AR1458

Final

Environmental Assessment for Master Interim Lease, Defense Distribution Depot Memphis, Tennessee

Prepared for

Defense Logistics Agency

by

US Army Corps of Engineers
Mobile District

September 1996

E.1.b

[redacted] Final Environmental Assessment for Master Interim Lease, DDDMT, US Army Corps Of Engineers, Mobile Sept 1996

ENVIRONMENTAL ASSESSMENT ORGANIZATION

This Environmental Assessment (EA) evaluates the environmental and socioeconomic impacts of DLA's proposed action to grant a master interim lease of surplus Defense Distribution Depot Memphis, Tennessee (DDMT) property to the Memphis Depot Redevelopment Agency (MDRA) prior to the disposal of DDMT. The proposed action aids in fulfilling DLA's underlying need to comply with the President's Five Part Plan to Revitalize Base Closure Communities (July 2, 1993). This EA will facilitate decision making on courses of action to support economic revitalization of the community.

An ***EXECUTIVE SUMMARY*** briefly describes the proposed action, environmental and socioeconomic consequences, and mitigation measures.

SECTION 1.0 ***PURPOSE, NEED, AND SCOPE*** summarizes the purpose of and need for the proposed action and describes the scope of the environmental impact analysis process.

SECTION 2.0 ***DESCRIPTION OF THE PROPOSED ACTION*** describes the proposed action of a master interim lease of the main installation at DDMT.

SECTION 3.0 ***ALTERNATIVES CONSIDERED*** examines alternatives for implementing the proposed action.

SECTION 4.0 ***AFFECTED ENVIRONMENT*** describes the existing environmental and socio-economic setting of Defense Distribution Depot Memphis, Tennessee.

SECTION 5.0 ***ENVIRONMENTAL AND SOCIOECONOMIC CONSEQUENCES*** identifies potential environmental and socioeconomic effects of implementing the master interim lease.

SECTION 6.0 ***FINDINGS AND CONCLUSIONS*** identifies potential impacts associated with the alternatives and draws a conclusion as to which alternative should be implemented.

SECTION 7.0 ***LIST OF PREPARERS*** identifies persons who prepared the document and their areas of expertise.

SECTION 8.0 ***DISTRIBUTION LIST*** indicates recipients of this environmental assessment.

SECTION 9.0 ***REFERENCES*** provides bibliographical information for cited sources.

SECTION 10.0 ***PERSONS CONSULTED*** provides a listing of persons and agencies consulted during preparation of this EA.

APPENDICES

- ***A*** Coordination
- ***B*** Record of Non-Applicability (RONA) Concerning the General Conformity Rule (40 CFR 51)
- ***C*** Economic Impact Forecast System (EIFS) Modeling Results

An ***ACRONYMS AND ABBREVIATIONS*** list (foldout) is provided immediately following the appendices.

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Finding of No Significant Impact for Grant of Master Interim Lease of the Main Installation of the Defense Distribution Depot Memphis, Tennessee

Pursuant to the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508) for implementing the procedural provisions of the National Environmental Policy Act (42 U.S.C. 4321 et seq.) and Defense Logistics Agency Regulation 1000.22 (*Environmental Considerations in DLA Actions in the United States*), the Defense Logistics Agency conducted an Environmental Assessment (EA) of the potential environmental and socioeconomic effects associated with implementing a master interim lease of the main installation of Defense Distribution Depot Memphis, Tennessee (DDMT).

1. PROPOSED ACTION

Grant a master interim lease, to the Memphis Depot Redevelopment Agency (MDRA), of the DDMT main installation property no longer required for the DDMT mission. The master interim lease will be for purposes resulting in mixed use (predominantly commercial storage).

Leasing of the installation will continue until disposal of the property and reuse under the management of the MDRA. Transfer of the property is likely to occur during or after 1998. Ultimate reuse of the DDMT property cannot be known until development and adoption of the MDRA's Redevelopment Plan, expected to be available in early 1997, and initiation of that plan under the management of the MDRA.

2. ALTERNATIVES CONSIDERED

DLA considered three additional alternatives that met the Agency's purpose and need: Disposal by Conveyance or Transfer; Lease in Furtherance of Conveyance; and Interim Lease for Mixed Use (Predominantly Wholesale and Retail Sales). They were determined to be not feasible. A no action alternative involving retaining all surplus properties in a caretaker status was also considered.

3. FACTORS CONSIDERED IN DETERMINING THAT NO ENVIRONMENTAL IMPACT STATEMENT IS REQUIRED

The EA, which is incorporated into this Finding of No Significant Impact, examined potential impacts of the proposed action and no action alternative on 15 resource areas and areas of environmental and socioeconomic concern: land use, air quality, noise, water resources, geology, infrastructure, hazardous and toxic materials, permits and regulatory authorizations, biological resources, wetlands, cultural resources, socioeconomics, economic development, quality of life, and installation agreements.

Implementing the proposed action would result in only minimal or no environmental or socioeconomic impact. A somewhat positive impact would be realized by facilitating early economic redevelopment and job creation.

Mitigation to avoid, reduce, or compensate for limited adverse impacts would be designed to fit the particular characteristics of the lease. Best management practices would be implemented to ensure compliance with applicable regulatory requirements.

4. CONCLUSION

Based on the Environmental Assessment, it has been determined that implementation of the proposed action would have no significant direct, indirect, or cumulative impacts on the quality of the natural or human environment. Because no significant environmental impacts will result from implementation of the proposed action, an Environmental Impact Statement is not required and will not be prepared.

5. PUBLIC COMMENT

DLA plans to initiate this action 30 days from the date of execution of this Finding of No Significant Impact. Copies of the EA may be obtained by contacting Mr. Jerry Jones, U.S. Army Corps of Engineers, Mobile District, 109 St. Joseph Street, Mobile, AL 36602. This EA is available for reading at the following repositories: Memphis/Shelby County Public Library, Main Branch; Memphis/Shelby County Health Department, Pollution Control Division; and the Cherokee Branch Public Library.

Date: 24 Sept 96

Michael J. Kennedy

MICHAEL J. KENNEDY
Colonel, USMC
Depot Commander

Environmental Assessment
for
Master Interim Lease,
Defense Distribution Depot
Memphis, Tennessee

Prepared by:

Mobile District
U.S. Army Corps of Engineers

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ENVIRONMENTAL ASSESSMENT

LEAD AGENCY: Defense Logistics Agency

TITLE OF PROPOSED ACTION: Implementation of a master interim lease of the main installation of the Defense Distribution Depot Memphis, Tennessee

AFFECTED JURISDICTION: Memphis and Shelby County, Tennessee

PREPARED BY: William F. Vogel, Colonel, USA, US Army Corps of Engineers, Mobile District, Commanding

APPROVED BY: Michael J. Kennedy, Colonel, USMC, Depot Commander, Defense Distribution Depot Memphis, Tennessee

ABSTRACT: The proposed action is to implement a master interim lease for the main installation of the Defense Distribution Depot Memphis, Tennessee (DDMT). The purpose is to make surplus DDMT property available for economic redevelopment prior to closure and transfer of the installation. It fulfills DLA's underlying need to comply with the President's Five Part Plan to Revitalize Base Closure Communities by facilitating immediate economic redevelopment. An interim lease may be granted until the Army disposes of the property. The master lease would be for purposes resulting in mixed use (predominantly commercial storage). In addition to the proposed action, a no action alternative is evaluated. The main installation area consists of 578 acres with 6.4 million square feet of facilities and 5,081,000 square feet of open storage space. No significant adverse environmental or socioeconomic impacts have been identified. Therefore, preparation of an Environmental Impact Statement is not required and a Finding of No Significant Impact will be published in accordance with DLA Regulation 1000.22 (*Environmental Considerations in DLA Actions in the United States*).

REVIEW COMMENT DEADLINE: Comments may be provided to Mr. Jerry Jones at the Corps of Engineers, Mobile District (ATTN: CESAM-PD-EI), 109 St. Joseph Street, P.O. Box 2288, Mobile, Alabama 36628-0001, or by facsimile at (334) 694-3815. Comments on this Environmental Assessment must be received within 30 days of the date of publication.

EXECUTIVE SUMMARY

INTRODUCTION

The 1995 Base Closure and Realignment Commission (BRAC '95) made recommendations for realignment and closure actions for military installations. On July 13, 1995, the President of the United States approved the BRAC '95 Commission's recommendations. The United States Congress reviewed the recommendations, and they became law on September 28, 1995. Among the actions recommended by the BRAC '95 Commission was that the Defense Distribution Depot Memphis, Tennessee (DDMT) be closed and that materiel remaining at DDMT at the time of closure be relocated to optimum storage space within the Department of Defense (DoD) Distribution System. The Defense Logistics Agency (DLA), which operates DDMT, will close DDMT on September 30, 1997.

This Environmental Assessment addresses the proposed granting of a master interim lease of surplus DDMT property to the Memphis Depot Redevelopment Agency (MDRA) prior to the disposal of the DDMT installation. The purpose of this action is to make surplus DDMT property available for economic redevelopment. Leasing of the installation would continue until disposal of the property and reuse under the management of the MDRA. A separate NEPA analysis for disposal and reuse is being prepared.

BACKGROUND AND SETTING

DDMT is located in the south-central part of Memphis in Shelby County, Tennessee. The entire installation consists of 642 acres, of which only 578 acres are included in this action. There are 189 buildings on the installation consisting of 5,078,000 square feet of covered storage space, 1,324,000 square feet of other covered space,[1] and 5,081,000 square feet of open storage space. These facilities support DDMT's principal mission of receiving, storage, and shipping of textile products, food products, electronic equipment, construction materials, hazardous materials, and industrial, medical, and general supplies.

Laws and regulations applicable to this action include the Defense Base Closure and Realignment Act of 1990, the Federal Property and Administrative Services Act of 1949, DLA Regulation 1000.22 (*Environmental Considerations in DLA Actions in the United States*), and the Federal Property Management Regulations. Additionally, the President's Five Part Plan (July 2, 1993) serves as a principal basis on which DLA proposed to grant a master interim lease. The Five Part Plan provides guidance for implementing jobs-centered reuse that puts local economic redevelopment first. It also promotes environmental cleanup that removes any unnecessary delays while protecting human health and the environment. Other major influences on the leasing process include federal statutes such as the Community Environmental Response Facilitation Act; Clean Air Act; Clean Water Act; Comprehensive Environmental Response, Compensation, and Liability Act; Endangered Species Act; National Historic Preservation Act; and Resource Conservation and Recovery Act. These laws impose standards for environmental compliance and planning, and they help to ensure the preservation of environmental values. Executive orders pertaining to compliance with pollution control standards (EO 12088), Superfund implementation (EO 12580), and environmental justice (EO 12898) were also considered.

[1] Other covered space includes administrative offices; shipping, receiving, and packing facilities; maintenance shops; housing; and recreation facilities.

PROPOSED ACTION

The proposed action is the granting of a master interim lease, to the MDRA, of the DDMT main installation property no longer required for the DDMT mission. The master interim lease would be for purposes resulting in mixed use (predominantly commercial storage).

A master lease may be either an interim lease or a lease in furtherance of conveyance. The proposed action is for an interim lease. It is a lease that serves as the principal lease instrument for an entire installation or for major portions of it. Individual parcels and properties may be sublet under the terms of a master interim lease. The master interim lease and each subsequent sublease require completion of an Environmental Baseline Survey, a Finding of Suitability to Lease, NEPA analysis and documentation, and other applicable natural and cultural resources determinations and consultations.

Mixed use (predominantly commercial storage) contemplates economic redevelopment activities that are centered on like-kind use of DDMT's chief asset, storage facilities. As the DDMT mission draws down, increased space would become available for private-sector commercial storage and distribution of goods.

Consistent with this concept, lessees also could engage in other types of activities. These activities could include use of recreational facilities such as the DDMT's nine-hole golf course; use of administrative spaces for office, clerical, or educational purposes; and use of general-purpose spaces for light industrial, commercial retail, or service enterprises.

All leasing under a master interim lease of DDMT would occur on a noninterfering basis with continuation of the DDMT mission until closure. After closure and until disposal, the installation would be maintained in caretaker status and the facilities would be managed by a caretaker force of approximately 30 personnel. Both before and after closure, leases would recognize the DLA's continuing efforts to restore the environmental condition of the property, and any leases of areas subject to restoration would be structured to allow ongoing restoration activities. All lessees granted use of the DDMT property before closure would be subject to government security requirements.

Government hazardous waste storage facilities at DDMT would not be available to lessees using the installation. Lessees would be required to store hazardous materials in accordance with applicable laws and regulations and would be required to properly dispose of hazardous waste offsite at their own expense. Leases would include provisions for Government inspection of lessee operations to ensure appropriate handling, storage, and disposal of any minor amounts of hazardous waste.

Lessees would be required to provide routine maintenance of leased facilities. They would be precluded from making structural modifications to the facilities or taking other actions that would foreclose other options or impair the Government's use of the facilities in the event of a need by the Government to terminate the lease and resume operations.

Facilities potentially available for use under a master interim lease can be classified into nine categories:

- Administrative/Security
- Shops
- Motor Pool
- Community/Recreation
- Housing (4 units)

- Storage (60 facilities)
- Open Storage (25 sites)
- Loading Docks
- Miscellaneous

Leasing of the installation could continue until disposal of the property and reuse under the management of the MDRA. Transfer of the property is likely to occur during or after 1998. Ultimate reuse of the DDMT property cannot be known until development and adoption of the MDRA's Redevelopment Plan, expected to be available in early 1997, and initiation of that plan under the management of the MDRA.

For the purposes of evaluating potential environmental effects associated with the granting of leases, it is estimated that the following would be used or managed under master interim lease by the MDRA: one-half of all covered storage space, a majority of Building 144 and one-half of other administrative space, all family housing, and the majority of the community and recreational facilities. It is estimated that, compared to the Government's use of warehousing space, commercial storage by private-sector lessees would involve a higher degree of activities related to the distribution of goods. Based on DDMT's personnel level of 1,322 employees at the time operations at DDMT began to downsize and the levels of activity associated with the ongoing mission, it is estimated that leasing could involve as many as 1,000 jobs. Facilities would begin to be available around March 1997, subject to approval of the master interim lease application submitted by the MDRA and completion of the interim leasing process. Facilities would be made available as vacated by DDMT and no longer required. It is expected that the storage facilities would be vacated by July 1997.

ALTERNATIVES

DLA considered four alternatives that met the Agency's purpose and need:

- Disposal by Conveyance or Transfer
- Lease in Furtherance of Conveyance
- *Interim Lease for Mixed Use (Predominantly Commercial Storage)*
- Interim Lease for Mixed Use (Predominantly Wholesale and Retail Sales)

Three of the four alternatives are not feasible. Disposal by conveyance or transfer of lease and lease in furtherance of conveyance cannot occur until completion of the NEPA analysis of the environmental effects of disposal and reuse of the installation. This action is also dependent upon completion of the redevelopment plan. These actions are not expected to occur until mid-1997. Interim lease for mixed use (predominately wholesale and retail sales), which would require open access to the general public, was determined to not be feasible at DDMT due to the security requirements currently in place. In addition, wholesale and retail sales may require modifications to buildings to accommodate this type of use which would require capital investment that could be jeopardized by lease terms calling for return of the property on short notice. The remaining alternative, DLA's granting a master interim lease resulting in mixed use (predominantly commercial storage) is feasible and is the preferred alternative. This EA also considered a no action alternative involving retaining all surplus properties in a caretaker status.

ENVIRONMENTAL CONSEQUENCES

The proposed action to grant a master interim lease of surplus DDMT property to the MDRA prior to the disposal of DDMT was reviewed comparing the environmental and sociological effects associated with the preferred alternative (lease for mixed use, predominantly commercial storage) and the no action or caretaker alternative. Baseline environmental and sociological conditions for the DDMT main installation and region of influence have been described and the environmental and sociological consequences of implementing the proposed action have been evaluated. Table ES-1 summarizes the impacts to the DDMT main installation associated with implementing the preferred alternative and no action alternative. The evaluation of the proposed action (preferred alternative) and the no action alternative indicate that physical and socioeconomic environments at DDMT and in the region of influence would not be significantly affected by granting a master interim lease. A positive effect would be realized by facilitating early economic redevelopment and job creation.

MITIGATION RESPONSIBILITY AND PERMIT REQUIREMENTS

Most of the effects associated with the implementation of the preferred alternative would be mitigated using best management practices such as taking action to reduce noise levels near residential areas during evening hours and establishing a circulation plan and installing traffic control measures to compensate for increased vehicle traffic around storage facilities.

Actions would be required to implement the preferred alternative as described in Section 2.3, such as completion of the FOSL and EBS. DDMT must develop a leasing plan and agreement with the MDRA. This agreement would specify terms and conditions for both the government and the lessees such as utilities metering, facility maintenance, hazardous material and hazardous waste restrictions, and measures necessary to protect the environment.

Approved agreements specifying pretreatment requirements and flow limits would need to be executed between lease holders and the City of Memphis authorizing discharge to the sanitary sewer system even if the proposed discharges are similar to current discharges. Mitigation of sewer surcharges on DDMT property and in the nearby Kellogg Plant might be available by using both of the parallel sewer lines that currently exist on Frisco Street to accommodate increased flows.

CONCLUSIONS

The Environmental Assessment analysis led to the conclusion that implementation of the proposed action would not result in significant environmental or socioeconomic impacts. Issuance of a Finding of No Significant Impact would be appropriate, and preparation of an Environmental Impact Statement is not required.

Table ES-1
Summary of Impacts

Resource Area	Preferred Alternative	No Action Alternative
Land Use	none	N.S.[1]
Air Quality	N.S.	none
Noise	N.S.	none
Water Resources	none	none
Geology	none	none
Infrastructure		
Potable Water Supply	N.S.	N.S.
Wastewater Treatment	N.S.	none
Traffic and Transportation	N.S.	none
Roadways	none	none
Airports	none	none
Railways	none	N.S.
Energy	N.S.	none
Communication Systems	N.S.	none
Hazardous and Toxic Materials	N.S.	none
Permits and Regulatory Authorizations	N.S.	none
Biological Resources	none	none
Threatened and Endangered Species	none	none
Wetlands	none	none
Cultural Resources		
Archeological Resources	none	none
Architectural Resources	N.S.[2]	none
Socioeconomic Environment		
Demographics	none	none
Visual and Aesthetic Values	none	none
Native American and Ethnic Concerns	none	none

Table ES-1
Summary of Impacts (continued)

Resource Area	Preferred Alternative	No Action Alternative
Homeless and Other Special Programs	none	none
Public Safety	none	none
Environmental Justice	positive	N.S.
Economic Development		
Regional Economic Impact	positive	N.S.
Installation Contribution and Local Expenditure	positive	N.S.
Military Force Structure, Salaries, and Expenditures	none	N.S.
Quality of Life		
Housing	none	none
Schools	none	none
Family Support	none	none
Medical Services	none	none
Shops and Services	positive	N.S.
Recreation	none	none
Installation Agreements	N.S.	none

[1] N.S. = not significant.
[2] Leases for properties built before 1947 must contain language requiring consultation with DLA.

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SECTION 1.0: PURPOSE, NEED, AND SCOPE

1.1 BACKGROUND

Under provisions of the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), the 1995 Defense Base Closure and Realignment Commission (BRAC '95 Commission) made recommendations on July 1, 1995, for realignment and closure actions for military installations. On July 13, 1995, the President of the United States approved the BRAC '95 Commission's recommendations. The United States Congress reviewed the recommendations, and they became law on September 28, 1995.

Among the actions recommended by the BRAC '95 Commission was that the Defense Distribution Depot Memphis, Tennessee (DDMT) be closed and that materiel remaining at DDMT at the time of closure be relocated to optimum storage space within the Department of Defense (DoD) Distribution System. The Defense Logistics Agency (DLA), which operates DDMT, will close DDMT on September 30, 1997.

1.2 PURPOSE AND NEED

This Environmental Assessment (EA) evaluates the environmental and socioeconomic impacts of DLA's proposed action to grant a master interim lease of surplus DDMT property to the Memphis Depot Redevelopment Agency (MDRA) prior to the disposal of DDMT. The purpose of the proposed action is to make surplus DDMT property available for economic redevelopment. The proposed action aids in fulfilling DLA's underlying need to comply with the President's Five Part Plan to Revitalize Base Closure Communities (July 2, 1993). This EA will facilitate decision making on courses of action to support economic revitalization of the community.

1.3 SCOPE

This EA carries out the intent of the National Environmental Policy Act (NEPA). It has been prepared in accordance with regulations issued by the Council on Environmental Quality (CEQ) and DLA. It analyzes and documents the environmental and socioeconomic effects of a master interim lease of DDMT property.

The Army holds title to the DDMT property, and DLA operates the installation through DDMT. The Army will conduct a separate analysis of potential environmental effects of the disposal and reuse of DDMT. It will be substantively different from the DLA's present proposed action and alternatives.

The area of study that will be analyzed for this EA includes the main installation of DDMT and its region of influence, Shelby County, Tennessee. Dunn Field, an area separated from the main DDMT installation, will not be included in this action. Therefore, it will not be analyzed except as it might relate to the leasing action on the main installation.

1.4 IMPACT ANALYSIS

This EA identifies and analyzes the relevant environmental and socioeconomic effects on the existing resources at DDMT and within the region of influence of the proposed action presented in Section 2.0 and alternatives described in Section 3.0. An interdisciplinary team of environmental scientists, engineers, biologists, archaeologists, historians, and military experts analyzed the proposed action and alternatives against the baseline conditions described in Section 4.0 (Affected Environment). Section 5.0 (Environmental and Socioeconomic Consequences) presents the effects identified and potential mitigation measures. Section 6.0 (Findings and Conclusions) presents the results of the environmental impact analysis process.

The baseline established to evaluate the potential environmental and socioeconomic effects of granting a master interim lease of DDMT to the MDRA is the physical condition and operational status of the property as of July 1995.

1.5 AGENCY AND PUBLIC INVOLVEMENT

Agency and public participation in the NEPA process promotes both open communications between the public and government and better decision making. All persons and organizations that have a potential interest in the proposed action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the decision-making process.

On July 23, 1996, the Army held a public meeting to obtain public input on the scope of its disposal and reuse EA for DDMT. In coordination with the DLA, the Army also sought public input at that meeting on the scope of the Environmental Assessment of granting a master interim lease for the installation. Approximately 50 persons attended the meeting held at the Sheraton Four Points Hotel located 2 miles south of the installation. While the majority of comments pertained to the types of reuse that might occur at the installation, community members voiced support for the creation of jobs to replace those lost as a result of closure of DDMT.

Public participation opportunities with respect to the proposed action, master interim lease of DDMT, are guided by DLA Regulation 1000.22 (*Environmental Considerations in DLA Actions in the United States*). DDMT will keep the community informed of the status and progress of implementing the proposed action to grant a master interim lease. Copies of the completed final EA will be made available to members of the public, concerned organizations, and representative officials. If appropriate, the DLA will issue a Finding of No Significant Impact (FNSI). Following issuance and publication of the FNSI in a local newspaper of general circulation, DLA will consider any comments on the proposed action or EA submitted by agencies, organizations, or members of the public before initiating a master interim lease.

1.6 FRAMEWORK FOR DECISION MAKING

Selection and implementation of leasing alternatives available to the DLA would be undertaken in light of constraints imposed by statutory and regulatory provisions governing property disposal. These provisions include the Defense Base Closure and Realignment Act of 1990, the Federal Property and Administrative Services Act of 1949, and the Federal Property Management Regulations.

The President's Five Part Plan serves as a principal basis on which DLA decides to grant any lease. The Five Part Plan provides guidance for implementing jobs-centered reuse that puts local economic redevelopment first. It also promotes environmental cleanup that removes any unnecessary delays while protecting human health and the environment.

Other major influence on the leasing process include federal statutes such as the Community Environmental Response Facilitation Act; Clean Air Act; Clean Water Act; Comprehensive Environmental Response, Compensation, and Liability Act; Endangered Species Act; National Historic Preservation Act; and Resource Conservation and Recovery Act. These laws impose standards for environmental compliance and planning, and they help to ensure the preservation of environmental values. Executive orders pertaining to compliance with pollution control standards (EO 12088), Superfund implementation (EO 12580), and environmental justice (EO 12898) will also be considered.

SECTION 2.0: DESCRIPTION OF THE PROPOSED ACTION

2.1 BACKGROUND

Under the Defense Base Closure and Realignment Act of 1990, closure of an installation is to occur not more than 6 years after the President's submission of the BRAC Commission recommendations to Congress. The President approved the 1995 BRAC Commission recommendations on July 13, 1995. DLA plans to close the installation by September 30, 1997.

Prior to disposal and reuse, a master interim lease of DDMT property would provide an interim measure to permit continued economic benefit in the affected community. The parties to such an interim lease would be the DLA and the MDRA. An interim lease may be granted, but in no case may it extend beyond the time the Army plans to dispose of the property. An interim lease to the MDRA as the development authority would permit subleasing on terms and conditions similar to those executed between the DLA and the MDRA.

2.2 SITE DESCRIPTION

DDMT consists of 189 buildings, warehouses, and other structures. It is located in the south-central part of the City of Memphis (Figure 2-1). The 642-acre installation has 26 miles of railroad track and 28 miles of paved roads. The installation has 5,078,000 square feet of covered storage space, 5,081,000 square feet of open storage space, and 1,324,000 square feet of other covered space.[1] These facilities support DDMT's principal mission of receiving, storage, and shipping of textile products, food products, electronic equipment, construction materials, hazardous materials, and industrial, medical, and general supplies.

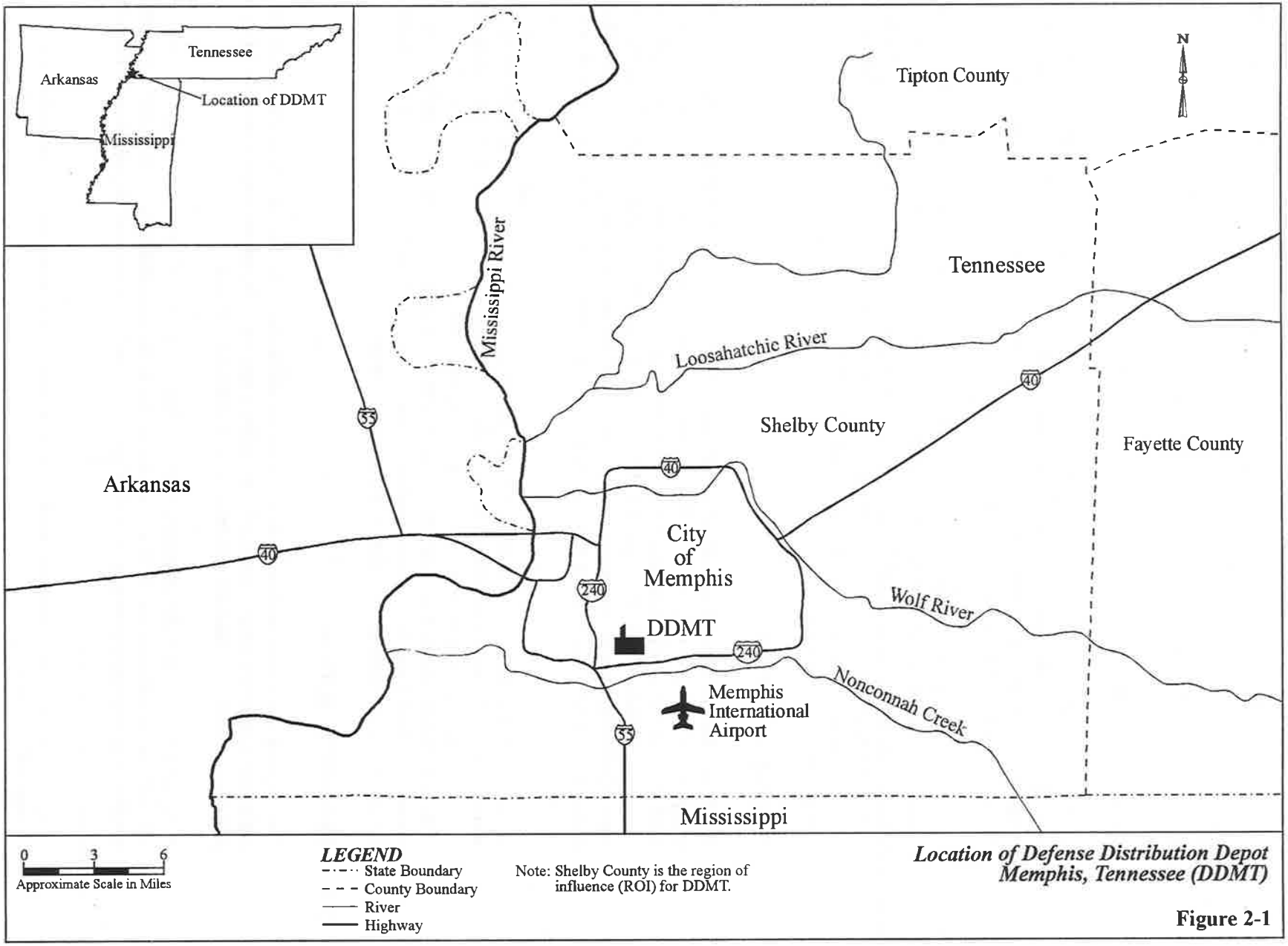
DDMT comprises two areas, the main installation and Dunn Field (Figure 2-2). The main installation area consists of 578 acres bounded by Airways Boulevard on the east, Perry Road on the west, Ball Road to the south, and Dunn Road to the north. The main installation is highly developed and contains most of the buildings and material storage yards for the facility. The Dunn Field area is located to the north, across Dunn Road from the northwest quadrant of the main installation area. It will not be included in the master interim lease and therefore is not discussed further.

2.3 PROPOSED ACTION

The proposed action is the implementation of a master interim lease, to the MDRA, of the DDMT main installation property no longer required for the DDMT mission. The master interim lease would be for purposes resulting in mixed use (predominantly commercial storage).

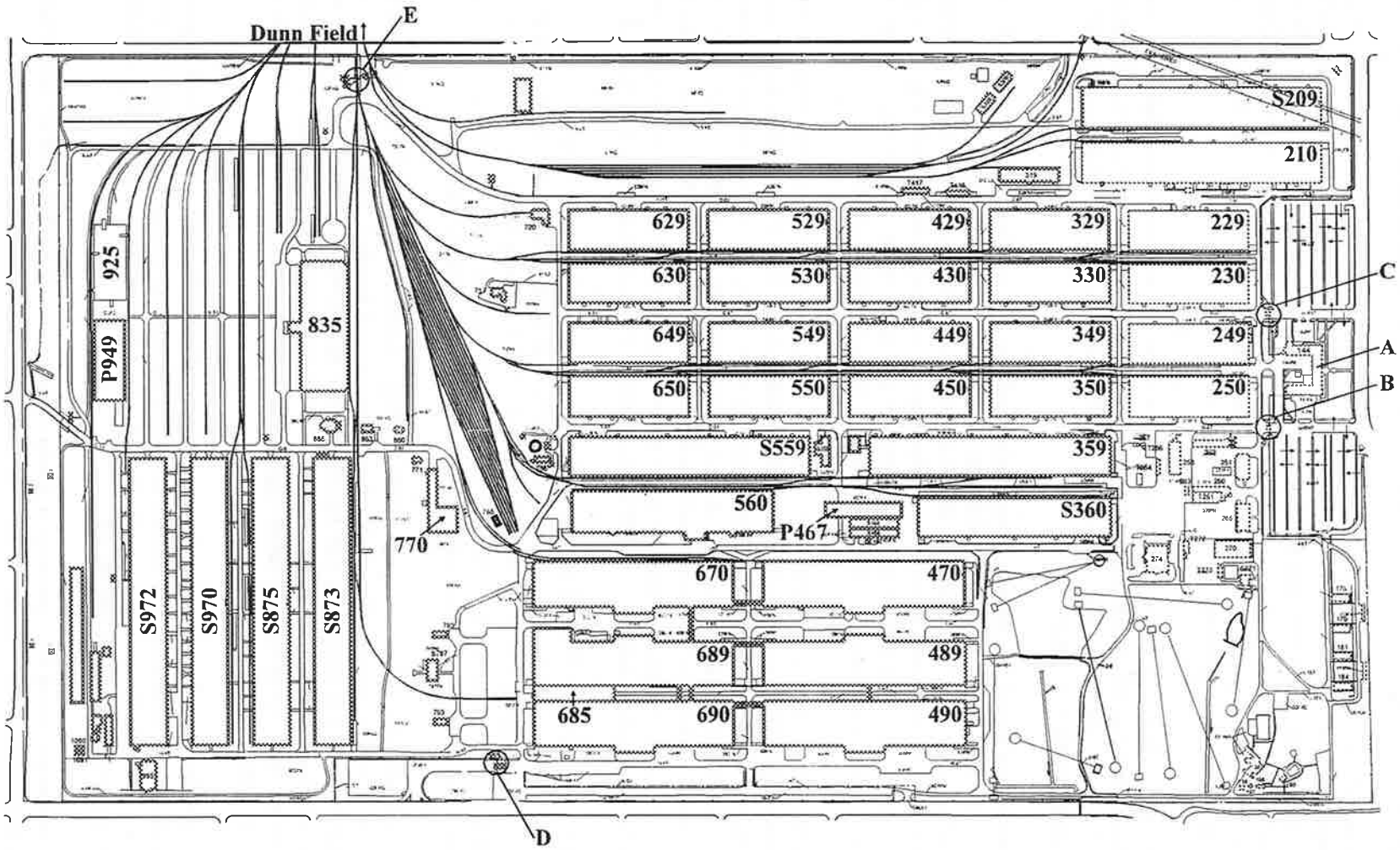
A master lease may be either an interim lease or a lease in furtherance of conveyance. The proposed action is for an interim lease. It is a lease that serves as the principal lease instrument for the entire installation or for major portions of it. Individual parcels and properties may be sublet under the terms

[1] Other covered space includes administrative offices; shipping, receiving, and packing facilities; maintenance shops; housing; and recreation facilities.



Location of Defense Distribution Depot Memphis, Tennessee (DDMT)

Figure 2-1



0 425 850
Approximate Scale in Feet

Source: DDMT, 1996a

LEGEND

A - Headquarters (Bldg. 144)
B - Gate 1
C - Gate 2
D - Gate 8
E - Gate 15
Building #s in boldface

DDMT Main Installation

Figure 2-2

of a master interim lease. The master interim lease and each subsequent sublease require an environmental baseline survey (EBS), Finding of Suitability to Lease (FOSL), NEPA, and other applicable natural and cultural resources determinations and consultations (US DoD, 1995). The period of the master interim lease would begin upon completion of the NEPA analysis, EBS, and FOSL, and approval of the lease application. It would last no more than 5 years or until final disposition of the installation, whichever comes first.

A master interim lease for mixed use (predominantly commercial storage) contemplates economic redevelopment activities that are centered on like-kind use of DDMT's chief asset, storage facilities. As the DDMT mission draws down, increased space would become available for private-sector commercial storage and distribution of goods.

Consistent with a mixed use concept, lessees also could engage in other types of activities. These activities could include use of recreational facilities such as the DDMT's nine-hole golf course; use of administrative spaces for office, clerical, or educational purposes; and use of general-purpose spaces for light industrial, commercial retail, or service enterprises. Under the master interim lease concept, the variety of facilities available would include covered storage, open storage, administrative, maintenance shop, motor pool, community and recreation, housing, and miscellaneous areas.

All leasing under a master interim lease of DDMT would occur on a noninterfering basis with continuation of the DDMT mission until closure of the installation. After closure and until disposal, the installation would be maintained in caretaker status and the facilities would be managed by a caretaker force of approximately 30 personnel. After closure, leasing would be on a noninterfering basis with the activities being undertaken by the caretaker personnel. Both before and after closure, leases would recognize the DLA's continuing efforts to restore the environmental condition of the property, and any leases of areas subject to restoration would be structured to allow ongoing restoration activities.

All lessees granted use of the DDMT property before closure would be subject to security requirements. All personnel entering the fenced area (the majority of the main installation) would be required to obtain security passes from the DDMT Security Office. Personnel entering Building 144, the installation headquarters, would be required to register and wear badges indicating their visitor status. All vehicular traffic inside the fenced compound would similarly be subject to Government control.

Government hazardous waste storage facilities at DDMT would not be available to lessees using the installation for mixed use purposes (predominantly commercial storage). Hazardous materials of any lessee shall be stored in accordance with applicable laws/regulations (e.g., 10USC2692) and shall be properly disposed of offsite, at lessee expense. Leases would include provisions for Government inspection of lessee operations to ensure appropriate handling, storage, and disposal of any minor amounts of hazardous waste.

Lessees would be required to provide routine maintenance of leased facilities. They would be precluded from making structural modifications to the facilities or taking other actions that would foreclose other options or impair the Government's use of the facilities in the event of a need by the Government to terminate the lease and resume operations.

Facilities potentially available for use under a master interim lease can be classified into nine categories. The major facilities in these categories are described below. Refer also to Figure 2-2.

- *Administrative/Security*. Building 144, the installation headquarters, is a four-story building having 103,496 square feet. Nine sentry stations range from 67 square feet to 675 square feet in size. Building 210 houses administrative and computer functions. Building S145 serves as the DDMT Pass and Identification Office. Building 459 serves as a training facility.

- *Shops*. Eleven facilities at DDMT are classified as shops. Buildings 260, 265, and 801 are used as facilities engineer maintenance shops. Buildings 211 and S469 are battery shops. Building 1086 (9,760 square feet) is a care and preservation shop/paint booth, Building 1087 (4,927 square feet) is a paint facility, and Building 1088 (2,272 square feet) is a sandblasting facility.

- *Motor Pool*. Seven buildings support motor pool functions at DDMT. Building 257 is a gas station. Building 253 (9,160 square feet) and Building 770 (27,326 square feet) are used for vehicle maintenance. Other motor pool buildings provide space for vehicle wash racks, grease racks, and storage.

- *Community/Recreation*. Building 195 (4,254 square feet) is a community club, Building 274 is a post restaurant, Building 193 houses a swimming pool, and Building 252 (5,900 square feet) is a physical fitness center. Other community and recreational assets include a nine-hole golf course, tennis and volleyball courts, and public restrooms.

- *Housing*. DDMT has four duplex family housing units.

- *Storage*. Sixty facilities provide more than 5 million square feet of general-purpose and special-purpose storage space in support of the DDMT mission. There are 20 five-bay, 109,956-square-foot structures (Buildings 229, 230, 249, 250, 329, 330, 349, 350, 420, 430, 449, 450, 529, 530, 549, 550, 629, 630, 640, and 650). Building 359 is a 207,455-square-foot facility. Building 360 (174,665 square feet) is a new building. Building 559 is a 218,105-square-foot general-purpose warehouse. Buildings 470, 489, 490, 670, 689, and 690 are each in excess of 207,000 square feet.

- *Open Storage*. Twenty-five sites provide areas for open storage of flammable materials, petroleum products, steel, PVC pipe, transformers, and other materials.

- *Loading Docks*. Fifteen facilities at DDMT are used for loading and unloading of materiel.

- *Miscellaneous*. Other assorted facilities at DDMT include electrical switching stations, equipment sheds, pump houses, a scale house, sewage pump stations, standby generators, waiting shelters, and a water storage tank. Approximately 1,700 parking spaces are available, most of which are located outside the installation's security fence.

Subject to Government needs, compatibility with the DDMT mission, ongoing restoration activities at former hazardous waste sites, and security requirements, all of the foregoing facilities could be made available under a master interim lease to result in mixed use (predominantly commercial storage) prior to closure of the installation. It is anticipated that following redistribution of materiel to other storage sites within the DLA system and closure of the installation, the majority of the facilities would become available for subleasing under the master interim lease to MDRA.

Leasing of the installation could continue until disposal of the property and reuse under the management of the MDRA. Transfer of the property is likely to occur during or after 1998. Ultimate reuse of the DDMT property cannot be known until development and adoption of the MDRA's Redevelopment Plan, estimated to become available in early 1997, and initiation of that plan under the management of the MDRA.

For the purposes of evaluating potential environmental effects associated with the granting of leases, it is estimated that the following would be used or managed under master interim lease by the MDRA: one-half of all covered storage space, a majority of Building 144 and one-half of other administrative space, all family housing, and the majority of the community and recreational facilities. It is estimated that, compared to the Government's use of warehousing space, commercial storage by private-sector lessees would involve a higher degree of activities related to distribution of goods. Based on DDMT's personnel level of 1,322 employees at the time operations at DDMT began to down-size and the levels of activity associated with the ongoing mission, it is estimated that leasing could involve as many as 1,000 jobs. Facilities would begin to be available in approximately March 1997, subject to approval of the master interim lease application submitted by the MDRA and completion of the interim leasing process. Facilities would be made available as they are vacated by DDMT and no longer required. It is expected that the storage facilities would be vacated by July 1997.

SECTION 3.0: ALTERNATIVES CONSIDERED

DLA has considered four alternatives that meet the Agency's purpose and need set forth at Section 1.2. As explained in the following subsections, three of the four alternatives are not feasible. The remaining alternative, DLA's granting a master interim lease resulting in mixed use (predominantly commercial storage) is feasible and is the preferred alternative. This EA also considers a no action alternative.

3.1 ALTERNATIVE 1: DISPOSAL BY CONVEYANCE OR TRANSFER

Sale or transfer by public benefit conveyance or economic development conveyance mechanisms would provide opportunity for economic redevelopment of DDMT property. Under current laws and regulations imposing requirements on the base closure process, numerous actions must precede such disposal. These include screening of the property for potential use by other federal agencies, providers of homeless assistance, and state and local entities, as well as identification and remediation of past hazardous waste sites. The MDRA, recognized by DoD as the local redevelopment authority, may prepare a reuse plan indicating the community's preferences for future uses of the installation's assets. Also, disposal and reuse of DDMT will be the subject of separate analysis under NEPA for potential environmental effects. Depending on several factors, assessment of which cannot yet occur, the Army may divest itself of the property via transfer to another federal agency, transfer by public benefit conveyance or economic development conveyance, or sale to any of several public or private entities. Steps leading to any of these outcomes are under way; the ultimate disposition of DDMT is unknown. These circumstances render disposal unavailable at this time. Accordingly, disposal as a means for economic redevelopment of the DDMT community is premature and not feasible and, therefore, is not analyzed further in this EA.

3.2 ALTERNATIVE 2: LEASE IN FURTHERANCE OF CONVEYANCE

A lease in furtherance of conveyance gives the leaseholder a future right to purchase property under specified conditions. Since grant of a lease in furtherance of conveyance provides the parties greater certainties with respect to their investments, it generally represents an opportunity for the Army to realize proceeds from a property that has a higher fair market value.

Army policy prohibits leases in furtherance of conveyance until completion of NEPA analysis of the environmental effects of installation disposal and reuse. A lease in furtherance of conveyance is an irrevocable action and therefore, it must await completion of NEPA documentation so as not to foreclose options that might otherwise be exercised at the time a decision regarding disposal of the installation is reached. The EA for disposal and reuse, being prepared by the Army, is expected to be completed in mid-1997. Earlier completion of that document is not possible due to the necessary consideration of the MDRA's Redevelopment Plan (expected to be completed in early 1997). Under these circumstances, a grant of lease in furtherance of conveyance is not feasible and, therefore, is not further evaluated in this EA.

3.3 ALTERNATIVE 3: INTERIM LEASE FOR MIXED USE (PREDOMINANTLY COMMERCIAL STORAGE)

The description of a lease for mixed use (predominantly commercial storage) is provided in Section 2.3, Proposed Action. This alternative is the DLA's preferred alternative for achieving its purpose and need for the action and is analyzed in detail in this EA.

3.4 ALTERNATIVE 4: INTERIM LEASE FOR MIXED USE (PREDOMINANTLY WHOLESALE AND RETAIL SALES)

A lease for mixed use (predominantly wholesale and retail sales) would involve redevelopment-oriented activities characterized by wholesale and retail establishments catering to the public. Since this alternative would help create jobs in the community affected by closure, it would be consistent with the President's Five Part Plan for community economic redevelopment. As in the alternative for mixed use (predominantly commercial storage), other uses could be permitted, such as activities centered on recreation, office/clerical functions, and storage.

Two factors largely affect the leasing for mixed use (predominantly wholesale and retail sales) alternative. First, three-fourths of the DDMT facilities are designed for storage use. The buildings would require major physical alteration to make them suitable for wholesale or retail sales operations. Such alterations would require capital investment that could be jeopardized by lease terms calling for return of the property on short notice to DLA or Army control if so dictated by Government need. Second, wholesale and retail sales operations that rely on substantial public contact would be severely hampered by DDMT's security requirements and physical layout. Retail establishments using spaces within the main installation's security perimeter would be at a major competitive disadvantage because customers would lack free access and convenient parking. These practical considerations render the alternative of lease for mixed use (predominantly wholesale and retail sales) not feasible, and therefore the alternative is not further analyzed in this EA.

3.5 ALTERNATIVE 5: NO ACTION

This document refers to the continuation of existing conditions of the affected environment without implementation of the proposed action as the no action alternative. DDMT is presently being operated by the DLA as a distribution depot. Under the no action alternative, DLA operations would continue until closure of the installation, at which time the facilities would be placed in caretaker status or would be made available for community reuse upon disposal. Inclusion of the no action alternative is prescribed by CEQ regulations. The no action alternative serves as a benchmark against which proposed federal actions and alternatives can be evaluated.

SECTION 4.0: AFFECTED ENVIRONMENT

4.1 INTRODUCTION

This section describes the environmental and socioeconomic conditions at Defense Distribution Depot Memphis (DDMT), Tennessee. It provides information to serve as a baseline from which to identify and evaluate environmental and socioeconomic changes resulting from implementation of the proposed action (to establish a master interim lease at DDMT). The environmental and socioeconomic effects of the proposed action and alternatives, including the no action alternative, on the baseline conditions are described in Section 5.0. For purposes of this EA, Dunn Field will be omitted from the analysis because it is not part of the main installation, for which a lease is being considered.

4.2 LAND USE

4.2.1 Regional Geographic Setting and Location

DDMT is located in southwestern Tennessee, in Shelby County, in the south-central section of the City of Memphis. DDMT lies 4 miles southeast of the central business district and 1 mile north of Memphis International Airport. The depot encompasses 642 acres and is divided into two sections, the main installation and Dunn Field (DLA, 1993).

DDMT was established in 1942 as an Army organization to provide stock control, storage, and maintenance services for the Army Engineer, Chemical, and Quartermaster Corps. According to the Chain of Title and aerial photographs of the area, the property was used primarily for agriculture (mainly cotton) before it was obtained by the government (Woodward-Clyde, 1996).

Since 1963, the depot has been a principal distribution center for the DLA for shipping and receiving textile products; food products; electronic equipment; construction materials; hazardous materials; and industrial, medical, and general supplies. DDMT receives, warehouses, and distributes supplies common to all U.S. military services in the southeastern United States, Puerto Rico, and Panama. Approximately 4 million items are received and shipped by DDMT annually. About 107,000 tons of goods are shipped annually (Woodward-Clyde, 1996).

4.2.2 Climate

Shelby County is characterized by a typical continental climate with warm, humid summers, averaging 80 degrees Fahrenheit (°F); cold winters, averaging 40°F; and abundant rainfall. The average annual rainfall for Shelby County is 49.73 inches with the heaviest precipitation in the winter and early spring (USDA, 1989). Thundershowers are prevalent in late spring and early summer. Prevailing winds are from the southwest. Frequently, there are extreme changes in the weather at DDMT due to cold air moving down from Canada and warm, moist air moving up from the Gulf of Mexico.

4.2.3 Land and Airspace Use

DDMT is divided into two separate areas, the main installation and Dunn Field. The main installation area consists of 578 acres bordered by Airways Boulevard on the east, Perry Road on the west, Ball

Road to the south, and Dunn Road to the north. The main installation is highly developed and contains the buildings and most of the material storage yards for the facility. Activities on the main installation are primarily material storage and retrieval. Installation support activities also include sandblasting and painting, vehicle maintenance, former PCB transformer storage, pesticide and herbicide storage and use, and former treatment of wood products (Woodward-Clyde, 1996).

The Memphis and Shelby County Office of Planning and Development (OPD) has zoned the DDMT property light industrial (I-L). There are 189 structures, warehouses, and other support out-buildings, 26 miles of railroad tracks, and 28 miles of paved roadways on the depot. Approximately 126 acres is covered storage space, and approximately 138 acres is open storage space (Woodward-Clyde, 1996). Lake Danielson and the golf course pond are waterbodies located in the southeastern corner of the main installation. Both are used as water holding areas for fire protection.

Although several activities are occurring on the depot, the predominant land use is supply and storage (Harland Bartholomew & Associates, Inc., 1988a).

4.2.4 Site Use

4.2.4.1 Administration

Administrative uses of the depot are concentrated on the east end of the main installation near Airways Boulevard. The headquarters building, Building 144, is located directly on Airways Boulevard and was constructed in 1942. It has 101,270 square feet of office space and contains administrative space for the major collocated activities. Each of the warehouse complexes also has some administrative space (see Table 4-1 and Figure 4-1). Building 210, built in 1960, contains 219,761 square feet of administrative space.

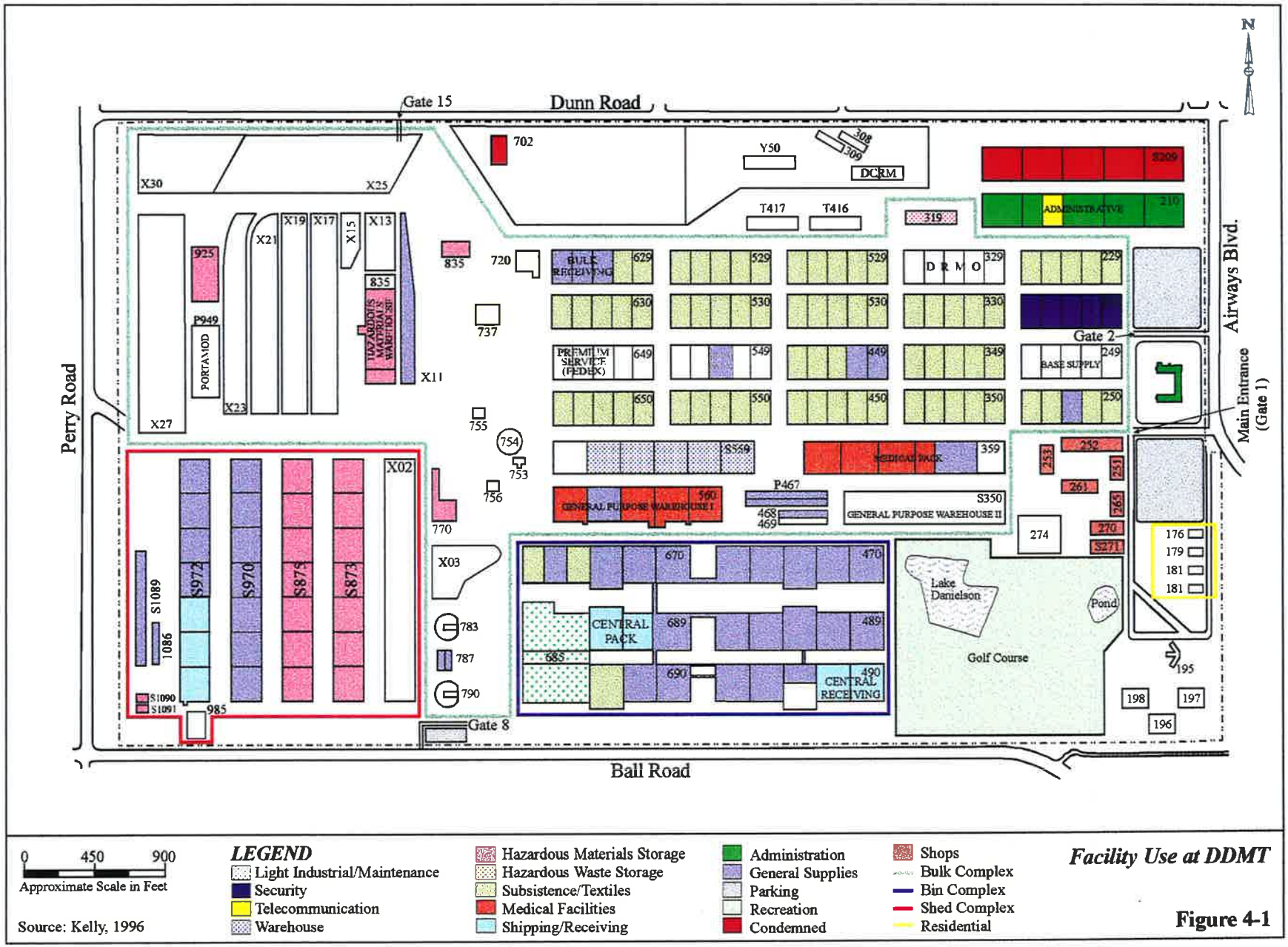
4.2.4.2 Supply and Storage

Supply and storage constitute the major land use on the depot. There are 38 general storage buildings, 4 storage sheds, 1 flammables storage facility, and over 6 million square feet of open storage at DDMT (Harland Bartholomew & Associates, Inc., 1988a). Storage functions can be categoriezed as bulk storage, bin storage, shed/open storage, and hazardous materials storage (see Figure 4-1).

Table 4-1
Administrative Buildings

Building #	General Description	Utilities Available	Remarks/Constraints
144	Headquarters building at main entrance of depot	Water, sewage, electricity, telephone, heat	Brick veneer, built-up roof, generally in good condition
210	Seven bays of warehouse converted to office space	Water, sewage, electricity, telephone, heat	Wood roof framing needs repair

Sources: DDMT, 1996b; Harland Bartholomew & Associates, Inc., 1988b.



Facility Use at DDMT

Figure 4-1

4.2.4.3 *General-Purpose Warehouses*

In the eastern portion of DDMT, 20 World War II era warehouses, known as "the 20 typicals," are arranged four across and five deep. These warehouses are made of reinforced concrete. Each has a floor area of 103,000 square feet and is covered by a wood truss roof. The warehouses were built in 1942 by German prisoners of war impounded at DDMT during World War II. The structures that housed the prisoners are no longer standing. One of the warehouses, Building 209, is condemned for structural reasons (MDRA, n.d.). Each warehouse has truck and rail access. Six newer warehouses known as the "6 typicals" of the Korean War era contain 206,656 square feet of space and were built in 1954. Two other warehouses with 206,758 square feet of space each, were recently completed. They include Building 360, which has never been used (Table 4-2).

Nineteen of the "20 typicals" share the same structural problem. Due to age, wooden members have become brittle and unpredictable. The exception to the "20 typicals" is Building 550, which now has steel trusses and roof decking in all bays. The roofs on the "6 typicals" are single-ply membrane and are approximately 10 years old, with an expected life of 15 to 20 years. Roofs on the 20 World War II typicals are still maintainable. Prior to BRAC '95, long-range plans provided for replacement of all wooden trusses and roofs for the remaining structures along with demolition and/or replacement of the open-shed structures.

4.2.4.4 *Special-Purpose Warehouses and Buildings*

Two buildings in this category were constructed or modified for the storage and handling of hazardous materials. Other buildings in this category include maintenance support and motor pool functions. The sandblasting and paint booth buildings, which are used for preparing industrial materials for shipment, are located near the intersection of Ball and Perry Roads (Table 4-3).

Table 4-2
General-Purpose Warehouses

Bldg #	General Description	Utilities Available	Remarks
229	General-Purpose Warehouse	Water, sewage, electricity, heat	WW II era
230	General-Purpose Warehouse (Security)	Water, sewage, electricity, telephone, heat	WW II era
249	General-Purpose Warehouse (Base Supply)	Water, sewage, electricity, telephone, heat	WW II era
250	General-Purpose Warehouse (Shipping/Receiving)	Water, sewage, electricity, telephone, heat	WW II era
329	General-Purpose Warehouse (Run by the Defense Reutilization and Marketing Office)	Water, sewage, electricity, heat	WW II era

Table 4-2
General-Purpose Warehouses (continued)

Bldg #	General Description	Utilities Available	Remarks
330	General-Purpose Warehouse	Water, sewage, electricity, telephone, heat	WW II era
349	General-Purpose Warehouse	Water, sewage, electricity, telephone, heat	WW II era
350	General-Purpose Warehouse	Water, sewage, electricity, telephone, heat	WW II era
429	General-Purpose Warehouse	Electricity	Facility 3 years old; slab is probably 40 years old (WWII era)
450	Care and Preservation and Spray Booth	Water, sewage, electricity, heat	WW II era
529	Spray Paint Booth	Water, sewage, electricity, telephone, heat	WW II era
530	General-Purpose Warehouse	Water, sewage, electricity, telephone, heat	WW II era
549	General-Purpose Warehouse (Bulk packing)	Water, sewage, electricity, telephone, heat	WW II era
550	General-Purpose Warehouse	Water, sewage, electricity, telephone, heat	WW II era
629	General-Purpose Warehouse (Bulk Receiving)	Water, sewage, electricity, telephone, heat	WW II era
630	General-Purpose Warehouse	Water, sewage, electricity, telephone, heat	WW II era
649	Premium Service Warehouse (FedEx building)	Water, sewage, electricity, telephone, heat	WW II era

Table 4-2
General-Purpose Warehouses (continued)

Bldg #	General Description	Utilities Available	Remarks
650	General-Purpose Warehouse	Water, sewage, electricity, telephone, heat	WW II era
559	General-Purpose Warehouse (Warehouse Equipment)	Water, sewage, electricity, telephone, heat	Facility over 50 years old; major structural deficiencies; has reached end of service life
560	General-Purpose Warehouse (Medical Facility)		Facility recently completed; no major structural deficiencies
359	Special-Purpose Warehouse (Medical Facility)	Water, sewage, electricity, telephone, heat	Facility over 50 years old; no major structural deficiencies
360	General-Purpose Warehouse	Water, sewage, electricity, telephone, heat	Facility new; never used
670	General-Purpose Warehouse	Water, sewage, electricity, telephone, heat	Korean War era
470	General-Purpose Warehouse	Water, sewage, electricity, telephone, heat	Korean War era
489	General- Purpose Warehouse	Water, sewage, electricity, telephone, heat	Korean War era
490	General-Purpose Warehouse (Central Receiving and Machine Shop)	Water, sewage, electricity, telephone, heat	Korean War era

Sources: DDMT, 1996b; Harland Bartholomew & Associates, Inc., 1988b.

Table 4-3
Special-Purpose Warehouses and Buildings

Bldg #	General Description	Size (ft^2)	Year Built	Utilities Available	Remarks
835	Special-Purpose Warehouse (Hazardous Materials)	141,316	1988	Water, electricity, heat, sewage, telephone	Facility only 8 years old; no major structural deficiencies
873	Open-Shed Warehouse (Hazardous Materials)	253,581	1942	Electricity	Facility over 50 years old; no major structural deficiencies; nearing end of service life
925	Special-Purpose Warehouse (Flammable Storage)	60,000	1993		Facility new but has inadequate fire sprinkler GPM rating for a flammable storage facility
1086	General-Purpose Warehouse	9,640	1950	Electricity	Facility over 40 years old; no major structural deficiencies; combination open and closed storage
1087	Maintenance Shop	4,927	1952	Water, electricity, heat	Metal siding construction with metal roof
1088	Sandblasting Facility	2,272	1953	Water, electricity, heat	Metal siding construction with metal roof

Sources: DDMT, 1996b; Harland Bartholomew & Associates, Inc., 1988b.

4.2.4.5 Open Sheds and Open Storage

There are four open sheds from the World War II era, each comprising 252,000 square feet, and approximately 100 acres of open-yard storage (MDRA, n.d.). See Table 4-4. These sheds are semipermanent structures constructed of wood columns and roof supports with a built-up roofing system (DDMT, 1996c).

Buildings S873, S875, and S970 are all over 50 years old and are composed of wood. The wooden trusses have become brittle and unpredictable. Building S972, also over 50 years old, has major structural deficiencies (Roach, personal communication, 1996).

Table 4-4
Open Sheds and Open Storage

Bldg #	General Description	Utilities Available
S873	Open-Shed Warehouse	Electricity
S875	Open-Shed Warehouse	Water, sewage, electricity, telephone, heat
S970	Open-Shed Warehouse	Electricity
S972	Closed Shed Warehouse/Box shop	Water, sewage, electricity, telephone, heat

Sources: DDMT, 1996b; Harland Bartholomew & Associates, Inc., 1988b.

4.2.4.6 Light Industrial Activities

Light industrial activities at DDMT include maintenance of passenger vehicles, trucks, mechanized material handling equipment, structures and grounds, utility systems, and various stored stock. Most of the maintenance activities are concentrated in three areas of the depot. These are located on the east side of the intersection of 9th Street and J Street, with various maintenance shops in the shed complex and in several smaller semipermanent structures in the southwest corner of the depot. Other maintenance storage activities occur elsewhere on the depot (Table 4-5).

4.2.4.7 Operations

Operations areas include shipping and receiving and material handling facilities in the Bulk Storage Complex, the Bin Storage Complex, and the Shed/Open Storage area. The largest of the three areas is the freight terminal in the bin storage area.

Automated material handling systems on the facility include a mechanized central receiving and bulk receiving facility, a bin storage operation, a central freight terminal, an intra-depot transportation system, and a central packing area. Mechanization includes automated sort systems, tow-line conveyor systems, automated stretch-wrap machines, conveyorized cargo transporter systems, cargo/pallet dock conveyors, and carousel storage and retrieval systems (MDRA, n.d.).

The bin facilities were constructed in the mid-1950s. These facilities are constructed of steel support and roof structure with masonry block walls and a single-type, continuous roofing system. The roofing system was installed in 1989. Roof rain gutters have failed and need replacing. Exterior walls show joint and surface failure, and a major repair project to seal and paint is required (Table 4-6).

Table 4-5
Light Industrial and Maintenance Activities

Bldg #	General Description	Size (ft^2)	Year Built	Utilities Available	Remarks/ Constraints
253	General-Purpose Maintenance Shop	9,160	1952	Water, sewage, electricity, telephone, heat	CMU, metal windows, built-up roof
260	Facility Engineer Maintenance Shop	6,707	1942	Water, electricity, heat	Brick construction with built-up roof
265	Facility Engineer Maintenance Shop	8,001	1942	Water, sewage, electricity, heat	Brick veneer construction with built-up roof
465	Forklift Wash Facility	400	1984	None	Metal siding construction with metal roof
469	Maintenance Facility-MHE	9,600	1960	Electricity	Metal siding construction with metal roof
720	Railroad Maintenance Facility	4,665	1942	Water, sewage, electricity, telephone, heat	Brick veneer construction with built-up roof
770	Vehicle Maintenance Shop	27,326	1952	Water, sewage, electricity, telephone, heat	Concrete block construction with built-up roof
801	Facility Engineer Maintenance Shop	544	1956	Heat	Sheet metal walls, steel roof
972	Military Table of Organization and Equipment Support Maintenance Shop	9,100	1942	Water, sewage, electricity, telephone, heat	Facility over 50 years old; major structural deficiencies; nearing end of service life

Sources: DDMT, 1996b; Harland Bartholomew & Associates, Inc., 1988b.

Table 4-6
Operations

Bldg #	General Conditions	Size (ft^2)	Year Built	Utilities Available	Remarks/ Constraints
490	Shipping and Receiving (Central receiving)	80,426	1954	Water, sewage, electricity, telephone, heat	Facility over 40 years old; no major deficiency; 2 of 5 bays devoted to shipping and receiving
549	Shipping and Receiving (Bulk pack)	5,444	1942	Water, sewage, electricity, telephone, heat	Facility over 50 years old; minor structural roof deficiencies; nearing end of service life
629	Shipping and Receiving (Bulk receiving)	21,992	1942	Water, sewage, electricity, telephone, heat	Facility over 50 years old; minor structural roof deficiencies; nearing end of service life
630	Shipping and Receiving	21,992	1942	Water, sewage, electricity, telephone, heat	Facility over 50 years old; minor structural roof deficiencies; nearing end of service life
649	Shipping and Receiving	22,472	1953	Water, sewage, electricity, telephone, heat	Facility over 40 years old; minor structural roof deficiencies; nearing end of service life
670	Shipping and Receiving	40,213	1953	Water, sewage, electricity, telephone, heat	Facility over 40 years old; no major structural deficiencies
690	Shipping and Receiving	82,917	1953	Water, sewage, electricity, telephone, heat	Two finger docks for exterior truck unloading
972	Shipping and Receiving	28,900	1942	Water, sewage, electricity, telephone, heat	Facility over 50 years old; major structural deficiencies; nearing end of service life

Sources: DDMT, 1996b; Harland Bartholomew & Associates, Inc., 1988b.

4.2.4.8 *Commercial Services*

Commercial services on DDMT include dining and food preparation facilities in the Community Club and the "J" Street Cafeteria. Other commercial services include the thrift shop and the Base Exchange. See Table 4-7.

4.2.4.9 *Recreation Facilities*

Recreation facilities on DDMT include the golf course, swimming pool, tennis court, and volleyball court, all located in the southeast portion of the installation.

4.2.4.10 *Housing Structures*

Four on-post housing structures are located east of the golf course on DDMT's eastern boundary. The duplex-type housing structures are capable of serving eight families and were constructed in 1948. All four housing structures are made of brick walls with wood roof support (Table 4-8). The 1988 Master Plan recommended that residential use of these units be discontinued.

Table 4-7
Commercial Services

General Description	Size (ft^2)	Year Built	Utilities Available	Remarks/Constraints
Community Club (Building S195)	1,271	1993	Water, sewage, electricity, telephone, heat	New addition to existing Community Club, seats 200 for dining
Thrift Store (Building 251)	8,001	1942	Water, sewage, electricity, telephone, heat	Brick veneer, metal windows, built-up roof

Sources: DDMT, 1996b; Harland Bartholomew & Associates, Inc., 1988b.

Table 4-8
Housing Structures

Bldg#	General Description	Size (ft^2)	Utilities Available
176	Housing Structure	4,787	Water, sewage, electricity, telephone, heat
179	Housing Structure	4,835	Water, sewage, electricity, telephone, heat
181	Housing Structure	4,835	Water, sewage, electricity, telephone, heat
184	Housing Structure	4,739	Water, sewage, electricity, telephone, heat

Sources: DDMT1996, Harland Bartholomew & Associates, Inc., 1988b

4.2.4.11 *Reserved Land/Buffer*

An open field between the golf course and the family housing is the only area on the depot designated as reserved. The area acts as a buffer between the warehouses and the surrounding recreational and residential areas. (Harland Bartholomew & Associates, Inc., 1988a).

4.2.4.12 *Memphis Transportation Museum*

The Memphis Transportation Museum owns eight train cars, which were purchased for subsequent restoration and display. These cars are located on the railroad tracks on DDMT, parallel to Dunn Road. The museum has never restored the rail cars (Cooper, personal communication, 1996a).

4.2.4.13 *Airspace Use*

The Federal Aviation Administration (FAA) has jurisdiction over the airspace 150 feet above the Memphis International Airport and the airspace surrounding DDMT. Memphis Approach Control owns the airspace over DDMT and surrounding areas up to 16,000 feet. Airspace over the Memphis area is used almost exclusively for commercial flights. The Air National Guard, based at Memphis International Airport, sometimes uses the airspace for military flights (Bowers, personal communication, 1996; Knapp, personal communication, 1996).

Memphis International Airport does not have height restrictions for building on the area where DDMT is located, but any construction on the DDMT property would have to be filed to the FAA through a Notice of Proposed Construction (Federal Aviation Regulation Part 77). There are height restrictions for approach zones to the airport to ensure that approaches are not obstructed (Bowers, personal communication, 1996). DDMT does not lie in the approach zones.

There are no helipads, airports, or runways on the main installation at DDMT. DDMT does not have any airspace use restrictions (Cooper, personal communication, 1996a).

4.2.5 *Surrounding Land and Airspace Use*

Memphis, Tennessee, is the hub of a large network of highways, railways, and airways, thereby lending Memphis the name "Distribution Center of the United States." Eight federal highways, two interstate highways, and seven state highways traverse Memphis. Two highway bridges span the Mississippi River at Memphis, and an expressway circles the city, allowing through traffic to avoid inner-city traffic congestion.

DDMT is located in south-central Memphis in an area of mixed residential, commercial, and industrial uses. DDMT lies in the Depot District, the smallest of the 20 districts designated by the City of Memphis and Shelby County Office of Planning and Development. This district is bounded by Highland and Prescott Streets on the east, Interstate 240 to the south, the Illinois Central Gulf Railroad and Interstate 240 on the west, and South Parkway East and Southern Avenue to the north. Within the district, industry is the major land use and DDMT is the largest employer (Memphis and Shelby County Office of Planning and Development, 1983).

Housing in the Depot District consists mainly of single-family homes and duplexes (Memphis and Shelby County Office of Planning and Development, 1983). There are some multifamily dwellings. Within the district, there are four mobile home parks; three are near Elvis Presley Boulevard and one is along Lamar. Because most of the development in the district was begun before there were zoning regulations, many housing areas are located directly next to industries and businesses (Memphis and Shelby County Office of Planning and Development, 1983).

DDMT is bordered by four streets—Dunn Avenue to the north, Airways Boulevard to the east, Ball Road to the south, and Perry Road to the west. The City of Memphis and Shelby County Office of Planning and Development has zoned the surrounding properties as light-industrial, heavy-industrial, commercial, and residential (Woodward-Clyde, 1996). Most of the area surrounding DDMT is highly developed (Harland Bartholomew & Associates, Inc., 1988a).

Airways Boulevard is the most heavily traveled road in the vicinity of the depot. Airways Boulevard south to the Interstate 240 interchange is lined with commercial properties including restaurants, convenience shops, a car dealership, and other small businesses. To the north of the depot along Airways Boulevard, the adjacent uses are industrial. The northeast corner of DDMT is adjacent to the Kellogg plant and other industies. The Frisco Railroad and Illinois Central Gulf Railroad lines lie north of DDMT in the vicinity of the industrial users.

Dunn Road is lined with several small businesses and a trucking distribution center. Between these buildings are several single-family homes, many of which are adjacent to Dunn Field. Perry Road consists mainly of single-family homes. Several churches are interspersed between these homes. Ball Road is lined entirely with single-family homes, and its side streets have single-family homes and duplexes. Many of these homes and business overlook DDMT.

Immediately in the vicinity of the depot are four open spaces used for recreation. Calvary Cemetery and Forest Hill Cemetery are located northwest of DDMT, and there is one cemetery directly adjacent to DDMT along Airways Boulevard.

There are six elementary schools, three junior high schools, and one high school near DDMT (Harland Bartholomew & Associates, Inc., 1988a).

The Memphis International Airport is located approximately 2 miles south of DDMT. The airport is a designated full facility. It serves as a major hub for several large airlines and a number of freight companies that make the airport a global hub for many types of cargo shipments.

Six other airports and the Naval Air Station in Millington, Tennessee, offer a variety of aviation services to the immediate vicinity (DLA, 1992).

4.3 AIR QUALITY

4.3.1 General Air Quality Conditions

National ambient air quality standards have been adopted for six "criteria pollutants": ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), inhalable particulate matter (PM10), and lead (Pb) particles. States or local governments are required by the Clean Air Act to monitor ambient levels of these pollutants and to develop air quality management plans to ensure that

federal air quality standards are achieved and maintained. The Memphis and Shelby County Health Department monitors ambient air quality in Shelby County and has developed a local implementation plan to address the requirements of the Clean Air Act.

DDMT is within an area currently designated as an air quality "maintenance area" for ozone and carbon monoxide standards and as a "nonattainment area" for federal lead standards (Scofield, personal communication, 1996). Because of these designations, the DLA's proposed leasing action will be evaluated with regard to the applicability of the federal Clean Air Act General Conformity Rule.

4.3.2 Air Pollutant Emissions at DDMT

Emission sources at DDMT include 28 natural-gas boilers, numerous space heaters, 3 emergency generators, a fuel dispensing facility, an abrasive blast cleaning operation, 8 degreasing units, and 2 paint spray booths. Several of these emission sources are regulated by operating permits administered by the Memphis and Shelby County Health Department. Emissions from the abrasive blast cleaning operations and paint spray booths are controlled by a baghouse collection system and dry filters, respectively. Although quantified estimates of emissions from all DDMT sources are not available, the following types of pollutants, in varying quantities, can be expected to be emitted from operations at the depot: particulate matter, sulfur dioxide, volatile organic compounds, carbon monoxide, and nitrogen oxides.

An air toxics questionnaire concerning hazardous air pollutants used and stored at the depot was filed with the Memphis and Shelby County Health Department in 1995. Although many of these chemicals could pose a threat to public health if they were emitted in appreciable amounts, they are primarily at the depot for storage purposes only. Existing emissions from these sources are minimal.

In addition to the stationary sources of air pollutants at DDMT, vehicle traffic associated with the base also contributes to emissions. These emissions result from employees being driven to and from the depot and trucks being used to deliver and distribute materials. The air quality model RONACALC has been used to estimate these emissions. This model predicts emission estimates based on data and procedures from U.S. Environmental Protection Agency (EPA) emission inventory guidance and the MOBILE5A and EMFAC7F vehicle emission rate models. Vehicle emission rates were based on typical rates for gasoline and diesel cars and trucks operating in a low-altitude region such as Memphis. Average speeds and travel times were used in the absence of more specific information.

With a 1995 workforce of approximately 1,300 persons and assuming that 28 truck trips are made per day (Amido, personal communication, 1996), the following emissions can be approximated using RONACALC: 28 tons per year of reactive organic compounds, 29 tons of nitrogen oxides, 37 tons of inhalable particulate matter, 261 tons of carbon monoxide, and 3 tons of sulfur dioxide.

4.4 NOISE

The Noise Control Act of 1972 (Public Law 92-574) requires federal agencies to avoid creating noise that may jeopardize public health or welfare. The act directs federal agencies to comply with applicable federal, state, interstate, and local noise control regulations. In keeping with the act, in 1974 the U.S. EPA provided information on identifiable negative effects of noise, identifying indoor and outdoor noise

limits that protect public health and welfare (e.g., preventing hearing damage, sleep disturbance, and communication disruption).

4.4.1 *Existing Noise Sources*

The Depot District Plan (Memphis and Shelby Office of Planning and Development, 1983) provides information on the neighborhoods immediately adjacent to DDMT. In general, there are single-family residential land uses to the west and south of the depot; i.e., the neighborhoods to the west of Perry Road and south of Ball Road. The majority of the remaining immediately adjacent property is manufacturing; mixed commercial, office, and residential; or institutional. Most automotive and truck traffic related to DDMT approaches from Route 240 and uses Airways Boulevard to access DDMT directly or to reach Ball Road (Harland Bartholomew & Associates, Inc., 1988c). The vast majority of land uses along this corridor are not residential, with the exception of a small area of low-density residential land use bounded by Ball Road, Ketchum Road and Airways Boulevard. Rail traffic enters DDMT from the north, passing through a corridor mainly composed of industrial/manufacturing land uses.

4.4.2 *Depot-Related Noise Sources*

The sources of noise originating from DDMT include vehicular traffic, rail equipment operations, and miscellaneous equipment operations. Due to the nature of the depot's mission, there are few sources of high-magnitude, short-duration noise. Of depot-related noise sources, automotive/truck and rail traffic is believed to be the most significant. Heavy trucks make up a significant part of the vehicular traffic volume operating at DDMT. Approximately 30 trucks are estimated to enter and leave the depot during a typical 10-hour workday. The vast majority of heavy trucks enter DDMT through a truck entrance located at Ball Road (Gate 8). Almost all trucks approach DDMT by way of Route 240, accessing Ball Road from Airport Boulevard by way of Ketchum Road. The daily number of vehicles entering and leaving DDMT in 1987 was estimated to be approximately 5,000, the vast majority of which use Gates 1, 2, and 8 (Harland Bartholomew & Associates, Inc., 1988c). As of 1995, the number of vehicles entering and leaving DDMT is closer to 1,500; most of these vehicles are employee or visitor automobiles that are parked just inside the boundary of DDMT and are not operated during the day.

In 1987 rail traffic into and out of DDMT was reported to average 100 rail cars per month, with increases to 250 rail cars per month in the autumn (Harland Bartholomew & Associates, Inc., 1988b). Rail traffic had reduced to about 40 cars per year in 1995 (personal communication, Denise Cooper). Most rail activities occur in a zone located within 2,000 feet of DDMT's boundaries.

4.4.3 *Other Noise Sources*

There are several major sources of noise affecting the areas adjacent to DDMT that, for the most part, are not directly related to depot activities. The Final Environmental Impact Statement for Memphis International Airport indicates that a significant portion of the air traffic originating from the airport passes within a mile (horizontal distance) of DDMT (US DOT, 1993). Noise level projections for the year 2000 indicate the day-night noise level (Ldn) in the vicinity of DDMT will be between 65 and 70 decibels (dBAs). Based on DoD Installation Compatibility Use Zone (ICUZ) guidelines, these levels are generally not compatible with Zone 2 land uses (residential, medical, or educational) unless special acoustic treatments and designs are used to ensure acceptable interior noise levels.

Another major source of noise in the vicinity of DDMT is urban noise, including automotive/truck traffic not related to DDMT. Table 4-9 indicates the approximate number of vehicles (automotive and truck) traveling in the immediate vicinity of DDMT during the typical day (Harland Bartholomew & Associates, Inc., 1988c). On the eastern boundary of DDMT, Airways Boulevard is a major arterial roadway that feeds Route 240. Airways Boulevard has conveyed up to 52,000 vehicles per day through a corridor lined predominantly with mixed commercial, high-density residential, and office land uses. The other roadways bordering DDMT are less traveled. Each conveys less than 25 percent of the traffic on Airport Boulevard. All of the roadways convey their peak traffic between 3 p.m. and 5 p.m., which equals approximately 10 percent of the day's total traffic load.

4.5 *WATER RESOURCES*

4.5.1 *Surface Water*

Stormwater drainage on DDMT is accomplished by overland flow to a system of swales, ditches, concrete-lined channels, and a storm drainage system. Stormwater drainage is achieved by means of concrete-lined channels and underground storm sewer systems with numerous surface and curb outlets. All directional boundaries of DDMT receive stormwater outfalls (Woodward-Clyde, 1996). Paved and built-up areas of the depot, along with the general characteristics of the surface soils in undisturbed areas at DDMT, promote the rapid runoff of surface waters (CH2M Hill, 1995).

Drainage along the eastern, western, and southern boundaries of the main installation is accomplished by city drainage ditches and small creeks. Drainage directions and outfalls are to the west along Tarrent Branch, to the east along an unnamed intermittent stream, and to the south along an unnamed intermittent stream. Surface water flows are directed along these drainage ways to Nonconnah Creek, which is

Table 4-9
1994 Mid-Block Traffic Counts for Public Roads Adjacent to DDMT

Location	Position Relative to the Depot	Travel Directions	Average Daily Traffic Count	Peak Hour Traffic Count	Peak Hour
Airways Blvd. between Ball Rd. and Dunn Rd.	Eastern depot boundary accessed through Gates 1 and 2	north/south	33,153	2793	4-5 p.m.
Ball Rd. between Perry Rd. and Airways Blvd.	Southern depot boundary accessed through Gate 8	east/west	6,292	602	3-4 p.m.
Dunn Rd. between Perry Rd. and Airways Blvd.	Northern depot boundary accessed through Gate 15	east/west	6,517	565	4-5 p.m.
Perry Rd. between Dunn Rd. and Ball Rd.	Western depot boundary	north/south	6,321[1]	NA[2]	NA[2]

[1] Values for Perry Rd. are not mid-block average but are the two-way traffic count taken on October 19, 1993, just south of the intersection of Perry Rd. and Dunn Rd.
[2] NA = Not available.
Source: Johnson, personal communication, 1996.

located approximately three-quarters of a mile to the south of DDMT. Nonconnah Creek flows westerly into Lake McKeller, which empties directly into the Mississippi River (CH2M Hill, 1995). See Figure 4-2.

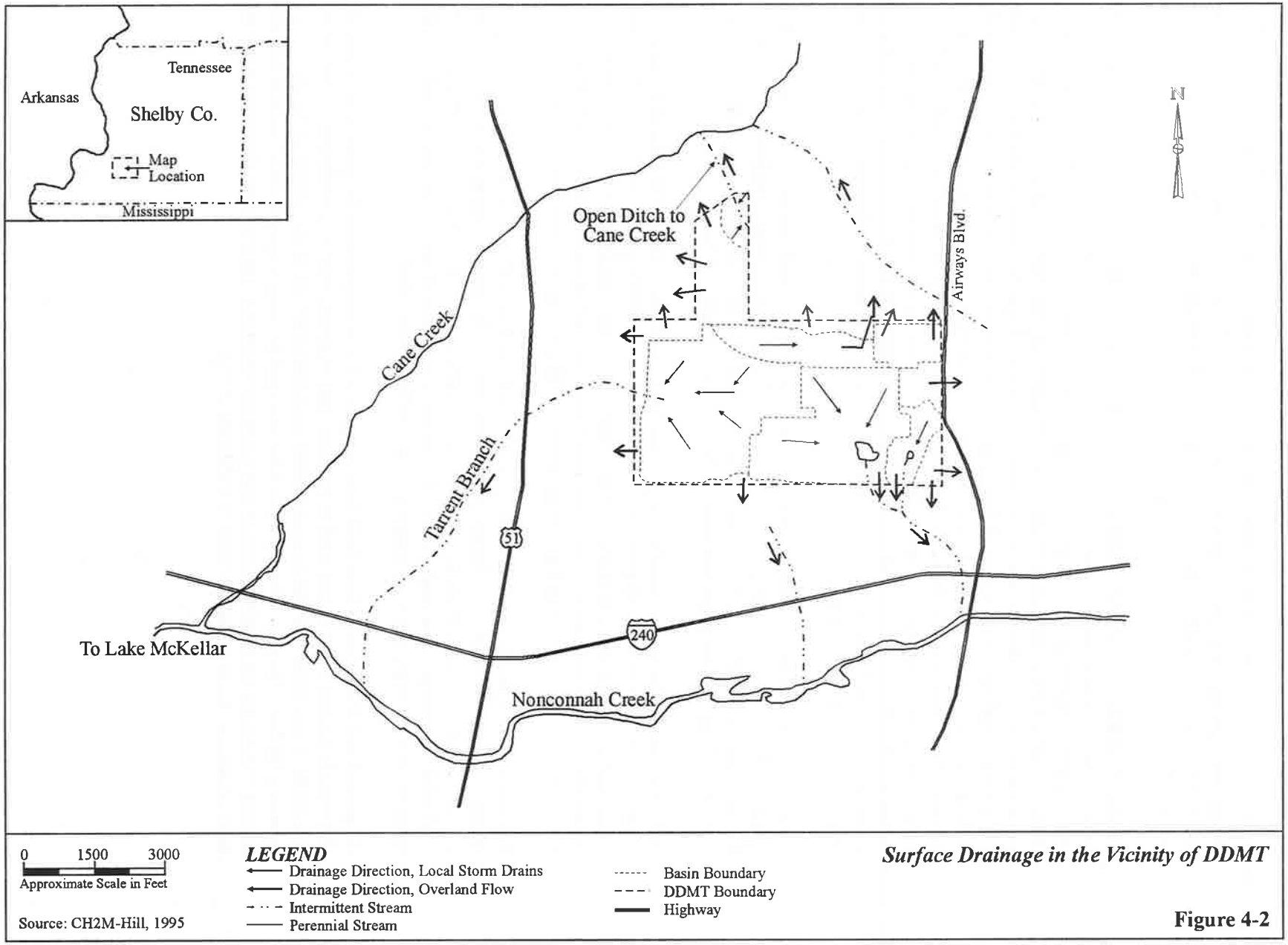
The ditches, channels, and drainage alignments on the depot convey seasonal wet-weather or stormwater flows and are frequently void of flow during dry periods. Lake Danielson, a 4-acre surface stormwater impoundment available for fire fighting, and a small pond located on the depot golf course are the only permanent surface waters located on DDMT. Lake Danielson receives surface water runoff from the golf course and from an on-site storm sewer. A significant amount of the flow entering the lake comes from stormwater runoff from the vicinity of Buildings 470, 489, 490, 689, and 690. Overflow from Lake Danielson discharges through a drop inlet at its dam into a concrete-lined channel. Flows follow storm drains to the culvert under N Street and Ball Road, eventually emptying into Nonconnah Creek. The pond on the golf course receives runoff from the golf course, from adjacent developed areas where Buildings 249, 250, 251, 265, 270 and 271 are located, and from the south parking lot. Pond discharge is also directed to a culvert under N Street and Ball Road and eventually to Nonconnah Creek through unnamed tributaries (CH2M Hill, 1995).

Lake Danielson and the golf course pond serve primarily as stormwater drainage reservoirs for fire-fighting emergencies. The drainage channels on DDMT and in adjacent neighborhoods flow either to the northwest of DDMT into Cane Creek or to the south into Nonconnah Creek. Cane Creek joins Nonconnah Creek several miles southwest of DDMT (CH2M Hill, 1995).

Eight separate discharges for industrial-type wastewaters, swimming pool filter backwash, and Lake Danielson overflow to storm drainage are authorized by an NPDES permit at DDMT. Authorized industrial-type wastewaters include runoff from the painting and sandblasting operations in the open storage area, boiler blowdown, cooling tower blowdown, and once-through cooling water. Wastewater is monitored for flow, pH, oil and grease, suspended solids, and metals (Woodward-Clyde, 1996).

Tennessee Water Quality Standards classify uses of water in terms of their applicability to the public interest. When a water body is classified for more than one use, the most stringent water quality criteria are applied. Natural watercourses designated as wet-weather conveyances are required to be protective of wildlife and humans that might come into contact with them and must maintain the water quality standards that are applicable to downstream waters (CH2M Hill, 1995).

Nonconnah and Cane Creeks have both been designated for propagation and maintenance of fish and other aquatic species, livestock and wildlife watering, and irrigation under the Tennessee Water Quality Standards. Cane Creek has also been classified for recreational use in the section of the stream that flows near DDMT. The most stringent applicable water quality criteria apply to these streams and state that fish and aquatic life must be protected and that waters must not contain toxic substances that cause death or serious illness to aquatic biota (CH2M Hill, 1995).



Surface Drainage in the Vicinity of DDMT

Figure 4-2

The potential for flooding, or surface inundation even for short periods of time, at DDMT is low because of the surface elevations on the depot. They range from 276 to 316 feet national geodetic vertical datum (NGVD)[1], well above the average elevations of the Mississippi River alluvial valley flood levels of 185 to 230 feet NGVD. Excluding areas to the southwest, surface elevations on DDMT are also equal to or slightly higher than most of the adjacent properties, which further reduces the risk of flooding (CH2M Hill, 1995).

4.5.2 *Hydrogeology/Groundwater*

The regional hydrologic setting in the Memphis area is characterized by the thick unconsolidated sedimentary units that were deposited in the Mississippi embayment. The Mississippi embayment is a wedge-shaped, down-warped, structural trough-like depression that extends from the Gulf of Mexico north to Cairo, Illinois. The trough's greatest depth is defined by its axis, which trends N50°E in an alignment that generally follows the Mississippi River. The trough and the sedimentary units deposited in the structural feature dip southward. The sedimentary units that make up the embayment tend to thicken from east to west, with the thickest accumulation along the axis. The characteristics of sedimentary deposits within the embayment are responsible for the overall hydrogeologic character of the region. See Figure 4-3.

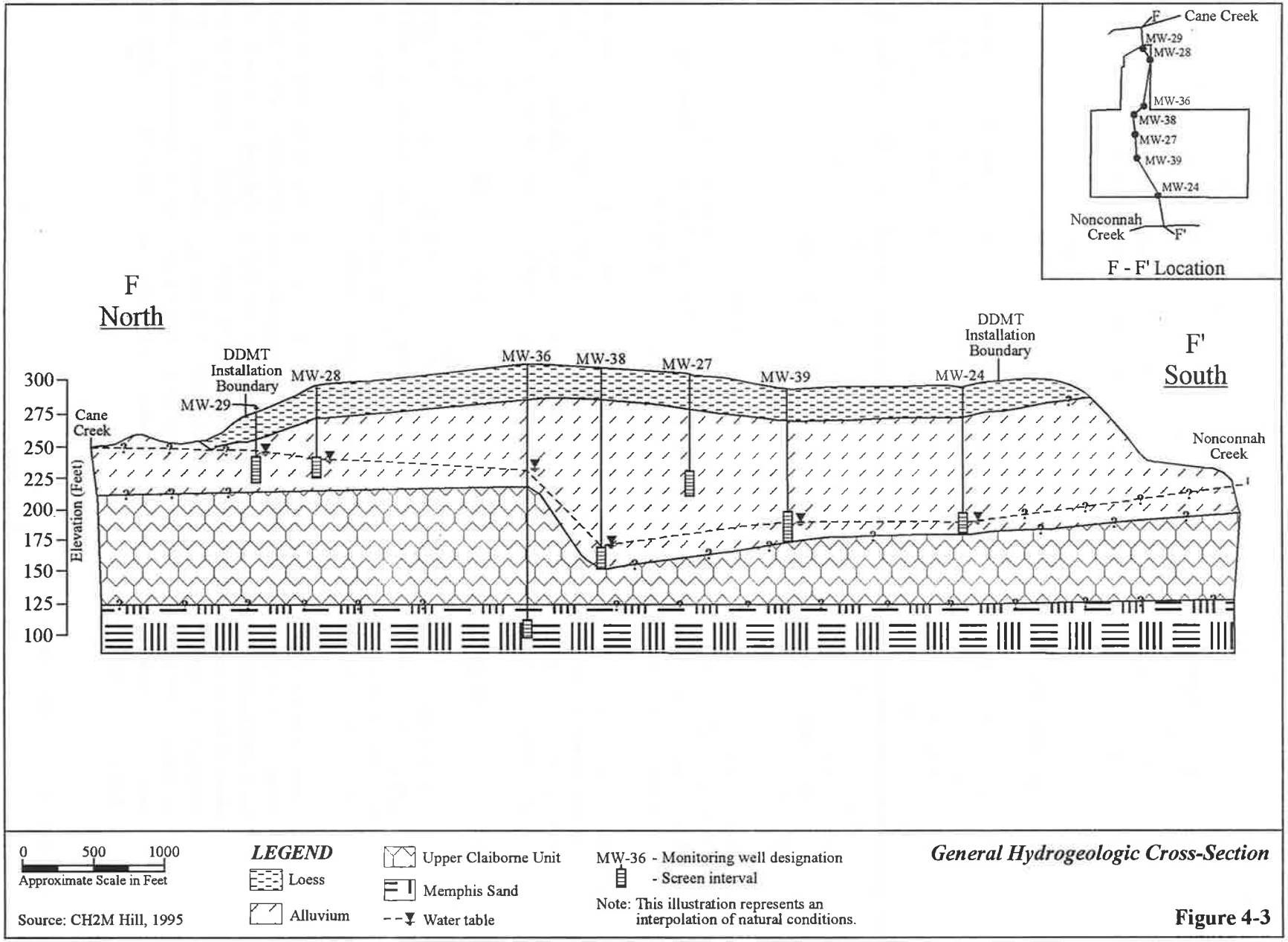
Several aquifers of local or regional importance exist in the Memphis area. These aquifers include the following, in order of increasing geologic age and depth from the surface: Alluvium, the Fluvial Terrace Aquifer, the Memphis Sand Aquifer, and the Fort Pillow Sand Aquifer. The Alluvial Sand Aquifer is restricted to the channels of major drainageways and does not occur at DDMT.

The characterization of hydrogeologic conditions at DDMT is based on physical inspections, test borings, groundwater quality monitoring, well installations, and the direct measurements of in situ hydraulic properties that were made during the remedial investigation conducted by Law Environmental in 1990 (CH2M Hill, 1995). The following aquifers or confining units have been identified at DDMT:

- *Loess*. The uppermost geologic unit encountered at DDMT is the loess, which consists of a firm silty clay and clayey silt with some sand lenses. This unit does not usually bear water, but it tends to limit infiltration of precipitation to underlying aquifers where it has not been disturbed. Sandy lenses within the loess can become locally perched water-bearing zones and can contain water for short periods following rainfall events. The perched zone typically consists of a fine sandy layer within the loess at a depth of about 20 feet below the ground surface.

- *Fluvial Deposits*. Fluvial or terrace deposits underlie the loess deposits. The fluvial deposits form the shallow unconfined aquifer beneath DDMT. The deposits consist primarily of clayey sands, sand, and gravelly sand deposits that range from 40 to 131 feet in thickness at DDMT. The saturated thickness of the aquifer varies from about 5.7 feet to 18 feet at DDMT, and the water level surface ranges from 243 feet NGVD to 155 feet NGVD. Recharge of the unit is primarily from precipitation. Discharge from the unit is primarily by downward hydrologic connection or by lateral flow. The Fluvial Aquifer is not used as a source of drinking water within the Memphis area (Woodward-Clyde, 1996).

[1] Elevation based on mean sea level as established in 1929.



General Hydrogeologic Cross-Section

Figure 4-3

Flow within the Fluvial Aquifer to the north of the main installation is in a westerly direction. Groundwater flow in the Fluvial Aquifer under the main installation appears to be locally toward a sink or a buried stream channel. Overall, a general west-to-southwest groundwater flow occurs in the Fluvial Aquifer under the main installation. The higher elevation of both Cane Creek and Nanconnah Creek in relation to the groundwater table indicates that the two creeks contribute to discharges into the aquifer. The apparent southward flow away from Cane Creek and the northward flow away from Nonconnah Creek, in combination with a drop in elevation of the water table in the area, supports the possibility of downward vertical leakage into the deeper Memphis Sand Aquifer (CH2M Hill, 1995).

- *Jackson Formation/Upper Clayborne Group*. The Jackson Formation/Upper Clayborne Group at DDMT consists primarily of distinct grey or orange clay. It represents a regionally important confining bed separating shallow water-bearing zones from underlying major aquifers. The fluvial deposits provide water to many domestic and farm wells in rural areas of the Gulf Coastal Plain, but none of these are located in the vicinity of DDMT. The saturated thickness of the fluvial deposits is limited and subject to fluctuation (CH2M Hill, 1995).

  The depth of contact with the surface of the confining Jackson Formation/Upper Clayborne Group ranges from 223 feet NGVD in the northwest corner of the main installation to 118 feet NGVD to the south of Dunn Field. The variability in the depth to the contact with the Jackson Formation/Upper Clayborne Group is interpreted to be due to post-Eocene erosion.

  Variations in the depth to the Jackson Formation/Upper Clayborne Group on the main installation to the south of Dunn Field suggests that the unit in this area does not conform to the more pervasive flat-lying nature of the formation. Variations in the depth and thickness of the unit suggest that it has been significantly eroded in this area on DDMT. Additional studies in this area would be needed to determine possible hydraulic communication (if any) between the upper Fluvial Aquifer and the underlying Memphis Sand (CH2M Hill, 1995). Studies (Gram and Parks, 1986) suggest that Jackson Formation/Upper Clayborne Group is not laterally continuous throughout the Memphis area. In some areas, the Memphis Sand is directly overlain by alluvial or fluvial deposits, allowing downward vertical leakage from shallow water-bearing zones to the Memphis Sand. Leakage through the Jackson Formation/Upper Clayborne Group is possible even where it is continuous because of significant differences in the head pressures between the lower confined and upper unconfined aquifers. The confining unit is composed of permeable fine sand and lignitic lenses in addition to confining less permeable clay and silt strata (CH2M Hill, 1995).

- *Memphis Sand*. The Memphis Sand is reported to underlie the entire Memphis area. The unit represents the shallowest artesian aquifer in the area, and it is the region's most important source of water. Locally, in the Memphis area, pumping has lowered the water levels in the aquifer considerably. At DDMT the surface of the aquifer is approximately 125 to 150 feet NGVD. The base of the unit is estimated to be about -750 feet NGVD. Flow in the Memphis Sand is generally westward, toward the Allen Well Field, a major local pumping zone. Most of the recharge for the aquifer comes from its outcrop area, which forms a wide northeast-trending belt several miles to the east of Memphis. The outcrop area extends from the east of Shelby, Fayette, and Hardemen Counties northeast across most of western Tennessee (CH2M Hill, 1995). The Memphis Sand is the primary source of potable water. In 1990 the total groundwater use for the Memphis Sand was 186.9 million gpd (Hudson, personal communication, 1996).

- *Flour Island Formation.* The Flour Island Formation lies stratigraphically below the Memphis Sand. The formation consists primarily of silty clay and sandy silt. Lenses and thin interbeds of fine sand and lignite are also locally present in the unit. The extent of the unit varies in the Memphis area, ranging from 160 to 310 feet in thickness. The Flour Island Formation serves as the lower confining unit of the Memphis Sand and the upper confining unit of the Fort Pillow Sand.

- *Fort Pillow Sand.* The Fort Pillow Sand lies beneath the Memphis Sand and underlies DDMT at a depth of about 1,400 feet below the ground surface. The aquifer averages about 200 feet in thickness and is under strong artesian (hydrostatic pressure) conditions. It derives most of its recharge from its outcrop area, which is well to the east of DDMT, and from other hydrologic units (CH2M Hill, 1995). In 1990 the total municipal/industrial use for the Fort Pillow Sand was 4.1 million gpd (Hudson, personal communication, 1996).

- *Old Breastworks Formation.* This formation is the oldest Tertiary unit identified in the DDMT area. The unit consists primarily of silty clays and clayey silts with lenses and interbeds of fine sand and lignite. The unit acts as the lower confining unit for the Fort Pillow Sand. The stratigraphic unit is reported to range from 125 to 350 feet in thickness.

Studies conducted by McMaster and Parks in 1986 and 1987 and the Memphis Light, Gas and Water Division (MLGWD) indicate that water from the fluvial deposits has low concentrations of dissolved solids, generally is moderately hard, and has low concentrations of iron. The MLGWD study indicated that all major and trace inorganic constituents in the water from the fluvial deposits were within the known range of values for natural uncontaminated water. Synthetic organic compounds were not detected in any of the samples taken by MLGWD. Monitoring wells were located from less than one-half to over one mile to the west of DDMT (CH2M Hill, 1995).

The Allen Well Field, operated by the MLGWD, is located to the west of DDMT. The field draws water from the Memphis Sand for use in the City of Memphis and most of Shelby County. Studies have indicated that areas of hydraulic interconnection might exist in the confining Jackson Formation/Upper Clayborne Group that overlies the Memphis Sand Aquifer and might allow the migration of contaminants from the overlying unconfined Fluvial Aquifer. It should be noted that, to date, none of the studies conducted at DDMT indicate that any hydraulic interconnections exist between the two aquifers at DDMT (CH2M Hill, 1995).

Analysis in 1988 and 1989 of groundwater samples obtained from wells within the Allen Well Field showed no contaminants exceeding drinking water standards. Six wells located within 1 mile of the DDMT had levels of volatile organic chemicals that were below the gas chromatographic detection limits. In 1988, MGLW detected low levels of chlorinated solvents in three wells in the Allen Well Field. The source of the contaminants was believed to be an industrial concern located adjacent to the wells, and DDMT was not considered as a potential source. An analysis of water taken from a post-chlorination distribution point for the Allen Well Field, dated September 30, 1988, showed low levels of bromodichloromethane, chlorodibromomethane, and chloroform, which are common by-products of water that has undergone chlorination. These chemicals have not been detected in water at DDMT (CH2M Hill, 1995). See also Section 4.7.1, Potable Water Supply.

4.6 GEOLOGY

4.6.1 Physiography

The Memphis, Tennessee, area is located within the Mississippi Alluvial Plain and Gulf Coastal Plain Subdivisions of the Atlantic Coastal Plain Physiographic Province. The majority of Memphis, including DDMT, is located in the Gulf Coastal Plain subdivision, locally known as the West Tennessee Plain. The area is characterized by dissected loess-covered uplands; land surfaces are nearly level to markedly rolling and generally lack distinct features (CH2M Hill, 1995).

Drainage systems within the Gulf Coastal Plain are generally well developed. Uplands associated with major streams tend to be low with relatively shallow stream valleys. Most principal (higher-order) streams have low gradients and occupy broad alluviated and terraced valleys, whereas the lower-order streams have developed narrow, V-shaped valleys in fine-grained soils (CH2M Hill, 1995).

4.6.2 Structure and Stratigraphy

The Memphis area and DDMT are located near the center of the Mississippi embayment. The Mississippi embayment is a wedge-shaped, down-warped, structural trough-like depression that extends from the Gulf of Mexico north to Cairo, Illinois. The trough begins inland as a thin accumulation of clastic materials that thicken substantially toward the Gulf of Mexico. The axis of the trough roughly parallels the current course of the Mississippi River (N50°E). Several thousand feet of sand, clay, silt, gravel, and lignite were deposited in the depression during the late Cretaceous, Paleocene, and Eocene epochs.

Tertiary and Quaternary strata occurring over the Eocene formations in the Memphis area are composed of loosely consolidated deposits of marine, fluvial, fluvialglacial and deltaic sediments. These deposits reach maximum thicknesses of from 2,700 to 3,700 feet in the Memphis area.

Periods of Pleistocene glaciation are responsible for the origin, distribution, and character of most of the Quatenary deposits that occur in the Mississippi embayment and the Memphis area. Continental ice sheets did not extend into the Lower Mississippi Valley, but they were responsible for the changing preglacial drainage that consequently carried large volumes of glacial meltwater and outwash into the area (CH2M Hill, 1995).

The New Madrid seismic zone, which represents the most seismically active area in the eastern United States, is located toward the northern end of the Mississippi embayment (see the section on seismicity).

The following geologic formations have been identified at DDMT based on strata encountered in soil borings and during monitoring well installation for a remedial investigation conducted at DDMT by Law Environmental in 1990 (CH2M Hill, 1995):

- *Loess*. The uppermost geologic formation encountered at DDMT is loess. The loess deposits occur at or near the surface and consist of brown silty clay, clayey silt, and sandy clay. (See Section 4.5.2, Hydrogeology/Groundwater, for a description.)

- *Fluvial deposits*. Fluvial deposits underlie the loess deposits and were encountered at all boring locations during the Law study (CH2M Hill, 1995). The fluvial deposits consist of three generalized

members consisting of silty clay, sandy clay, and clayey sand; poorly graded, fine- to medium-grained sand; and gravelly sand. See Section 4.5.2, Hydrogeology/Groundwater, for a description.

- *Jackson Formation/Upper Claiborne Group.* The Jackson Formation/Upper Clayborne Group consists of a stiff gray to orange, low-plasticity lignitic clay in the areas were it was encountered during the Law study. The unit underlies the unconfined water-bearing fluvial deposits and is a regionally significant confining unit. See Section 4.5.2, Hydrogeology/Groundwater, for a more detailed description.

- *Memphis Sand.* The Memphis Sand underlies the Jackson Formation/Upper Claiborne Group. The unit is composed primarily of thick-bedded, white to brown or gray, very fine grained to gravelly sand. The Memphis Sand ranges from 500 to 890 feet in thickness, and depth to the top of the unit ranges from about 120 to 300 feet below the surface. At DDMT, the Memphis Sand is approximately 125 to 150 feet NGVD. As mentioned in Section 4.5.2, the Memphis Sand represents the region's most important source of water, and the City of Memphis obtains its drinking water from the aquifer. The upper portion of the unit was encountered at DDMT in all borings that penetrated the Jackson Formation/Upper Claiborne Group during the Law study (CH2M Hill, 1995).

The Flour Island Formation, Fort Pillow Formation, and Old Breastworks Formation occur stratigraphically below the Memphis Sand in the DDMT area. These units were not encountered during the remedial investigation due to the depth of borings and well installations. Based on the regional geology, these units should be present under DDMT. Brief descriptions of these units are included in Section 4.5.2.

4.6.3 Topography

The altitude of Shelby County ranges from a maximum of 430 feet above mean sea level (MSL) to a minimum of 185 feet MSL on the water-deposited soils of the Mississippi River alluvial plain. Approximately 10 percent of the county is located in the Mississippi River floodplain, and an additional 20 percent lies within the floodplains of smaller rivers and creeks. Much of the remaining county consists of gently rolling to hilly topography that has been dissected by streams and creeks. The streams are entrenched with moderately wide valley floors. The northern part of the county is rolling and hilly, and the southern part is gently rolling (Memphis and Shelby County Office of Planning and Development, 1977). Most of DDMT, which is located in the southwestern section of Shelby County, is fairly level with an average elevation of 300 feet MSL.

Approximately 57 percent of the main installation has been developed. Most of the land encompassing the main installation has been graded, paved, and built up. The topography in the main installation is nearly level. Surface elevations range from approximately 316 feet NGVD in the Defense Reutilization and Marketing Office storage yard adjacent to Dunn Avenue to 267 feet NGVD in the low area below Lake Danielson. The golf course, located in the southeastern sector, is the only significant park-like area on the main installation, and it has elevations ranging from 267 feet NGVD to 301 feet NGVD. Maximum local relief on the main installation is 20 feet, measured across Lake Danielson's earthen dam (CH2M Hill, 1995).

4.6.4 Soils

The Soil Survey for Shelby County (USDA, 1989) shows three soil mapping units on the main installation of DDMT. A brief description of the soils and their location on DDMT follows.

- *Graded land, silty materials (Gr).* This mapping unit consists of areas that have been cleared and graded for construction of subdivisions, buildings, and industrial sites. In most areas the original soils have been disturbed to the point that they can no longer be identified. The soil material is typically brown, yellowish-brown, and dark brown and is silty in texture. This mapping unit extends over approximately 90 percent of DDMT (USDA, 1989).

- *Memphis Silt Loam, 8 to 12 percent slope (MeD2).* This soil is a deep, well-drained, silty soil that occurs on short hillsides. The texture of MeD2 is predominantly a silt loam with a silty clay loam subsoil present in most places. Control of erosion is the main limitation of the MeD2. MeD2 is on the southeast corner of the main installation (USDA, 1989).

4.6.5 Seismicity

The Memphis metropolitan area lies within the periphery of the seismically active New Madrid fault zone. Minor to moderate seismic activity occurs in the region encompassing the New Madrid fault zone, and the area currently has the highest level of seismicity in the United States east of the Rocky Mountains (Memphis and Shelby County Office of Planning and Development, 1977).

The Memphis area is in Earthquake Hazard Zone 3 on a scale of 1 to 4, with 4 being the highest risk. Seismic Zone 3 building codes are intended to protect the safety of a building's occupants during and immediately following the type of earthquake that may be expected to occur in Earthquake Hazard Zone 3. Structures that were built to Seismic Zone 3 codes include Buildings 360 and 560, which are general-purpose warehouses; Building 835, which is a hazardous materials (HAZMAT) storage area; and Building 865. Recent additions to existing structures were also built to Seismic Zone 3 codes. Buildings on the DDMT with additions meeting the Seismic Zone 3 codes include Buildings 25, 330, 469, 489, 490, 529, 550, 559, 670, 685, 690, 925, 972; Building 689 section 5; the cafeteria; and the community club (Roach, personal communication, 1996).

4.7 INFRASTRUCTURE

4.7.1 Potable Water Supply

Memphis Light, Gas and Water Division (MLGWD), a publicly owned utility of the city of Memphis, supplies potable and industrial water to DDMT. Raw water is obtained entirely from deep wells that are screened in one of two aquifers—the Memphis Sand Aquifer, a 500-foot-thick sand aquifer, the primary source, and the Fort Pillow Sand Aquifer, a 1,400-foot-thick sand aquifer, the reserve for future water needs and supplier of a few industrial wells (Woodward-Clyde, 1996). Both aquifers are capable of supplying very large quantities of good-quality water (Woodward-Clyde, 1996).

Water treatment consists of aeration and rapid sand filtration to remove iron, hydrogen sulfide, and carbon dioxide. Treated water is chlorinated in accordance with state law, even though the water is bacteria-free (CH2M Hill, 1995b, cited in Woodward-Clyde, 1996), and fluoride is added to the final

water to achieve a 1 part per million concentration (Harland Bartholomew & Associates, Inc., 1988a). Potable water is tested weekly by the Installation Environmental Health Section, a tenant activity at DDMT. The installation has never experienced difficulties with its drinking water quality (CH2M Hill, 1995b, cited in Woodward-Clyde, 1996). Because no separate industrial water supply or distribution system is in place on the installation, potable water is used throughout DDMT (Memphis and Shelby County Office of Planning and Development, 1995).

The installation's water system consists of underground piping ranging from 17 to 54 years old. The system is used for domestic and industrial uses and for fire suppression water requirements. Water is supplied to DDMT by MLGWD through three metering stations located on the depot—one along Airways Boulevard, one along Dunn Road, and one along the western boundary of the property (Ron Huckaby, personal communication, 1996). Main pressure at the meter stations is approximately 65 pounds per square inch gauge (psig), and backflow preventers are provided at the entry points to protect the city supply (Harland Bartholomew & Associates, Inc., 1988a).

The water distribution system consists of 8-inch and 10-inch mains laid out in a grid system that provides good coverage for the entire installation (Harland Bartholomew & Associates, Inc., 1988a). The original water distribution system was constructed in the 1940s and 1950s and consists of pipings of lined and unlined cast iron with some ductile steel (DDMT, 1996c). Parts of the system were upgraded in the 1960s. The mains serving the northwestern quadrant were constructed in 1979 (Harland Bartholomew & Associates, Inc., 1988a). The water pipes located on the depot are owned and maintained by the federal government. The condition of the oldest portion of the water distribution system should be considered marginal due to age-associated deterioration (Roach, personal communication, 1996).

DDMT purchases an average of 2.3 million gallons of water per month from the City of Memphis (Law Environmental, 1990c, cited in Woodward-Clyde, 1996). Average monthly demand over the period that included fiscal years 1985 and 1986 was approximately 3,278,000 gallons (Harland Bartholomew & Associates, Inc., 1988a). The maximum population at DDMT was 2,729 in December 1986, a total that included civilian employees, military personnel, and military dependents living at the depot. Annual consumption of publicly supplied water at DDMT was 36 million gallons per year in 1995 (City of Memphis, 1995). The approximate breakdown of daily average water consumption is 20 gallons per day (gal/day) for non-contact cooling, 10 gal/day for boiler feed, and 150,000 gal/day for industrial/domestic uses (City of Memphis, 1995). Water is limited to three metering points servicing 10-inch mains with an estimated total maximum capacity of approximately 3,168,000 gallons per day.

The depot has experienced problems in the past with failures in the oldest portions of the system mostly due to sudden pressure rises or surges associated with the fire protection system (activation of the auxiliary pumps). A jockey pump has recently been added to the system to minimize the pressure surges that accompany activation of one or more of the high-pressure pumps, and it should minimize future failures in the older lines.

The emergency fire pump station and high-pressure fire protection line were constructed in 1987. The station has five diesel engine pumps capable of delivering 1,500 gpm each at 116 psi. A 500,000-gallon adjacent aboveground storage tank (Building 754) provides water to the pumps. The pumps discharge through individual 8-inch-diameter lines to a 20-inch-diameter header, then to high-pressure 20-inch, 12-inch, and 10-inch mains (Harland Bartholomew & Associates, Inc., 1988a). The high-pressure fire protection line is dedicated for fire protection only and is connected to Buildings 835, 865, 560, 360, and

689. A pressure-reducing valve limits water pressure to less than 100 psi in the older fire protection line (Harland Bartholomew & Associates, Inc., 1988a).

4.7.2 *Wastewater Treatment*

DDMT has a sanitary sewer system that consists of a gravity collection system and two sewage pumping stations. There are no on-post facilities for treating sanitary or industrial wastewater. Domestic and approved (i.e., pretreated) industrial-type wastewaters are discharged into the municipal water collection system of the City of Memphis for ultimate treatment by municipal facilities (Harland Bartholomew & Associates, Inc., 1988a). Treatment currently occurs at the T.E. Maxson Facility, also known as the City of Memphis South Wastewater Treatment Plant, which has a design flow of 80 million gallons per day (mgd). The plant presently provides secondary treatment for a total flow of 60 mgd (Harland Bartholomew & Associates, Inc., 1988a). Wastewater contributions from DDMT include domestic sewage (with a relatively small industrial flow component) and infiltration and inflow (I/I). The precise magnitude of I/I is unknown because sewage flows are estimated from water consumption rather than actual measument. However, DDMT personnel do not believe I/I is excessive (Harland Bartholomew & Associates, Inc., 1988a).

Three vehicle wash racks equipped with oil/water separators are in use at Buildings 253, 456, and 770. The effluent lines run from the oil/water separators to the sanitary sewage collection system. The only other industrial wastewater generated at DDMT is from the cooling towers at Buildings 144, 210, and 359, which also discharge to the sanitary sewer (Harland Bartholomew & Associates, Inc., 1988a).

The following discharge points (i.e., inputs) and volumes to the collection system on the depot are identified in the City of Memphis Industrial Wastewater Discharge Agreement with DDMT (City of Memphis, 1995):

- 140,000 gal/day of sanitary sewage and a small volume of wastewater from a wash rack.
- 3,500 gal/day of sanitary sewage.
- 5,400 gal/day of sanitary sewage and a small volume of wastewater from a wash rack.
- 85 gal/day of sanitary sewage.
- 15 gal/day of sanitary sewage.

These permissible discharges to the sanitary sewer can total up to 149,000 gal/day. Actual flow through the DDMT collection system and into the city's owned and operated collection system is estimated to be approximately 100,000 gal/day (Al-Chokhachi, personal communication, 1996). DDMT's agreement provides for discharges associated with work occurring up to 6 days per week in two shifts with 1,000 employees on site during the day shift (8 a.m. to 2 p.m.) and 200 employees on site during the evening shift (2 p.m. to 12 a.m.). The nontransferable sewer use ordinance and wastewater discharge agreement between the City of Memphis and DDMT identifies the sanitary discharges from the depot as Standard Industrial Code (SIC) code 9711. Table 4-10 presents the limits for wastewaters beyond which pretreatment is required prior to discharge into the sanitary sewer system at point number 1 located on Dunn Road.

The collection system at DDMT consists of 6-inch to 12-inch gravity mains and two sewage lift stations in Buildings 755 and T874 (Harland Bartholomew & Associates, Inc., 1988a). The basic system was constructed in 1942 when the original 20 warehouses were built. The system was extended in 1954 to serve facilities in the south-central area of DDMT. A natural divide in the terrain at DDMT runs

Table 4-10
DDMT/City of Memphis Sewer Use Ordinance Effluent Limits

Parameter	Daily Average Maximum (mg/L)	Daily Average Maximum (lb/day)	Instantaneous Maximum (mg/L)	Instantaneous Maximum (lb/day)
BOD_5[1]	250.0	291.9	400.0	467.04
Total Suspended Solids	300.0	350.28	500.0	583.8
Total Solids	500.0	583.8	800.0	934.08
Oil & Grease (Hydrocarbons)	—	0.0	—	0.0
Oil & Grease (Total)	15.0	17.514	25.0	29.19
Ammonia Nitrogen (NH_3 -N)	—	0.0	—	0.0
Total Kjeldahl Nitrogen	—	0.0	—	0.0
	Minimum	**Maximum**		
Maximum Temperature (°F)	—	110	—	—
pH Range (Standard Units)	5.5	10.0	—	—

[1] 5-day biochemical oxygen demand.
Source: City of Memphis, 1995.

generally southward from Gate 15 and along the railroad classification yard to the southern boundary. Sewage generated in the area west of the installation's topographic divide must be pumped to the gravity system in the northeastern quadrant, which discharges to the sanitary sewer operated by the City of Memphis beginning at the manhole on Dunn Avenue. A small lift station currently serves the open-shed storage area, and a new lift station serves the new Hazardous Materials Warehouse.

The DDMT sewage collection system is composed of four subsystems. One subsystem, consisting of 6-inch- and 8-inch-diameter mains, serves the northeastern quadrant of the depot and discharges through an 8-inch outfall to the city's sewer on Dunn Avenue. The capacity of the city's collection system that begins at the manhole on Dunn Avenue has been the subject of recent discussions between the city and DDMT officials. One issue is that the Kellogg Plant located on Frisco Street has experienced occasional sewer surcharges (backups) in its plant (Al-Chokhachi, personal communication, 1996). These events may have been due to damage caused to the existing sewer by work conducted on a nearby rail spur. In response to this problem, a second, parallel sewer line was constructed by the city of Memphis on Frisco Street to accommodate the Kellogg Plant. This line also currently serves DDMT. However, although DDMT has an approved sewer use ordinance/discharge agreement with the city for up to 150,000 gal/day, current flow is estimated to be far lower than the approximately 100,000 gal/day estimated to be discharged from DDMT in the past (Al-Chokhachi, peronsal communication, 1996). The original sewer line on Frisco Street is currently handling only small volumes of flow and could provide additional capacity for increased flows from DDMT if necessary (Al-Chokhachi, personal communication, 1996).

The second subsystem serves the area west of 6th Street and 9th Street. It consists of 6-, 8-, 10-, and 12-inch mains and two sewage lift stations (Buildings 755 and T874). Each of the existing lift stations has dual pumps that operate on alternate cycling. Pump capacities are 150 gallons per minute (gpm) each at Building 874 and 500 gpm each at Building 755. The Medical Storage Building (Building 359)

has a sewage lift station with 100-gpm capacity. The system has a 12-inch outfall to the previously mentioned city sewer located on Dunn Avenue.

The third subsystem consists of 6-, 8-, and 10-inch mains serving the area bounded by 9th Street, J Street, 3rd Street, and the southern reservation boundary. It has a 10-inch outfall to a city manhole on Ball Road.

The fourth subsystem consists of 6- and 8-inch mains. It serves the family housing and recreational facilities in the extreme southeastern section of the depot. It has an 8-inch outfall to a city sewer on Ball Road.

The existing major trunk sewers on the DDMT were analyzed to determine their adequacy for flow based on existing populations using a sanitary sewer model developed by the U.S. Army Construction Engineering Research Laboratory (CERL). This analysis indicated that a maximum flow of 38.5 cubic feet per second would be generated and that because most of the flow would originate upstream of Lift Station 755, the collection system is adequate for existing and planned facilities (Harland Bartholomew & Associates, Inc., 1988a).

4.7.3 Traffic and Transportation

Airways Boulevard, a six-lane road that forms the eastern border of the main installation, is the most heavily traveled thoroughfare in the vicinity of the installation. Small commercial properties and other developments are located from the area of DDMT southward to the Airways Boulevard interchange with Interstate 240 (Woodward-Clyde, 1996).

Dunn Avenue, Ball Road, and Perry Road border the installation to the north, south, and west, respectively (Harland Bartholomew & Associates, Inc., 1988c).

Major highways serving the Memphis area and installation are Interstate Highways 40 and 55 and U.S. Highways 51, 61, 64, 70, 72, and 78. Interstate 240 is a local bypass that runs the circumference of the city and connects to I-40 and I-55. Memphis is also served by state highways 1, 3, 4, 14, 23, 57, and 83 (Harland Bartholomew & Associates, Inc., 1988c). Two highway bridges span the Mississippi River at Memphis—the Hernando-DeSoto Bridge in the central business district and the Memphis-Arkansas Bridge south of the central business district (Harland Bartholomew & Associates, Inc., 1988c).

Several gates provide access to DDMT. The main entrance to DDMT is from Airways Boulevard through Gate 1. Gates 2 and 23 are also on Airways Boulevard. Gate 15 is located on Dunn Avenue, directly across from the access gate to Dunn Field. Gate 9 is located on Perry Road. Gate 8, the only truck access gate, and Gate 6 are on Ball Road. Gates 1 and 8 are the only gates currently in use.

A 1996 *Employee Distribution by ZIP Code* report (DDMT, 1996d) shows a total of 1,103 employees currently at the depot. Harland Bartholomew & Associates, Inc. found that the average vehicle occupancy ratio was between 1.1 and 1.3 persons per vehicle (1988c). In 1987-1988, at a time when DDMT was in full operation, there were 2,612 employees. The two main types of traffic generated by DDMT are employee commuting traffic and trucks and other vehicles that service the operations of the depot. Essentially all civilian and truck traffic occurs on weekdays (Harland Bartholomew & Associates, Inc., 1988c).

Employee commuting traffic occurs on the public streets adjacent to and approaching the depot, but very little occurs within the gates of DDMT. There are 1,974 parking spaces available on the depot, including 1,757 spaces outside the security fence. Parking areas outside the fenceline are located at Gates 1, 2, and 8. Shuttle buses transport employees from these parking areas to their designated work areas. The three parking lots at Gates 1, 2, and 8 provide adequate parking for the depot employees (Cooper, personal communication, 1996a). Automobile theft and pilferage have been a concern affecting the spaces outside the security fence.

4.7.3.1 Roadways

Internally, DDMT has 28 miles of paved roads and streets. Most of the roads throughout the depot have two lanes, usually separated by a dashed line. The speed limit on the depot ranges from 15 to 25 miles per hour. Street lighting is located mainly on the tops of buildings facing down toward the streets. There are also several streetlights on posts facing the streets. Roads servicing DDMT consist of asphalt, asphalt-overlaid paving, and reinforced concrete. The open storage areas are paved with 3 inches of asphalt on a road gravel base (DMMT, 1996a). During Operation Desert Storm, DDMT roads received intensive use by shipping trucks. As a result, all of the roads on the depot except for 21st Street from B Street to G Street and approximately 900 feet of 25th Street west of Building 972 were repaved following the war (Cooper, personal communication, 1996a; Roach, personal communication, 1996). At present, the overall condition of the road structural systems servicing DDMT is good (DDMT, 1996c). Those roads not repaved after Operation Desert Storm are in need of repaving (Roach, personal communication, 1996).

Roads at DDMT are classified as primary, secondary, or tertiary according to the quantity of traffic served, the origin and destination of traffic movements, and the street design in terms of width, street geometry, and type of surface. There are 11 east-west roads and 11 north-south roads at DDMT. They form somewhat of a grid pattern, although there is a lack of continuous streets extending between the installation boundaries. According to the 1998 DDMT Master Plan (Harland Bartholomew & Associates, Inc., 1988a), this arrangement results in somewhat inhibited movement for serving operations in the three major supply areas of bulk storage, bin storage, and shed/open storage. A perimeter road around the boundary of the installation provides for circulation and security patrolling, although it is somewhat circuitous in sections because of several missing connections (Harland Bartholomew & Associates, Inc., 1988a).

4.7.3.2 Existing Traffic Conditions

As of the 1983 *Depot District Plan* prepared by the Memphis and Shelby County Office of Planning and Development, there were 23 major streets in the area around DDMT, carrying an average of 336,000 daily vehicular trips divided almost evenly between local and through traffic (Memphis and Shelby Office of Planning and Development, 1983). Information from the *1994 Traffic Volumes Report*, Memphis and Shelby County Office of Planning and Development (August 1995), shows similar traffic volumes in the immediately vicinity of the depot, as summarized in Table 4-11. Traffic data from DDMT were collected in 1987, at a time when the depot was in full operation, and reported in the DDMT *Comprehensive Transportation and Traffic Engineering Report* of July 1988. Table 4-11 shows a summary of traffic volume data for DDMT gates and nearby installation streets. These data indicated that Gates 1, 2, and 8, the only gates currently in use, were also the most heavily accessed gates at that time. These gate traffic figures include some traffic that entered DDMT gates and parked in the adjacent parking lots and did not travel any farther into the DDMT property. This appears especially true for

Table 4-11
1987 DDMT Traffic Counts

		Gate 24-hour Traffic Volume		24-hour Traffic for Nearby DDMT Streets	
Gate	Location	Total	Percent	Street location	24-hour Traffic Total
1 (Main Gate)	Airways Boulevard	2,672	28%	1st Street, south of G Street	481
				G Street, west of 1st Street (also near Gate 2)	669
2	Airways Boulevard	1,986	21%	(see G Street above)	
6	Ball Road	320	3%	M Street, east of 6th Street (also accessible from Gate 8)	787
8	Ball Road	3,652	39%	6th Street, south of J Street	2,318
				M Street, west of 9th Street	626
				J Street, east of 6th Street	545
				9th Street, between K and M Streets	112
15	Dunn Avenue	218	2%	13th Street, north of B Street	174
23	Airways Boulevard	631	7%	C Street, east of 6th Street (also accessible from Gate 15)	260

Source: Harland Bartholomew & Associates, Inc., 1988c.

Gates 1 and 2, entering from Airways Boulevard, where reported average daily traffic on nearby G Street was only 669 vehicles. There was a reported average daily volume of 2,430 vehicles on 9th Street and 6th Street (mostly 6th) near Gate 8, indicating that a higher percentage of the vehicles that entered DDMT through that gate continued into the facility beyond the parking lots provided for employees. This traffic would correspond to trucks entering DDMT through Gate 8 in connection with shipping and receiving operations. The highest daily volumes of traffic on the DDMT installation during this 1987 data collection period occurred on 6th Street, M Street, G Street, J Street, and 1st Street (Harland Bartholomew & Associates, Inc., 1988c).

In the 1988 traffic report, peak hours for traffic inside DDMT were found to correspond to work activities. The morning and evening peak hours for traffic around Building 144 (Headquarters Building) were found to begin around 7 a.m. and 3:30 p.m., respectively, corresponding to the beginning and ending hours for the workday. On the other hand, the two intersections of J Street with 6th Street had morning and evening peak hours beginning at 9:45 a.m. and 2:15 p.m., respectively, indicative of the high level of mid-morning and mid-afternoon activity between the Transportation Terminal (Building 685) and the surrounding warehouses (Harland Bartholomew & Associates, Inc., 1988c).

A 1987 truck origin-destination survey (Harland Bartholomew & Associates, Inc., 1988c) indicated that 61 percent of the trucks accessed the DDMT facility from Interstate 240 (either east- or west-bound) to Airways Boulevard to Ketchum/Ball Road to Gate 8. Ninety-two percent of respondents from the same survey reported no difficulty in either locating the installation or driving and maneuvering on the DDMT streets. Truck traffic entering the depot was observed to be consistently active with inbound trucks between 6 a.m. and 11 a.m., after which the number of entering trucks began to decline (Harland Bartholomew & Associates, Inc., 1988c). The peak arrival time was immediately following the opening of Gate 8, where a queue of up to 35 trucks developed waiting to enter the installation (Harland Bartholomew & Associates, Inc., 1988c).

The number of truck arrivals to DDMT was reported to be about 105 to 115 per day in 1987-1988. At that time an increase to about 145 per day by 1995 was projected (Harland Bartholomew & Associates, Inc., 1988c). However, the actual number of truck arrivals did not reach the projected level. Currently between 26 and 30 trucks enter DDMT in the typical 10-hour work day (Amido, personal communication, 1996).

Over-the-road tractor-trailer rigs loading or unloading in the 20 typical (World War II) warehousing areas partially block the street. The distance from the center line of the road to the loading dock is 70 feet, 8 inches, and some of the newer rigs reach 80 feet in length.

4.7.3.3 Public Transportation

Memphis Area Transit Authority (MATA) bus route #32 runs north-south along Airways Boulevard past DDMT. This route is one of the MATA-designated crosstown units. Bus stops are located in front of the DDMT main entrance, at the intersection of Airways Boulevard and Dunn Avenue, and at most major intersections or every 2 or 3 blocks along the route. Service in the area begins at 6:00 a.m. both northbound and southbound and ends around 5:30 p.m. southbound and around 6:15 p.m. northbound. Buses serving this route carry 48 to 52 passengers. Buses run about every 20 minutes in the morning and afternoon peak periods and about 45 to 50 minutes during midday. (Maxwell, personal communication, 1996).

4.7.3.4 Air Traffic

There are no runways, helipads, or other air traffic facilities on the depot. DDMT is under one of the primary flight paths of Memphis International Airport.

The Memphis International Airport is located 2 miles south of DDMT, across I-240 and Airways Boulevard. Virtually all major U.S. airlines, as well as several regional/commuter airlines, provide passenger service to this airport. There is also major air cargo traffic throught Memphis International. Due to the airport's large number of international passenger flights and large amount of cargo traffic, the U.S. Custom Service has designated the airport as a "Port of Origin." There are six other airports in the Memphis area that offer private, general aviation services (Harland Bartholomew & Associates, Inc., 1988a).

4.7.3.5 Railways

Six major national railroad systems operate in the Memphis area. These are the Union Pacific System, CSX Corporation, Norfolk Southern, Southern Pacific, Illinois Central Gulf, and Burlington Northern.

Approximately 96 freight trains travel in and out of Memphis daily. In addition, passenger rail service to Memphis is provided by Amtrak (Harland Bartholomew & Associates, Inc., 1988c).

Tracks of the Burlington Northern Railroad and the Illinois Central Gulf Railroad lie a few blocks to the north of DDMT. Several large industrial and warehousing operations are located along these rail lines (Harland Bartholomew & Associates, Inc., 1988c). Access tracks to DDMT run between these tracks and the northern boundary of the main installation. Burlington Northern and CSX Corporation provide commercial rail carrier service for DDMT (DDMT, 1996c).

There are approximately 26 miles of railway track throughout DDMT with two main switch yards. Access tracks for the depot enter the property at two areas, both located on the north side along Dunn Avenue. One primary track enters through Gate 15 and branches off to serve the classification yard, and subsequently the bulk and bin storage warehouses. Several other individual tracks also enter the depot in this area, either near Gate 15 or through Gates 10, 11, and 12 by way of Dunn Field. These tracks serve the sheds and open storage areas. The second major access track enters the installation through Gate 22, extends through an interchange yard paralleling Dunn Avenue, and continues over to Gate 15. Both of these primary access tracks are connected to the 5-line interchange yard, capable of handling 150 cars, and the 12-line storage yard, capable of handling 260 cars. Rail service within the installation is provided by two government-owned engines housed in Building 720 (Harland Bartholomew & Associates, Inc., 1988c). Railroad lines throughout the depot are unsigned where they cross roads.

The *Comprehensive Transportation and Traffic Engineering Report* of July 1988 concluded that the number and location of rail lines were generally adequate to serve the needs of the installation. At that time, approximately 100 rail cars were entering the base monthly, with up to 250 cars per month in autumn (Harland Bartholomew & Associates, Inc., 1988c). However, two problems were found to exist regarding the DDMT rail facilities. One was related to the weight classification of the rails themselves. Rails are designated in standard sections by weight. The American Railway Engineering Association currently recommends seven rail sections ranging from 90 to 140 pounds per linear yard. Some of the DDMT rail facilities have rails that are lighter than the lowest current standard (90 pounds). These lighter rails are not capable of carrying the heavier locomotives and higher-capacity rail cars that have been developed since the DDMT rails were installed. As a result, some of the rail lines can no longer be used, while other lines are restricted to use by light locomotives only. The second problem involves the curvature of the rails, particularly in the switching areas. In some areas of the base, the DDMT rail lines have not been sufficiently upgraded to allow for the longer turning radii needed by newer, longer rail cars to operate at a given speed. The result is that the operating speeds of the trains are severely constrained at many switches and curves (Harland Bartholomew & Associates, Inc., 1988c). The 1996 infrastructure summary report for DDMT states that the rail system is currently in very poor condition (DDMT, 1996c).

4.7.3.6 Shipping

Shipping operations on the depot are for delivery to other military installations worldwide. Shipping operations begin at the central packaging plant, which packages both bin and bulk materials. Roadway Package Express (RPS), Federal Express, and the U.S. Postal Service are used for shipments from the depot. Federal Express currently runs operations from Building 649.

4.7.4 Energy

4.7.4.1 Electricity

Electricity is supplied to the depot by Memphis Light, Gas and Water Division (MLGWD) by means of two incoming service lines—one primary and one alternate feed. DDMT has no main transforming capability, and therefore power is provided at the distribution-level voltage (Woodward-Clyde, 1996). The primary and alternate feeds to DDMT are from MLGWD Substation 1, through which electricity is redistributed throughout the depot. These service lines cross the installation boundary at approximately 425 feet west of Gate 21 on Dunn Road and continue southward to a government-owned circuit breaker station located 1,500 feet south of the Dunn Road centerline. This government-owned distribution system is mostly aerial, and most of the electrical system, including transformers, was installed in the early 1940s (Harland Bartholomew & Associates, Inc., 1988c). One central meter meters all of the electrical usage on the depot. There are approximately 10 to 15 individual government-owned meters on depot buildings.

The electrical distribution system on DDMT is a 7,200/12,480-volt, 4-wire, 3-phase, 60-cycle system. The major portion of the system, including transformers, was installed in the early 1940s. Ninety-nine percent of the primary (2-600 amp feeders) and secondary (3-400 amp feeders) distribution systems within DDMT are of overhead construction (DDMT, 1996c). This is depot-owned switchgear fed by MLGWD.

The primary four-wire conductors were upgraded by replacement in 1988 and 1989, and the electrical distribution switch station was constructed in 1990 (DDMT, 1996c). The electrical system is considered to be in good condition (Roach, personal communication, 1996). There are reported instances of oil leaks at the transformers (Harland Bartholomew & Associates, Inc., 1988a). Underground piping systems are monitored only at failure, whereas the electrical wiring is monitored through ongoing preventive maintenance programs by depot personnel and outside contracted maintenance as required.

There are two emergency generators on DDMT for use in the event of a power outage. Building 359, a medications and cold storage facility, is equipped with a 75-kilowatt (kW), three-phase generator. Building 210, an administrative and computer center, has a small 3.3-kW, single-phase generator for emergency office power and is also equipped with an Uninterruptable Power Supply (UPS) system for automatic data processing facilities housed there. The UPS system allows personnel about 15 minutes of time to download data from computers before full power is lost (Harland Bartholomew & Associates, Inc., 1988a).

The maximum yearly demand for electricity occurs from July through September. MLGWD provides a service feeder to the electrical system. This feeder is 336.4 thousand circular miles (MCM) with a capacity of 530 amps. 1987 data indicated a usage of 250 amps, allowing for a 52.8 percent excess capacity. DDMT also provides a distribution feeder that is 1/0 copper with a capacity of 310 amps. The 1987 usage of the feeder was 250 amps, allowing for 19.4 percent excess capacity (Harland Bartholomew & Associates, Inc., 1988a).

4.7.4.2 Fuel Oil

Five of the 20 boilers at DDMT use fuel oil and natural gas as their fuel; the remaining 15 boilers use natural gas. Heating fuel usage in 1984 through 1986 averaged 19,000 gallons per year (Harland

Bartholomew & Associates, Inc., 1988a). The use of fuel oil for heating has been eliminated from the depot (Roach, personal communication, 1996).

There is no bulk storage facility for fuel oil. All underground storage tanks have been removed with the exception of the tanks at located at buildings T875 and 359. These tanks have been closed in place Cooper, 1996.)

4.7.4.3 Natural Gas

Approximately 90 percent of the heat on the depot is provided by natural gas (Huckaby, personal communication, 1996). MLGWD provides natural gas to the depot under a firm-rate contract with no specified limits to the amount of gas supplied (Harland Bartholomew & Associates, Inc., 1988a). Total gas consumption for fiscal year 1986 was 47,385,300 cubic feet (Harland Bartholomew & Associates, Inc., 1988a). Natural gas is limited by four meters capable of handling 35,000 CCF/hr each for a total of 140,000 CCF/hr maximum.

MLGW maintains the central metering system. There is 48,900 linear feet of piping of various sizes in the gas distribution system, all underground except where it enters the building penetration. In accordance with nationally accepted mechanical codes, each building has its own isolation valve and regulator. Twenty-eight buildings have their own meter (DDMT, 1996c), but there is only one central meter for the entire natural gas system on the depot.

Natural gas is metered by a city-owned metering and regulator station located near the northern boundary and about 550 feet to the west of Gate 21. A 2-inch emergency supply line taps the city main in Airways Boulevard near the main entrance and runs westward to a point near Gate 1, where it connects to the on-post distribution system. The entire on-post system is government-owned. It is a looped grid consisting of black iron or ductile iron mains ranging in size from 2 inches to 6 inches in diameter. Pressure in the distribution system ranges from 40 to 50 pounds per square inch (psi). Regulators at the buildings reduce the pressure down to between 60 and 20 ounces. Major system improvements were implemented in the 1960s, and most of the original system has been replaced. The depot has not experienced any ususual problems with the system, which is considered in good condition (Roach, personal communication, 1996).

4.7.4.4 Steam

Steam is used to heat some of the buildings at DDMT. Buildings 210, 229, and 359 are heated with low-pressure (15-psig) steam, and Building 770 is heated with high-pressure (85-psig) steam (Harland Bartholomew & Associates, Inc., 1988a).

4.7.5 Communication Systems

Communication systems on the depot include telephone, radio, cellular phone, voice and data lines, and access to a local area network. All communication systems are owned by the federal government. The telephone switch is located in Bay 2 of Building 210. The switch is approximately 20 years old and is capable of 2,000 phone lines, both single and multiline. Voice and data usage is distributed through a Data over Voice (DOV) connection. Switch services provided include Defense Subscriber Network (DSN), WATTS (a commercial wide-area telecommunications service for long distance), and commercial local and long distance. The depot has 100 digital/voice pagers, 50 Electronic Custom Telephone Set

(ECTS) phone sets, 60 Spirit phone sets, 1,350 single-line sets, and 15 cellular phones. Cellular air time is leased (DDMT, n.d.).

The radio network on the depot is owned by the federal government and uses federal frequencies. The network supports a security net, cargo net, common user net, command and control net, pager net, and hand-held radio network. The depot owns a 180-foot radio tower with five antennas, located near Gate 9 (DDMT, n.d.).

The Smartmaster 2000 PACX has approximately 2,000 data lines connected to the Public Base Exchange (PBX). There are point-to-point connections for printers, DOV connections for various computer services, capability for voice and data over the same telephone lines, and voice and data DOV connection to the desktop PC (DDMT, n.d.).

4.8 *HAZARDOUS AND TOXIC MATERIALS*

Numerous substances that can be considered hazardous materials are received and stored at DDMT. The receipt of hazardous materials on the depot serves both Army missions and the operations on the installation. All of these materials are stored and handled in accordance with local, state, and federal regulations.

4.8.1 *Hazardous Material Storage and Generation of Hazardous Waste*

Both mission and operational materials are received from manufacturers as packaged commodities in containers that vary in size up to 55-gallon drums. Mission stock received on the depot is stored, repackaged (if necessary), and distributed as needed. Operation stock is stored and used on the installation for maintenance and operational activities. Hazardous materials for both mission and operation stock include flammable solids and liquids, corrosives, poisons (including pesticides), compressed gases (flammable and nonflammable), Class C explosives, oxidizers, low-level radioactive materials (e.g., compasses, watches), and other regulated materials (Woodward-Clyde, 1996). While in storage, these materials are segregated by hazardous storage compatibility groups to ensure optimum safety conditions are met.

The storage of mission stock occurs in Buildings 835 and S873 and the last few bays of Building 319 (Cooper, personal communication, 1996a). The storage of operation stock occurs in several areas throughout the Depot: paints are stored in Buildings 1090 and 1091; antifreeze and oils, mainly in Building 770 but also in all other vehicle maintenance areas; flammables, throughout the depot (Cooper, personal communciation, 1996a). Buildings 319 and 925 are the main flammable material storage areas. Area X25 can also be used to store Class 1 flammable liquids. Pesticides and herbicides are stored in Building 737. Buildings 873 and 875 are open-shed warehouses used to store hazardous materials and petroleum products.

Approximately 98 percent of the hazardous waste generated on the installation is from mission stock that has exceeded its shelf life (Cooper, personal communication, 1996a). The hazardous materials become hazardous waste only after all other means of getting rid of the material (i.e., donation or sale) have been exhausted. Other hazardous waste results from the cleanup of small hazardous materials spills due to packaging failures during transport or during handling.

DDMT may also accept waste from other DoD installations and those federal agencies which have a Memorandum of Understanding with the DLA. However, the depot currently accepts only hazardous materials that are usable or that can be reused (Thompson, personal communication, 1996). If, after every effort is made to reuse the accepted off-site-generated material, it is determined that the material cannot be used, it becomes a hazardous waste. Of the nominal amount of materials received, only about 5 percent become hazardous waste (Thompson, personal communication, 1996).

Under the Waste Minimization Program, the depot makes every effort to properly use and store all hazardous materials received. For those materials which can be recycled, including oil, paint, and some cleaning solvents, DDMT uses contractors to reclaim such materials. All of these efforts are to ensure the depot reduces the generation of hazardous waste.

4.8.2 *Treatment, Storage, and Disposal of Hazardous Waste*

The Defense Reutilization and Marketing Office (DRMO) provides disposal services for hazardous waste and hazardous materials generated by DDMT. The depot is a generator of hazardous waste and has a RCRA Part B permit (no. TN4 210 020 570) in effect until the year 2000. Pursuant to the Part B permit, the hazardous wastes that may be stored by the DRMO include reactive and toxic substances, poisons, herbicides and pesticides, flammables and ignitables, corrosives and bases, oxidizers, reactives, halogenated solvents, toxic materials, ignitable and toxic materials, and wastes. The maximum amount of waste that DDMT is permitted to store is 154,400 gallons.

The DRMO receives hazardous waste from the different operational areas on the depot. Currently, the DRMO stores hazardous waste in Building 319. Previously, Buildings 308 and 309 were used for storage of hazardous materials and hazardous waste and buildings T405 and T406 were used for hazardous material storage including batteries and PCB transformers (Woodward-Clyde, 1996).

The DRMO does not treat hazardous waste. Hazardous waste is stored at the depot according to the terms and conditions of the Part B permit until it is shipped offsite. According to the Annual Summary Reports for TSDR Facilities (reports which characterize the waste stream received and disposed of by the DRMO), the quantities of hazardous waste received and disposed of for the years 1990 through 1995 are as shown in Table 4-12.

Table 4-12
Quantities of Hazardous Waste Received and Disposed of from 1990 through 1995

Year	Amount Received (kg)	Amount Disposed of (kg)
1990	25,678.45	25,678.45
1991	59,527	59,527
1992	78,229.7	78,229.7
1993	206,321.9	199,632.5
1994	128,636.5	133,023.3
1995	137,993.8	139,928.1

Sources: DDMT, 1990, 1993, 1994, 1995; DDRC, 1991, 1992.

4.8.3 Site Contamination

As a result of past practices and environmental contamination, DDMT was placed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List (NPL) in October 1992. Several environmental studies have been conducted at DDMT that have identified and characterized areas and sources of contamination. A total of 103 constituents were identified in surface water, groundwater, soil, and sediment during the sampling events of the remedial investigation (Law Environmental, 1990c, cited in Woodward-Clyde, 1996).

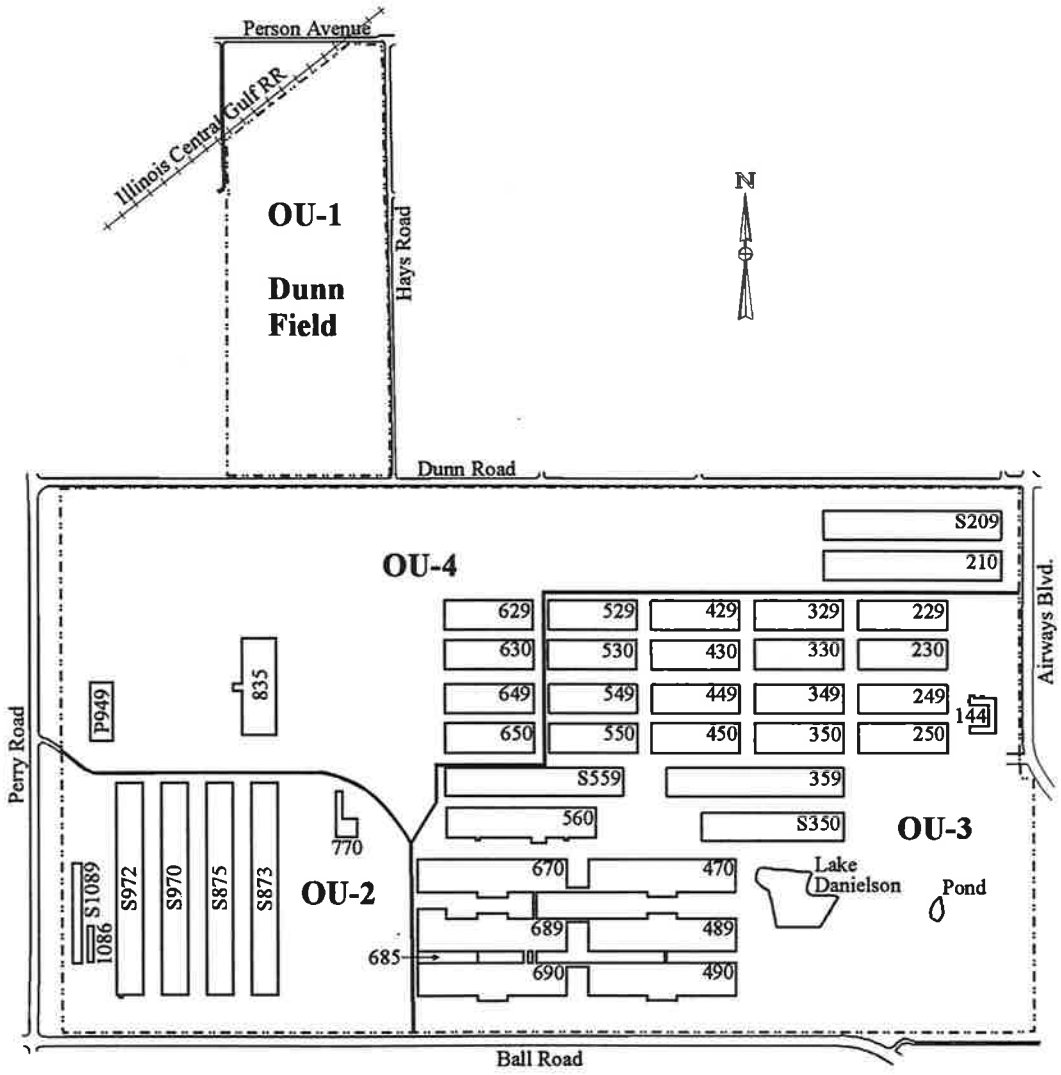
4.8.3.1 Areas of Concern

A total of 93 sites have been identified as having potential contamination (CH2M Hill, 1995). DDMT, EPA, Corps of Engineers Support Center, Huntsville (CEHNC), and Tennessee Department of Environmental Conservation (TDEC) agreed to divide the facility into four operable units (OUs)—Dunn Field (OU-1), main installation's southwest quadrant (OU-2), southeast watershed and golf course (OU-3), and north-central area (OU-4)—to characterize the contamination and focus the remedial investigation. For the purposes of this leasing EA, only a description of the main installation areas is provided. See Figure 4-4.

OU-2 is located in the southwestern quadrant of the main installation and is characterized primarily as an industrial area where maintenance and repair activities have taken place. Pesticides, PCBs, and polycyclic aromatic hydrocarbons (PAHs) were detected at the sandblasting/painting area; pesticides, solvents, and PAHs were detected in the area of the maintenance shop. Groundwater investigations in OU-2 have indicated the presence of solvents and metals. Four contaminated sites in this area require screening to determine whether a remedial investigation or no further action is necessary, and four areas are being studied in the Remedial Investigation/Feasibility Study (RI/FS) (CH2M Hill, 1995). In addition, four sites have been recommended for no further action (CH2M Hill, 1994), and three sites have been recommended for early removal (CH2M Hill, 1996). See Figure 4-5.

OU-3 is located in the southeastern quadrant of the main installation and encompasses the entire watershed including the two surface water lakes on the installation. Pesticides and PAHs were detected in the sediments of both lakes. Groundwater investigations in OU-3 detected the presence of volatile organic compounds (VOCs) and metals. Both surface water bodies in OU-3 have detected levels of pesticides, PAHs, and PCBs in the sediment. Soil samples were insufficient to characterize individual sites or sources. Twelve contaminated sites in this area require screening to determine if a remedial investigation or no further action is necessary, and five areas are being studied in the RI/FS (CH2M Hill, 1995 and Cooper, personal communication, 1996c). In addition, four sites have been recommended for no further action (CH2M Hill, 1996). See Figure 4-6.

OU-4 is located in the north-central quadrant of the main installation. It includes material storage areas similar to those in OU-3. Pesticides, PAHs, VOCs, solvents, and metals were detected in surface and subsurface soil samples in this area. Groundwater investigations in OU-4 have indicated the presence of solvents, pesticides, PAHs, and metals. Twenty-one contaminated sites in this area require screening to determine if a remedial investigation or no further action is necessary, and one area is being studied in the RI/FS (CH2M Hill, 1995). In addition, four sites have been recommended for no further action (CH2M Hill, 1996). See Figure 4-7.



0 700 1400
Approximate Scale in Feet

Source: Woodward-Clyde, 1996

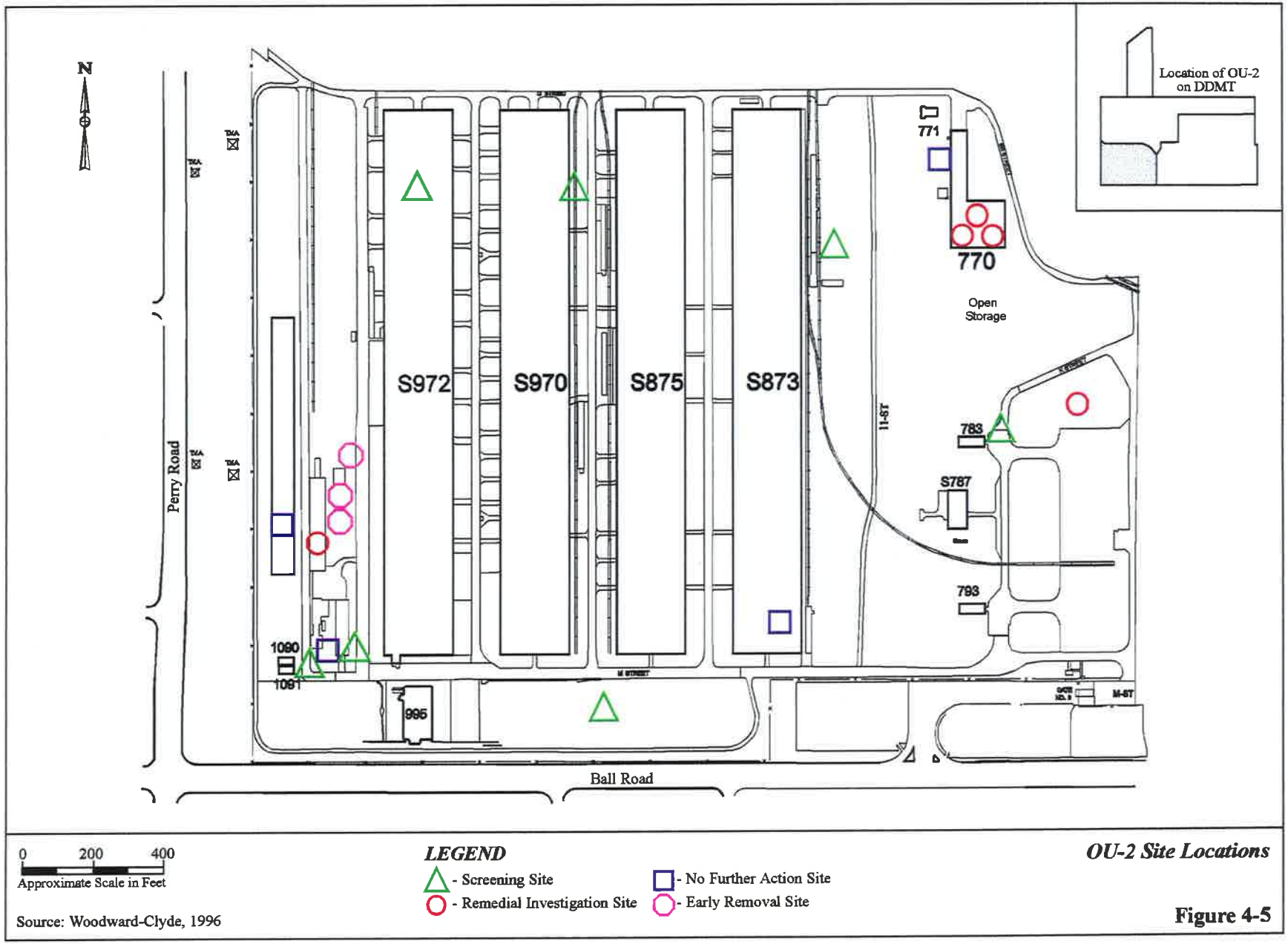
LEGEND

OU-1: Dunn Field
OU-2: Southwestern Quadrant of DDMT
OU-3: Southeastern lakes and golf course area
OU-4: North-central area

Note: DDMT is divided into four operable units (OUs) for remedial investigation purposes only.

Operable Unit Locations at DDMT

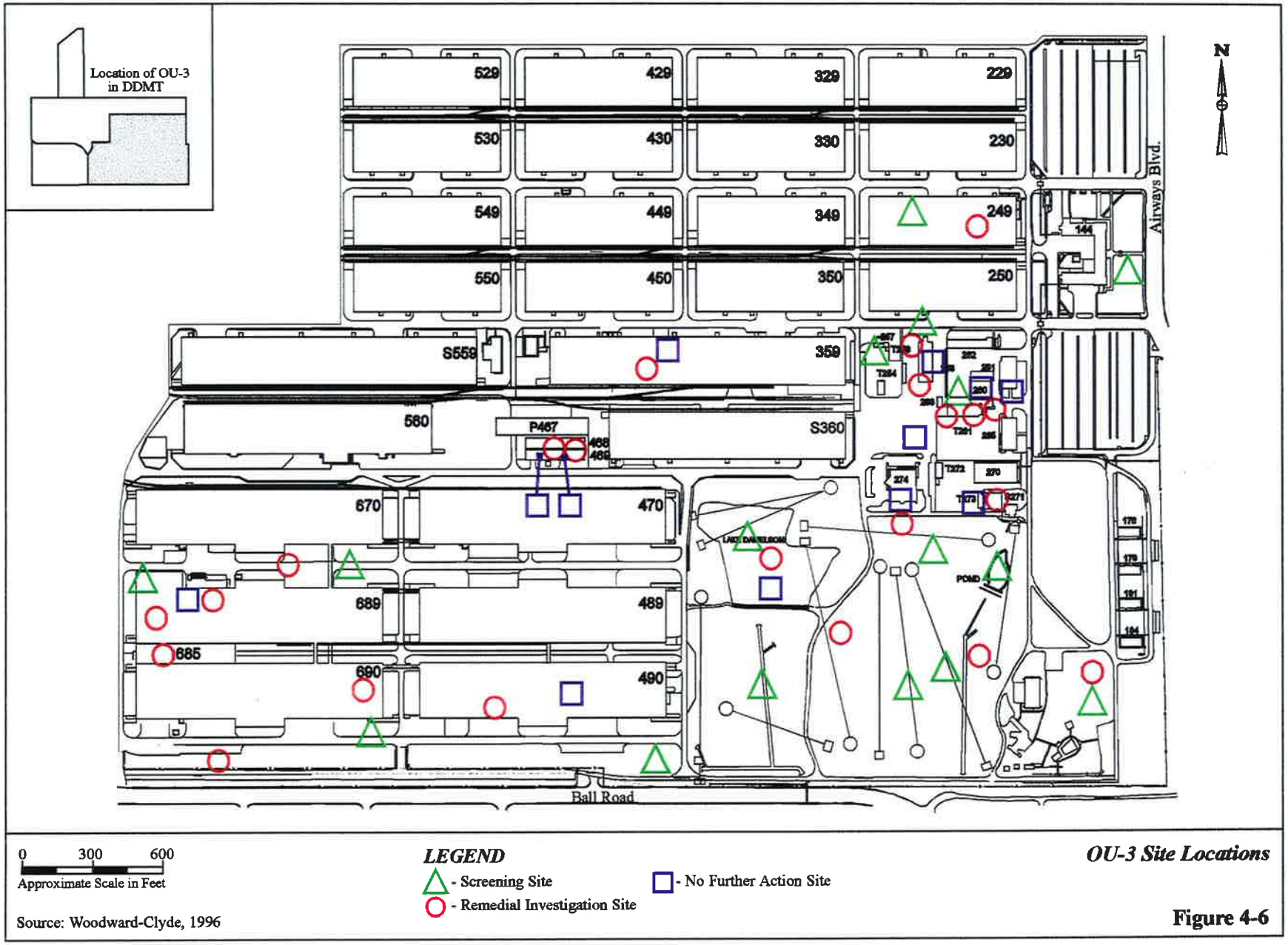
Figure 4-4

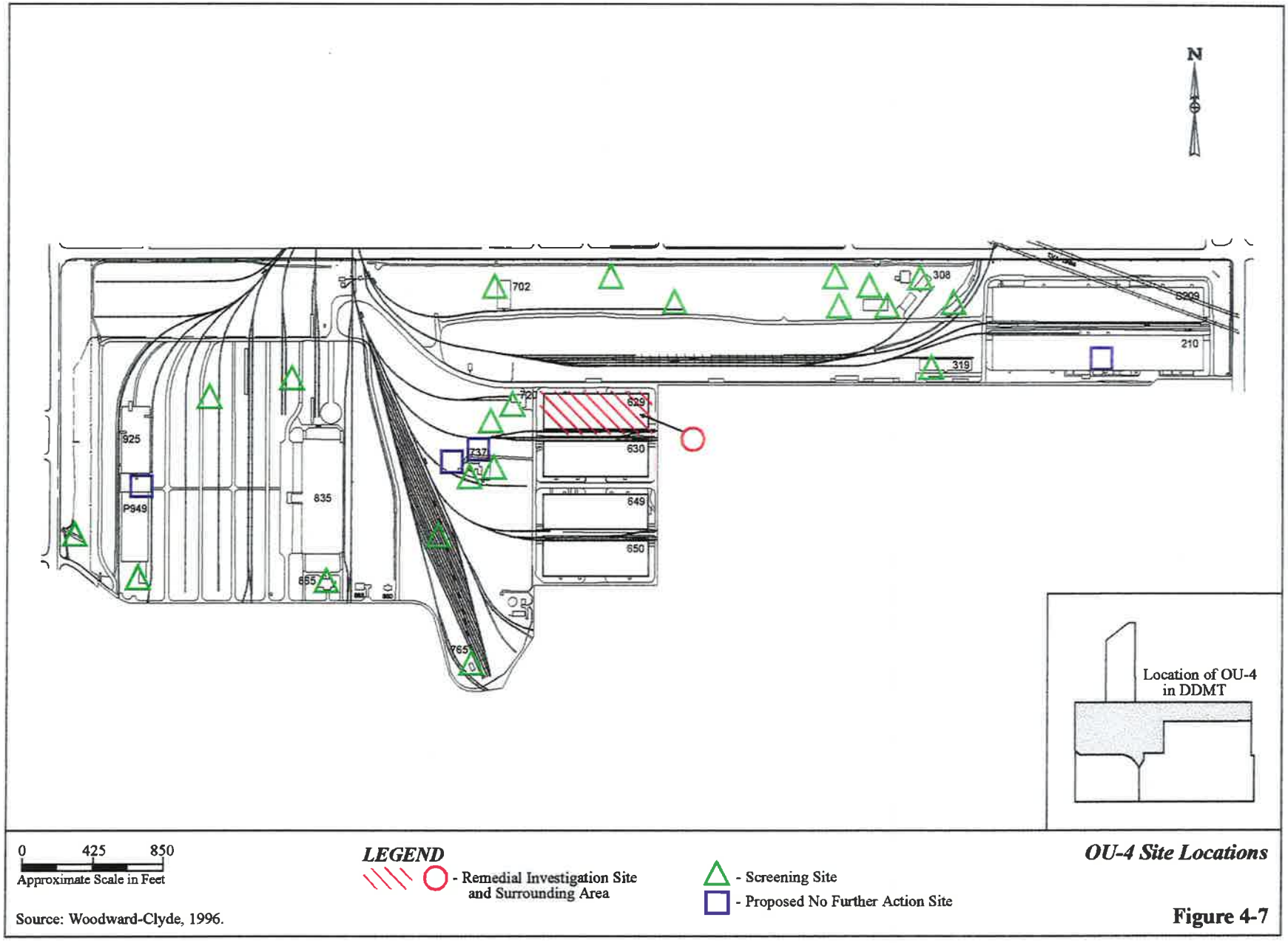


Source: Woodward-Clyde, 1996

OU-2 Site Locations

Figure 4-5


Location of OU-3 in DDMT
529
429
329
229
530
430
330
230
549
449
349
249
550
450
350
250
S559
359
560
P467
468
469
S360
670
470
689
489
685
690
490
Airways Blvd.
Ball Road
POND
N
0 300 600
Approximate Scale in Feet
LEGEND
- Screening Site
- Remedial Investigation Site
- No Further Action Site
OU-3 Site Locations
Source: Woodward-Clyde, 1996
Figure 4-6


N
702
308
209
210
319
720
629
630
649
650
737
925
P949
635
655
765
Location of OU-4 in DDMT
0 425 850
Approximate Scale in Feet
LEGEND
- Remedial Investigation Site and Surrounding Area
- Screening Site
- Proposed No Further Action Site
OU-4 Site Locations
Source: Woodward-Clyde, 1996.
Figure 4-7

This action contains only a summary listing of contaminated areas from the environmental studies and surveys that have been performed over the years. Other potential sites of contamination are described in the Environmental Baseline Survey. These additional potential sources of contamination were not previously documented and were identified during on-site visual inspections and a review of records (Woodward-Clyde, 1996).

4.8.3.2 *Other Toxic or Hazardous Substances*

Other toxic or hazardous substances found at DDMT include asbestos, lead, polychlorinated biphenyls (PCBs), radon, pesticides and herbicides, and aboveground and underground storage tanks.

Asbestos. Several asbestos surveys have been conducted at DDMT. Out of 113 buildings identified on the Asbestos Identification Survey (AIS), 88 have been identified with asbestos-containing materials (ACM) (Woodward-Clyde, 1996) . Of those buildings, seven were determined to have ACM in friable condition based on physical damage and/or natural deterioration. Thus, these buildings are considered a potential health hazard to personnel and access is restricted. Abatement measures will be addressed in the BRAC Cleanup Plan to be published. The buildings include Buildings 22, 144, 210, 230, 249, 250, and 251. There are 31 additional buildings where ACM was identified as being in poor and/or friable condition based on physical damage and/or natural deterioration, and the AIS recommended abatement or removal of the ACM. The EBS determined that out of 10 additional buildings not included in the AIS, ACM is possible in 6 buildings based on the year of construction.

Lead. Lead-based paint (LBP) testing was conducted in the six apartments at the four housing units (Buildings 176, 179, 181, and 184), the garage, the playground, and the community center (Building 195). LBP was found in all exterior and interior painted surfaces in the housing units and in the exterior surfaces at the community center and the garage. Based on this information, all buildings on the depot constructed prior to 1978 are assumed to have LBP (Woodward-Clyde, 1996). Soil samples in and around this area demonstrated only one area (near Building 184) with a detected lead level above the EPA limit of 400 ppm. Additionally, three potable water samples were collected and analyzed for lead, and all three samples were below the established limit for drinking water. Abatement measures will be addressed in the BRAC Cleanup Plan to be published.

Polychlorinated Biphenyls. There are no PCB-containing transformers currently in use on site. There are, however, 3 possible PCB-containing transformers (transformers with no "non-PCB" labels) located on site in area X17 (Figure 4-1), an open storage area (Cooper, 1996). DDMT is currently tracking down information to determine if these transformers contain PCBs and, if information is not available, will sample them accordingly (Cooper, personal communication, 1996a).

Radon. A radon gas survey was completed in February 1996. Concentrations from the Priority I areas (child care, hospitals, schools, and living quarters) did not exceed the EPA recommended action level of 4 picocuries per liter of radon (Neidlinger, 1996). Since Priority I concentrations did not exceed 4 picocuries per liter of radon, Priority 2 and 3 structures were not measured (IAW AR 200-1).

Pesticides and Herbicides. As part of the facility pest management program, DDMT personnel regularly use pesticides and herbicides to prevent and eliminate insect and rodent infestations and to control weeds (DDMT, 1996e). The Installation Services Division is responsible for ensuring proper handling and usage of the substances. All pesticides and herbicides are stored in Building 737.

Medical and Biohazardous Wastes. Part of Building 359 is used for medical storage, including flammable materials and drugs. There is a medical incinerator, but it is no longer in use. Medical waste at DDMT consists of supplies that have exceeded their shelf life, syringes, and miscellaneous other biohazardous materials. The medical and biohazardous wastes are stored in the medical storage area. All of the waste is transported off site for incineration at a licensed facility (Jones, 1996).

Aboveground and Underground Storage Tanks. The installation has two 1000-gallon aboveground storage tanks that are each 2 years old (one stores diesel and one stores gasoline) and two underground storage tanks (18,000 and 20,000 gallons of gasoline) that are consistently monitored for leaks. All four tanks are adjacent to Building 257, the gas station. These are the only remaining tanks on site.

4.8.4 Remediation Plan and Status

The RI/FS for each of the four operable units is under way. Relevant elements of the BRAC cleanup plan, currently under development, will be further addressed in the DDMT disposal/reuse EA currently under preparation. The objectives for remediation are outlined in the RI/FS Work Plan (CH2M Hill, 1995). The preliminary remedial action objective for groundwater is to stop the migration of contaminants into the Fluvial Aquifer to protect human health. The objective for surface soils is to protect human health and to limit the migration of contaminants into surface waters. The objective for surface waters and sediments is to protect the health of anyone who might be exposed through the consumption of contaminated fish or physical contact and to protect aquatic life.

In addition to those sites which will be screened or will undergo a remedial investigation, 17 sites are proposed for no further action because (1) sampling results show no observed contamination, (2) prior removal or remediation activities were conducted, or (3) the area is not a threat for releases from past waste management activities (CH2M Hill, 1995). In addition, there are sites selected for the early removal process. The early removal process at DDMT may be used as an alternative to the traditional RI/FS remedial design and remedial action process. The primary objective of the early removal process is to expedite cleanup activities at selected sites that have been identified as having significant environmental and economic benefits (CH2M Hill, 1996).

4.9 PERMITS AND REGULATORY AUTHORIZATIONS

4.9.1 Air

There are currently three Air Pollution Control Operating Permits in effect for DDMT, issued by the Memphis and Shelby County Health Department (Table 4-13). Although these permits expired October 30, 1995, renewals were requested August 8, 1995, and are still awaiting action by the Health Department. Operations are allowed to continue under the terms of the existing permits (Memphis and Shelby County Health Department, 1991).

Several additional Air Pollution Control Operating Permits that were in effect for similar light industrial activities have been canceled in recent years due to decreased activity levels at the depot.

Table 4-13
Air Pollution Control Operating Permits in Effect at DDMT

Permit Number	Facility
0209-01P	Abrasive blast cleaning, Building 1088
0209-02P	Paint spray booth, Building 1087
0209-03P	Spray booth, Building 1086

Sources: Memphis and Shelby County Health Department, 1991; Woodward-Clyde, 1996

4.9.2 Water

DDMT operates under National Pollutant Discharge Elimination System (NPDES) permit Number TN0022322, for various stormwater system outfalls. This permit has an expiration date of September 29, 1998. The NPDES permit authorizes eight separate discharges of industrial-type wastewaters, swimming pool filter backwash, and Lake Danielson overflow to storm drainage (Woodward-Clyde, 1996).

DDMT has no on-post facilities for treating its sanitary and industrial wastewater. Sanitary and approved industrial-type wastewaters are discharged into the municipal wastewater collection system of the City of Memphis for ultimate treatment by municipal facilities. Wastewater from DDMT flows to the city's South Wastewater Treatment Plant. The City of Memphis provides sewage treatment under a sewer use agreement, permit no. S-NN3-013 (Harland Bartholomew & Associates, Inc., 1988a).

4.9.3 Solid Waste

Solid wastes generated at DDMT have been disposed of by sanitary landfilling, recycling, or incineration. The depot currently has no on-site disposal facilities. An on-site incinerator in Building 359 previously used for burning classified paper is no longer in use. Solid wastes are collected and transported to an approved landfill site in Shelby County by depot personnel using government-owned equipment (Harland Bartholomew & Associates, Inc., 1988a). These is no special permit required for general domestic waste disposal, although the State of Tennessee has granted approval for "Special Waste Stream" disposal of material such as paint filters, sandblast filters, and crushed oil filters, to which the receiving landfill facility operator has assigned a waste stream tracking number (Cooper, personal communication, 1996b).

Hazardous waste management at DDMT operates under a Resource Conservation and Recovery Act (RCRA) Hazardous Waste Generator Permit, EPA identification no. TN4210020570, which has no expiration date (Woodward-Clyde, 1996). There is also a RCRA Part B Permit for the installation, which has the same EPA identification number and expires September 28, 2000. This Part B permit allows for the storage of hazardous wastes for up to 180 days (Woodward-Clyde, 1996).

The depot currently operates two underground storage tanks (USTs) under Tennessee Petroleum Underground Storage Tank Registration Certificate, facility no. 0-790241, effective through March 31, 1997. These two USTs are described in Table 4-14. Other storage tanks located on the depot currently are not registered or in use.

Table 4-14
Underground Storage Tanks in Operation at DDMT

Tank Number	Capacity	Substance
04	20,000 gallons	gasoline
05	18,000 gallons	diesel[1]

[1]The UST Certificate lists this as a gasoline storage tank. It was converted to diesel fuel in January 1996, after an aboveground diesel tank was closed down (Cooper, personal communication, 1996b).

4.10 BIOLOGICAL RESOURCES AND ECOSYSTEMS

The assessment of biological resources in this EA includes the main installation of DDMTand the area immediately surrounding it. The U.S. Fish and Wildlife Service and Tennessee Department of Environment and Conservation, Division of Natural Heritage, were consulted regarding sensitive species and habitat issues. Neither agency reported the presence of any threatened or endangered species and sensitive habitat (wetlands) on or directly adjacent to the main installation. Copies of these letters are provided in Appendix A.

4.10.1 Vegetation

Excluding the golf course, the area available for leasing on DDMT is almost entirely developed. Vegetation is limited to Bermuda grass (*Cynodon dactylon*), a few black oaks (*Quercus velutina*), and several species of non-native ornamental shrubs and trees. Landscaping programs have concentrated the decorative plantings around Lake Danielson and the golf course, as well as in the housing area (Harland Bartholomew & Associates, Inc., 1988a).

4.10.2 Wildlife

Given the highly developed nature of DDMT and its surrounding area, almost no wildlife is found at the depot except for species commonly found in a typical residential or urban area. Lake Danielson is periodically stocked with bluegill (*Lepomis* sp.) and bass (*Micropterus* sp.), and some catfish (*Ictalurus* sp.) are also present there. The lake environment has been impacted by base operations in the past, as seen in 1976 when pesticide runoff from the golf course resulted in a fish kill (Harland Bartholomew & Associates, Inc., 1988a).

4.10.3 Threatened and Endangered Species

Records from both the Tennessee Department of Environment and Conservation and the U.S. Fish and Wildlife Service indicate that no federally listed or proposed threatened or endangered species occur on the depot (see Appendix A).

4.10.4 Wetlands

A wetland survey of DDMT was completed by the U.S. Army Corps of Engineers, Memphis District in July of 1996. Preliminary results of the survey indicate that there are no regulated wetlands on DDMT (see Appendix A).

4.11 CULTURAL RESOURCES

This region of Tennessee was inhabited by various Native American cultures for more than 11,000 years. The various cultures can be identified by changes in projectile point types, pottery, subsistence patterns, housing, and ceremonial artifacts and places. Native American occupation lasted until Euro-American settlement began after 1818. The dominant historic Native American occupants of this region were the Chickasaws until 1818. In that year, the Chickasaws sold their lands in western Tennessee and Kentucky as part of the Jackson Purchase (US DOT, 1993).

Euro-American settlement of the Memphis region began rapidly after the Jackson Purchase. In fact, most of the primary towns and roadways in Shelby County had been established by 1840. In May 1941, the federal government bought 500 acres of land in Shelby County to establish a depot. Construction of the depot began in July 1941, and the facility was activated in January 1942. Since its establishment, DDMT has functioned as a storage and maintenance facility for Army Engineer, Chemical, Quartermaster Services; as a prisoner of war camp during World War II; and as a principal distribution center for DoD commodities within the south-central United States (US DOT, 1993; Harland Bartholomew & Associates, 1988a; Waddell, 1941).

4.11.1 Archeological Resources

Based upon coordination with the Tennessee SHPO, no archeological sites are known to be located within the boundaries of DDMT, although the general area was occupied by a variety of Native American groups (Triewiller, personal communication, 1996). Two archeological test trenches dug at the site of Building 865 found no archeological deposits (Harland Bartholomew & Associates, Inc. 1988a; Woodward-Clyde, 1996).

4.11.2 Architectural Resources

DDMT was constructed in 1941 on property that had previously been used as cotton fields. Maps of the DDMT property before construction suggest that there were no known historical structures in the area. There are currently no buildings or structures located on the DDMT property that are listed on the National Register of Historic Places (Harland Bartholomew & Associates, Inc. 1988a; Woodward-Clyde, 1996). As part of the BRAC property disposal process, a historical architectural inventory study is now being conducted for all DDMT buildings that are over 50 years old. National Register eligibility recommendations for DDMT buildings and structures will be made by this study. When completed, the recommendations of this study will be coordinated with the Tennessee State Historic Preservation Officer (Austin, 1996).

4.12 SOCIOLOGICAL ENVIRONMENT

This section describes the contribution of DDMT to the economy and social conditions in the region. The socioeconomic indicators for this study include population, regional economic development (employment and income), housing, and schools. In addition, recreational and community facilities, public health and safety, race and ethnic concerns, and social services are discussed. These indicators characterize the region of influence (ROI) that would be most affected by the proposed leasing of DDMT.

The baseline year for socioeconomic data is 1995, the date of the BRAC Commission's announcement of DDMT realignment. This base year represents the most recent fiscal year in which DDMT staffing and

operations were conducted under "normal" conditions. Where 1995 data are not available, 1990 census data are presented. Data more recent than 1995 also are provided as appropriate to illustrate socioeconomic trends.

An ROI is a geographic area selected as a basis on which social and economic impacts of project alternatives are analyzed. The criteria used to determine the ROI are the residency distribution of DDMT employees, the commuting distances and times, and the location of businesses providing goods and services to DDMT and its personnel and their dependents. Based on these criteria, the ROI for the social and economic environment is defined as Shelby County, Tennessee (Figure 2-1). The ROI covers an area of 772 square miles, including the City of Memphis, which covers 296 square miles. The county receives the majority of DDMT procurement and contractual spending and provides necessary goods and services for the depot, including housing, public services, and transportation.

Approximately 93 percent of DDMT employees reside in Shelby County; a negligible percentage reside in Arkansas, Mississippi, and other Tennessee counties (DDMT, 1996d).

4.12.1 Demographics

Population characteristics in the ROI are provided for the baseline year of 1995. To illustrate trends, data are also provided for 1980 and 1990, as well as forecasts for 2000 where appropriate. Demographic data include population trends and forecasts, and other key socioeconomic indicators.

The workforce population at DDMT is 1,322 persons and is composed of 6 military, 398 civilian, 790 wage grade, 18 Non-Appropriated Fund, and 110 contractual workers. Twenty-six DDMT personnel and their dependents live on the installation (Gowdy, 1996; MDRA, n.d.).

In 1994, the population of Shelby County was approximately 872,000. This represents a 5 percent increase since 1990, when the population was 826,330. Overall population has steadily increased by approximately 10 percent since 1980. Population is projected to increase to 912,207 by 2001 (MACC, 1996a). Table 4-15 shows the population changes from 1980 to 1990 and projections from 1990 to 2001.

Approximately 96 percent of Shelby County's residents live in urban areas. The ROI population averages 34 years of age, the national average. Fifty-two percent of the population is female; 47 percent is male (MACC, 1996a; U.S. DOC, 1990).

Table 4-15
Shelby County Population Trends

Population 1980	Population 1990	Population Change 1980-1990	Population 2001	Projected Change 1990-2001
777,113	826,330	+6%	912,207	+9%

Source: MACC, 1996a.

4.12.2 Visual and Aesthetic Values

Formerly a residential and agricultural area, the area surrounding DDMT is characterized by small commercial and manufacturing uses north and east of the depot and single-family residences south and west. Numerous small church buildings are scattered throughout the residential neighborhoods. Several schools, as well as two neighborhood parks, are located in the neighborhoods.

Most of the land surrounding DDMT is highly developed; however, three relatively large, undeveloped sites exist to the north, south, and east of DDMT (Woodward-Clyde, 1996).

4.12.3 Native American and Ethnic Concerns

Currently, less than 1 percent of the ROI population is Native American. Approximately 1 percent of the population is Asian or Pacific Islander. Less than 1 percent of the population has been identified as being of Hispanic origin (U.S. DOC, 1990).

4.12.4 Homeless, Special Programs

Shelby County Community Service Agency—Homeless Program helps homeless persons to find emergency housing. The Agency refers homeless persons to available shelters (Fant, personal communication, 1996).

Pursuant to the Base Closure Community Redevelopment and Homeless Assistance Act of 1994, property that is surplus to the federal government's needs is to be screened via a Local Reuse Authority's soliciting representatives of the homeless, and other interested parties. A Local Redevelopment Authority's (LRA's) outreach efforts to potential users or recipients of the property include working with the Department of Housing and Urban Development and other federal agencies that sponsor public benefit transfers under the Federal Property and Administrative Services Act. Homeless assistance will be addressed in the NEPA assessment for disposal and reuse.

4.12.5 Public Safety

4.12.5.1 Police Protection Services

DDMT does not have military police. Police protection at DDMT is provided by the South Precinct Office of the Memphis Police Department (Harland Bartholomew & Associates, Inc., 1988a). Currently, there are 15 civilian uniformed police officers and 10 civilian administrative personnel on DDMT. The ratio of police officers to employees on DDMT is 1 to 66 (Horn, 1996).

4.12.5.2 Fire Protection Services

Fire protection at DDMT is primarily provided by the City of Memphis Fire Department (MFD). Currently, MFD has 1,200 trained firefighters and equipment for fighting all types of fires. There are four MFD stations within a 5-mile radius of DDMT. On-post fire protection is provided by the DDMT Fire Department and internal fire suppression systems. The department is staffed by three federal employees. Fire-fighting equipment consists of one 60-gallon light-water unit on a pickup truck (Harland Bartholomew & Associates, Inc., 1988a).

4.12.6 *Environmental Justice*

Consideration of environmental justice concerns include race and ethnicity data and the poverty status of populations within the ROI.

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations." The purpose of the order is to avoid the disproportionate placement of any adverse environmental or economic impacts from federal policies and actions on minority and low-income populations.

The racial breakdown of Shelby County is very similar to that of the entire Memphis Metro area, which includes portions of Tennessee, Mississippi, and Arkansas. Currently, approximately 54 percent of the ROI is white and 46 percent is black (MACC, 1996a).

Median household income for the ROI is approximately $34,440. The U.S. poverty threshold is $11,821 for a family of three (Grolier, 1995). The Census Bureau bases the poverty status of families and individuals on 48 threshold variables, including income, family size, number of family members under 18 and over 65 years of age, and amount spent on food.

In 1990, approximately 14.7 percent of ROI residents were classified by the U.S. Census as living in poverty. Approximately 12.4 percent of the total population of Tennessee lives below the poverty level. Poverty in Shelby County is not equally distributed among the racial and ethnic populations, however. Approximately 3.9 percent of the white population lives in poverty compared to 30 percent of the black population, 16 percent of the Asian/Pacific Islander population, and 11.7 percent of the Native American population (U.S. DOC, 1990).

Table 4-16 depicts race, ethnicity, and poverty status characteristics of the population immediately surrounding DDMT.

Table 4-16
Race, Ethnicity, and Poverty Status for the Area Surrounding DDMT

	3-Mile Radius	5-Mile Radius	15-Mile Radius
Total Population	106,382	285,983	849,868
Total White	15,503	83,471	472,095
Total Black	90,421	199,473	367,245
Total Native American	114	418	1,657
Total Asian	145	2,039	7,169
Total Other	199	582	1,702
Total Hispanic	390	1,483	5,681
Living in Poverty	31%	28%	18%

Source: U.S. DOC, 1990.

4.13 ECONOMIC DEVELOPMENT

Economic development data include local industry trends, income distribution, occupational composition of the labor force, employment trends, and installation contribution to the regional economy.

4.13.1 Regional Economic Activity

The City of Memphis continually ranks among the lowest of major metropolitan areas in all cost-of-living indices. Memphis is a major economic center for cotton, hardwood lumber, and agribusiness. Health care is the largest single industry in the city's economy. The Memphis Metro area is the number one U.S. market for residential construction gain, showing a 31 percent increase in 1995 over 1994. The area ranks third for office construction and fifth for industrial construction within the United States. Major new and expanded companies created more than 6,000 jobs in 1995 (MACC, 1996b).

Memphis is a national distribution center. The 25,000 miles of navigable waterways of the Mississippi River remain a cost-effective method of transporting bulk goods and commodities. The Port of Memphis is the second-largest inland port on the Mississippi River and the fourth-largest inland port in the nation. Memphis is located at the center of a 250-million-person U.S. market and is positioned exactly equidistant from the industrial centers of Mexico and Canada. Memphis International Airport ranks first in the nation in terms of landed weight for a cargo airport (MACC and MLGWD, n.d.).

In 1992, 99 percent of jobs within Shelby County were in nonagricultural industries and 0.2 percent were in agricultural industries. The three primary categories of nonagricultural employment were services, wholesale and retail trade, and government. Together, these industries employed nearly 70 percent of the total labor force (US BEA, 1994). Table 4-17 presents employment distribution by occupational category in the ROI.

The services industry was the largest source of jobs in Shelby County, employing 28 percent of the total workforce. Wholesale and retail trade was the second-largest source of jobs, providing 24 percent of jobs. Government employed approximately 17 percent of the labor force (US BEA, 1994).

Table 4-18 lists 10 of the major employers in the Memphis area. Federal Express Corporation, which originated in Memphis, is the single largest employer, employing approximately 24,000 workers. The Memphis City Board of Education, which employs nearly 15,000 workers, is the second-largest employer.

The total workforce population of Shelby County is approximately 377,000 (US DOC, 1996). Unemployment in the county increased slightly from 4.4 percent in 1990 to 4.6 percent in 1994 (Table 4-19). Unemployment in the state of Tennessee was 4.8 percent in 1994, which was lower than the U.S. average of 6.1 percent (MACC and MLGWD, 1995a).

The number of households in the ROI is currently estimated to be more than 330,000, representing a growth of approximately 20 percent since 1980. The average household size in Shelby County is approximately 2.7 people. Currently, median household income is $34,440, an increase of 21 percent since 1990 (MACC, 1996c). Median household income in Shelby County is slightly higher than the state average. In 1994, per capita personal income in Shelby County was $22,592, an increase of 22 percent since 1990. Per capita income for the United States was $21,696, an increase of 14 percent since 1990 (MACC and MLGWD, 1995a).

Table 4-17
Shelby County Employment by Industry

Occupation of Employed Persons	Distribution of Earnings in ROI
Services	28%
Wholesale and Retail Trade	24%
Government	17%
Transportation and Public Utilities	10%
Manufacturing	9%
Finance, Insurance, and Real Estate	7%
Construction	4%

Source: US BEA, 1994.

Table 4-18
Memphis Area Major Employers (1994)

Employer	Number of Employees
Federal Express Corporation (transportation and communication)	24,000
Memphis City Board of Education (education)	14,749
Baptist Memorial Hospitals (medical)	5,162
The Kroger Company (distribution, warehouse, and retail)	4,460
Methodist Hospitals (medical)	4,335
University of Tennessee (education)	3,800
Shelby County Schools Board of Education (education)	3,794
Wal-Mart Stores, Inc. (retail)	3,060
First Tennessee Bank (finance)	2,800
Regional Medical Center at Memphis (medical)	2,700

Source: MACC and MLGWD, 1995a.

Table 4-19
Unemployment Trends

Year	Shelby County (%)	Tennessee (%)	United States (%)
1990	4.4	5.2	5.5
1991	5.5	6.6	6.7
1992	5.7	6.4	7.4
1993	5.3	5.6	6.8
1994	4.6	4.8	6.1

Source: Tennessee Department of Employment Security (cited in MAC SC and MLGWD, 1995a).

4.13.2 Installation Contribution, Local Expenditures

DDMT employs 1,322 persons. Average annual salaries total more than $39 million. DDMT's estimated nonsalary (operational)expenditures were approximately $25.5 million (fiscal year 1995). This figure reflects expenditures for utilities, services, supplies, construction, and operations but does not include expenditures for technical procurements (Gowdy, 1996).

4.13.3 Military Force Structure, Salaries, and Expenditures

Table 4-20 lists 1995 personnel levels and salaries for DDMT.

Table 4-20
1995 Personnel Levels and Salaries

Employee Type	Number	Average Salary/Wage
Permanent Military - Officer	4	$73,344
Permanent Military - Enlisted	2	$28,890
Permanent Civilian - GS Series	398	$38,634
Wage Grade	790	$26,975
Lessee	0	—
Other Non-appropriated Funds	18	$16,232
Contractual Workers	110	$18,000
TOTAL	1,322	

Source: Gowdy, 1996.

4.14 QUALITY OF LIFE

4.14.1 Housing

4.14.1.1 On-Base Housing

Twenty-six military personnel and their dependents live on the installation in family housing. There are eight duplex housing units in four structures containing approximately 2,000 square feet in each unit. Adjacent to the housing is the park area, which includes a golf course, swimming pool, tennis courts, playground, cafeteria, and community club building, housing the golf shop (MDRA, n.d.). The facilities are well buffered from the warehouses and industrial operations (Harland Bartholomew & Associates, Inc., 1988a).

4.14.1.2 Off-Base Housing

Ninety-three percent of the DDMT workforce resides within Shelby County (DDMT, 1996d). The ROI contains a range of housing environments, 96 percent of which are urban units (US DOC, 1990). There

are approximately 328,000 housing units in the ROI, approximately 93 percent of which are occupied (Table 4-21). The value of an owner-occupied housing unit in the ROI averages $75,000 to $99,000. Average rent is $395 for old construction and $528 for newly constructed apartments (THDA, 1996).

In Memphis and Shelby County, residential property is assessed at 25 percent of its value, industrial corporate real estate is assessed at 40 percent, and industrial personal real estate is assessed at 30 percent (MACC and MLGWD, 1995a).

Table 4-21
ROI Housing Quantity and Quality

Housing Characteristics	Shelby County
Quantity:	
Number of units	327,796
Occupancy rates	
Owner occupied	60%
Renter occupied	40%
Vacant	7%
Quality:	
Median rooms of all housing units	5
Median persons per housing unit	2
Median age of units (years)	24
Lacking complete kitchen facilities	0.6%
Lacking complete plumbing facilities	0.5%

Source: U.S. DOC, 1990.

4.14.2 Schools

The U.S. Department of Education provides federal impact aid to school districts that have federal lands within their jurisdiction since federal property is exempt from local taxes. This federal impact aid is authorized under Public Law 103-382 as payment in lieu of taxes.

School districts receive federal funding for each student whose parent or parents live on or work on federal property. The amount of federal school aid a school district receives is dependent on the number of "federal" students the district supports in relation to the total district student population. Schools receive more funding for students whose parents both live and work on federal property. Total funding varies year by year according to congressional appropriations for the program, but in general, funding has ranged from $250 to $1,750 per pupil.

There are no schools for dependents of DDMT personnel located on the installation. The majority of DDMT dependent students attend school in Shelby County. The school districts in Shelby County have 111 students affiliated with DDMT this year (1995-1996). A total of 43,000 students are enrolled in Shelby County schools. There are 27 elementary, 10 middle, and 7 high schools in the area. Per pupil expenditure is $3,997. The staff-to-student ratio is 1 to 18.7 (MACC, 1996; Shelby County Schools, 1996).

There are more than 60 private and parochial schools in the Memphis area, with a total enrollment of over 18,000. There are seven colleges and universities in the area. These include the University of Memphis, Christian Brothers University, University of Tennessee-Memphis, Rhodes College, Shelby State Community College, Southern College of Optometry, and Memphis College of Art. State Technical Institute at Memphis, Tennessee Technology Center at Memphis, Southeast College of Technology, William R. Moore School of Technology, and Concorde Career Institute provide technical training designed to meet the needs of local industry (MACC and MLGWD, 1995b).

4.14.3 Family Support

DDMT support services for employees and their families center around the Employee Service Center and the Employee Assistance Program. The Employee Service Center primarily provides training on techniques used in job searching, including resume writing and interviewing, along with providing information on job availability. The Employee Assistance Program provides general counseling and assistance. If further assistance is needed, recommendations can be provided through the program (Hillis, 1996).

4.14.4 Medical Services

Memphis offers one of the largest health care centers in the nation with 19 hospitals and more than 7,000 hospital beds. The world's largest and fifth-largest hospitals are located in the center, along with other hospitals that provide general medical services. St. Jude's Children's Research Hospital is also a part of the center. The Veteran's Administration Medical Center provides general medical care to veterans from a tri-state region.

The Memphis and Shelby County Health Department operates several health clinics. There are two clinics specifically serving the Depot area, including Cawthon and South Memphis (Harland Bartholomew & Associates, Inc., 1988a). A clinic for minor outpatient treatment is also located on DDMT (DLA, 1992).

4.14.5 Shops and Services

Numerous shopping centers covering over 13 million square feet of building area are available in Memphis and Shelby County. The shopping centers include several enclosed malls and an open pedestrian mall that is a main attraction for downtown Memphis (MACC, 1983).

Military shopping facilities located on DDMT include dining facilities, a thrift shop, and a liquor store (Harland Bartholomew & Associates, Inc., 1988a). Other facilities include a post office, a fitness/wellness center, a community club, and a small base exchange (DLA, 1992).

4.14.6 Recreation

DDMT has a number of recreational facilities including a picnic area, golf course, lake, swimming pool, athletic fields (including a softball field) tennis court, and volleyball court (DLA, 1992).

Memphis provides 6,700 acres of parkland in more than 200 parks within the city limits. The Memphis Park Commission sponsors a large variety of amateur leagues, including basketball, softball, and soccer (MACC and MLGWD, n.d.).

4.15 INSTALLATION AGREEMENTS

4.15.1 Police Protection Services

DDMT has established a mutual aid agreement with the Memphis Police Department, located approximately 6 miles from DDMT, to provide police protection to DDMT (Horn, 1996).

4.15.2 Fire Protection Services

Fire protection at DDMT is primarily provided by the City of Memphis Fire Department (MFD). Currently, there is no signed agreement between the MFD and DDMT; however, fire-fighting support is supplied at no cost to DDMT (Harland Bartholomew & Associates, Inc., 1988a). On-post fire protection is provided by the DDMT Fire Department and internal fire suppression systems. See also Section 4.12.6.2 for more information on fire protection services.

4.15.3 Easements and Leases

Narrow easements for road right-of-way have been granted for Dunn Avenue and Airways Boulevard. Somewhat larger easements for Tennessee Valley Authority (TVA) electrical transmission facilities were either existing at the time the property was acquired or granted since the original property acquisition. There is a 225-foot easement traversing the northeast corner of the installation near the intersection of Dunn Avenue and Airways Boulevard. This easement also continues in a northwesterly direction and crosses Dunn Field. Another TVA easement, which is 200 feet wide, runs parallel to and adjoins Perry Road on the western boundary of the depot. In total almost 34 acres are included in these three road right-of-way and TVA easements. These easements are perpetual, and there is no indication that they will be abandoned at any point in the future (Harland Bartholomew & Associates, 1988a).

Macedonia Baptist Church has a land lease for a small parcel of less than one-half acre on Perry Road for use by the church for a parking lot. This lease was initiated in 1979 for a 10-year period. (Harland Bartholomew & Associates, 1988a).

SECTION 5.0
ENVIRONMENTAL AND SOCIOECONOMIC CONSEQUENCES

This section describes the environmental and socioeconomic consequences of implementing the proposed action described in Section 2.0 (master lease in the form of an interim lease for mixed use, predominantly commercial storage). This action is referred to in this section as the preferred alternative. A no action alternative is also evaluated. Three additional alternatives, described in Section 3.0, are considered not feasible and will not be further addressed in this section:

- Master lease in the form of a lease in furtherance of conveyance.
- Master lease in the form of an interim lease for mixed use, predominantly wholesale and retail sales.
- Disposal by conveyance or transfer.

As described in Section 2.0, activities associated with the preferred alternative would begin as the DDMT workforce on the installation declines. Lessee operations would occupy facilities no longer required for DDMT operations. Lessee activities would be similar to those conducted by DDMT both in personnel numbers and types of activity. Lessee operations would be phased in over time rather than commencing all at once. An overall increase in operational tempo (OPTEMPO) could be expected should lessee operations increase from the current federal schedule of 10 hours a day Monday through Friday to continuous 24-hour operations 7 days a week.

5.1 ENVIRONMENTAL CONSEQUENCES

5.1.1 Introduction

The potential direct and indirect effects of implementing the preferred alternative and the no action alternative on the physical environment are described by resource area. Cumulative effects are described in Section 5.3 and mitigation measures are described in Section 5.4.

5.1.2 Land Use

Preferred Alternative. The City of Memphis and Shelby County intend to sublease the property to private corporations for similar or comparable uses. Potential subleases would include activities such as distribution businesses, light industry, offices, and general distribution support businesses similar to current activities at the depot. No consequences to land use patterns in the region of influence (ROI) are anticipated should leasing occur since the proposed leasing uses of the facility are similar to current uses. No direct or indirect impacts are expected.

No Action Alternative. If DDMT were placed into caretaker status, existing light industrial (I-L zoning) land use patterns on the property would not change. Under caretaker status, DDMT would have a proposed staff of 30 personnel to manage the installation and monitor cleanup. The facilities and infrastructure would be substantially unoccupied after DDMT operations ceased between July and September 1997. If DDMT were to remain in caretaker status for an extended period of time, the conditions of the buildings, facilities, and utility systems could be expected to decline. Unoccupied buildings are potentially subject to increased incidents of vandalism and instances of material failures such as leaking roofs and burst pipes. These incidents tend to go unnoticed for longer periods of time in unoccupied facilities, potentially increasing the extent and level of damage. With prolonged vacancy,

adverse effects on local land use patterns could occur if the structures, grounds, and utility systems became no longer suitable to support the uses for which they were designed or for which they could potentially be used. Under this alternative, Army adherence to the U.S. Department of Defense *Base Reuse Implementation Manual* (US DoD, 1995) would minimize the potential for facility deterioration.

5.1.3 Air Quality

As described in Section 4.0, Shelby County is currently classified as a maintenance area for federal ambient ozone (O_3) and carbon monoxide (CO) standards and as a nonattainment area for lead (Pb) standards. The following subsections describe how the preferred alternative and the no action alternative would affect Shelby County's ambient air quality, including how the actions could affect the county's ability to maintain and achieve compliance with these federal standards.

A Record of Non-Applicability (RONA) has been prepared that describes DDMT's proposed leasing action as exempt from the General Conformity Rule because the master interim lease will result in activities that are "similar in scope and operation to activities currently being conducted" (40 CFR 51.853; refer to Appendix B for the RONA).

Preferred Alternative. The proposed leasing action is expected to result in air emissions that are similar in type and quantity to current depot emissions. The natural gas boilers and space heaters currently used by DDMT would likely also be used by the lessees at the same rate. Similarly, emissions from fuel storage and dispensing operations that might result from future commercial storage activity would be similar to those which currently exist.

Any new stationary sources that would result from light industrial operations occurring on the installation would be required to comply with all federal and state rules and regulations. They would also need to obtain an air quality permit from the Memphis and Shelby County Health Department. The permit process is designed to regulate sources that might cause significant ambient air quality impacts. Since potential lessees, in the terms of the lease and the permit, would be prohibited from generating substantial amounts of hazardous waste, emission of hazardous air pollutants (HAPs) are expected to be minimal under the proposed leasing action. No significant direct air quality impacts are expected from this alternative.

The indirect effects of the leasing action on air quality are expected to result primarily from lessee employees commuting to and from work and increased truck activity. Other possible indirect effects, such as emissions from construction or renovation activities, would not occur because new construction would not be permitted and any renovations would be expected to be minor.

Private operation of the depot's storage facilities are likely to result in a somewhat greater number of truck trips being made per day as compared to the number of trips associated with past DDMT activity. Emissions from employees' commuting are likely to be reduced, however, because the number of jobs anticipated to result from the leasing action (1,000) would be fewer than DDMT's baseline workforce (1,322).

To estimate the emissions that would result from the reduced number of employees and the increased truck activity, the RONACALC model was used. The RONACALC model predicts emissions based on data and procedures from EPA emission inventory guidance and the MOBILE5A and EMFAC7F vehicle emission rate models. Industrial and heavy truck emission rates were based on typical rates

for gasoline and diesel trucks operating in a low-altitude region such as Memphis. Average speeds and travel times were used in the absence of more specific information.

The results of the RONACALC model application show that if 1,000 employees commute to and from the depot and 45 to 90 truck trips are made each day, predicted emissions would decrease or only slightly increase from the 1995 estimates (see Table 5-1). (To estimate the number of truck trips resulting from the re-use scenario, it was assumed that three to six truck trips per day would originate from each of the 15 warehouses available for leasing. See Section 2.3 Proposed Action and Section 5.1.7.3.) Emissions of the ozone precursors reactive organic compounds (ROGs) and nitrogen oxides (NO_x) will still be a small percentage of total Shelby County emissions and would not be expected to cause a change in the ozone compliance status of the area (Gray, personal communication, 1996). The carbon monoxide emissions, which must be evaluated on a more localized level, could contribute to air quality problems if they were to occur simultaneously at congested, high-volume intersections. Because the anticipated truck activity is expected to be spread over more than an 8-hour workday, however, carbon monoxide violations are not expected to occur (Gray, personal communication, 1996). See Appendix A.

No Action Alternative. Caretaker activities at DDMT would result in few air pollutant emissions. Activities associated with infrastructure maintenance, site remediation, and security operations would contribute only minor quantities of emissions from the use of motor vehicles, paints and solvents, and small internal combustion engines (such as lawn mowers). Emissions from stationary sources (such as the depot's boilers or space heaters) would decrease from their current levels. No new air emission sources would be created as a result of caretaker activities.

Table 5-1
Estimated Emissions of Criteria Pollutants (tons/year)

	ROG	NO_x	PM10	CO	SO_x
1995 Emission Estimates[1]					
Employee Commuting	27.7	26.0	36.1	255.0	2.3
Truck Activity	0.7	2.9	1.2	5.6	0.2
Total	28.4	28.9	37.3	261.6	2.5
Re-use Emission Estimates[2]					
Employee Commuting	21.3	20.0	27.8	196.1	1.7
Truck Activity	2.2	9.2	4	18.1	0.7
Total	23.5	29.2	31.8	214.2	2.4
Change in Emissions from Baseline to Re-use	(4.9)	0.3	(5.5)	(47.4)	(0.1)

[1] 1995 emission estimates are based on 1,300 employees and 28 truck trips per day.
[2] Re-use emission estimates are based on 1,000 employees and 90 truck trips per day.

Indirect emissions resulting from caretaker activities would also contribute only minor quantities of emissions. Vehicle emissions resulting from the commutes of the approximately 30 caretaker personnel would be minor and would represent an insignificant portion of Shelby County's total emissions. Other possible indirect effects on air quality, such as emissions from construction activities or additional vehicle traffic, would not occur under the no action alternative.

5.1.4 Noise

Preferred Alternative. Noise levels within DDMT are not expected to increase significantly above current levels. Based on the assumption of like use, the volume of truck and rail traffic (the largest noise sources) is not expected to increase substantially. Furthermore, peak noise levels, as affected by the peak traffic volume and the vehicle type ratios (ratios of trucks to cars), are not expected to change substantially. No adverse effects are anticipated from the preferred alternative for areas adjacent to DDMT. Anticipated noise sources from the preferred alternative would account for a low percentage of the average daily noise in the vicinity of DDMT.

No Action Alternative. The no action alternative would substantially reduce noise levels within DDMT because automotive, truck, and rail traffic would be reduced to marginal levels. Given the large volume of vehicle traffic (automotive and airplane) in the vicinity of DDMT and the urbanized nature of the surrounding area, caretaker status would only slightly reduce daily noise levels, as measured in the average day-night noise level (Ldn).

5.1.5 Water Resources

This section describes the potential for reduction in the quantity or quality or water resources for existing or potential future uses from implementing the preferred alternative and the no action alternative. Based on existing water uses on the main installation, implementing either alternative would not increase demand or exceed the capacity of the Memphis Light, Gas and Water Division's (MLGWD's) ability to meet water demand uses. Such uses include but are not limited to human consumption, industrial uses, irrigation, recreation, protection of wildlife, and aesthetics.

Preferred Alternative. No indirect impacts to surface waters or groundwater are anticipated as a result of the preferred alternative. No lessee activities that differ appreciably from current practices would be permitted. No new construction or extensive modification to existing structures is expected. No direct or indirect on-site or off-site impacts to surface waters or groundwater would be expected as the result of leasing the property.

No Action Alternative. Under caretaker status, the reduced level of activity at DDMT could be expected to result in greatly reduced water use. No direct impacts to surface waters or groundwater are anticipated as a result of the no action alternative.

5.1.6 Geology

Preferred Alternative. No direct or indirect impacts to the topography are anticipated as a result of the preferred alternative because existing structures will be leased and the construction of new facilities, along with associated grading, would not be anticipated. No direct or indirect impacts to the physiographic setting, structure, or stratigraphy are anticipated as a result of the preferred alternative.

No direct or indirect impacts to the soils on the DDMT main installation are anticipated as a result of the preferred alternative because existing structures will be leased and the disturbance of soils associated with the construction of new facilities would not be anticipated. No increases in seismic activity are expected as a result of activities associated with the proposed leasing alternative.

No Action Alternative. No direct or indirect impacts to the soils would be expected from the implementation of caretaker status because the DDMT facility would be maintained, including the preservation of ground cover in non-built-up areas. No direct or indirect impacts to the physiographic setting, structure, stratigraphy, or topography are anticipated as a result of this alternative.

5.1.7 *Infrastructure*

5.1.7.1 *Potable Water Supply*

Preferred Alternative. MLGWD would continue to supply potable and industrial water for commercial/industrial operations under a master interim lease arrangement as currently supplied. There would be a requirement to provide separate metering of water or some way of estimating water consumption so that lessees could be billed. This would not impact capacity or demand; rather, it is required for billing purposes. No changes are anticipated to the City of Memphis's ability to provide potable water to any of its regional customers as a result of implementing the preferred alternative because leasing uses are anticipated to be similar to current uses. No direct or indirect impacts to the water supply or demand are expected.

No Action Alternative. If leasing were not to occur and DDMT were to be placed into caretaker status, there would no longer be an appreciable demand for potable water. This would not result in an adverse impact on MLGWD or its ability to provide potable water to its customers in the area. Prolonged caretaker status could eventually result in the deterioration of the water distribution system at DDMT through nonuse, resulting in the need for repair or replacement.

5.1.7.2 *Wastewater Treatment*

Preferred Alternative. The wastewater collection system in the local area is near capacity. Combined flows from active subleases at DDMT and flows from the nearby Kellogg Plant could cause sewer backups in buildings on DDMT or exacerbate backups already occurring at the Kellogg Plant. The problem can be avoided through best management practices by using both of the parallel sewer lines that currently exist on Frisco Street to accommodate the increased flows.

There is no anticipated impact on the ability of the City of Memphis to treat wastes discharged from DDMT to the municipal collection and treatment system.

The MDRA and/or its lessees would have to establish new discharge agreements with respect to wastewater on DDMT because the existing sewer use ordinance and wastewater discharge agreement between the City of Memphis and DDMT is nontransferable. Approved agreements specifying pretreatment requirements and flow limits will need to be executed between lessees and the City of Memphis authorizing discharge to the sanitary sewer system, even if the proposed discharges are similar to current discharges.

No Action Alternative. Should DDMT go to caretaker status, the City of Memphis's wastewater collection and treatment system would not be affected by limited use or nonuse (which would still consist of any infiltration/inflow) of the collection system at DDMT. No impacts are anticipated under the no action alternative.

5.1.7.3 Traffic and Transportation

Preferred Alternative. Traffic volumes on internal DDMT roads are expected to increase slightly due to increased OPTEMPO. This is predominantly from increased truck traffic. Vehicle type ratios (ratios of trucks to cars) are expected to change minimally with the increased truck traffic. Peak periods could be expected to change as a result of the increased OPTEMPO and extended hours of operation from weekday 6:00 a.m. to 6:00 p.m. to 24-hour operations 7 days per week. These peak periods are assumed to have reduced numbers of vehicles although total numbers of vehicles would increase total volume. The roads external to the DDMT main installation would not be affected because there is sufficient capacity.

As described in the proposed action, it is assumed that one half of the warehouse facilities would be used by lessees. This is approximately 15 warehouse buildings. It is estimated that each building could experience, on average three to six truck trips a day or a total of 45 - 90 truck trips total per day associated with lessee's activities. Based upon the variety of potential like-kind uses, some buildings would likely experience no traffic in a week and others could experience somewhat more than estimated. The presence of rail would serve as a substitute to trucking as surface means of transportation. Although limited as described in Section 5.1.7.6, it would nevertheless have a net effect of reducing traffic.

Implementing the preferred alternative is expected to potentially result in traffic patterns on DDMT that do not currently exist. Many of the interior roads adjacent to loading docks are narrow. Trucks backed up to loading docks could completely block these roads and access to other buildings. This could potentially affect the residual ongoing DDMT mission and the remediation effort during drawdown. The leasing plan must accommodate these requirements. New traffic circulation control measures might be required, such as traffic management and new control devices. Other gates might have to be opened or truck traffic allowed through open gates in addition to Gate 8.

There is adequate parking available for the number of expected lessee personnel; however, these parking areas are located on the periphery of the main installation. A lessee would have to walk to work, or a shuttle bus system could be used as is currently done by DDMT. Keeping personal vehicles outside the main area would also minimize previously described effects on traffic in the interior of the installation.

No adverse impacts are anticipated on the major roads external to but serving DDMT from the increased traffic volumes that could occur under the preferred alternative.

No Action Alternative. Caretaker status would produce so few vehicle trips per day that there would be no direct or indirect negative impacts. Lessened traffic would have only minimal beneficial effects because of its small total volume in relation to other area traffic.

5.1.7.4 Roadways

Preferred Alternative. There would be no direct or indirect impacts to either the internal or external roadways. They are constructed for heavy vehicle traffic similar to the current use.

No Action Alternative. A potential temporary beneficial effect could be anticipated for the roads on DDMT. The roadways repaved following intense use during the 1991 Gulf War would not be subject to deterioration to an appreciable degree while the DDMT remained in caretaker status.

5.1.7.5 Airports

Preferred Alternative. Because of the relatively similar size and nature of the activities anticipated during interim leasing, no direct or indirect impacts to the Memphis International Airport or to the six other airports in the Memphis area are anticipated.

No Action Alternative. Since most DDMT shipments are by truck, no direct or indirect impacts to the Memphis International Airport or to the six other airports in the Memphis area, positive or negative, would be anticipated should the depot be placed in caretaker status.

5.1.7.6 Railways

Preferred Alternative. The poor condition of the railways within the main installation would limit significant use during the leasing period. Repair or removal of the railways could not occur until after disposal and transfer of the DDMT property. No direct or indirect impacts to DDMT or local rail systems is anticipated.

No Action Alternative. Under a protracted caretaker scenario, natural deterioration of the depot's rail system would likely continue. Extensive repairs would still be required to make the railways fully usable again. No other direct or indirect impacts to the railways would be expected.

5.1.7.7 Energy

Preferred Alternative. There is sufficient capacity on both the DDMT main installation and with the utility providers in Memphis and Shelby County to accommodate anticipated lessee energy demand. Energy consumption would have to be metered or some other alternative developed to allow lessees to pay for their use of utilities. No other direct or indirect effects, positive or negative, would be anticipated with respect to energy issues (electricity, fuel oil, natural gas, and steam) at DDMT or in the local area.

No Action Alternative. Caretaker status would result in a sharply reduced demand for energy at DDMT. No other direct or indirect impacts, positive or negative, would be anticipated with respect to energy.

5.1.7.8 Communication Systems

Preferred Alternative. Telephone lines and radio frequencies are government-owned and would not be available for use by lessees. Equipment not slated for disposal in place could be removed. Any lessee would be responsible for establishing telephone services with South Central Bell. Federal communication systems and equipment would not be available to lessees. No direct or indirect impacts,

positive or negative, would be anticipated with respect to the communication systems (telephone, radio, cellular phone, voice and data lines, and access to a local area network) in place at DDMT.

No Action Alternative. Government-owned communication equipment not slated for disposal and not otherwise needed could be removed. Direct or indirect impacts with respect to facility communication systems are not anticipated.

5.1.8 Hazardous and Toxic Materials

Preferred Alternative. Impacts associated with the leasing of the property depend in part on the specific activities that involve the storage and use of hazardous materials and the generation and storage of hazardous waste. As part of DoD Directive 4165.66-M, standard environmental provisions are provided for interim leases. Those provisions include the requirement that lessees who generate and store hazardous waste must strictly comply with the hazardous waste permit requirements under RCRA and any state-specific requirements. In addition, according to the Memphis Depot Master Interim Lease Concept (MDRA, 1996), the MDRA will not sublease to any activity that generates hazardous waste as its primary business or activities that store or dispose of hazardous materials. Permitted leasing activities will include those which use substances similar to those currently used on the depot. Compliance with applicable laws and regulations and the use of best management practices would minimize the potential for the release of hazardous substances that could subsequently migrate off site and affect adjacent areas.

No Action Alternative The no action alternative would not affect the current hazardous material and waste management practices at DDMT. Due to the installation's preparations for closure, hazardous material storage and use at DDMT and the generation of hazardous waste would decrease over time to a minimal level. In addition, DoD would continue to remediate any contaminated sites.

The reduction in hazardous material usage and generation of hazardous waste associated with conversion to caretaker status would result in beneficial long-term impacts by reducing the potential for contaminants to be released into the environment.

5.1.9 Permits and Regulatory Authorizations

Preferred Alternative. Air pollution control permits issued by the Memphis and Shelby County Health Department for DDMT are not transferable to lessees, who will need to apply for and receive their own permits from the Health Department.

The existing sewer use agreement between the City of Memphis and DDMT is nontransferable. Approved agreements specifying pretreatment requirements and flow limits would need to be executed between lessees and the City of Memphis to authorize discharge to the sanitary sewer system even if the proposed discharges are similar to current discharges.

DDMT will maintain a NPDES permit for the installation until disposal. Lesses will have to apply for point source permits.

The RCRA permit under which DDMT generates and manages hazardous wastes (no. TN4-21-002-0570) is not transferable except under certain conditions, similar to those for the NPDES permit—notification, written agreement, and approval (USEPA, n.d.).

The UST registration permit is transferable to lessees only with the completion and submission of an Owner/Operator Agreement form and a Notification for Underground Storage Tanks form to the Tennessee Department of Environment and Conservation, Division of Underground Storage Tanks.

No Action Alternative. Under caretaker status, requirements for activities such as blast cleaning or paint spray booth activities for which DDMT currently has air pollution control permits would be reduced or eliminated. These permits would be canceled or allowed to expire. No direct or indirect negative impacts from caretaker activities would be anticipated.

The existing sewer use agreement between DDMT and the City of Memphis would be expected to continue, providing for the treatment of any wastewater associated with the DDMT caretaker activities. No adverse impact on sewer use permitting would be anticipated.

Caretaker activities could operate under the terms of the existing NPDES permit for stormwater discharge, which expires September 29, 1998.

5.1.10 Biological Resources and Ecosystems

5.1.10.1 Vegetation

Preferred Alternative. No direct effects to vegetation would be expected to occur since no new construction is planned under this alternative. The vegetation on site would be maintained by the remaining DDMT staff. No indirect effects to vegetation are anticipated under the preferred alternative.

No Action Alternative. Landscaped areas would be maintained in their current condition and no new construction would occur. No direct or indirect effects to vegetation would be expected to occur under the no action alternative.

5.1.10.2 Wildlife

Preferred Alternative. Since almost no wildlife species are known to be present on the depot, no impacts, positive or negative, would result from implementing the preferred alternative. The nature of the proposed leasing activities would not be expected to affect what wildlife or habitat areas exist on the installation.

No Action Alternative. No direct or indirect impacts to wildlife are anticipated as a result of the no action alternative. The potential for viable wildlife communities on the depot will remain close to zero, even with the decrease in operations associated with this alternative. Caretaker personnel would continue to maintain open areas, although at reduced levels, should this alternative be adopted.

5.1.10.3 Threatened and Endangered Species

Preferred Alternative. Since no threatened and endangered species are known to inhabit DDMT, no direct or indirect effects to these resources are expected to occur.

No Action Alternative. No direct or indirect effects to threatened and endangered species are expected to occur under this alternative. The potential for these species to use habitat on the depot will remain close to zero, even with the decrease in operations associated with this alternative.

5.1.10.4 Wetlands

Preferred Alternative. No direct or indirect impacts to wetlands are anticipated as a result of the preferred alternative. A wetland survey of DDMT was completed by the U.S. Army Corps of Engineers in July of 1996. Results of the survey indicate that there are no regulated wetlands on DDMT (see Appendix A).

No Action Alternative. Given the absence of wetland resources, no direct or indirect impacts to wetlands would be anticipated as a result of the no action alternative.

5.1.11 Cultural Resources

5.1.11.1 Archeological Resources

Preferred Alternative. No known archeological sites on or eligible for the National Register are located on DDMT. Based on the extensive construction activities that have occurred on the DDMT main installation, it is unlikely that any intact significant archeological remains are preserved at DDMT. As part of the Section 106 consultations being conducted for the disposal of the DDMT property, the DLA will appraise the Tennessee SHPO that the DDMT property is believed to have no potential to possess intact archeological remains.

No Action Alternative. Without the implementation of the preferred alternative, the existing conditions would continue and no archeological resources would be affected. The selection of caretaker status for DDMT would result in the maintenance of installation buildings and grounds in essentially their current condition.

5.1.11.2 Architectural Resources

Preferred Alternative. DDMT has a number of World War II era buildings and structures. They are currently being evaluated for National Register eligibility. Until eligibility determinations are completed, leases for all buildings constructed before 1947 will require the lessee to notify the DLA of any proposed lessee actions that have the potential to affect the integrity or appearance of the buildings. If the DLA determines that National Historic Preservation Act Section 106 consultations are required as a result of these proposed actions, the lessee will not undertake any building alterations until the requirements of Section 106 have been fulfilled.

After the eligibility determinations have been completed, leases for National Register eligible buildings will require the lessee to notify the DLA of any proposed lessee actions that have the potential to affect

the integrity or appearance of the buildings. If the DLA determines that National Historic Preservation Act Section 106 consultations are required as a result of these proposed actions, the lessee will not undertake any building alterations until the requirements of Section 106 have been fulfilled.

No Action Alternative. No architectural resources would be affected under the no action alternative.

5.2 SOCIOECONOMIC CONSEQUENCES

Method of Analysis. Baseline social and economic indicators provided in Section 4.0 are used as the basis for the socioeconomic analysis. The analysis presented in this section includes a comparison of the preferred alternative and the no action alternative. The area of primary impact from the leasing activities will be Shelby County, the ROI. As discussed in Section 4.12, Shelby County was selected as the ROI based on the procurement spending patterns of DDMT, the spending patterns of employees, and the residency distribution of employees. It is anticipated that the caretakers and the majority of lessees will reside within Shelby County. This analysis measures the maximum potential effects on the overall area most affected by the preferred alternative and no action alternative rather than attempting to forecast community-specific impacts.

This analysis models the impacts of the preferred alternative and no action alternative assuming that lessees live within the county. It measures the maximum economic impact the actions could have on Shelby County without diluting that impact by distributing it among the surrounding counties. Actual impacts to Shelby County might be less than those estimated, and some impacts might be distributed outside to surrounding areas. Nonetheless, a large portion of spending will take place in the ROI.

The EIFS Model. To determine the socioeconomic impacts of the preferred alternative, the Army's Economic Impact Forecast System (EIFS) model was used. The EIFS model is a computer-based economic tool that calculates multipliers to estimate the primary and secondary effects resulting from an alternative. Based on these calculated multipliers, the model estimates changes in employment, income, population, sales, government expenditures, housing, and schooling for the ROI due to the alternative. The analysis presented in this section is based on EIFS model output.

Significance Criteria. For this analysis, impacts caused by the preferred alternative are compared to the normal range of variation for the ROI. The normal range of variation is calculated by the EIFS model and expressed as the rational threshold value (RTV) for the ROI. From this model, it is determined whether the expected change generated by the preferred alternative is significant. The RTV is calculated on the basis of yearly historical fluctuations in business volume, personal income, employment, and population. This analysis establishes acceptable positive and negative boundaries for economic change. For a change to be significant, it must exceed the established positive or negative RTV. Appendix C contains complete RTV tables for the DDMT ROI for the years 1969 to 1992.

As shown in Tables 5-2 and 5-3, none of the effects predicted for the preferred alternative exceed the historical RTVs for any of the socioeconomic variables. The positive and negative RTVs for the DDMT ROI, along with the percentage change due to the preferred alternative, are also shown.

Table 5-2
EIFS Standard Model Output for the Preferred Alternative

Indicator	Projected Change	Percentage Change	RTV Range
Total sales volume	$104,119,000	0.274	-5.122% to 6.920%
Total employment	1,498	0.303	-3.116% to 4.184%
Total income	$37,281,000	0.237	-3.290% to 7.249%
Local population	0	0.00	-0.821 to 0.663
Local off-base population	0	N/A	N/A
Number of schoolchildren	0	N/A	N/A
Demand for housing			
Rental	0	N/A	N/A
Owner-occupied	0	N/A	N/A
Total housing demand increase	0	N/A	N/A
Government expenditures	$1,810,000	N/A	N/A
Government revenues	$5,201,000	N/A	N/A
Net government revenues	$3,391,000	N/A	N/A
Civilian employees expected to relocate	0	N/A	N/A
Military employees expected to relocate	0	N/A	N/A

Note: N/A = not applicable.
Source: See Appendix C.

5.2.1 Socioeconomic Effects

This section presents the effects of the preferred alternative and no action alternative and discusses the results of the preferred alternative and no action alternative EIFS model runs. Appendix C contains tables with detailed information on the inputs to and outputs of the EIFS model.

5.2.1.1 Demographics

Preferred Alternative. It is anticipated that the preferred alternative would directly employ approximately 1,000 people. According to the EIFS model, there would be a negligible increase in total population of less than 1 percent (Table 5-2).

No Action Alternative. The no action alternative would be expected to result in the retention of approximately 30 jobs to maintain landscaping and infrastructure. According to the EIFS model, no significant effects on the local population would be anticipated (Table 5-3).

5.2.1.2 *Visual and Aesthetic Value*

Preferred Alternative. Because no new construction would be permitted under a leasing alternative, no impact on visual or aesthetic values is expected.

No Action Alternative. The no action alternative would require minimal maintenance of landscaping and infrastructure and would not result in any change to existing visual or aesthetic values.

5.2.1.3 *Native American and Other Ethnic Concerns*

Preferred Alternative. It is anticipated that the preferred alternative will directly employ approximately 1,000 people. Job creation would have a negligible effect on Native American or other ethnic groups or the area population at large.

Table 5-3
EIFS Standard Model Output for the No Action Alternative

Indicator	Projected Change	Percentage Change	RTV Range
Total sales volume	$3,124,000	0.008	-5.122% to 6.920%
Total employment	45	0.009	-3.116% to 4.184%
Total income	$1,118,000	0.007	-3.290% to 7.249%
Local population	0	0.00	-0.821 to 0.663
Local off- base population	0	N/A	N/A
Number of schoolchildren	0	N/A	N/A
Demand for housing			
Rental	0.00	N/A	N/A
Owner-occupied	0.00	N/A	N/A
Total housing demand increase	0.00	N/A	N/A
Government expenditures	$54,000	N/A	N/A
Civilian employees expected to relocate	0	N/A	N/A
Military employees expected to relocate	0	N/A	N/A

Note: N/A = not applicable.
Source: See Appendix C.

No Action Alternative. The retention of 30 jobs to maintain caretaker status would not be expected to result in significant effects on local Native American or ethnic populations.

5.2.1.4 Homeless and Special Programs

Preferred Alternative. Property that is surplus could be used for homeless assistance if as a result of the LRA's screening process it is determined that there is such a need. Homeless assistance will be further addressed in the NEPA assessment for disposal and reuse.

No Action Alternative. Property that is surplus could be used for homeless assistance if as a result of the LRA's screening process it is determined that there is such a need. Homeless assistance will be further addressed in the NEPA assessment for disposal and reuse.

5.2.1.5 Public Safety

Preferred Alternative. The Memphis Police Department has staff and resources sufficient to provide protection services to incoming lessees. No significant effects would be anticipated as a result of the preferred alternative.

No Action Alternative. The Memphis Police Department has staff and resources sufficient to provide protection services for the caretaker staff and their families. No significant effects would be anticipated as a result of the no action alternative.

5.2.1.6 Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations." The purpose of the order is to avoid the disproportionate placement of any adverse environmental or economic impacts from federal policies and actions on minority and low-income populations.

Preferred Alternative. The leasing of the DDMT main installation does not create disproportionately high or adverse human health or environmental impacts on minority or low-income populations of the surrounding community. In general, it would be expected to confer social and economic benefits on all groups.

No Action Alternative. Implemention of the no action alternative for the DDMT main installation would not create disproportionately high or adverse human health or environmental impacts on minority or low-income populations of the surrounding community. In general, it would be expected to confer minimal social and economic benefits on all groups.

5.2.2 Economic Development

5.2.2.1 Regional Economic Activity

Preferred Alternative. According to the EIFS model, the preferred alternative would result in increased sales volume of approximately $104 million or a 0.274 percent change in local sales. Total direct and indirect employment is forecast to increase by 1,498 people or 0.303 percent. Total income would be

expected to increase by more than $37 million or 0.237 percent. None of these impacts to regional economic activity in the ROI would be significant (Table 5-2).

No Action Alternative. Some spending would be expected, but job creation and requirements for new equipment and supplies would be minimal. According to the EIFS model, the no action alternative would result in increased sales volume of approximately $3.1 million or a 0.008 percent change in local sales. Total direct and indirect employment would be expected to increase by 45 people or 0.009 percent. Total income is also forecast to increase by more than $1.1 million or 0.007 percent. None of these impacts to regional economic activity in the ROI would be significant (see Table 5-3). Maintaining the property in caretakership will represent a foregone economic opportunity for reuse. Such effects, while adverse to the long-term socioeconomic conditions, are not considered to be significant.

5.2.2.2 *Installation Contribution, Local Expenditures*

Preferred Alternative. Any spending on goods and services by lessees would be anticipated to benefit the local economy.

No Action Alternative. Spending on salaries, new equipment, and supplies as a result of the no action alternative would be anticipated to have a minimal benefit to the local economy. Maintaining the property in caretakership would represent a foregone economic opportunity for near-term reuse. Such effects, while adverse to the long-term socioeconomic conditions, would not be considered significant.

5.2.2.3 *Military Force Structure, Salaries, and Expenditures*

Preferred Alternative. Military force structure, salaries, and expenditures would not be affected by implementation of the preferred alternative.

No Action Alternative. The amount of direct spending and procurement from the no action alternative would be a function of demand for maintenance supplies, number of people employed, and salary levels. Some spending would be expected, but requirements for new equipment and supplies would be minimal. Direct spending would be limited, well within the normal range of economic variance for the ROI. No significant impacts are anticipated. Maintaining the property in caretakership would represent a foregone economic opportunity for near-term reuse. Such effects, while adverse to the long-term socioeconomic conditions, would not be considered significant.

5.2.3 *Quality of Life*

5.2.3.1 *Housing*

Preferred Alternative. Lessees would be expected to reside in the ROI and would not be expected to relocate from areas outside the ROI. According to the EIFS model, housing would not be affected (Table 5-2).

No Action Alternative. Caretaker personnel would be expected to reside in the ROI and would not be expected to relocate from areas outside the ROI. According to the EIFS model, housing would not be affected (Table 5-3).

5.2.3.2 Schools

Preferred Alternative. According to the EIFS model, there would be no effect on ROI schools as a result of implementing the preferred alternative (Table 5-2).

No Action Alternative. According to the EIFS model, there would be no effect on ROI schools as a result of the no action alternative (Table 5-3).

5.2.3.3 Family Support

Preferred Alternative. Family services in the ROI appear adequate to support any increase in demand that might occur as a result of implementing the preferred alternative.

No Action Alternative. Family services in the ROI appear adequate to support demands as a result of implementing the no action alternative.

5.2.3.4 Medical Services

Preferred Alternative. Memphis health care centers are numerous and sufficient to provide medical services to incoming lessees and their families.

No Action Alternative. Memphis health care centers are numerous and sufficient to provide medical services to the caretaker staff and their families.

5.2.3.5 Shops and Services

Preferred Alternative. According to the EIFS model, the preferred alternative would result in a direct and indirect increase in sales volume of approximately $104 million or a 0.274 percent change in local sales. This change is less than 1 percent of annual sales volume, well within the historical RTV level. Although beneficial for local merchants, this effect is not considered to be significant (Table 5-2).

No Action Alternative. The amount of direct spending and procurement from the no action alternative would be a function of demand for maintenance supplies and the number of people employed. Some spending would be expected, but requirements for new equipment and supplies would be minimal. Direct spending would be limited, well within the normal range of economic variance for the ROI. No significant impacts on sales volume are anticipated. Maintaining the property in caretakership would represent a foregone economic opportunity for near-term reuse. Such effects, while adverse to the long-term socioeconomic conditions, would not be considered significant.

5.2.3.6 Recreation

Preferred Alternative. Recreational facilities located in the ROI, including facilities located on the DDMT main installation, appear adequate to support any increase in demand that might result from the preferred alternative.

No Action Alternative. Recreational facilities located in the ROI, including facilities located on the DDMT main installation, appear adequate to support any demand that might occur as a result of implementing the no action alternative.

5.2.4 *Installation Agreements*

Preferred Alternative. DDMT would establish a leasing agreement with MDRA and its sublessees that would ensure noninterference with continued DDMT operations, disposal of the installation, and restoration activities.

Agreements to provide for fire and police security would have to be established by the lessee as needed. The lease with the Macedonia Baptist Church for parking would have to be addressed to see if it should be continued or terminated.

Road right-of-way easements and Tennessee Valley Authority utility easements will continue to exist under either the leasing alternative or the no action alternative. Lessees of the property would have to operate under these easements.

No Action Alternative. Existing agreements would be maintained and periodically reviewed for needed modification. No direct or indirect impacts, positive or negative, would be anticipated.

5.3 *CUMULATIVE EFFECTS*

A cumulative impact is defined as the impact on the environment that results from the incremental impact of a proposed action when added to other past, present, or reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can also result from individually minor but collectively significant actions taking place over time.

The proposed action is an interim measure that would be taken to foster economic development until such time as the DDMT main installation is disposed of and transferred through the BRAC disposal process. The impacts associated with that use will be described in a NEPA assessment for disposal and reuse currently under preparation. As described in the proposed action in Section 2.0 and the alternatives in Section 3.0, this proposed interim action would provide for both similar personnel numbers and similar types of activities. Although implementing the preferred alternative would not allow leases in furtherance of conveyance, it would still be expected to attract private interests looking for less expensive facilities. This would provide replacement jobs for those lost due to the DDMT closure sooner than waiting for transfer of the facilities. Under the no action alternative those numbers would decrease to 30 personnel and the only activity that would continue would be activities associated with the BRAC Cleanup Plan. To implement the no action alternative would delay economic development until after transfer of the facilities.

As DDMT activities draw down and are eventually terminated on the DDMT main installation, the character of the installation will change. If the preferred alternative is implemented, leases by private interests will grow to replace that lost activity. Although the activities of the lessees replacing DDMT would be of the same types as the activities of DDMT, it is expected that the lesses' activities would be more intense. The lessees would likely operate 24 hours a day 7 days a week. These activities would initially be constrained by security requirements such as requiring badging of employees and vehicle inspections. This requirement would likely be eliminated after the DDMT mission ended. Additionally, vehicle traffic on interior roads would increase, creating some traffic circulation problems.

Cumulative effects could result from the combination of noise associated with trucks operating at DDMT at night and "normal" aircraft noise from flights routinely occurring over the DDMT main installation at night.

5.4 *MITIGATION*

Implementing the preferred alternative could be considered a mitigation of the BRAC action in that it avoids or provides a substitute for the jobs lost as result of the closure of DDMT. It also provides occupants on the DDMT main installation, resulting in continued maintenance for facilities and infrastructure that otherwise might be left unoccupied and subject to the accelerated deterioration associated with vacant facilities.

Actions would be required to implement the preferred alternative as described in Section 2.3, such as completion of the FOSL and EBS. DDMT must develop a leasing plan and agreement with the MDRA. This agreement would specify terms and conditions for both the government and the lessees such as utilities metering, maintenance, hazardous material and hazardous waste restrictions, and measures necessary to protect the environment. Most of the effects associated with the implementation of the preferred alternative would be mitigated using best management practices.

Approved agreements specifying pretreatment requirements and flow limits would need to be executed between lease holders and the City of Memphis authorizing discharge to the sanitary sewer system even if the proposed discharges are similar to current discharges.

Mitigation of sewer surcharges on DDMT property and in the nearby Kellogg Plant might be available by using both of the parallel sewer lines that currently exist on Frisco Street to accommodate increased flows.

SECTION 6.0
FINDINGS AND CONCLUSIONS

The proposed action to grant a master interim lease of surplus DDMT property to the MDRA prior to the disposal of DDMT was reviewed comparing the environmental and sociological effects associated with the preferred alternative (lease for mixed use, predominantly commercial storage) and the no action or caretaker alternative. Baseline environmental and sociological conditions for the DDMT main installation and region of influence have been described, and the environmental and sociological consequences of implementing the proposed action have been evaluated. The evaluation of the proposed action (preferred alternative) and the no action alternative indicate that physical and socioeconomic environments at DDMT and in the region of influence would not be significantly affected by granting a master interim lease.

Implementation of the preferred alternative would not substantially alter the baseline environmental conditions. It would produce a positive effect by providing economic benefits to the area by creating jobs, as described in Section 5.2. Implementing the preferred alternative aids in fulfilling DLA's underlying need to comply with the President's Five Part Plan to Revitalize Base Closure Communities by creating economic opportunity as soon as possible, minimizing the time between closure and reuse.

Table 6-1 summarizes the level of impact to each resource area that would result from the implementation of the proposed action or the no action alternative, along with suggested mitigation measures.

Based on this Environmental Assessment, implementation of the proposed action would have no significant direct, indirect, or cumulative impacts on the quality of the natural or human environment. Because no significant environmental impacts would result from implementation of the proposed action, preparation of an Environmental Impact Statement is not required. Preparation of a Finding of No Significant Impact is appropriate.

Table 6-1
Summary of Impacts and Mitigation

Resource Area	Level of Impact		Suggested Mitigation
	Preferred Alternative	No Action Alternative	
Land Use	none	N.S.[1]	
Air Quality	N.S.	none	
Noise	N.S.	none	Follow best management practices to reduce noise levels near residential areas during evening hours.
Water Resources	none	none	
Geology	none	none	
Infrastructure			
Potable Water Supply	N.S.	N.S.	Meter utilities or develop a method of accounting for reimbursement.
Wastewater Treatment	N.S.	none	Use both of the parallel sewer lines that currently exist on Frisco Street to accommodate increased flows.
Traffic and Transportation	N.S.	none	Follow best management practices such as establishing a circulation plan and installing traffic control measures to offset increased OPTEMPO of lessee operations.
Roadways	none	none	
Airports	none	none	
Railways	none	N.S.	
Energy	N.S.	none	Meter utilities or develop a method of accounting for reimbursement.
Communication Systems	N.S.	none	

Table 6-1
Summary of Impacts and Mitigation (continued)

Resource Area	Level of Impact		Suggested Mitigation
	Preferred Alternative	No Action Alternative	
Hazardous and Toxic Materials	N.S.	none	Follow best management practices to allow cleanup activities to continue without interruption.
Permits and Regulatory Authorizations	N.S.	none	Lessees obtain permits for wastewater, air emissions, hazardous wastes.
Biological Resources	none	none	
Threatened and Endangered Species	none	none	
Wetlands	none	none	
Cultural Resources			
Archeological Resources	none	none	
Architectural Resources	N.S.[2]	none	
Socioeconomic Environment			
Demographics	none	none	
Visual and Aesthetic Values	none	none	
Native American and Ethnic Concerns	none	none	
Homeless and Other Special Programs	none	none	
Public Safety	none	none	
Environmental Justice	positive	N.S.	
Economic Development			
Regional Economic Impact	positive	N.S.	
Installation Contribution and Local Expenditure	positive	N.S.	
Military Force Structure, Salaries, and Expenditures	none	N.S.	

Table 6-1
Summary of Impacts and Mitigation (continued)

Resource Area	Level of Impact		Suggested Mitigation
	Preferred Alternative	No Action Alternative	
Quality of Life			
Housing	none	none	
Schools	none	none	
Family Support	none	none	
Medical Services	none	none	
Shops and Services	positive	N.S.	
Recreation	none	none	
Installation Agreements	N.S.	none	

[1] N.S. = not significant.
[2] Leases for properties built before 1947 must contain language requiring consultation with DLA.

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APPENDIX A

Coordination

United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, Tennessee 38501

July 23, 1996

Ms. Wendy L. Brown
Natural Resource Scientist
Tetra Tech, Inc.
10306 Eaton Place, Suite 340
Fairfax, Virginia 22030

Dear Ms. Brown:

Thank you for your letter and enclosures of July 5, 1996, regarding the Disposal and Reuse Environmental Assessment for the Defense Distribution Depot Memphis in Shelby County, Tennessee. The Fish and Wildlife Service (Service) has reviewed the information submitted and offers the following comments.

Information available to the Service does not indicate that wetlands exist in the vicinity of the proposed project. However, our wetland determination has been made in the absence of a field inspection and does not constitute a wetland delineation for the purposes of Section 404 of the Clean Water Act or the wetland conservation provisions of the Food Security Act. The Corps of Engineers or the Natural Resources Conservation Service should be contacted if other evidence, particularly that obtained during an on-site inspection, indicates the potential presence of wetlands.

Endangered species collection records available to the Service do not indicate that federally listed or proposed endangered or threatened species occur within the impact area of the project. We note, however, that collection records available to the Service may not be all-inclusive. Our data base is a compilation of collection records made available by various individuals and resource agencies. This information is seldom based on comprehensive surveys of all potential habitat and thus does not necessarily provide conclusive evidence that protected species are present or absent at a specific locality. However, based on the best information available at this time, we believe that the requirements of Section 7 of the Endangered Species Act of 1973, as amended, are fulfilled. Obligations under Section 7 of the Act must be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

Thank you for the opportunity to comment on this action. If you have any questions, please contact Timothy Merritt of my staff at 615/528-6481.

Sincerely,

Lee A. Barclay, Ph.D.
Field Supervisor

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
401 Church Street
Nashville, Tennessee 37243

August 5, 1996

Ms. Wendy L. Brown
Tetra Tech, Inc.
10306 Eaton Pl., Suite 340
Fairfax VA 22030

Subject: Project review information for rare, threatened, or endangered species and critical or sensitive habitat

Dear Ms. Brown:

Please be advised that a review of our Departmental data bases indicates **no** recorded threatened and/or endangered species within the project boundaries nor within a one mile radius of the proposed project. Our records do indicate several other species occurrence records within an approximate four mile radius of the proposed project site(s). The review is for the proposed **Defense Distribution Depot Memphis, Interim Leasing Environmental Assessment, near Nonconnah Creek, Memphis, Shelby County, TN** project site(s). As per your request, the species that have recorded occurrences near the project site(s) are listed by quad map and are attached.

Please do not make public the exact location of any element listed here-in, as this could lead to possible over-collection and abuse.

The results of our review do not mean that a comprehensive biological survey has been completed. Should you consider a survey of the project sites, prior to project implementation, we would appreciate you notifying our office of your findings.

In order to comply with the National Environmental Policy Act consideration should be given to the comprehensive and *cumulative* impacts associated with the project actions. Based upon the information provided, it is probable that any proposed stream crossing will impact instream, aquatic, habitat and riparian habitat as part of the project implementation.

Any restoration activities should include the use of native plant species. Restoration should be accomplished by using native plant species consistent with local community types.

Techniques for sediment retention and streamside reconstruction are outlined in the following documents prepared by our Department:

1. Tennessee Erosion Control Handbook, July 1992.

2. Reducing Nonpoint Source Water Pollution by Preventing Soil Erosion and Controlling Sediment on Construction Sites, March 1992.

3. Riparian Restoration and Streamside Erosion Control Handbook, November 1994.

Please refer to these documents when planning measures to lessen any project or construction impacts.

We appreciate the opportunity to assist you with your pre-project planning. If we can be of further assistance with your project please contact our office in Nashville, telephone 615/532-0431.

Respectfully,

Andrew N. Barrass Ph. D.,
Environmental Review Coordinator
Division of Natural Heritage

Attachments: (3)

13:45:35 05 AUG 1996

QUADNAME:.....	SCOMNAME:.....	SNAME:.....	FEDERAL	STATE	SRANK:.....
SOUTHEAST MEMPHIS	SIX-LINED RACERUNNER	CNEMIDOPHORUS SEXLINEATUS			S3
SOUTHEAST MEMPHIS	SIX-LINED RACERUNNER	CNEMIDOPHORUS SEXLINEATUS			S3
SOUTHEAST MEMPHIS	PURPLE FRINGELESS ORCHID	PLATANTHERA PERAMOENA		T	S3
SOUTHWEST MEMPHIS	YELLOW-CROWNED NIGHT-HERON	NYCTANASSA VIOLACEA			S3
SOUTHWEST MEMPHIS	YELLOW-CROWNED NIGHT-HERON	NYCTANASSA VIOLACEA			S3
SOUTHWEST MEMPHIS	YELLOW-CROWNED NIGHT-HERON	NYCTANASSA VIOLACEA			S3
SOUTHWEST MEMPHIS	YELLOW-CROWNED NIGHT-HERON	NYCTANASSA VIOLACEA			S3
SOUTHWEST MEMPHIS	MISSISSIPPI KITE	ICTINIA MISSISSIPPIENSIS		D	S2
SOUTHWEST MEMPHIS	RED-HEADED WOODPECKER	MELANERPES ERYTHROCEPHALUS			S4
SOUTHWEST MEMPHIS	BEWICK'S WREN	THRYOMANES BEWICKII		T	S2
SOUTHWEST MEMPHIS	SIX-LINED RACERUNNER	CNEMIDOPHORUS SEXLINEATUS			S3
SOUTHWEST MEMPHIS	SIX-LINED RACERUNNER	CNEMIDOPHORUS SEXLINEATUS			S3
SOUTHWEST MEMPHIS	SIX-LINED RACERUNNER	CNEMIDOPHORUS SEXLINEATUS			S3
SOUTHWEST MEMPHIS	HERON ROOKERY	HERON ROOKERY			

14 Records Processed

LIST OF RARE, THREATENED, AND ENDANGERED SPECIES FOR SW & SE MEMPHIS TN QUADS

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	GLOBAL RANK	STATE RANK
OTHERS					
HERON ROOKERY	HERON ROOKERY				
PLANTS					
PLATANTHERA PERAMOENA	PURPLE FRINGELESS ORCHID		T	G5	S3
VERTEBRATES					
ICTINIA MISSISSIPPIENSIS	MISSISSIPPI KITE		D	G5	S2
MELANERPES ERYTHROCEPHALUS	RED-HEADED WOODPECKER			G5	S4
NYCTANASSA VIOLACEA	YELLOW-CROWNED NIGHT-HERON			G5	S3
THRYOMANES BEWICKII	BEWICK'S WREN		T	G5	S2

6 Records Processed

Federal Status Definitions of Tennessee's Rare Plants and Animals

Federally listed species are protected by the Endangered Species Act of 1973 (as amended) and the list is administered and determined by the US Fish and Wildlife Service.

E/SA - Endangered by similarity of appearance.

LE - **Listed Endangered**, the taxon is threatened by extinction throughout all or a significant portion of its range.

LT - **Listed Threatened**, the taxon is likely to become an endangered species in the foreseeable future.

PE - **Proposed Endangered**, the taxon is proposed for listing as endangered.

PT - **Proposed Threatened,** the taxon is proposed to be listed as threatened.

Y - **Synonyms**

C - **Candidate Species,** These 'Candidate' species are not currently proposed for listing, but development and publication of proposed rules for such candidate species is anticipated. The US Fish and Wildlife Service has on file sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species. The US Fish and Wildlife Service will determine the relative listing priority of these candidate species, and encourages other agencies, groups and individuals to give consideration to these taxa in environmental planning.

C2 - **DESIGNATION DISCONTINUED**
C3 - **DESIGNATION DISCONTINUED**
- **3A** - **DESIGNATION DISCONTINUED**
- **3B** - **DESIGNATION DISCONTINUED**
- **3C** - **DESIGNATION DISCONTINUED**

__NL - status varies for different populations or parts of range with at least one part not listed.

__XN - non-essential experimental population

__XE - essential experimental population

(Modified From Federal Register, 50 CFR Part 17, Feb. 28, 1996, Vol. 61, No. 40, pp. 7596 - 7613.)

Note: The taxa listed as candidate species may be added to the list of Endangered and Threatened plants and animals, and, as such, consideration should be given them in environmental planning. Taxa listed as LE, LT, PE and PT must be given consideration in environmental planning involving federal funds, lands, or permits, and should be given consideration in all non-federal activities. For further information contact the Region 4, Endangered Species Coordinator, at the US Fish and Wildlife Service, 1875 Century Boulevard, Atlanta, Georgia 30345, phone (404)679-7096; or an Endangered Species Specialist at the US Fish and Wildlife Service, 446 Neal Street, Cookeville, Tennessee 38501, phone (615)528-6481.

State Status Definitions of Tennessee's Rare Plants

State Status indicates which plants are formally listed as state **Endangered**, **Threatened**, or **Special Concern** under the authority of the **Tennessee Department of Environment and Conservation**. The Department has the valuable assistance of the State's best field botanists, twelve of whom serve on the Scientific Advisory Committee which periodically reviews the list.

E - Endangered, species now in danger of becoming extinct in Tennessee because of:
- (a) their rarity throughout their range, or
- (b) their rarity in Tennessee as a result of sensitive habitat destruction or restricted area of distribution.

E* - Taxa considered to be Endangered in Tennessee due to evidence of large numbers being taken from the wild and lack of commercial success with propagation or transplantation.

T - Threatened, species likely to become endangered in the immediately foreseeable future as a result of rapid habitat destruction or commercial exploitation.

S - Special Concern, species requiring concern because of:
- (a) their rarity in Tennessee because the State represents the limit or near-limit their geographic range, or
- (b) their status is undetermined because of insufficient information.

P - Possibly Extirpated, species that have not been seen in Tennessee for the past 20 years.

(Adapted from Somers, Paul. 1989. Revised List of the Rare Plants of Tennessee. Journal of the Tennessee Academy of Sciences, 64(3): 179-184.)

State Status Definitions of Tennessee's Rare Wildlife

State Status indicates which animals are formally listed as state endangered or threatened under the authority of the Tennessee Wildlife Resources Agency (T.C.A. 70-8-104, 70-8-105, and 70-8-107).

E - Endangered- any species or subspecies of wildlife whose prospects of survival or recruitment within the state are in jeopardy or are likely within the foreseeable future to become so due to any of the following factors:
- (a) The destruction, drastic modification, or severe curtailment of its habitat;
- (b) Its overutilization for scientific, commercial or sporting purposes;
- (c) The effect on it of disease, pollution, or predation;
- (d) Other natural or man-made factors affecting its prospects of survival or recruitment within the state; or
- (e) Any combination of the foregoing factors.

T- Threatened- any species or subspecies of wildlife which is likely to become an endangered species within the foreseeable future.

D - Deemed in Need of Management- any species or subspecies of nongame wildlife which the executive director of the TWRA believes should be investigated in order to develop information relating to population, distribution, habitat, needs, limiting factors, and other biological and ecological data to determine management measures necessary for their continued ability to sustain themselves successfully.

Note: Species with no State Status designation are considered rare in the state by the Division of Natural Heritage. Information is collected on these species in order to minimize their formal listing as Endangered or Threatened.

State Rank Definitions of Tennessee's Rare Wildlife

As a supplement to the official State and Federal status designations, the **Division of Natural Heritage (Tennessee Department of Environment & Conservation)** publishes this accompanying list of **State Ranks** as determined using methodology developed by The Nature Conservancy. Where possible, State Ranks are assigned based upon known occurrences of rare animals and published range maps. Otherwise ranks are assigned based upon the best available information, with all State Ranks being periodically reviewed and updated. Many species which have neither federal nor state protected status are tracked by the Heritage Program based upon their State Rank. In particular, these include species which are state endemics, have a narrow range in Tennessee, or which are facing particular threats, and for which neither state nor federal laws have extended legal protection. **State Ranks** are defined as follows:

S1 = Critically imperiled in the state because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state (Typically 5 or fewer occurrences or very few remaining individuals).

S2 = Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state (6 to 20 occurrences or few remaining individuals).

S3 = Rare and uncommon in the state (21 to 100 occurrences).

S4 = Widespread, abundant, and apparently secure in state, with many occurrences, but of long-term concern (Usually more than 100 occurrences).

S5 = Demonstrably widespread, abundant, and secure in the state, with stable and sustainable populations under present conditions.

SA = Accidental: Accidental or casual in the state (i.e., infrequent and far outside usual range).
SH = Historical: Occurred historically in the state, and suspected to be extant.
SP = Potential: Potential that the species occurs in the state, but no occurrences reported.

SR = Reported: Reported in the state but without conclusive documentation which would provide a basis for either accepting or rejecting (e.g., misidentified specimen) the report. Also includes species for which the Tennessee Divison of Natural Heritage does not have data to allow accurate mapping of the occurrence.

SSYN = Synonym: Reported from the state, but has been synonymized with another taxon.

SU = Unrankable: Possibly in peril in the state, but status uncertain; need more information.
SX = Extirpated: Believed to be extirpated from the state.

S#S# = Numeric range rank: A range between two of the numeric ranks (e.g. S1S2, Smoky Dace).
S? = Unranked: Species not yet ranked in the state.

HYB = Hybrid: Taxon represents a hybrid between species.

B = Breeding: Considered a breeding population within the state.
N = Non-breeding: Considered a non-breeding population within the state.
? = Inexact or uncertain rank.

Note: DNH has responsibility for assigning state ranks. Those species having an **SRANK** of **S1** to **S3**, **state endemics**, and species with **limited distribution** in Tennessee should be given special consideration in environmental planning. For further information contact DNH at (615) 532-0431.

MEMPHIS AND SHELBY COUNTY
HEALTH DEPARTMENT

YVONNE S. MADLOCK
Director

JOHN B. KIRKLEY, M.D.
Interim Health Officer

DR. W. W. HERENTON
Mayor of Memphis

JIM ROUT
Mayor of Shelby County

July 19, 1996

J. Michael Betteker
Tetra Tech, Inc.
10306 Eaton Place, Suite 340
Fairfax, VA 22030

Dear Mr. Betteker:

In response to your letter of July 10, this Department would like to raise the following areas of interest and concern related to the environmental and human health issues of leasing of the Depot.

1. Air Quality - As an area only recently redesignation for carbon monoxide, the reutilization activities effects on local carbon monoxide levels is of critical importance. As the Depot is located on a major road and part of our city's interstate route, increases in traffic could cause significant adverse micro and proposals macro air quality effects. As congestion management is a key element in addressing the potentially greater traffic volumes, projected by certain redevelopment potentials, we must better understand changes in traffic patterns, peak traffic, off hour traffic, and vehicle mix. Employment density increases, decreases in carpooling or ride sharing from existing levels and any emissions from potential stationary pollution sources which might lease on site would also be helpful in our evaluation.

2. Groundwater issues, excluding Dunn Field - While recognizing the Dunn Field portion of the facility must be managed in a different path due to its status as a Federal Facility Superfund site, there is another groundwater issue I have found troubling in my position both as a Restoration Advisory Board (RAB) member and the local official responsible for management of our local groundwater protection program. In looking at groundwater surface elevation, there appears to be a trough that runs along the western edge of the Dunn Field portion and under the facility where Dunn fields western edge meets the main property line. While there appears to be some support for this being a preexisting geological structure that does not interconnect the shallow and Memphis Sands aquifers, I am concerned that the roughly fifteen (15) feet of clay said to be found in the trough is continuous. This impact reutilization as, if there is an interconnection, large areas of the facility would require extensive work to prevent seepage into the trough and eventually our groundwater supply.

814 JEFFERSON AVENUE, MEMPHIS, TENNESSEE 38105
PHONE (901) 576-7600 FAX (901) 576-7832

3. PCB contamination - While the EBS draft discusses the Base's PCB removal program, this pollutant was detected near the front of the administration building during the CH_2M Hill study for background levels. PCB contamination is a likely pollutant both inside and outside the building and while most of the outside sites will likely be found, inside use of transformers and capacitor's may not be as noticeable. The expense of such clean-ups and the disruptive nature on building use and reuse makes this a concern.

We also wish to withhold our general comments about the appropriate type of review (EA or EIS) at this time. We believe there are serious public concerns on this site and its potential impact to human health that must be fully explored if the community is to accept reuse in the positive fashion necessary to promote highest and best reuse of this property. Accordingly, we believe its likely that citizens would prefer the highest level of review on this leasing assessment but might agree to a lesser review at the transfer portion if an EA were conducted at this time.

Sincerely,

J. Carter S. Gray, Manager
Pollution Control

JCSG:br

CC: Cindy Buchanan
Memphis Depot Redevelopment Agency

Christen Kartmen
DDMO

TETRA TECH, INC.
10306 Eaton Pl., Suite 340
Fairfax, VA 22030
Telephone (703) 385-6000

July 10, 1996

Dan Sherry
Tennessee Wildlife Resources Agency
P.O. Box 40747
Nashville, TN 73204

Dear Mr. Sherry:

The Department of the Army is preparing an Interim-Lease Environmental Assessment (EA) and Disposal and Reuse EA for its proposed closure of the Defense Distribution Depot, Memphis, TN. The EAs will evaluate the environmental and socioeconomic impacts associated with interim-leasing prior to disposal and then the ultimate disposal and reuse of the entire installation. At this time, the preparation of the leasing EA is underway. We will follow up with an additional letter of correspondence for the Disposal and Reuse EA at a later date.

The Defense Distribution Depot Memphis consists of 642 acres located in Shelby County, TN. The interim leasing of the installation will be planned by the Memphis Depot Redevelopment Agency and is expected to involve light industrial uses similar to those on the installation prior to closure. Within the next 18 months, the number of personnel employed by the lessee is anticipated to range from 300 to 600.

In accordance with the National Environmental Policy Act, Endangered Species Act, and Fish and Wildlife Coordination Act, an evaluation of the potential environmental impacts (both positive and negative) associated with implementing the Army's proposed closure is required. This letter requests informal consultation with you for the proposed action. A duplicate letter is being sent to the U.S. Fish and Wildlife Service in Atlanta for federal consultation.

We are requesting a list of the federal- and state-listed threatened, endangered, and candidate species that are known to occur, or could potentially occur, on the Memphis Defense Distribution Depot. Also, we would like a listing of any other sensitive natural resources that could be impacted by the proposed interim leasing activities on the installation. For quick reference, the installation can be found on the USGS quadrangle maps (7.5 minute series) Southeast Memphis, TN and Southwest Memphis, TN-AR. The submittal date for the draft leasing EA is August 20, 1996. Any information you can provide by July 31st would be extremely beneficial to our analysis.

If your office has any information available on this issue, please send it to:

Tetra Tech, Inc.
Attn: Wendy Brown
10306 Eaton Place
Suite 340
Fairfax, VA 22030

If you have any questions or require additional information, please call me at (703) 385-6000. Thank you for your assistance.

Sincerely,

Wendy L. Brown

Wendy L. Brown
Natural Resource Scientist

TETRA TECH, INC.
10306 Eaton Pl., Suite 340
Fairfax, VA 22030
Telephone (703) 385-6000

July 10, 1996

Dann Spariosu
Regional Project Manager
U.S. Environmental Protection Agency
Federal Facilities Branch
345 Courtland Street, NE
Atlanta, GA 30365

Dear Mr. Spariosu:

The Department of the Army is preparing an Interim-Lease Environmental Assessment (EA) and Disposal and Reuse EA for its proposed closure of the Defense Distribution Depot, Memphis, TN. The EAs will evaluate the environmental and socioeconomic impacts associated with interim-leasing prior to disposal and then the ultimate disposal and reuse of the entire installation. At this time, the preparation of the leasing EA is underway. We will follow up with an additional letter of correspondence for the Disposal and Reuse EA at a later date.

The Defense Distribution Depot Memphis consists of 642 acres located in Shelby County, TN. The interim leasing of the installation will be planned by the Memphis Depot Redevelopment Agency and is expected to involve light industrial uses similar to those on the installation prior to closure. Within the next 18 months, the number of personnel employed by the lessee is anticipated to range from 300 to 600.

We are interested in any initial questions or concerns you might have regarding the environmental issues resulting from this action. Feel free to either send a letter with your comments or concerns or call me directly at (703) 385-6000. Thank you for your input.

Sincerely,

J. Michael Betteker
Senior Environmental Engineer

JJ

DEPARTMENT OF THE ARMY
MEMPHIS DISTRICT CORPS OF ENGINEERS
167 NORTH MAIN STREET B-202
MEMPHIS TN 38103-1894

Reply to
Attention of:

CELMM-CO-R (1145b)

23 July 1996

MEMORANDUM FOR Commander, Mobile District, ATTN: CESAM-PD-EI (Findley)

SUBJECT: Wetland Delineation for Defense Distribution Depot, Memphis, Tennessee.

1. Reference memorandum CESAM-PD-EI, subject as above. A site inspection performed by Tom Skelton of our Regulatory Branch on July 19, 1996, revealed that there are no wetlands on the site. There are two small ponds located on the golf course, however, we would not consider these to be waters of the United States.

2. If you have questions, please call Tom Skelton at (901) 544-3471. Please refer to File No. 960340550.

for LARRY D. WATSON
Chief
Regulatory Branch

APPENDIX B

Record of Non-Applicability (RONA) General Conformity Rule (40 CFR 51)

RECORD OF NON-APPLICABILITY CONCERNING THE GENERAL CONFORMITY RULE (40 CFR Part 51)

The principal mission of the Defense Distribution Depot Memphis, Tennessee (DDMT) is to provide for storage, receiving, and shipping of materiel within the Department of Defense (DoD) Distribution System. The materiel handled by DDMT includes textile products, food products, electronic equipment, construction materials, hazardous materials, and industrial, medical, and general supplies. The Defense Logistics Agency (DLA), which operates the depot, proposes to grant a master lease of excess DDMT property to the Memphis Depot Redevelopment Agency to facilitate economic redevelopment of the community. This proposed leasing action requires that DLA complete a conformity review to determine whether the action is subject to the U.S. Environmental Protection Agency's General Conformity Rule (40 CFR Part 51).

DDMT is located within Shelby County, an area that is in maintenance status for ozone and carbon monoxide and is in nonattainment status for lead. The General Conformity Rule provides that actions proposed to occur within nonattainment or maintenance areas must, unless otherwise exempt, be accompanied by a Conformity Determination. Among the recognized exemptions, however, is "the granting of leases ... where activities conducted will be similar in scope and operation to activities currently being conducted" (40 CFR Part 51.853). Because the proposed master lease would result in predominantly commercial storage activities (which are similar in scope and operation to current storage activities), it has been determined that the DLA proposal is exempt from the General Conformity Rule requirement to prepare a full Conformity Determination. This decision is also based on the fact that increased emissions associated with private operation of the facility will be offset by decreased emissions from reduced DLA activity (i.e., the "net emissions" of each criteria pollutant will be below the General Conformity Rule de minimis threshold levels).[1]

Proponent: Defense Logistics Agency, Defense Distribution Depot, Memphis, TN 38114.

Responsible Official: Christine E Kartman — 9/12/96

Christine Kartman
BRAC Environmental Coordinator

[Date]

[1]DA. 1995. *Department of the Army Guide for Compliance with the General Conformity Rule under the Clean Air Act*. U.S. Army Environmental Center and U.S. Army Center for Health Promotion and Preventive Medicine, Aberdeen Proving Ground, MD.

APPENDIX C

Economic Impact Forecast System (EIFS) Modeling Results

Economic Impact Forecast System (EIFS) Model and Outputs

The Need for Socioeconomic Impact Assessment

The assessment of socioeconomic impacts resulting from Army actions can be one of the most controversial issues related to the realignment or closure of an installation. The economic and social well-being of a local community can be dependent upon the activities of the installation, and disruptions to the status quo become politically charged and emotion-laden. The objective of a socioeconomic analysis of Army actions is an open, realistic, and documented assessment of the potential effects.

The requirement to assess socioeconomic impacts in EAs or EISs has been a source of legal discussion since the passage of the National Environmental Policy Act (NEPA). While NEPA is predominately oriented toward the biophysical environment, court decisions have supported the need for analysis of socioeconomic impacts when they are accompanied b biophysical impacts.

The Economic Impact Forecast System

The US Army developed the Economic Impact Forecast System (EIFS) with the assistance of many academic and professional economists and regional scientists to address the economic impacts to NEPA and to measure their significance. As a result of its designed applicability, and in the interest of uniformity, EIFS is mandated by ASA (IL&E) for use in NEPA assessment for Base Closure and Realignment. The entire system is designed for the scrutiny of a populace affected by the actions being studied. The algorithms in EIFS are simple and easy to understand, but still have firm, defensible bases in regional economic theory.

EIFS is included as one of the tools of the Environmental Technical Information System (ETIS) and is implemented as an on-line supported by USACERL throughout the University of Illinois. The system is available to anyone with an approved login and password, and is available at all times through toll-free numbers, Telenet, and other commonly-used communications. The ETIS Support Center at the university and the staff of USACERL are available to assist with the use of EIFS.

The databases in EIFS are national in scope and cover the approximately 3,700 counties, parishes and independent cities which are recognized as reporting units by federal agencies. EIFS allows the user to "define" an economic region of influence (ROI) by simply identifying the counties which are to be analyzed. Once the ROI is defined, the system aggregates the data, calculates "multipliers" and other variables used in the various models in EIFS, and prompts the user for input data.

The EIFS Impact Models

The basis of the EIFS analytical capabilities is the calculation of multipliers that are used to estimate the impacts resulting from Army-related changes in local expenditures and/or employments. In calculating the multipliers, EIFS uses the economic base model approach that relies on the ratio of total economic activity to "basic" economic activity. Basic, in this context, is defined as the production or employment engaged to supply goods and services outside the ROI or by federal activities (such as military installations and their employees). According to economic base theory, the ratio of total income to basic income is measurable (as the multiplier)

and sufficiently stable so that future changes in economic activity can be forecast. This technique is especially appropriate for estimating "aggregate" impacts and makes the economic base model ideal for the EA/EIS process.

The multiplier is interpreted as the total impact on the economy of the region resulting from a unit change in its basic sector; for example, a dollar increase in local expenditures due to an expansion of its military installation. EIFS estimates its multipliers using a "location quotient" approach based on the concentration of industries within the region relative to the industrial concentrations for the nation.

The user selects a model to be used from a menu of options. EIFS has models for three basic military activity scenarios: standard, construction, and training. The user inputs those data elements into the selected model which describe the Army action: civilian and military to be moved and their salaries, and the local procurement associated with the activity being relocated. Once these are entered into the system, a projection of changes in the local economy is provided. These are projected changes in sales volume, employment, income, and population. These four "indicator" variables are used to measure and evaluate socioeconomic impacts.

The Significance of Socioeconomic Impacts

Once model projections are obtained, the Rational Threshold Value (RTV) allows the user to evaluate the "significance" of the impacts. This analytical tool reviews the historical trends for the defined region and develops measures of local historical fluctuations in sales volume, employment, income, and population. These evaluations identify the positive and negative changes within which a project can affect the local economy without creating a significant impact.

This technique has two major strengths: (1) RTVs are specific to the region under analysis and (2) are based on actual historical time series data for the defined region. The use of EIFS impact models in combination with the RTV have proven very successful in addressing perceived socioeconomic impacts. The EIFS models and these techniques measuring significance are theoretically sound and have been reviewed on numerous occasions.

PRINCIPAL DATA FOR EIFS MODELING

FIPS*	County	State	'90 Population	Area(sq km)
47157	Shelby	TN	826,330	2,030

*Federal Information Processing System

RATIONAL THRESHOLD VALUES

AREA: 47157 Shelby, Tennessee

All dollar amounts are in thousands of dollars.
Dollar adjustment based on Consumer Price Index (1987=100).

BUSINESS VOLUME (using Non-Farm Income)

YEAR	Non-Farm income	adjusted income	change	deviation	%deviation
1969	2,157,620	6,383,491			
1970	2,303,134	6,433,335	49,844	-178,624	-2.798 %
1971	2,581,661	6,921,343	488,008	259,540	4.034 %
1972	2,944,705	7,628,770	707,426	478,959	6.920 %
1973	3,275,607	7,989,285	360,516	132,048	1.731 %
1974	3,602,551	7,917,695	-71,591	-300,058	-3.756 %
1975	3,779,891	7,605,414	-312,280	-540,748	-6.830 %
1976	4,113,078	7,834,434	229,020	552	0.007 %
1977	4,584,307	8,200,907	366,472	138,005	1.762 %
1978	5,218,240	8,668,173	467,266	238,798	2.912 %
1979	5,813,849	8,677,387	9,214	-219,254	-2.529 %
1980	6,360,658	8,358,289	-319,097	-547,565	-6.310 %
1981	6,775,272	8,075,413	-282,876	-511,343	-6.118 %
1982	7,036,712	7,915,311	-160,102	-388,570	-4.812 %
1983	7,588,991	8,284,925	369,613	141,146	1.783 %
1984	8,374,911	8,834,294	549,369	320,902	3.873 %
1985	8,999,803	9,174,111	339,817	111,350	1.260 %
1986	9,680,345	10,031,446	857,334	628,867	6.855 %
1987	10,544,552	10,544,552	513,106	284,639	2.837 %
1988	11,303,119	10,868,384	323,832	95,364	0.904 %
1989	12,118,867	11,118,227	249,843	21,375	0.197 %
1990	12,851,671	11,204,596	86,369	-142,098	-1.278 %
1991	13,360,858	11,189,998	-14,598	-243,065	-2.169 %
1992	14,291,767	11,638,246	448,248	219,781	1.964 %

average yearly change:	228,468
maximum historic positive deviation:	628,867
maximum historic negative deviation:	-547,565
maximum historic % positive deviation:	6.920 %
maximum historic % negative deviation:	-6.830 %
positive rtv:	6.920 %
negative rtv:	-5.122 %

PERSONAL INCOME

YEAR	Personal income	adjusted income	change	deviation	%deviation
1969	2,388,373	7,066,192			
1970	2,583,200	7,215,643	149,450	-154,936	-2.193 %
1971	2,879,691	7,720,351	504,709	200,322	2.776 %
1972	3,244,006	8,404,161	683,810	379,423	4.915 %
1973	3,613,438	8,813,263	409,102	104,716	1.246 %
1974	4,012,806	8,819,354	6,090	-298,296	-3.385 %
1975	4,323,030	8,698,249	-121,104	-425,491	-4.825 %
1976	4,715,834	8,982,541	284,292	-20,095	-0.231 %
1977	5,183,007	9,271,926	289,385	-15,001	-0.167 %
1978	5,867,794	9,747,166	475,240	170,853	1.843 %
1979	6,572,106	9,809,113	61,947	-242,439	-2.487 %
1980	7,329,874	9,631,898	-177,216	-481,602	-4.910 %
1981	7,978,408	9,509,425	-122,472	-426,859	-4.432 %
1982	8,382,769	9,429,436	-79,989	-384,375	-4.042 %
1983	9,040,709	9,869,770	440,334	135,947	1.442 %
1984	9,952,415	10,498,328	628,558	324,172	3.284 %
1985	10,628,536	10,834,390	336,062	31,675	0.302 %
1986	11,506,795	11,924,140	1,089,750	785,364	7.249 %
1987	12,438,032	12,438,032	513,892	209,506	1.757 %
1988	13,391,647	12,876,584	438,552	134,165	1.079 %
1989	14,595,011	13,389,918	513,335	208,948	1.623 %
1990	15,459,841	13,478,502	88,583	-215,803	-1.612 %
1991	16,118,237	13,499,361	20,859	-283,527	-2.104 %
1992	17,274,373	14,067,079	567,718	263,331	1.951 %

average yearly change:	304,386
maximum historic positive deviation:	785,364
maximum historic negative deviation:	-481,602
maximum historic % positive deviation:	7.249 %
maximum historic % negative deviation:	-4.910 %
positive rtv:	7.249 %
negative rtv:	-3.290 %

EMPLOYMENT

YEAR	Employment	change	deviation	%deviation
1969	353,185			
1970	350,143	-3,042	-10,947	-3.100 %
1971	363,491	13,348	5,443	1.554 %
1972	386,604	23,113	15,208	4.184 %
1973	400,864	14,260	6,355	1.644 %
1974	409,079	8,215	310	0.077 %
1975	397,959	-11,120	-19,025	-4.651 %
1976	399,551	1,592	-6,313	-1.586 %
1977	413,357	13,806	5,901	1.477 %
1978	431,602	18,245	10,340	2.501 %
1979	442,273	10,671	2,766	0.641 %
1980	441,703	-570	-8,475	-1.916 %
1981	433,926	-7,777	-15,682	-3.550 %
1982	424,973	-8,953	-16,858	-3.885 %
1983	434,184	9,211	1,306	0.307 %
1984	451,815	17,631	9,726	2.240 %
1985	462,193	10,378	2,473	0.547 %
1986	476,386	14,193	6,288	1.360 %
1987	494,143	17,757	9,852	2.068 %
1988	513,963	19,820	11,915	2.411 %
1989	530,755	16,792	8,887	1.729 %
1990	537,978	7,223	-682	-0.129 %
1991	532,995	-4,983	-12,888	-2.396 %
1992	535,006	2,011	-5,894	-1.106 %

average yearly change:	7,905
maximum historic positive deviation:	15,208
maximum historic negative deviation:	-19,025
maximum historic % positive deviation:	4.184 %
maximum historic % negative deviation:	-4.651 %
positive rtv:	4.184 %
negative rtv:	-3.116 %

POPULATION

YEAR	Population	change	deviation	%deviation
1969	714,300			
1970	723,800	9,500	3,826	0.536 %
1971	733,500	9,700	4,026	0.556 %
1972	741,100	7,600	1,926	0.263 %
1973	734,600	-6,500	-12,174	-1.643 %
1974	742,100	7,500	1,826	0.249 %
1975	742,300	200	-5,474	-0.738 %
1976	747,300	5,000	-674	-0.091 %
1977	751,600	4,300	-1,374	-0.184 %
1978	758,000	6,400	726	0.097 %
1979	768,700	10,700	5,026	0.663 %
1980	779,100	10,400	4,726	0.615 %
1981	785,200	6,100	426	0.055 %
1982	786,800	1,600	-4,074	-0.519 %
1983	789,600	2,800	-2,874	-0.365 %
1984	793,000	3,400	-2,274	-0.288 %
1985	801,100	8,100	2,426	0.306 %
1986	802,000	900	-4,774	-0.596 %
1987	809,700	7,700	2,026	0.253 %
1988	818,400	8,700	3,026	0.374 %
1989	823,000	4,600	-1,074	-0.131 %
1990	828,000	5,000	-674	-0.082 %
1991	836,000	8,000	2,326	0.281 %
1992	844,800	8,800	3,126	0.374 %

average yearly change:	5,674
maximum historic positive deviation:	5,026
maximum historic negative deviation:	-12,174
maximum historic % positive deviation:	0.663 %
maximum historic % negative deviation:	-1.643 %
positive rtv:	0.663 %
negative rtv:	-0.821 %

Project name: DDMT - Preferred Alternative

Default price deflators:

baseline year (ex. business volume)	(CPI - 1987)	= 100.0
output and incomes (ex b.v.)	(CPI - 1993)	= 126.3
baseline year (business volume)	(PPI - 1987)	= 100.0
local services and supplies	(PPI - 1993)	= 115.7
output and incomes (business volume)	(PPI - 1993)	= 115.7

Change in expenditures for services and supplies: $19,300,000
Change in expenditures for local services and supplies: $12,826,648.00 (calculated)
Change in military/civilian employment: +1,000
Average income of affected military/civilian personnel: $30,000

********** STANDARD EIFS MODEL FORECAST FOR DDMT PREFERRED ALTERNATIVE **********

Export income multiplier: 2.9815

Change in local

Sales volume	Direct:	$34,922,000	
	Induced:	$69,197,000	
	Total:	$104,119,000	(0.274%)
Employment	Direct:	167	
	Total:	1,498	(0.303%)
Income	Direct:	$3,177,000	
	Total (place of work):	$39,471,000	
	Total (place of residence):	$37,281,000	(0.237%)
Local population		0	(0.000%)
Local off-base population		0	
Number of school children		0	
Demand for housing	Rental:	0	
	Owner occupied:	0	
Government expenditures.....		$1,810,000	
Government revenues		$5,201,000	
Net Government revenues		$3,391,000	

STANDARD EIFS FORECAST MODEL

Project name: DDMT - No Action Alternative

Default price deflators:

baseline year (ex. business volume)	(CPI - 1987)	= 100.0
output and incomes (ex b.v.)	(CPI - 1993)	= 126.3
baseline year (business volume)	(PPI - 1987)	= 100.0
local services and supplies	(PPI - 1993)	= 115.7
output and incomes (business volume)	(PPI - 1993)	= 115.7

Change in expenditures for services and supplies: $579,000
Change in expenditures for local services and supplies: $384,799.44 (calculated)
Change in military/civilian employment: +30
Average income of affected military/civilian personnel: $30,000

********** STANDARD EIFS MODEL FORECAST FOR RE-RUN CARETAKER **********

Export income multiplier: 2.9815

Change in local

Sales volume	Direct:	$1,048,000	
	Induced:	$2,076,000	
	Total:	$3,124,000	(0.008%)
Employment	Direct:	5	
	Total:	45	(0.009%)
Income	Direct:	$95,000	
	Total (place of work):	$1,184,000	
	Total (place of residence):	$1,118,000	(0.007%)
Local population		0	(0.000%)
Local off-base population		0	
Number of school children		0	
Demand for housing	Rental:	0	
	Owner occupied:	0	
Government expenditures.....		$54,000	
Government revenues		$156,000	
Net Government revenues		$102,000	

ACRONYMS AND ABBREVIATIONS

ACM	asbestos-containing material
AIS	Asbestos Identification Survey
BOCA	Building Officials Code Association
BRAC	Base Realignment and Closure
BTU	British thermal unit
BTUH	British thermal units per hour
BOD_5	5-day biochemical oxygen demand
CAA	Clean Air Act
CEHNC	Corps of Engineers Support Center, Huntsville
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CERL	Construction Engineering Research Laboratory
CO	carbon monoxide
dBC	decibel scale
DDMT	Defense Distribution Depot Memphis, Tennessee
DDRC	Defense Distribution Region Central
DDRE	Defense Distribution Region East
DLA	Defense Logistics Agency
DoD	Department of Defense
DOV	Data Over Voice
DRMO	Defense Reutilization Marketing Office
DSN	Defense Subscriber Network
EA	Environmental Assessment
EBS	Environmental Baseline Survey
ECTS	Electronic Custom Telephone Set
EO	executive order
EPA	Environmental Protection Agency
FNSI	Finding of No Significant Impact
FOSL	Finding of Suitability to Lease
Fm	Falaya silt loam
Fs	filled land, silty
ft^3/s	cubic feet per second
gal/day	gallons per day
gpm	gallons per minute
Gr	graded land
ICUZ	Installation Compatibility Use Zone
I-L	Light Industrial
I/I	infiltration and inflow
kW	kilowatt
LBP	lead-based paint
Ldn	day-night noise level
LF	lineal feet
LRA	Local Reuse Authority
MACC	Memphis Area Chamber of Commerce
MCM	thousand circular miles
MDRA	Memphis Depot Redevelopment Agency
MeB	Memphis silt loam 2%-5% slope
MeD2	Memphis silt loam 8%-12% slope
MFD	Memphis Fire Department
mgd	million gallons per day
MLGWD	Memphis Light, Gas and Water Division
mph	miles per hour
MSL	mean sea level
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NGVD	national geodetic vertical datum
NO_2	nitrogen dioxide
O_3	ozone
OPD	Memphis and Shelby County Office of Planning and Development
OPTEMPO	operational tempo
OU	operable unit
PAH	polyaromatic hydrocarbon
Pb	lead
PBX	Public Base Exchange
PCB	polychlorinated biphenyl
PM_{10}	inhalable particulate matter
psig	pounds per square inch gauge
psi	pounds per square inch
RI/FS	Remedial Investigation/Feasibility Study
ROI	region of influence

SIC	Standard Industrial Code	US DOC	U.S. Department of Commerce
SO_2	sulfur dioxide	US DOT	U.S. Department of Transportation
TDEC	Tennessee Department of Environmental Conservation	USFWS	United States Fish and Wildlife Service
UPS	Uninterruptable Power Supply	UST	underground storage tank
US BEA	U.S. Bureau of Economic Analysis	VOC	volatile organic carbon