period of time, if the proposed land use restriction is in place and the MCLB leaves the area, who will do the enforcing of that land use restriction.

Captain Ference: The Marine Corps is responsible for that property, sir.

Carl Buckhalter: So the Marine Corps would come back in?

Captain Ference: Well, before the Marine Corps ever left or turned over ownership of that property, we would be responsible under Base Realignment and Closure, I suppose.

Carl Buckhalter: All right, so if you intended on at any given particular time to leave this given area, before you left, you would have to clean up that particular area before you moved out, is that correct?

Captain Ference: The decision would be revisited, sir; and I don't know and I can't say how that would be revisited; whether an additional investigation would take place or excavation; I'm not sure how that would be handled. But I know if there is going to be a change in land use, essentially, the decision is taken back and reviewed to determine if additional work needs to take place. I don't know if that would be additional sampling following by additional remediation or just direct remediation based on the sampling that is already done.

Carl Buckhalter: With this land use restriction, what is being done to correct, or can you correct, the situation on PSC 6 at this particular time or is it something that you will just have to wait until you want to leave and then clean it up? Can you do anything about it now?

Captain Ference: Sir, there could be a number of things conducted. You could probably excavate the entire 7 mile canal, but there is no risk there that rates that type of excavation or remediation and the benefits to do that would far outweigh-I mean would be exceeded by the cost of doing such a thing.

Carl Buckhalter: Well, what I'm trying to get at is, if you are willing to put a land use restriction on PSC 6, then you are trying to tell us there is something wrong there, but then again you're trying to tell me that, "hey, we don't need to do anything about it" because there is nothing wrong with it. Which is it, is it contaminated or is it not contaminated?

Captain Ference: Sir, there are contaminants there, so it is not as clean as a fresh piece of dirt that's never been trod upon. However, the risks for the area-there is no risk for the personnel that work in that area. The hypothetical risk that exceeded the standards was for a child resident playing in that area, playing in that canal, every day and that's not the case of what takes place in that area. There are no child residents over there. But is there chemicals of potential concern present there, yes, sir, there are.

Carl Buckhalter: Okay.

Sonia Gooden: What type of controls do you implement in order to keep humans off of that area that you are concerned about, that institutional controls have been placed on? Do you fence it?

Captain Ference: No, ma'am, it is not going to be fenced.

Sonia Gooden: It is not fenced. Is there any signs up at all that would give a trespasser or a child, any individual, that they should be on the property, playing in the dirt, playing in the ditch.

Captain Ference: No, ma'am, because of the proximity of base housing and where children reside being so far away and the fact that children do not play over in the western portion of base, or are not authorized over on that portion of base. That-the only thing that is being proposed is we do not want to develop this for residential land use. In fact one of the risk assessments, was child trespasser. I don't want to misstate, I want to make sure, but generally, that is one of the things looked at is the trespassers.

Joe Daniel: We evaluated a base worker, a child transient, and where's Doctor Dulaney?

Dr. Marland Dulaney: Yeah, a child transient is the equivalent of a child trespasser.

Captain Ference: So that was evaluated within the risk assessment.

Dr. Dulaney: That was evaluated and that was within the acceptable range. What we are saying is if a child were to play there all the time, it wouldn't be safe. Because the child would be there every day, 350 days a year for six years. That is not safe. But if a child were to cut through there, just playing or going from one place to another, if an adult were to do it, if an older child were to do it, that would be safe.

Sonia Cooden: Do you have wildlife on the property of the Marine Base in the confines of that 3500 acres. Do you have wildlife and deer and quail?

Captain Ference: Yes, ma'am.

Sonia Gooden: How would you, are you going to-some of them have natural habitats and our question, I think, would probably be would the wildlife be affected. Since Dr. Dulaney said 365 days a year for a child, how would-what type of response would we have on the wildlife that would be out there in that area?

Captain Ference: There was an ecological risk assessment conducted. I don't have the numbers. An ecological risk assessment was conducted; that was considered. I don't have the specifics. it is in the remedial investigation risk assessment and I don't have the numbers off the top of my head. If you would like, upon review

of that information if you see something that you have a concern about, I would love to have a comment so we can address it. I don't know if Dr. Dulaney can answer that.

Dr. Dulaney: We looked at individual species that were considered to be very sensitive and most likely to occur in those areas, mice, rats are very common. And there was no ecological threat there. We don't look at deer, but usually the mice are going to be very good indicators of it and that one wasn't a problem. As a general rule, what we know about the environment if these specific species that we select are not going to be a problem, as a general rule, much higher species are not as well.

Larry Gooden: This is in the canal, right?

Captain Ference: Yes, sir.

Larry Gooden: How do you prevent-do you ever do maintenance in that canal as far as like keeping up landscape or you have people out there that might be mowing or you may have a blockage or something. How do you take care of that problem if you have a group of people going in to stop a blockage that might occur in the canal or somebody happen chance go in with a tractor or a mower and they may carry some of it off on equipment. How do you prevent that? Is there signs that might restrict a person going in there with any type of equipment that might by chance slip by and got into that area because they was doing landscaping or some type of grounds work? Because I know that we had the city come out on that farm out there they didn't even know that was a superfund site and had wells out there. So how well are you protected against that issue if you've got tractors and mowers and things going out there and you are sitting in your office saying, "Whoa, that stuff is not supposed to be out there." And he's tracking stuff off in his boots or whatever.

Captain Ference: Well, sir, the adult worker situation was considered in the risk assessment. And those risks met the standards for an adult worker for that area. So no there, there is not going to be any restrictions in that area.

Larry Gooden: So if that guy was mowing out there and he had a problem with his equipment and he got off and got his hands in it, and he was wiping the sweat off his face, there is no contact problem.

Captain Ference: Yes, sir.

Larry Gooden: So how is that person aware of this situation if he's out there?

Joe Daniel: Captain Ference, why don't you have Dr. Dulaney elaborate on that?

Larry Gooden: Before you do, also with the wildlife, the herons go out there and they eat frogs, crawfish, and they carry off other frogs, too.

Dr. Dulaney: And unfortunately we can't study every animal species that is out there, so we pick the ones that we know, through the literature that's available, are the most sensitive, are the most likely. Mice, for example, if there is going to be something in the soil or down, in the water, mice have a-they are very useful because they have a small body weight. They are very active. They dig in the soil a lot and they have a very high contact with this. They have a better chance of coming into contact with the contaminants. Herons do feed in these kinds of areas, but they feed over a much larger area. A mouse can only go in a very small range. His home range is something about the size of this room. So when you study something in a small area, if he's in a real high contact, and he's safe, then the process is that that animal is safe; then something that feeds on him is safe. Now there are certain chemicals, as we all know, that go up in the food chain, lead and some PCB's and things like that and we take extra precautions for that kind of stuff. Even adding all these layers of protection to it, there wasn't a problem with the ecological risk. So that's how we deal with this. It is not quite as straight forward as with human health.

Dr. Dulaney: But to answer your question for human health, the reason why the child was above the regulations is because I have some dirt eaters at home. You know how kids are in the backyard, you know, they are just covered with dirt all the time. We assumed that they were going to do this 350 days a year, rain, shine, every day except for 2 weeks of vacation, and they were going to do this for 6 years. Those very, very stringent conditions, it wasn't safe. But someone who was working, say an excavation worker, someone who is going in there digging; that's a very high intensity, you get real messy and dirty. But how many times do you do it? You certainly don't do it 350 times a year for 16 years. Now if you did, that might represent a problem. But we looked at, I believe it was 30 days; someone out there digging for 30 days and got very, very-they ate about half a gram of soil a day, got it on their skin, got very messy, and even that worst case scenario, for that person, it was not a problem.

Larry Gooden: Even in heavy rain, overrun.

Dr. Dulaney: Right.

Larry Gooden: Even days later, it may be saturated ground and some seeping out, carrying sediment off.

Dr. Dulaney: Right. And that is something that you want to take into account and our people did do that because when it rains it spreads out and mixes with other soil and we-one of the other things we did, we assumed the worst case scenario, the dirtiest soil was characteristic of the entire site. Not all the soil was that contaminated.

Larry Gooden: So are you saying this problem is going to take care of itself over time?

Dr. Dulaney: I'm a toxicologist. I don't know that. In my experience though, I've worked on hazardous waste sites for over 11 years now, and many times nature can. Now metals, there's not much you can do about it. They're naturally occurring; metals are just part of nature. Many of the other things that you did find, many of them will take care of themselves and if there is going to be a change, I work on a lot of BRAC sites, and I can tell you that they go back and they look at this pretty tightly. So any concerns you have for BRAC, they're pretty good at going back and looking at this stuff again.

Carl Buckhalter: What is a BRAC?

Dr. Dulaney: That is the Base Realignment and Closure. Sorry, we use a lot of acronyms. I'm sorry.

LuAnn Turnage: Who is the all-knowing person or committee that establishes these 6-year periods, 30-day periods, 350 days out of the year? How do you arrive at these amounts?

Dr. Dulaney: I'm it tonight. These were defined by EPA scientists back in the late 80's and they are thoroughly reviewed as we go along. When we first start a risk assessment, we meet with the risk assessors for the state of Georgia and for the EPA. I'm a board certified toxicologist. The state has 2 board certified toxicologists, the EPA has one. And we all sit down in a room and say this is what we want to do and they come back and say, no, no, that's not conservative enough, we want you to do this, this and this. And we argue back and forth until we come up with a series of assumptions that are protective. And the idea is if you protect the most sensitive person, the person that is out there in the mud everyday, that 6-year old child, if you protect that person, you protect everybody else. If you protect the guy that's out digging in the soil, in the mud,

for 30 days and he comes home covered with mud, and he's protected, then anybody that's walking through there, that cuts through there, that gets dirt on his shoes cutting through the canal, is also protected. And that's why we do it. We actually set the standard so conservative that everybody else underneath here is protected as well. It is very rare that you are going to have construction for 30 days for something that small. But it is so conservative that we say that because it is up here and you, me, and everybody else is down here and we're all protected as well.

LuAnn Turnage: Do you normally follow up-once you make this summary, do you follow up with public health assessments with people who have been exposed or been compromised with these contaminants; such as - you know, I can understand what you're saying about a 6-year old child. But let's take an elderly person that takes heart medication, are you taking into consideration medications that may be coming from outside and we are not talking about a super healthy individual.

Dr. Dulaney: Yes, ma'am.

LuAnn Turnage: But through groundwater contamination, of course, even working in the yard.

Dr. Dulaney: Okay, one of things, if you read the risk assessment, it uses a term called the "reference dose." And the definition of the reference dose is it is the dose that is acceptable for you to be exposed to every day and be safe. And this includes sensitive sub-populations. And the reference dose includes children, neonates, unborn children, elderly, infirm, it includes everybody. So when the EPA sets this number and they put it out for general review in the entire scientific community, it usually comes back shot full of holes because everybody is saying, you know, some people are saying "it's not conservative enough" some people are saying "it needs to be less conservative." And then they all get together and they try it again. This is an iterative process. When they come to an agreement, usually the entire scientific community says, "well, there is some things I don't like about it, but I agree this is safe." And I can tell you as a toxicologist that every reference dose that is used by the EPA and everyone they used here is safe. The numbers that they are providing are safe.

Carl Turnage: A couple of questions. In the past, on PSC 6, has any cleanup been done to the ditches to try to remove the canal-try to remove any of the contaminants?

Captain Ference: No, sir.

Carl Turnage: What about the-are you going to have land use restrictions on that area, the canal area?

Captain Ference: Yes, sir.

Carl Turnage: What about the off-Base area, from there to the river?

Captain Ference: No, sir. The Marine Canal? No, Sir. What was found, Joe, I don't mean to put you on the spot. What was found was in the sediment and surface soil, is that correct, for PSC 6?

Joe Daniel: That's correct.

Captain Ference: And in the vicinity across from Maintenance Center?

Joe Daniel: Right.

Captain Ference: And that is further downstream from where these areas were.

Joe Daniel: That's correct.

Carl Turnage: So let's assume that from the base to the river it's clean?

Captain Ference: Has there been any sampling on the Marine Canal?

Joe Daniel: The area downstream, from the southwest corner of the base, is beyond the control of the Marine Corps. There are other inputs to that canal, so the Marine Corps cannot account for everything that's downstream from there. There are industries; there are other inflows of surface water runoff, for instance, so that is beyond, literally-physically beyond the control of the Marine Corps.

LuAnn Turnage: Has the EPA ever tested that ditch?

Joe Daniel: Rob, can you comment on that?

Rob Pope: Not to my knowledge. Not in conjunction with the Marine Base, Albany.

LuAnn Turnage: Would you consider testing it?

Rob Pope: It is something that could be considered, yes. Didn't the drainage basin, both inside and outside the base, get sampled?

Joe Daniel: There was some, as I-speaking from memory here, I believe there was a study done by another agency. I'm not sure if it was the EPA or what agency did it. But I think that there was a study

done an some media, either water or sediment for that canal. But I don't have specific information.

LuAnn Turnage: I just remember reading in the PSC's, the list of PSC's, in that drainage canal, there was like 950,000 tons of solids going down that ditch, is that correct? Or have I got it confused with another ditch?

Captain Ference: I don't have a number off the top of my head, ma'am. I'd have to refer to the investigation.

Judy Kimble: I'd like to know when the equipment was coming back from the Gulf, where was all this sand and water placed into. Where did it go when they washed off the equipment?

Captain Ference: Ma'am, are you referring to sand from Desert Storm?

Judy Kimble: Right.

Captain Ference: I was not here when the equipment came back, however, I was in Saudi Arabia when we were packing up equipment to bring it back and if you could see the amount of agricultural inspection that we had to pass in order to put a piece of equipment back on ship, you would be amazed. If they found any sand whatsoever in the equipment, it was sent back to the wash line. We spent many, many hours washing equipment so that when we brought equipment back, there would be no sand.

Judy Kimble: Why was there sand in the equipment my husband worked on? There was canteens and knives and all that when he went to work on the equipment. And him, and I think he said he knew at least 75 people, broke out in a rash which no doctor can diagnose. The government has denied it, but he had no problems until he worked on the equipment that came back. It did have sand in it and it did have canteens and other stuff in it.

Captain Ference: I don't know the answer to that, ma'am.

Judy Kimble: Where did it go, did it go into this ditch or did it go into a certain place because there was stuff on it.

Captain Ference: One thing I do know is that when they offload ships - and it is only from my experience with the Marine Corps, when they offload ships, oftentimes it is by a landing craft which is they will load equipment, wheeled vehicles, tracked vehicles, up onto the landing craft, they will swim that landing craft ashore, drop the gate, and the vehicles, Humvees, all of that will drive right across the beach. I assume that most of what

came here probably came from Camp Lejeune, North Carolina, and I would assume-I don't mean to assume-

Judy Kimble: How did it get in there with the-you can tell that it came from over there by the stuff that was in it. Do you understand what I'm saying?

Captain Ference: Yes, ma'am, I don't know the answer to that.

Judy Kimble: He has been really sick with that stuff and nobody can seem to help it because they can't diagnose what he's got.

Captain Ference: I don't know the answer to that one, ma'am, I'm sorry.

Judy Kimble: But I'm concerned if it's going in that water, too; if it's gone into the ditch or wherever this water is flowing, then, you know, who knows what's in there. If it broke these people out that can't even be diagnosed, you know what is it going to do if somebody else gets in there and gets in ingested into their system. There is no telling what it is going to do to them.

Captain Ference: In the investigation, the only chemicals that were found are those that were outlined in the investigation. I don't know if the source would be due to anything like that. I would say that based on my knowledge of off-loading ships, I don't know of a way to get equipment off a ship onto a rail car with-actually, if you pulled into a port. But oftentimes that is not the case, they swim the equipment to shore. I'm not saying that some sand didn't come from over there.

Judy Kimble: Right, 'cause he's got some of the sand; we just tried to find something to do with it.

Captain Ference: I'm not sure, ma'am, I'm sorry.

Judy Kimble: That's okay. It's the same answer I get from everybody, so I'm used to it.

Carl Buckhalter: With the 1994 flood was the PSC 6 canal flooded?

Captain Ference: This is Mr. Buckhalter's question and no, none of the base is flooded, is that correct? I'm looking up at Mr. Al Hargrove, Compliance in the Environmental Branch, and he is saying no. None of the base was flooded.

Captain Ference: Mr. Hargrove, could you comment on that?

Mr. Hargrove: There was no water backed up on base. However, further down the canal, downstream, there was water.

Captain Ference: No water backed up on base from the river.

Mr. Hargrove: Right. Back the canal on downstream from there, there was water in the canal.

Sonia Gooden: The canal itself did flood, at Mock Road, yes. Remember it went over the road and Proctor and Gamble was flooded.

Captain Ference: Any further comments, Al? Ms. Gooden said that it was flooded over Mock Road, any comment on that, how far up into base did that back up?

Marie Estes: It came from the base into the canal and went out, but it was flooded as it went out.

Captain Ference: I lost my train of thought. Oh, Mr. Buckhalter, does that answer your question?

Carl Buckhalter: Yes, sure.

Captain Ference: Any other Operable Unit 4 questions? Yes, sir.

Carl Buckhalter: With the investigative findings of arsenic, chromium, and whatever it is, is that below the MCL?

Captain Ference: MCL, Sir, is a water-a drinking water standard. Joe, do you----

Carl Buckhalter: Let's back up then. What levels of arsenic-those three metals, what levels are they to a human that they found?

Captain Ference: Well, that is what's evaluated in the risk assessment.

Carl Buckhalter: Okay. Has it come out?

Captain Ference: Yes, sir, that's part of the same report that is up in the library. The remedial investigation, base-line risk assessment, then the risk assessment is what I've alluded to earlier; and that's up there along with the proposed plan.

Karen Hall: They keep talking about safe levels and all that kind of stuff, the EPA said this much is safe, whatever, is there any way that we can get a copy of how much of all of these chemicals that we have found is safe? I mean, for human beings?

Captain Ference: In response to that question, just for the record, there has been some information on sheets handed out to EAGLE by Mr. Rob

Pope and they will be getting out information to you, Ms. Hall. If there is further information, please submit a comment and we'll see what type of information we can get for you.

Marie Estes: In '94 when we had the flood, did the water come over PSC 3 and into the swamp that's directly across the street from my house? Wouldn't that water have been contaminated from the PSC 3 and the PSC 26?

Captain Ference: I'm sorry, could you repeat the question.

Marie Estes: The PSC 3 and PSC 26, it sits directly across Ramsey Road.

Captain Ference: I'm sorry, if you don't mind, I do want to get back to that; but I want to focus on Operable Unit 4 and then move on to other questions after that if that would be OK.

Marie Estes: That's fine.

Carl Buckhalter: On your findings and once you get the minutes of this meeting, what is the timeframe and who does it have to go through before you receive the ROD for the Operable Unit 4?

Captain Ference: The end of the public comment period is 11th of November, and there is a responsiveness to comments that addresses comments, correct?

Joe Daniel: It's a responsiveness summary.

Captain Ference: A responsiveness summary that addresses the comments. And then from those comments we move on to the record of decision and that goes to the commanding officer for signature to implement the plan.

Carl Buckhalter: You do not have to send it to the EPA, EPD or anybody else?

Captain Ference: I'm sorry, what's that, the responsiveness to comments?

Carl Buckhalter: Well, no, what I'm saying is your ROD, doesn't everybody have to sign off on that?

Captain Ference: Yes, sir. The Georgia Environmental----

Carl Buckhalter: What is your time frame on that. I know that's not to the day, but I mean given-

Captain Ference: They have seen the record of decision already and there have been comments made and changes made to the decision which is based on this particular proposed plan. This is a draft record

of decision. This is what we are writing as a draft and they have given comments already and we have made changes on that. And for time frame, we're looking at early December as a signing, a formal signing of the record of decision.

Carl Buckhalter: Well, maybe what I'm trying to clarify here is when the initial proposal made and when will it, are you all talking about a year, two years, six months, what?

Captain Ference: No, the initial proposal, the formal initial proposal, proposed plan, was 13 October and that is also when the comment period begins. That is the formal issuance of the proposed plan. We have the 30 day comment period, address the comments, address any concerns, and move toward a record of decision signing which will be approximately 2 months after the proposed plan.

Carl Buckhalter: All right, with this proposal, what is the time frame of the information that you are basing this proposal on. In other words, how long have you been studying the PSC 6, 13, 22, whatever it is. How long has it been proposed for, you know, your test wells, whatever else you have to do to come up with the situation where you feel safe enough to give say a recommendation for cleanup or what to do about it?

Captain Ference: The initial investigation, I believe, was in '95? That's before Operable Unit 6 was open?

Joe Daniel: The initial draft on Operable Unit 4, I believe was in '94. We received comments on that from the state and EPA and reworked the document, collected additional information, submitted a final draft, and then a final and then submitted the proposed plan. So it's been several years.

Carl Buckhalter: Were there any test wells involved in the information collection of PSC 6?

Captain Ference: Test wells have been installed in the vicinity of Operable Unit 4, but they are for base-wide groundwater, Operable Unit 6, which is in the investigation I'm trying to read currently.

Sonia Gooden: Please bear with me. You have just given us a sheet, October 1998, it said land use controls-institutional controls. We're talking fences, signs, prohibition against excavation, construction, drilling, disturbances of the soil, property zoning restrictions. We understand that you will not pass title to land without this deed restriction. But this is material that you have here tonight that clearly states on how you will implement land use controls. It's calling for fencing, signs, how many fences and signs have you implemented out there on

the base with all the PSC's you've put institutional controls on?

Captain Ference: That is not a cookbook for every PSC. Those are examples of possible land use controls. For example, PSC 3, there is a restriction against digging because there is a cap on the land fill. PSC 16 is a PCB area by the chow hall, if you remember, and that area, after excavation, was undermining the foundation so they capped-they filled it with clean fill, capped it with a concrete cap, put a fence and signs around PSC 16. That is one I can think of off the top of my head.

Sonia Gooden: All right, but there are others out there that's had institutional controls placed on them. PSC 3, 26, it says right here: signs and fences are examples of physical methods while legal methods refer to deed restrictions. So my question is, is why are we given this information, we assume that you have signed and fenced these pieces of property, the hazardous waste sites that has institutional controls on them, and yet they haven't been fenced and posted.

Captain Ference: No, ma'am. If that's what that implies, then I apologize, because that is just an information sheet that explains types of land use controls and you decide what land use control you are going to do at a potential source of contamination based on the risk and the situation for each location; at PSC 16, we needed to go full board. Cap it, fence it, put up signs. However, other areas, that's not required to be protective of human health and the environment. So if that implies that is what is required for all land use control, then that is not what we are trying to get across with that. That is just an informational on types of land use controls and legal restrictions on future land use.

Joe Daniel: Captain Ference, can I elaborate on that? I'd like to refer Sonia to the land use control implementation plan, it is part of the proposed plan. Those are the land use controls that we are proposing specific to Operable Unit 4. What you have is a fact sheet, that is a generic sheet listing the types of land use controls that may be used in general.

Sonia Gooden: Well, can you see how we can get very confused between what you have done and what you are passing out as information to the community. It is very confusing that this sheet here clearly states the very first sentence, the term land use controls or LUC's refers to the physical or legal signs or legal statement that protects public health by limiting human activities at sites where chemicals will remain in place after cleanup. Signs and fences are examples of physical methods.

This is a definition of land use controls. But yet, whenever you refer to land use controls in your remediation, it means something totally different than what we have in our hands.

Joe Daniel: Right, it's taken out of context when read independently. We have the specific land use controls attached to the proposed plan. But we appreciate that input and thanks for that clarification.

Larry Gooden: Getting back to you again on the comment on the 30-day, working 30 days consecutively in the area of that canal. Are these people who are working in the area as groundkeepers, are they schooled or informed of the situations in the area; if they happen to be working in that area. If there is by chance some stuff dug up, by chance that you are not aware of, and it's carted off, what's the consequences of that? And how do you really determine that a 30-day consecutive is hazardous to you? How do you know 2 weeks is not the hazardous point? How do you determine 30 days is the hazardous point? If a person has been working in another area and he's got cuts or open wounds and he goes over here and works 2 hours over here and he's trampling around in that stuff. How do you know that's not hazardous to him?

Captain Ference: Well, the second question is sort of toward Dr. Dulaney and I'll field the first question.

Dr. Dulaney: Okay, what we did was we assumed that a 30-day period is how long this person was going to be working. If it is safe to work for a 30 days, then it is safe to work for 20 days, because you are there less. There is less exposure. And there is a general rule, the less your exposure, the less your risk. Ten days the same way, five days is exactly the same way. So 30 days we thought was so conservative that it wouldn't occur. What might occur if somebody's out there for a week, 10 days? If 30 days is safe, 10 days is safe.

Now the other scenario that you have, we don't take into account the-we assume that this is a healthy worker. That's really about the only thing that we can do. We do assume, though, that they got a fairly large amount of it on their skin. Much more of it than the studies have actually shown when we go back and reevaluate the science, we are so conservative for skin absorption that we are actually over-estimating the risk. So we are assuming that there is a very thick layer of material on your skin that is the most highly contaminated out there, or very high contamination out there. And that's always on your skin. And even in that situation, you are still safe.

Larry Gooden: So that individual working out there, he's not aware of that, though. He's not informed at all, that he has a right to know.

Captain Ference: No, sir.

Larry Gooden: Because he was working along and accidentally got a tractor stuck and he tried to get it unstuck, he swashing around in that stuff, it splashes on his face, whatever, how could you say that that guy's not contaminated.

Captain Ference: For the training question, because the risk does not exceed the acceptable levels of the EPA, no there is no training that says watch out for this; because, in essence, there is ----

Larry Gooden: You would sign off on this saying you would be-you would validate yourself to be in that vicinity. Let's say you had to do it, would you sign off and go there tonight and say it's safe?

Dr. Dulaney: Oh, sure. That's one of the reasons that they have people like me that do this kind of stuff. If I didn't think it was safe, I wouldn't be here telling you this. I can tell you that right now. If I didn't think it was safe, I would not be standing here.

Carl Buckhalter: On the PSC, what length of period are we talking about or will it ever be clear as far as non-contaminated without you doing something to it?

Captain Ference: Sir, are you referring to Operable Unit 4, Potential Sources of Contamination?

Carl Buckhalter: Yes, sure.

Captain Ference: That's what's in the investigation. We have found contamination and that is what is being addressed.

Carl Buckhalter: Well, I know. What I'm saying is, you are not going to do anything at this present time. Is it going to clear itself up? The drainage canal, is it going to clear itself up with more water running through it?

Captain Ference: Well, sir, many—I can't speak to every specific one and such as Dr. Dulaney mentioned, the metals, those are persistent and they are naturally occurring. The—for many other compounds, they are naturally degraded. Even very persistent compounds are naturally degraded, just more slowly over time. They won't reproduce and expand. I can't answer----

Carl Buckhalter: With these three chemicals that you have listed here, are they naturally occurring?

Captain Ference: Yes, Dr. Dulaney answered that question, arsenic, chromium, and vanadium are naturally occurring.

Dr. Dulaney: They may not be natural from this situation, but they are naturally occurring.

Captain Ference: Any additional Operable Unit 4 questions?

John Smith: Where is PSC 3 located? Is it located on the north side of the base?

Captain Ference: PSC 3 is located on the north side of the base. And if you have any questions about that, sir, we can address that immediately after we wrap up all the Operable Unit 4 issues.

LuAnn Turnage: All the operable unit maps that were on the home page, there are three circles that are not identified. But they are on all the maps of the OU's. What are they?

Captain Ference: I think I know what you are referring to.

LuAnn Turnage: Yes, it was on yours a moment ago.

Captain Ference: Okay, I see what they are. Cul-de-sacs. This is where we have a trailer court; there is where the officers' club is, it's the circle they park around; and this is the circular right in front of the headquarters building.

LuAnn Turnage: Okay.

Captain Ference: That's an easy one, I like those.

Sonia Gooden: Do you plan on conducting your next TRC meetings very similar to how you've done this one?

Captain Ference: Well, this is actually a public meeting on the proposed plan. And the next public meeting on the proposed plan for Operable Unit 6, yes, will be conducted just like this. I don't have a date for you. As for TRC meetings, since we've had a heightened awareness in the community, we will have to plan on a larger room to conduct those meetings with TRC members and anyone that is available for attending. I don't know if that answers your question or not, ma'am.

This is the public meeting for a proposed plan. They will be handled like this. TRC meetings are handled somewhat different-

ly, but they do begin with presentations from our staff as TRC members.

Sonia Gooden: Why is this the first time we have ever seen a sign at the end of Ramsey Road announcing the public meeting? We've never had one before. Why now?

Captain Ference: I can't answer why not before. But I can answer why there is one now. There is one now because during our tours with the EAGLE members as well as TRC members, it was identified that the base was not meeting the communication needs with the community, its closest neighbors north of the base. We wanted to try to improve that. That was one method of improving that and making sure that we got the word out.

The audience expressed their appreciation by applause.

Larry Gooden: One thing I want to bring up though is that you do have a list of membership of members that are on the committee that are local officials who claim that they have never gotten an invitation to these TRC meetings and their names are on these lists and we've confronted these people and they say "we've never gotten anything on it." So how did you derive their names are on this list and they have never received any invitation to a meeting?

Captain Ference: First, what I would like to mention is I did give two lists, I believe I copied two lists, I believe I copied two lists. One was a TRC member list. And that was a small list on one page; I believe it was one page. And the other list was about 4 pages of names and addresses which included some officials. And those are on the TRC mailing list, not the TRC members. As for members that have told you they have not received anything, I don't have an answer on why that hasn't happened in the past. We're going to try to improve on that in the future. There was one other portion of your question that I'm missing.

Larry Gooden: I think that was it. Why they were never informed they were part of this, even the mailing. They never received anything. When we, as EAGLEs dealt with the issue of the landfill, one of your members, Jim Tolbert of the Albany Planning Commission, and his name is part of the membership, right. And he said he didn't have any knowledge of the superfund.

Melissa (cannot understand name)
I happen to work with Mr. Tolbert. I don't think that's what he said. I think he said he had not been able to attend the meetings just because of schedule conflicts.

[several people were talking at once about what Mr. Tolbert said]

Larry Gooden.: Okay, but that answers that.

Luann Turnage: We appreciate the sign for our neighborhood, but there are also neighbors to the west and to the south. Did you all inform them of the meeting also?

Captain Ference: Only through the TRC mailing list and the legal notice in the paper on the 13th.

Sonia Gooden: Is there going to be an opportunity for us to say we feel or I would personally like to interject I would like to see some fence and signs around the institutional control property. Does that matter, that that's what I would like to see?

Captain Ference: We'd like to have that input, ma'am, if you would do that through our public comment or e-mail or mail or phone.

Sonia Gooden: Can you take a vote on whether the public would like to see signs posted and fences put around these areas. I mean, can't you find out what our feelings are? This is a public comment period.

Captain Ference: Yes, ma'am, it is important to find out what the feelings are and to address those. But the bottom line is to look at what do the risks proposed by this site rate to be protective of human health and the environment. But we have to take your comments and your consideration and address those and we will. But if a particular location does not necessarily rate some fences to be protective and it costs $50,000 to fence an area, and the community votes and would like for that to take place, I can't stand here and say that's what would take place because that wouldn't be smart use of taxpayer's money to pay $50,000 to fence off an area that may or may not need it.

Sonia Gooden: Okay, bear with me, please. You don't want to spend $50,000 to fence an area off and post it. But there's over $7 million a year spent on the study of contamination at that base. When the human health and welfare is involved, whether it is an employee of the base, a maintenance worker, a trespassing child, if there is one Nth of question whether that person's health could be at risk, don't you think $50,000 is a minimum amount to protect that person. Because in a couple of years, perhaps you will be gone from here. Someone else will take over and things can get dusty. Files-the integrity of records can get transposed. Digital communications now is taking your records into the computer system. So my question is we can address this now, we won't look at future problems down the

road. If you deemed it necessary to put something as coarse and solid as a deed restriction on a piece of property, why can't you fence and post it. Fence it and put signs up, even if it is $50,000. It eliminates future concern.

Captain Ference: I would like to see that, ma'am, if you would, submit that as one of the issues that we're going to have to respond to and we'll discuss it with both the regulatory agencies. I don't have the answers. I can't stand here and say we will do it or a vote of the community will say that we're going to do it. I can't make that decision right here. It's a team and there are other things to be said. But we definitely appreciate that concern and would like to see it if you would write that down on one of the comment sheets as well.

Carl Buckhalter: With my proximity of less than 200 feet from your adjoining property, I have a problem in so much as trying to help myself watch what's happening across the way. How can you help me identify the boundary marks of one or more than one PSC's that are connected or in close proximity and I'm saying this from our tour. I did not-I was not aware of a road or any other open area that was not contaminated between one PSC and another PSC. Can you help me identify them?

Captain Ference: You are referring to the PSC's on the northern end of Base?

Carl Buckhalter: That is correct.

Captain Ference: If we could, can I come back to that. We'd like to press forward. Are there any further questions on Operable Unit 4? I liked to wrap the Operable Unit 4 up and then address some of the larger questions from you all for other areas, but keeping in mind that we are currently working right now with your attorneys in identifying all those questions so we do have an opportunity to answer them-make sure we have a clear set of questions and we can answer them. That is the best way we can get answers back to you. But I would still like to tackle a few that are not pertaining to Operable Unit 4 once we've wrapped up here. Any more Operable Unit 4? [No additional questions.]

Captain Ference: Okay, with that in mind, I would like to thank you all for participating in the Operable Unit 4 public meeting and call the meeting to a close.

APPENDIX B

LAND-USE CONTROL IMPLEMENTATION PLAN FOR POTENTIAL SOURCE OF CONTAMINATION 6

LAND-USE CONTROL IMPLEMENTATION PLAN FOR PSC 6
Marine Corps Logistics Base
Albany, Georgia

This document identifies Land-Use Controls restricting (a) human access to and contact with surface soil, surface water, and sediment contaminated with inorganic constituents through residential development of the site and (b) certain activities occurring on or around Potential Source of Contamination (PSC) 6 of the Marine Corps Logistics Base (MCLB), Albany. Figure B-1 presents the general configuration of PSC 6 within MCLB, Albany.

As a result of previous investigations, MCLB, Albany was placed in Group 7 of the National Priorities List for Uncontrolled Hazardous Waste Sites, according to Title 40, Code of Federal Regulations (CFR), Part 300 (40 CFR 300, July 1991). Harding Lawson Associates was contracted under the Comprehensive Long-Term Environmental Action, Navy contract (contract number N62467-89-D-0317), to prepare and execute Remedial Investigation and Feasibility Study Workplans, Site Screening Workplans, and associated documents for 26 PSCs at MCLB, Albany. PSC 10 (Depot Maintenance Activity [DMA]), PSC 22 (DMA Old 90-Day Storage Area), PSC 13 (Industrial Wastewater Pipeline [IWP]), PSC 12 (Industrial Wastewater Treatment Plant [IWTP]), and PSC 6 (Industrial Discharge Drainage Ditch/Sanitary Sewer Line) comprise Operable Unit (OU) 4 at MCLB, Albany.

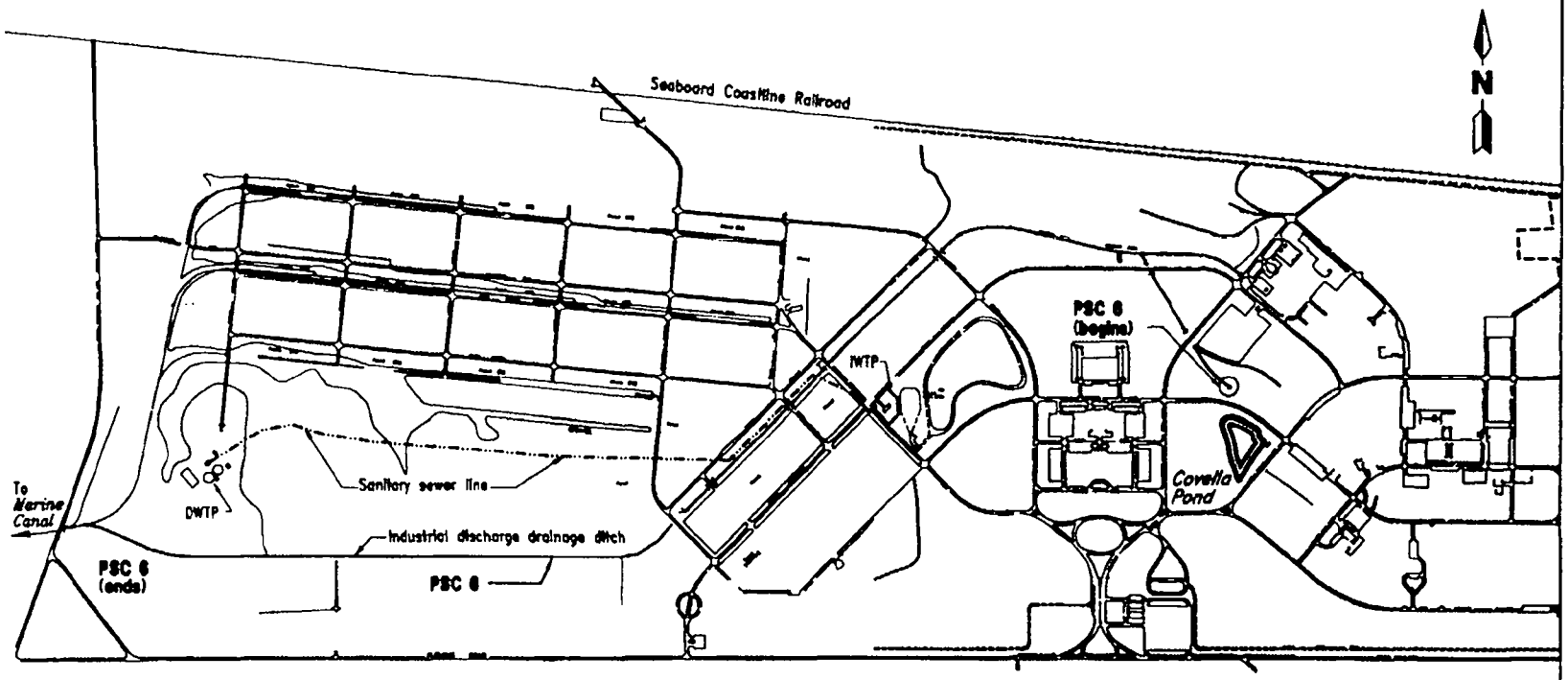
A remedial investigation (RI) and baseline risk assessment (BRA) was conducted at OU 4 from April 1993 through May 1994. The public health and ecological BRA determined that the surface soil, surface water, and sediment at PSC 6 poses a potential noncancer risk to a future resident above the U.S. Environmental Protection Agency (USEPA) Region IV criteria (ABB-ES, 1998). Based on the results of the BRA, USEPA Region IV and the Georgia Environmental Protection Division (GEPD) required the implementation of Land-Use Controls to prohibit potential future residential development of PSC 6.

Site Description and Location

PSC 6 (Industrial Discharge Drainage Ditch and Sanitary Sewer) consists of the industrial discharge drainage ditch that runs from the IWTP to the Marine Canal, and the sanitary sewer line that runs from the IWTP to the Domestic Wastewater Treatment Plant. The industrial discharge drainage ditch is a man-made drainage canal that originates at Covella Pond in the central portion of the base and extends downstream to its intersection with West Shaw Road. Typically, water levels through the ditch are less than 1 foot in depth while water levels during storm events can exceed 10 feet in depth. An underflow weir and sedimentation basin is located at the downgradient end of the ditch. These structures prevent miscellaneous sediment and debris from leaving the base property.

The RI confirmed the presence of low concentrations of volatile organic compounds, semivolatile organic compounds, and inorganics in the surface soil, surface water, and sediment at PSC 6. These compounds are possibly associated with past disposal activities (ABB-ES, 1998).

These RI data were evaluated to determine whether the substances found on site occur naturally or resulted from past waste disposal. Based on this evaluation,



LEGEND

PSC	Potential source of contamination
DWTP	Domestic wastewater treatment plant
IWTP	Industrial wastewater treatment plant

Source: Marine Corps Logistics Base General Base Development Map and USGS 7.5 Minute Quadrangle

0 1,000 2,000
SCALE: 1 INCH = 2,000 FEET

FIGURE B-1
PSC 6
INDUSTRIAL DISCHARGE DRAINAGE DITCH AND SANITARY SEWER LINE

RECORD OF DECISION
OPERABLE UNIT 4

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA

a list of chemicals of potential concern (COPCs) was developed for each environmental medium (e.g., surface soil) sampled at OU 4. A BRA was then prepared in accordance with USEPA Risk Assessment Guidance. This guidance reflects a conservative approach to BRA to ensure that subsequent cleanup decisions are protective of human health and the environment. Exposure pathways to the COPCs evaluated in the BRA included a current land-use scenario in which it was assumed that an older child trespasses at OU 4, as well as a future land-use scenario in which it was assumed that OU 4 is used for residential development (i.e., children and adults live at OU 4).

Human health and environmental risks associated with exposure to surface soil, surface water, and sediment were evaluated in the BRA for PSC 6. These estimated risks were deemed acceptable by the USEPA except for the potential, future child resident land-use scenario. The noncancer hazard index (HI of 3) exceeded the USEPA point of departure (HI greater than 1) thereby requiring an appropriate human health-based exposure restriction in this particular case. The elevated HI was due to the presence of multiple inorganics in the surface soil, surface water, and sediment. Therefore, USEPA Region IV and GEPD required that Land-Use Controls be implemented that restrict future residential development of PSC 6, as defined on Figure B-1.

Land-Use Control Objectives

The OU 4 Proposed Plan calls for the initial implementation and continued application of appropriate restrictions on future usage of the property encompassing PSC 6 while it is owned by the Federal government. These restrictions will apply until/unless site remediation is conducted to restore the site for unrestricted use. Should the Navy later decide to transfer, by deed, ownership in the property encompassing PSC 6 to any private person or entity, then the provisions of paragraph Deed Covenants and Conveyance of Title as set forth on page B-4 of this Land-Use Control Implementation Plan (LUCIP) shall apply. Until that time, the following Land-Use Controls will remain in effect:

Land-Use Controls Implemented to Achieve Objectives

MCLB, Albany Security. Physical access to the property surrounding PSC 6 is controlled by base security measures, including fencing, pass and identification procedures, guardhouse, and periodic security patrols.

Authorized Activities. The following activities are permissible within the confines of PSC 6:

- such activities or uses that will not result in the development of the site for residential purposes or pose a continuous, long-term exposure to child residents located near the site, and thus will present no greater risk of harm to health, safety, public welfare, or the environment; and

- such activities required to ensure adequate protection of human health and the environment.

Unauthorized Activities. Those activities and uses that are inconsistent with the objectives of this LUCIP, and which, if implemented at PSC 6, could pose an increased risk of harm to health, safety, public welfare, or the environment may

not be conducted at PSC 6. The following activities are not permissible within the confines of PSC 6:

- construction of facilities specifically intended for use as residential housing;

- installation and/or storage of chemicals, waste chemical products, or equipment with the potential for chemical leakage; and

- such activities or uses not specifically stated under "authorized activities" listed above that will result in the development of the site for residential purposes or pose a continuous, long-term exposure to child residents located near the site.

Proposed changes in Use. Any proposed changes in permissible uses at PSC 6 that may result in the development of PSC 6 for residential use shall be evaluated by a licensed engineering professional and MCLB, Albany Environmental Branch Office to determine whether or not the proposed changes will present a significant risk of harm to health, safety, public welfare, or the environment. Any such changes in use of the site are subject to approval by USEPA Region IV and GEPD.

Deed Covenants and Conveyance of Title. Should the decision later be made to transfer ownership of the property encompassing PSC 6 to any private person or entity, then the Navy shall either (1) take all actions necessary to remediate the site to then existing residential cleanup standards prior to effecting such transfer, or (2) deed record with the Dougherty County Register of Deeds appropriate restrictive covenants prohibiting future residential usage of the property. Should the Navy not have the requisite legal authority to record such deed restrictions, then it shall take all steps necessary to ensure that the cognizant Federal agency with such authority does so unless the property is remediated to residential standards prior to such transfer. Should cleanup of the site not be effected to residential standards, then notification will be given to USEPA Region IV and GEPD at least 30 days prior to any conveyance of title to the site to any third party(ies) and the purchaser(s) of the site will be advised via the deed documentation as to then existing site conditions and any/all associated Land-Use Controls and long-term monitoring requirements.

Posting. This LUCIP will be referenced in all MCLB, Albany Utility Maps and in MCLB, Albany's Master Plan. In conjunction with MCLB, Albany's Base Master Plan and utility maps, this LUCIP is included in the Land-Use Control Assurance Plan Agreement. No maintenance or construction activities are planned without referring to these documents.

REFERENCE

ABB Environmental Services. 1998. *Remedial Investigation and Baseline Risk Assessment Report for Operable Unit 4, Marine Corps Logistics Base (MCLB), Albany, Georgia*. Prepared for Department of the Navy, Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina (February).

Harding Lawson Associates

February 18, 1999

HLA-ES TN: 2520.027

Mr. Robert Pope
USEPA Region IV, 4WD-FFB
61 Forsyth Street, S.W.
Atlanta, Georgia 30303

Ms. Madeleine Kellam
Georgia Department of Natural Resources
Environmental Protection Division
205 Butler Street, S.E., Suite 1252
Atlanta, Georgia 30304

SUBJECT: Operable Unit 4 Final Record of Decision
Marine Corps Logistics Base, Albany, Georgia
Contract No.: N62467-89-D-0317/086

Dear Mr. Pope and Ms. Kellam:

On behalf of MCLB, Albany and SOUTHNAVFACENGCOM, Harding Lawson Associates has prepared the referenced Final Record of Decision for Operable Unit 4, and enclosed two copies for your review.

Please contact Dan Owens at (843) 820-7331 or me at (850) 942-7454, extension 246 if you have any questions regarding this package.

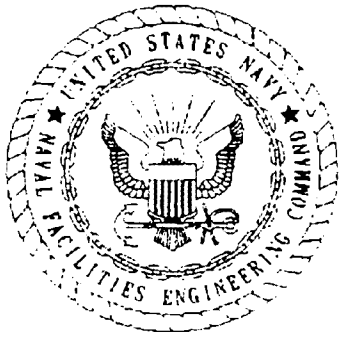
Sincerely,

HARDING LAWSON ASSOCIATES

Joseph H. Daniel, P.G.
Installation Manager

2 Enclosures

cf: D. Owens, Southern Division, Naval Facilities Engineering Command
J. Sanders, Southern Division, Naval Facilities Engineering Command
Capt. A. Ference, Marine Corps Logistics Base, Albany
F. Lesesne, Harding Lawson Associates



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/086 are complete and accurate and comply with all requirements of this contract.

DATE: February 18, 1999

NAME AND TITLE OF CERTIFYING OFFICIAL: Joseph H. Daniel, P.G.
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Frank Lesesne
Project Technical Lead

(DFAR 252.227-7036)