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U.S. Army Environmental Center

Community Environmental Response Facilitation Act (CERFA) Report

Pontiac Storage Facility
Pontiac, Michigan

Prepared for:

U.S. ARMY ENVIRONMENTAL CENTER
ABERDEEN PROVING GROUND, MARYLAND 21010

Prepared by:

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Commander, U.S. Army Environmental Center
Aberdeen Proving Ground, Maryland 21010

April 1994

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This report presents the results of the Community Environmental Response Facilitation Act (CERFA) investigation conducted by The Earth Technology Corporation (TETC) at Pontiac Storage Facility installation, a U.S. Government property selected for closure by the Base Realignment and Closure (BRAC) Commission under Public Laws 100-526 and 101-510. Under CERFA (Public Law 102-426), Federal agencies are required to identify expeditiously real property that can be immediately reused and redeveloped. Satisfying this objective requires the identification of real property where no hazardous substances or petroleum products, regulated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), were stored for one year or more, known to have been released, or disposed.

The Pontiac Storage Facility is a 31-acre site (more or less) located in Oakland County, Michigan, approximately 25 miles northwest of downtown Detroit. The installation's primary mission is to provide storage for the U.S. Army Tank Automotive Command (TACOM); it is the site of administrative and record keeping departments, as well as the storage place of machinery used to produce military equipment and ordnance. Activities associated with the property that have environmental significance are degreasing and painting.

TETC reviewed existing investigation documents; U.S. Environmental Protection Agency, State, and county regulatory records; environmental data bases; and title documents pertaining to Pontiac Storage Facility during this investigation. In addition, TETC conducted interviews and visual inspections of Pontiac Storage Facility as well as visual inspections of and data base searches for the surrounding properties. Information in this CERFA report was current as of April 1994. This information was used to divide the installation into four categories of parcels: CERFA Parcels, CERFA Parcels with Qualifiers, CERFA Disqualified Parcels, and CERFA-Excluded Parcels, as defined by the Army.

The total BRAC property acreage at Pontiac Storage Facility is 31 acres. Areas of the facility that have no history of CERCLA-regulated hazardous substance or petroleum product release, disposal, or storage are categorized as CERFA Parcels. TETC determined that approximately 25 acres of the 31-acre property fall within the CERFA Parcel category, predominantly in the northern part of the installation.

Areas of the facility that had no evidence of such release, disposal, or storage, but contained hazards not regulated by CERCLA (such as asbestos, radon gas, lead-based paint, unexploded ordnance, radionuclides, or not in-use equipment containing polychlorinated biphenyl) were categorized as CERFA Parcels with Qualifiers. None of the property was identified as CERFA Parcels with Qualifiers.

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LIST OF ACRONYMS

AEC	Army Environmental Center
BRAC	Base Realignment and Closure
BTEX	Benzene, Toluene, Ethylene, and Xylene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
ERIIS	Environmental Risk Information and Imaging Services
GMC	General Motors Corporation
IRP	Installation Restoration Program
IRS	Internal Revenue Service
MDNR	Michigan Department of Natural Resources
mg/kg	Milligram per kilogram
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyl
PNA	Polynuclear Aromatic
POC	Point-of-Contact
ppm	Parts per million
TACOM	Tank Automotive Command
TPH	Total Petroleum Hydrocarbon
μg/g	Micrograms per gram
USAEC	U.S. Army Environmental Center
USATHAMA	U.S. Army Toxic and Hazardous Material Agency

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EXECUTIVE SUMMARY

This report presents the results of the Community Environmental Response Facilitation Act (CERFA) investigation conducted by The Earth Technology Corporation (TETC) at Pontiac Storage Facility installation, a U.S. Government property selected for closure by the Base Realignment and Closure (BRAC) Commission under Public Laws 100-526 and 101-510. Under CERFA (Public Law 102-426), Federal agencies are required to identify expeditiously real property that can be immediately reused and redeveloped. Satisfying this objective requires the identification of real property where no hazardous substances or petroleum products, regulated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), were stored for one year or more, known to have been released, or disposed.

The Pontiac Storage Facility is a 31-acre site located in Oakland County, Michigan, approximately 25 miles northwest of downtown Detroit. The installation's primary mission is to provide storage for the U.S. Army Tank Automotive Command (TACOM); it is the site of administrative and record keeping departments, as well as the storage place of machinery used to produce military equipment and ordnance. Activities associated with the property that have environmental significance are degreasing and painting.

TETC reviewed existing investigation documents; U.S. Environmental Protection Agency, State, and county regulatory records; environmental data bases; and title documents pertaining to Pontiac Storage Facility during this investigation. In addition, TETC conducted interviews and visual inspections of Pontiac Storage Facility as well as visual inspections of and data base searches for the surrounding properties.

Information in this CERFA report was current as of April 1994. This information was used to divide the installation into four categories of parcels: CERFA Parcels, CERFA Parcels with Qualifiers, CERFA Disqualified Parcels, and CERFA-Excluded Parcels, as defined by the Army.

The total BRAC property acreage at Pontiac Storage Facility is 31 acres. Areas of the facility that have no history of CERCLA-regulated hazardous substance or petroleum product release, disposal, or storage are categorized as CERFA Parcels. TETC determined that approximately 25 acres of the 31-acre property fall within the CERFA Parcel category, predominantly in the northern part of the installation.

Areas of the facility that had no evidence of such release, disposal, or storage, but contained hazards not regulated by CERCLA (such as asbestos, radon gas, lead-based paint, unexploded ordnance, radionuclides, or not in-use equipment containing polychlorinated biphenyl) were categorized as CERFA Parcels with Qualifiers. None of the property was identified as CERFA Parcels with Qualifiers.

Areas of the facility, for which there is a history of release, disposal, or storage for one year or more of CERCLA-regulated hazardous substances or petroleum products or had a release of

hazards identified above were categorized as CERFA Disqualified Parcels. Six acres of installation property are identified as CERFA Disqualified Parcels.

Areas on the facility that will be retained by the Federal Government or that have already been transferred by deed are categorized as CERFA-Excluded Parcels. None of the property was identified as CERFA-Excluded Parcels.

The primary objective of CERFA is satisfied by the identification of CERFA Parcels and CERFA Parcels with Qualifiers. As a result, concurrence has been sought from the regulatory agencies on these two categories of parcels. This CERFA Report has been reviewed by the U.S. Army Environmental Center (USAEC), Pontiac Storage Facility, Region V U.S. Environmental Protection Agency, and the Michigan Department of Natural Resources (MDNR). Comments from these organizations have been incorporated into this final report. Any unresolved issues from the regulatory agencies are identified. Concurrence has been received for parcels 2D, 3D, and 4D.

This report contains maps that summarize the categorization of Pontiac Storage Facility on the basis of the above definitions. This Executive Summary should be read only in conjunction with the complete CERFA Report for this installation. The CERFA Report provides the relevant environmental history to substantiate the parcel categorization. This report does not address other property transfer requirements that may be applicable under the National Environmental Policy Act, nor does it address natural resource considerations such as the threat to plant or animal life.

SECTION 1.0

INTRODUCTION

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1.0 INTRODUCTION

This Community Environmental Response Facilitation Act (CERFA) Report for Pontiac Storage Facility was prepared by The Earth Technology Corporation (TETC) under Contract No. DAAA15-91-0009, Delivery Order 0010, for the U.S. Army Environmental Center (AEC), Base Closure Division. The purpose and scope of the work are presented in this section. The sources used to conduct the investigations for the CERFA report are identified in Section 2. Background information for the Pontiac Storage Facility is provided in Section 3. CERFA investigation results are discussed in Section 4. Finally, Section 5 includes maps that provide Pontiac Storage Facility boundaries, land transfers, and delineate the parcels of the facility according to CERFA Parcel identification requirements.

1.1 PURPOSE AND SCOPE

Public Laws 100-526 and 101-510 designated more than 100 Army facilities for closure and realignment. As a result, it became necessary to expedite the environmental investigation and cleanup process prior to the release and reuse of Army Base Realignment and Closure (BRAC) property. The BRAC environmental restoration program was established in 1989 with the first round of base closures (BRAC 88) and continued with subsequent rounds (BRAC 91, BRAC 93, etc.). The BRAC program is similar to the Army's Installation Restoration Program (IRP), but it has been expanded to include such categories of contamination as asbestos, radon, polychlorinated biphenyls (PCBs), and others that are not normally addressed under the IRP program.

The first step in the BRAC environmental restoration program was the preparation of Enhanced Preliminary Assessments (PAs). The term "enhanced" is used to distinguish these assessments from previous IRP PAs: the BRAC PAs are conducted from a property transfer perspective and evaluate substances (e.g., asbestos, radon, PCBs) that are not included in the previous PAs. The Enhanced PAs include reviews of existing installation documents, regulatory records, and aerial photographs; a site visit and visual inspection; and employee interviews. Enhanced PAs were conducted for BRAC 88 and BRAC 91 installations and are currently underway at BRAC 93 installations. An Enhanced PA was prepared for Pontiac Storage Facility in March 1990 by E.C. Jordan, under the direction of USAEC (formerly the U.S. Army Toxic and Hazardous Material Agency [USATHAMA]).

In October 1992, Public Law 102-426, CERFA, amended Section 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and established new requirements for contamination assessment and regulatory agency notification/concurrence for Federal facility closures. CERFA requires the Federal Government to identify property where no CERCLA-regulated hazardous substances or petroleum products were stored, released, or disposed before ending activities on real property owned. The government's assessment of a facility as uncontaminated must be concurred with by the appropriate regulatory agencies (U.S. Environmental Protection Agency on National Priority List bases and the State on non-National Priority List bases). These requirements retroactively affect the Army BRAC 88 and BRAC 91

environmental restoration activities and are being implemented at BRAC 93 sites concurrently with their Enhanced PAs. The primary objective of the CERFA is that Federal agencies expeditiously identify real property that can be rapidly reused and redeveloped. CERFA does not mandate that the Army transfer real property so identified.

TETC was awarded the task to identify real property where no CERCLA-regulated hazardous substances or petroleum products were stored, released, or disposed at 12 BRAC 88 sites. This report presents the findings of this CERFA response for Pontiac Storage Facility, Michigan.

1.2 Definition of Terms

The following definitions are used to categorize and label parcels identified on the installation:

- ★ CERFA Parcel -- A portion of the installation real property for which investigation reveals no evidence of storage for one year or more, release, or disposal of CERCLA hazardous substances, petroleum, or petroleum derivatives and no evidence of being threatened by migration of such substances. CERFA parcels include areas where PCB containing equipment is in operation, but there is no evidence of release. CERFA parcels also include any portion of the installation which once contained related environmental, hazard, or safety issues including unexploded ordnance (UXO) located on firing ranges or impact areas, radon, stored (not in-use) PCB-containing equipment, asbestos contained within building materials, and lead-based paint applied to building material surfaces, but which have since been fully remediated or removed.

- ★ CERFA Parcel with Qualifier(s) -- A portion of the installation real property for which investigation reveals no evidence of storage for one year or more, release, or disposal of CERCLA hazardous substances, petroleum, or petroleum derivatives and no evidence of being threatened by migration of such substances. Parcel does however contain related environmental, hazard, or safety issues including unexploded ordnance (UXO) located on firing ranges or impact areas, radon, radionuclides contained within products being used for their intended purposes, asbestos contained within building materials, lead-based paint applied to building material surfaces, or stored (not in-use) PCB containing equipment.

- ★ CERFA Disqualified Parcel -- A portion of the installation real property for which investigation reveals evidence of a release, disposal, or storage for more than one year of a CERCLA hazardous substance, petroleum, or petroleum derivatives; or a portion of the installation threatened by such a release or disposal. CERFA Disqualified Parcels also include any portion of the installation where PCB, asbestos containing material, lead-based paint residue, or any ordnance has been disposed of, and any locations where chemical ordnance has been stored. Additionally, CERFA Disqualified Parcels include any areas in which CERCLA hazardous substances or petroleum products have been released or disposed of and subsequently fully remediated.

- ★ CERFA Excluded Parcel -- A portion of the installation real property retained by the Department of Defense, and therefore not explicitly investigated for CERFA. CERFA Excluded Parcels also include any portions of the installation which have already been transferred by deed to a party outside the Federal Government, or by transfer assembly to another Federal agency.

The following labels are used in conjunction with the identified parcels:

- ★ P = CERFA Parcel
- ★ Q = CERFA Parcel with Qualifier(s)
- ★ D = CERFA Disqualified Parcel
- ★ E = CERFA-Excluded Parcel

Each parcel has been given a unique number to which the appropriate labels are attached. For example, 4P indicates that the fourth parcel is in the CERFA Parcel category.

The presence of hazards not regulated by CERCLA places a parcel in the CERFA Parcel with Qualifier category. This has been indicated by the following labels:

- ★ A = Asbestos
- ★ L = Lead-based Paint
- ★ P = PCB
- ★ R = Radon
- ★ X = Unexploded Ordnance
- ★ RD = Radionuclides

For example, similar to the designation described above, 5Q-L would indicate that the fifth parcel is in the CERFA Parcel with Qualifiers category because of the presence of lead-based paint. Similarly, parcel label 8Q-X/R indicates that the 8th parcel is in the CERFA Parcel with Qualifiers category because of the presence of unexploded ordnance and radon.

The following designations are used to indicate the type of contamination or storage present in a parcel that has been placed in the CERFA Disqualified category:

- ★ PR = Petroleum Release
- ★ PS = Petroleum Storage
- ★ HR = Hazardous Substance Release
- ★ HS = Hazardous Substance Storage

For example, 12D-HR indicates that the twelfth parcel is in the CERFA Disqualified category because of evidence of hazardous substance release.

For all parcels, "(P)" is used to indicate that the presence of a contaminant is possible, but that data are unavailable for verification. For example, 9Q-A(P) indicates that the ninth parcel is in the CERFA Parcel with Qualifiers category because of possible presence (unverified) of asbestos-containing material. Similarly, parcel label 15D-HR/PS/A(P) indicates that the 15th

parcel is in the CERFA Disqualified category based on evidence of a hazardous substance release and petroleum storage. It may also have asbestos-containing material.

1.3 GEOGRAPHICAL AND ENVIRONMENTAL SETTING

Pontiac Storage Facility is located in southern Michigan in the city of Pontiac (Oakland County), just northwest of Detroit, Michigan. Figure 1-1 presents the general location of the installation. The BRAC property, which is the subject of this report, consists of the entire facility of 31 acres. Pontiac Storage Facility is a U.S. Army TACOM facility, and it is located in a mixed residential, commercial, and industrial sector.

1.3.1 Physical Setting

The BRAC property contains a guard shack and the main warehouse facility. A pumphouse and boilerhouse were demolished in early 1993. The main warehouse facility is a 14-acre structure that formerly provided 600,000 square feet of internal storage space for machines used to produce military equipment and ordnance. The facility is divided into seven sections (A thru G). All equipment has been transferred off-site in anticipation of facility closure and proper transfer. The remaining land is composed of a nonpaved access road that surrounds the main warehouse facility and native grasses extending to the property fenceline.

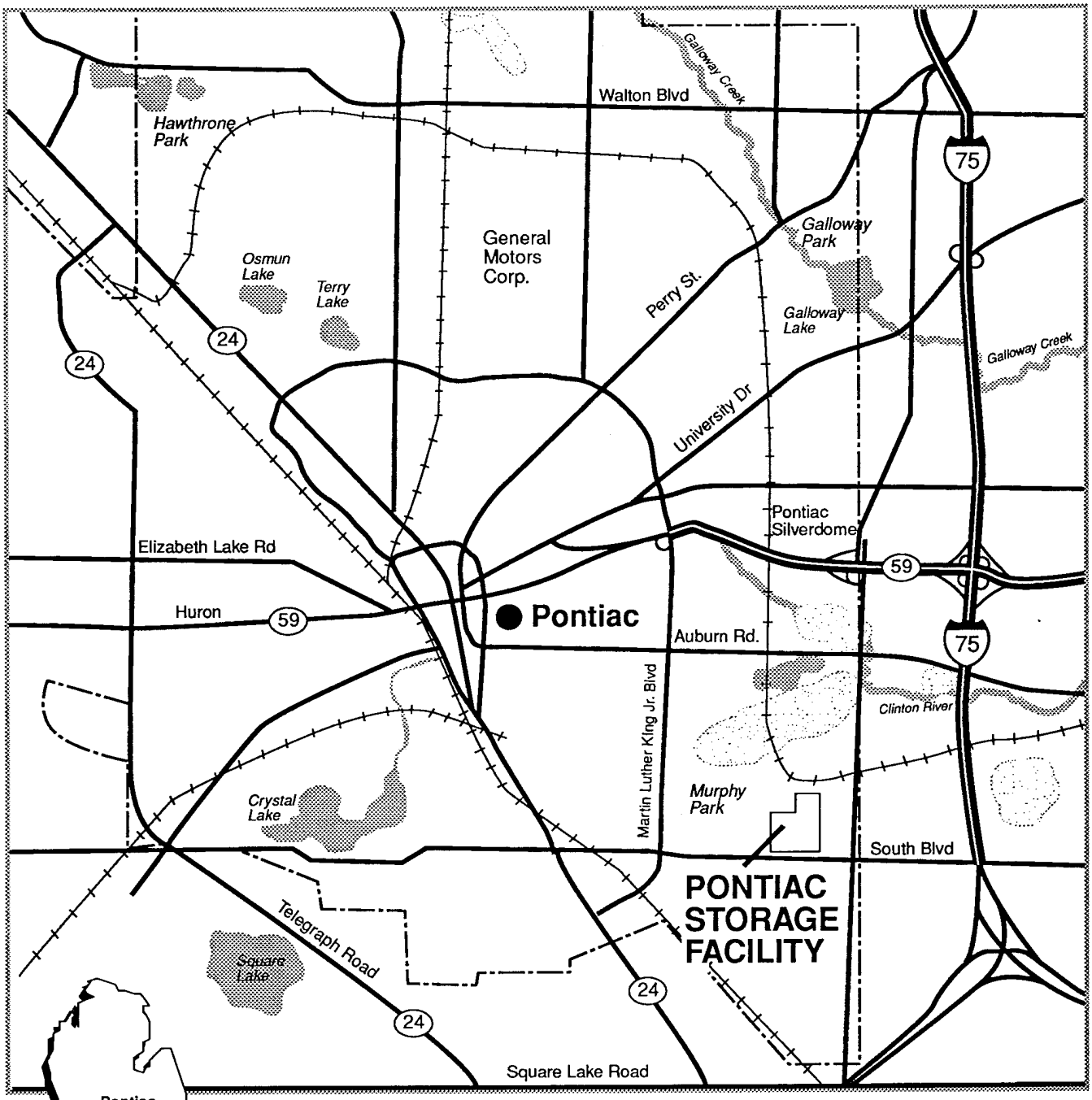
Pontiac Storage Facility is located in a heavy industrial zone. The area is mixed residential, commercial, and industrial. The Pontiac Storage Facility is bordered on the west and north by railway spurs (the western railway spur is abandoned), open land, and some residential properties; to the east there is light industry and an open field; and immediately to the south there is an open field. The General Motors Corporation Pontiac East and Pontiac Central Assembly Plant (henceforth identified as GMC) is located on the south side of South Boulevard, approximately 1,000 feet from Pontiac Storage Facility.

1.3.2 Surface Water

The BRAC property occupies a relatively flat area. Surface water drainage is primarily to the west into a linear depression once occupied by a railroad bed. This depression drains to the north into a 20- to 30-acre marsh that is connected to the Clinton River. Drainage away from the main facility is radial.

1.3.3 Geology and Soils

The U.S. Department of Agriculture, Soil Conservation Service mapped the soils beneath the BRAC property as "urban" or "covered by streets, sidewalks, driveways, parking lots, houses and other structures that so obscure or alter the soils that identification of the soils is not feasible." Other documentation identifies the soils beneath the BRAC property as belonging to the urban Marlette Capac Unit, which makes up about 18 percent of Oakland County. Marlette Capac Unit is composed of approximately 60 percent urban land, 20 percent Marlette soils, 12 percent Capac soils, and 8 percent soils of minor extent.



General Location of Pontiac Storage Facility, Pontiac, Michigan

Figure 1-1

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1.3.4 Hydrogeology

The hydrology beneath the BRAC property has not been characterized extensively. The Enhanced PA for Pontiac Storage Facility, Pontiac, Michigan (March 1990) reported that the BRAC property is underlain by 30 feet of primarily sandy clays with some clayey sands. Boring logs during construction of the facility indicate that water was encountered 3 feet below ground surface.

During the Site Investigation, soils no more than 40 feet below ground surface were investigated; these consisted predominantly of brown clayey silts grading to grey sandy silts and silty clays. Waterbearing sand and gravel lenses were encountered between 0 to 20 feet (shallow perched zones). The distribution depth and extent of these shallow sand and gravel lenses are highly variable throughout the site. It is unknown to what extent these lenses are hydraulically connected.

A more in-depth study of the hydrogeology beneath GMC was conducted. This facility is immediately south and southwest of the BRAC property; beneath it, there are unconsolidated deposits of 230 feet of clay till, which contain several small, discontinuous sand lenses, and one 10- to 25-foot-thick sand aquifer 150 feet below ground surface. The clay till is underlain by a 40-foot-thick sand and gravel aquifer. Water levels in the two aquifers were measured at 68 to 70 feet below the ground surface.

Potable water has been supplied to the Pontiac Storage Facility by the city of Pontiac since 1985. Prior to that time, potable water was supplied by two water supply wells on the facility property and stored in the water tower on the site. The city of Pontiac also supplies the neighboring industrial activities. The nearest known groundwater wells to Pontiac Storage Facility that still provide potable water are located approximately 0.5 to 0.75 of a mile southwest. One well, located on GMC property, provides both cooling water and drinking water. Two other wells located within the residential subdivision south of GMC supply drinking water to that subdivision. These wells draw water from more than 150 feet, most likely from the regional aquifer that flows to the southeast.

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SECTION 2.0

SCOPE OF INVESTIGATION

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2.0 SCOPE OF INVESTIGATION

The scope of this CERFA investigation followed the protocol established in Public Law 102-426 supplemented by Department of Defense Policy on the Implementation of CERFA dated May 19, 1993. This section describes the sources that were used during the CERFA investigation conducted for Pontiac Storage Facility. Relevant information documents available from previous environmental studies are presented. Findings from Federal, State, and local government regulatory records, installation documents, aerial photographs, and personnel interviews are addressed. The visual inspection methods used during the site survey are identified.

2.1 EXISTING DOCUMENTS

Existing investigation documents and aerial photographs were reviewed to evaluate pertinent information that could be used as part of the CERFA report. These documents are summarized below and listed in Appendix A, "Reference List for Pontiac Storage Facility." Primary source documents containing CERFA criteria information include the Enhanced PA and the Environmental Investigation/Risk Assessment, which are summarized in Table 2-1.

2.1.1 Installation Assessment of Pontiac Storage Facility Report No. 179, (May 1979)

Prepared in May 1979, Report No. 179 provides an assessment of the quality of the facility's use, storage, treatment, and disposal of toxic and hazardous materials and defines those conditions that may adversely affect health and welfare or result in environmental degradation. The report focussed on installation history, the environmental setting, property leases, legal actions, past and current installation operations, disposal operations, and water quality. There were 15 findings as a result of this report. On the basis of available records and interviews, the report concluded that there was no evidence of contaminant migration due to past activities at Pontiac Storage Facility; however, the aboveground fuel oil tank and aboveground gasoline tank do not have secondary containment, presenting a potential for contaminant migration through the surface. The report recommended that a survey by USATHAMA not be conducted and that the aboveground fuel oil tanks and gasoline tanks be bermed.

2.1.2 Enhanced Preliminary Assessment Report, Pontiac Storage Facility (March 1990)

The Enhanced Preliminary Assessment concluded that there were several environmentally significant operations at the facility and adjacent properties to warrant further investigation (see Table 2-1). The following recommendations were made for correcting or further investigating significant environmental operations:

- ★ Investigate the extent of observed releases at the aboveground heating oil and gasoline storage tanks.
- ★ Prevent future releases from aboveground tanks by using secondary containment or by removing the tanks.

TABLE 2-1
SUMMARY OF ENHANCED PRELIMINARY ASSESSMENT AND ENVIRONMENTAL INVESTIGATION/RISK ASSESSMENT/ALTERNATIVES ASSESSMENT REPORT, PONTIAC STORAGE FACILITY, MICHIGAN

CERFA Label	Enhanced Preliminary Assessment, March 1990	Environmental Investigation/Risk Assessment, December 1993
Asbestos	Mentions potential asbestos sources, their locations, estimated quantities and relative condition.	An asbestos survey has been conducted and most asbestos-containing material has been removed at this time.
Lead-based paint	Enhanced Preliminary Assessment recommended a wipe sampling and analysis program should be prepared and implemented in the maintenance area of Section C in an effort to determine if the walls, floor, and rafters of Section C have been impacted by lead-containing paint overspray. No recommendation regarding a lead-based paint survey of the building's walls is mentioned.	Lead-based paint residual in paint and solvent use area was addressed. Lead-based paint building survey was conducted in early 1992 and two buildings have been demolished because of the amount of lead-based paint in them.
PCBs	Addressed PCB analytical results for equipment in storage. Recommended a PCB wipe sampling survey for main facility. Pontiac Storage Facility was developing a program to sample and analyze its transformers.	PCB survey has been conducted, including both transformers and wipe samples. No PCBs were detected.
Radon	Not within the scope of the investigation.	Radon survey has been conducted. Radon detected below USEPA action level of 4.0 picoCuries per liter.
Unexploded ordnance	Not within the scope of the investigation.	Not within the scope of the investigation. According to the USAEC representative for Pontiac Storage Facility this item was evaluated during the Environmental Investigation process. It was determined that it represented minimal presence and therefore did not represent a significant environmental risk and therefore was not addressed within the scope of the investigation.
Radionuclides	Not within the scope of the investigation.	Not within the scope of the investigation. According to the USAEC representative for Pontiac Storage Facility this item was evaluated during the Environmental Investigation process. It was determined that it represented minimal presence and therefore did not represent a significant environmental risk and therefore was not addressed within the scope of the investigation.
Petroleum release/ disposal	Known and suspected petroleum releases are identified and discussed.	Petroleum releases are discussed in conjunction with underground and aboveground storage tanks on the facility. Soil sampling and remediation is discussed in this report.
Petroleum storage	Addresses underground storage tanks on adjacent properties and on the site. Identifies three aboveground storage tanks and makes observations.	Underground storage tanks on site removed in late 1992. One aboveground storage tank remains at site; two have been removed.

TABLE 2-1
SUMMARY OF ENHANCED PRELIMINARY ASSESSMENT AND ENVIRONMENTAL INVESTIGATION/RISK ASSESSMENT/ALTERNATIVES ASSESSMENT REPORT, PONTIAC STORAGE FACILITY, MICHIGAN

Continued

CERFA Label	Enhanced Preliminary Assessment, March 1990	Environmental Investigation/Risk Assessment, December 1993
Hazardous release/disposal	Identified potential areas.	Sampling of those areas was described; it was determined that there was no significant environmental risk.
Hazardous storage	Identifies two areas as hazardous substance storage and use areas.	Areas further described.

Key: PCB = Polychlorinated Biphenyl
USEPA = U.S. Environmental Protection Agency
CERFA = Community Environmental Response Facilitation Act
USAEC = U.S. Army Environmental Center

- ★ Test the tightness of the 1,000-gallon heating oil underground storage tank and/or sample the surface soil.

- ★ Sample subsurface soil around the former 10,000-gallon heating oil underground storage tank and septic system.

- ★ Obtain additional information on approximately 100 underground storage tanks located within a 0.5-mile radius of the facility to determine their current or potential impact on Pontiac Storage Facility property.

- ★ Develop an asbestos sampling program.

- ★ Develop a lead-based paint survey program.

- ★ Develop a PCB wipe sampling and analysis program.

2.1.3 Environmental Investigation Phase I Report -- Site Investigation Report/Risk Assessment Report, (December 1992)

The purpose of the report was to identify any existing environmental contamination at the site, assess the human health and environmental risks associated with any contamination found, and develop/evaluate potential remedial action alternatives. Thirteen areas requiring environmental evaluation within the BRAC property were identified during the Site Investigation.

Table 2-1 shows how the Enhanced PA and the Environmental Investigation/Risk Assessment addressed CERFA-related issues. The baseline Risk Assessment contained an evaluation of potential noncarcinogenic hazards and carcinogenic risks quantitatively for all of the chemicals of concern with the exception of lead and total petroleum hydrocarbon (TPH). Residential and occupational exposure were assessed. However, lead concentrations were evaluated through the use of a lead biokinetic/uptake model.

2.1.4 Environmental Investigation Phase II Report -- Alternatives Assessment Report/Applicable or Relevant and Appropriate Requirements Report, (December 1992)

This report (prepared in December 1992) consisted of a review of environmental contamination at the site and the human health and environmental risk associated with any identified contamination; and an evaluation of potential remedial action alternatives. Thirteen areas requiring environmental evaluation within the BRAC property were also evaluated in terms of compliance with existing applicable or relevant and appropriate requirements.

2.1.5 Environmental Closure Report, (May 1993)

This report describes the remedial activities performed at the facility to make the property suitable for transfer from the Federal Government. These activities included removal of aboveground and underground storage tanks, asbestos abatement, and lead-based paint removal by the Louisville District Corps of Engineers. On the basis of analytical results and field

observations during the soil remediation activities, this report concluded that no further remediation was necessary. A Michigan Type B Closure Certification was granted as a result of the findings in this report. This type of closure certification means that the site has been closed according to the Michigan Type B closure criteria, and there are no restrictions on future uses (see Appendix D for a copy of Michigan Type B closure criteria).

2.1.6 Disposal and Reuse of Pontiac Storage Activity/Draft Environmental Assessment, (September 1993)

This report presents a discussion of the disposal of Pontiac Storage Facility and alternative reuse options. The disposal of the property and its subsequent reuse were found not to have a significant environmental or socioeconomic impact. A formal Finding of No Significant Impact is included as part of this document; an Environmental Impact Statement was not required.

2.2 FEDERAL, STATE, AND LOCAL GOVERNMENT REGULATORY RECORDS

Information regarding permit and compliance status, enforcement actions, and the hazardous waste generator status of Pontiac Storage Facility was obtained through on-site and telephone interviews, an electronic data base search, and record reviews at various Federal, State, and local regulatory agencies.

Record reviews and interviews were conducted at MDNR in Livonia, Michigan and the U.S. Environmental Protection Agency Region V. Federal and Army records made available by AEC and Pontiac Storage Facility were also reviewed.

An electronic data base search of Federal and State records resulted in a Federal/State Data Report and Map containing information from the following data bases:

- ★ National Priority List
- ★ Comprehensive Environmental Response Compensation, and Liability Information System
- ★ Toxic Release Inventory
- ★ Resource Conservation and Recovery Information System Treatment and Storage Facility
- ★ Resource Conservation and Recovery Information System Large Quantity Generators
- ★ Resource Conservation and Recovery Information System Small Quantity Generators
- ★ Civil Enforcement Docket
- ★ Emergency Response Notifications System
- ★ Facility Index System
- ★ Nuclear Facilities
- ★ Leaking Underground Storage Tanks
- ★ Open Dump
- ★ Solid Waste Facility
- ★ Environmental Contamination List.

The search encompassed the properties within a 2.5-mile radius from the center of the installation. A copy of the data base search results are included in Appendix B. A summary of relevant regulatory information obtained during the record review process is presented below.

2.2.1 Permits and Permit Applications

Pontiac Storage Facility records indicate that the facility has never held any permits from regulatory agencies to conduct operations. The facility does not currently use or store hazardous materials or generate any hazardous waste.

2.2.2 Inspection Reports and Enforcement Actions

According to the Enhanced PA dated October 1987, Pontiac Storage Facility was inspected by the Oakland County Health Division, acting as representatives of the MDNR. The inspection was conducted to evaluate the compliance status of the site with respect to Subtitle C of the Resource Conservation and Recovery Act of 1976, as amended; Michigan's Hazardous Waste Management Act, Act 64 of 1979, as amended; and Michigan's Liquid Industrial Waste Hauling Act, Act 136 of 1969, as amended. No areas of noncompliance were identified during the site inspection, and the facility was identified as a nongenerator of hazardous waste.

There were no subsequent documented inspections by regulatory agencies related to Pontiac Storage Facility while the facility was operational. Representatives from the MDNR have been present as observers during underground and aboveground storage tank remediation activities. Facility personnel have kept the MDNR informed of all remediation activities at the site. There were no Notices of Violation or compliance orders on record at the State or Federal agencies for Pontiac Storage Facility related to hazardous substance/waste storage handling.

2.3 INTERVIEWS

TETC conducted a site visit at Pontiac Storage Facility on October 12, 1993, to collect information and interview the facility Point-of-Contact (POC). TETC was represented by Gail Carter.

The facility POC was the only individual interviewed; by the time of the site visit, all personnel associated with the facility had been transferred out of Pontiac Storage Facility. The facility had not stored equipment for approximately 3 years. In addition, TETC visited regulatory agencies in Chicago, Illinois, and Livonia, Michigan, to obtain information not available at the installation. A complete list of the agencies visited or contacted and interviewees is provided in Table 2-2.

2.4 VISUAL INSPECTIONS

During the site visit, visual inspections were conducted throughout the facility and at adjacent properties. The purpose was to confirm findings reported in previous studies and information collected through interviews, as well as to identify new areas of concern. The visual inspection consisted of automobile drive-through and walk-through surveys of areas in which CERCLA-

TABLE 2-2
LIST OF PERSONNEL INTERVIEWED, PONTIAC STORAGE FACILITY, MICHIGAN

Reference	Name/Phone	Location	Dates of Employment	Job Position
a	Prentis Parker (313) 574-6615	U.S. Army Tank Automotive Command, Pontiac Storage Facility	1991 to present	Environmental Specialist
b	Terri Harmon (517) 322-1924	Michigan State Police Fire Marshall Division	October 1988 to present	Freedom of Information Act Contact
c	Duane Louton (313) 338-3700	Duane's Mobil Service Center	October 1988 to present	Service Center Manager
d	John Figurski (313) 332-9300	Auburn Pontiac	September 1993 to present	Service Manager
e	Thomas M. Reuter (313) 334-9941	F.W. Moote Electrical, Inc.	August 1959 to present	Secretary
f	Arlene Williams (313) 953-1464	Michigan Department of Natural Resources, Livonia, Michigan	August 1989 to present	File Clerk

regulated and non-regulated substances may be stored, released, or disposed. During the visual inspection, contamination sources were noted and leaks, spills, and other evidence of releases were observed and quantified; no samples were collected.

2.4.1 Inspection of Pontiac Storage Facility

Evidence was gathered regarding current or past contamination with the following substances:

Asbestos-containing material: The presence of asbestos-containing material at Pontiac Storage Facility is identified in the Environmental Investigation/Alternatives Assessment Phase Report.

Lead-based paint: A lead-based paint survey was conducted at Pontiac Storage Facility. The pumphouse and boilerhouse were found to have lead-based paint. These buildings were demolished and the debris moved to a landfill offsite.

Polychlorinated Biphenyls: PCB-containing equipment (electrical transformers and oil-filled switches) at Pontiac Storage Facility was identified in previous investigations. Research regarding the equipment and soil analysis were conducted; it was determined that this electrical equipment does not contain PCBs, and it has not leaked. Several types of equipment that have been stored at Pontiac Storage Facility contained PCB contaminated oils. A wipe/sampling survey has been conducted within the main facility, and no releases of PCB-contaminated oil were found.

Radon: A radon survey had been conducted at Pontiac Storage Facility, and the results indicated that radon levels are less than the U.S. Environmental Protection Agency action level of 4.0 picoCuries per liter.

Unexploded ordnance: There are no locations of unexploded ordnance at Pontiac Storage Facility.

Radionuclides: Installation personnel were interviewed and installation files searched to obtain data on radioactive material storage and use. In addition, the U.S. Army Environmental Hygiene Agency Health Physics Division provided the contractor with information obtained from installation files and U.S. Army Environmental Hygiene Agency archival report files. This information included Nuclear Regulatory Commission licenses and Department of the Army Radioactive Material Authorizations, and U.S. Army Environmental Hygiene Agency reports on radioactive material decommissioning.

Petroleum release or disposal: Areas of potential releases or disposal that were identified in the Enhanced PA, the Environmental Investigation/Risk Assessment, and any closure documentation were inspected visually. Evidence of discoloration or spills was noted, and well locations identified in the document reviews were observed. Information on storage tanks and pipelines gathered through document reviews and searches, including location, volume, past and present contents, and evidence of removal actions, was verified during the inspections to the extent possible. Evidence of excavation and removal, including changes in vegetation patterns,

rectangular areas of disturbed soil filled with gravel, and pieces of polyurethane lining protruding above the ground surface, were noted.

Petroleum storage: Petroleum storage occurred in underground and aboveground storage tanks. Locations of former and current tanks were inspected.

Hazardous substance release or disposal: Areas of potential releases that were identified during document reviews and records search were inspected visually. Evidence of discoloration, spills, or releases were noted, as well as any oil sheen on nearby bodies of water.

Hazardous substance storage: Areas of hazardous substance storage that were identified in the Enhanced PA and the Environmental Investigation/Risk Assessment were inspected visually. No hazardous substances are currently stored at the facility.

2.4.2 Inspection of the Adjacent Property

A visual inspection of the adjacent property was conducted. Prior to the site visit, a data base search was performed for the area adjacent to Pontiac Storage Facility within a 2.5-mile radius to identify small and large quantity waste generators, underground storage tanks, and leaking underground storage tanks. Both Federal and State data bases were searched (see part 2.2 of this report). Information obtained from the search was verified through visual inspections. Possible areas of environmental concern were visually inspected to determine their potential for contamination.

2.5 TITLE DOCUMENTS

TETC conducted a review of tract maps and transfer documents to identify the former property owners of the BRAC property at the time of its transfer to the Army. The purpose of this review was to determine the property's prior use and environmental condition at the time of its transfer. This review did not result in additional information. Previous ownership and the dates of transfer to the Army are indicated on Figure 5-2.

2.6 NEWSPAPER ARTICLES AND MEDICAL RECORDS

A search of Pontiac Storage Facility, U.S. Environmental Protection Agency, and State records did not reveal any newspaper articles or medical records that are relevant to this report.

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SECTION 3.0
PROPERTY BACKGROUND INFORMATION

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3.0 PROPERTY BACKGROUND INFORMATION

This section presents an overview of past and current operations at Pontiac Storage Facility and a discussion of environmental changes associated with the facility. It addresses activities relevant to waste management practices and significant environmental incidents that occurred since the Enhanced PA was conducted.

3.1 GENERAL BACKGROUND

The construction of Pontiac Storage Facility began in May 1955 and was completed in June 1956. The facility has been used predominantly to store manufacturing equipment used in the production of tanks and ordnance; it also provided degreasing and painting operations for the various types of equipment stored at the facility.

Upon its completion and until 1964, Pontiac Storage Facility was a government-owned, contractor-operated facility. Operating contractors during this period included GMC, Truck and Coach Division (1956 through 1958); General Riggers and Erectors, Inc. (1959); Mark-Pack Michigan, Inc. (1960 through 1962), and Uni-Service Corporation (1963 and 1964). In 1964, Pontiac Storage Facility became a government-owned, government-operated facility and was assigned to the U.S. Army Mobility Command; in 1967, it was reassigned to TACOM, and in 1984, it became a contractor-operated facility once again. Serv-Air, Inc., a subsidiary of E-Systems, Inc., has operated at the facility since 1984.

3.1.1 Past Activities

Maintenance operations at Pontiac Storage Facility (such as degreasing, painting, and refueling forklifts used at the facility) support its mission. Facility support functions include administration offices and a fire prevention system using a 500,000-gallon aboveground storage tank.

Storage of equipment: The warehouse has approximately 600,000 square feet of storage area. In the past, equipment associated with the manufacturing of tanks, Army vehicles, and ordnance equipment, such as boring machines, turning machines, drilling machines, gear shapers, lathes, welders, positioners, hydraulic presses, and forging machines was stored at the facility. The main facility has seven sections identified as Sections A through G. Each section had its own dehumidifier (See Figure 5-1 for Pontiac Storage Facility Section Identification).

Record keeping: Information about the equipment stored at Pontiac Storage Facility, filed in the office area located in Section E, included the type of machinery, number of pieces associated with the equipment, shipment papers, and storage location within the warehouse. These files also included information on equipment with hydraulic oil and/or oil coolant systems, such as the analytical results from oil samples for PCB analytes. The office area was heated with heating oil from a 1,000-gallon aboveground storage tank located directly adjacent to Section E. More recently, the Internal Revenue Service (IRS) used the office area to store files; the last remaining files were removed in January 1993.

Degreasing operations: Prior to 1990, the degreasing of machinery took place in the maintenance area of Section C within the main facility and consisted of spraying the machinery with a volatile solvent (5 percent tetrachloroethylene, 25 percent dichloromethane, and 70 percent stoddard solvent) and brushing solvent into those areas not sufficiently cleaned during spraying. Degreasing was conducted over large pans in which the sprayed solvent was allowed to fall and evaporate. Following evaporation, residues (such as oil, grease, dirt, and paint chips) remaining in the drip pans were removed with rags and disposed of with the general refuse. The maintenance area of Section C was heated with heating oil from a 1,000-gallon underground storage tank located directly adjacent to the Section C, along the east side of the building.

Painting machinery: Equipment was painted in the maintenance area of Section C within the main facility. Curtains were placed behind the unit being painted to collect/control paint overspray; when they became loaded with paint overspray, they were removed and disposed of with the facility's general refuse offsite. The records do not indicate how liquid paint wastes were disposed.

Refueling activities: Throughout the facility, forklifts were used to move stored equipment. A 300-gallon aboveground storage tank and the associated pumping system containing unleaded gasoline was located east of Section A, approximately 50 feet from the building.

Boilerhouse and water storage tank: A 500,000-gallon water storage tank is located north of Section E and west of Section A (see Figure 5-1). A boilerhouse that contained Groundwater Well No. 2, was also formerly located adjacent to the 500,000-gallon water storage tank. Groundwater was pumped to the water storage tank to be used as potable water and for fire fighting activities. (Pontiac Storage Facility is connected to the city of Pontiac water system, making the massive storage tank obsolete.)

3.1.2 Current Activities

Operations at Pontiac Storage Facility ended at about the time the Enhanced PA investigation was conducted in Fall of 1989. The equipment observed at Pontiac Storage Facility in 1989 was removed in 1990 in anticipation of the facility closing. At present, no items are stored at the facility. The IRS recently removed files that had been stored in the office area.

3.2 Environmental Changes at Pontiac Storage Facility

A number of environmentally significant changes have occurred at Pontiac Storage Facility since the Enhanced PA. Equipment storage and maintenance activities have not taken place on the facility since 1990. No environmentally significant areas have expanded in size, but a number of remediation efforts have been conducted. These changes were identified during the Environmental Investigation/Alternative Assessment and during the CERFA site visit and are discussed in greater detail in Section 4.5.

SECTION 4.0

INVESTIGATION RESULTS

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4.0 INVESTIGATION RESULTS

This section describes the results of the CERFA investigation. The first part describes all areas within the BRAC property that have been addressed in reports prior to the CERFA investigation, and the second part describes all areas within the BRAC property that have not been addressed in previous reports. The third part identifies adjacent properties that may be potential sources of contamination. The fourth part describes areas containing items not regulated by CERCLA, and the fifth part describes areas where remediation has occurred. Part six describes real property within the BRAC property that will be retained by the Army.

4.1 PREVIOUSLY IDENTIFIED AREAS REQUIRING ENVIRONMENTAL EVALUATIONS

This part describes both existing areas requiring environmental evaluations and those that have undergone change.

4.1.1 Existing Areas Requiring Environmental Evaluations

Table 4-1 lists all areas within the BRAC property addressed prior to the CERFA investigation. These areas requiring environmental evaluations were identified in the Environmental Investigation/Risk Assessment, the Environmental Investigation Phase II/Alternatives Assessment, and the Base Closure Report. The Environmental Investigation/Risk Assessment identified the areas requiring environmental evaluations, the samples taken at each site, the analyses from the samples, and the carcinogenic and noncarcinogenic risk associated with each site for future residential and occupational receptors. The risk is shown in the last column in Table 4-1. The Environmental Investigation/Alternatives Assessment and Base Closure Report also describe the 14 areas requiring environmental evaluations and the remediation work that has been conducted at each area requiring environmental evaluation.

1,000-gallon heating oil underground storage tank: This tank was located adjacent to the maintenance area in Section C of the main facility and was removed in 1992. During the Environmental Site Investigations, four soil samples were collected from the excavation pit, analyzed, and found to have TPH levels above background. The highest level of TPH (909 parts per million (ppm)) was found in the sidewall of the excavation proximity to the vent line. Phenanthrene (1.12 ppm), fluorene (0.44 ppm), and 2-methylnaphthalene (1.6 ppm) were also detected in relatively low concentrations in one soil sample.

Former 10,000-gallon heating oil underground storage tank: This steel tank was located in the northwest corner of the site adjacent to the boilerhouse. The tank was removed in 1984, under supervision of a Pontiac Storage Facility representative. No sampling or analyses were conducted at that time. During the Environmental Site Investigations, five samples taken from two soil borings were analyzed. Analyses showed relatively low levels of TPH (26 ppm) at a depth of 5 feet. Lead concentrations were below the background concentration of 31.4 ppm in all five of the soil samples.

TABLE 4-1
PREVIOUSLY IDENTIFIED AREAS REQUIRING ENVIRONMENTAL EVALUATION IN BRAC PROPERTY, PONTIAC STORAGE FACILITY, MICHIGAN

AREEs No.	Name	Coordinate Location (x,y) Figure 5-1	Parcel Number	Source of Information		Risk (Noncarcinogenic -- Hazard Index $\geq$ 1 or Carcinogenic -- Risk $\geq$ 1E-04)
				Enhanced Preliminary Assessment (1990)	Environmental Investigation/Risk Assessment (1993)	
1	1,000 gallon heating oil UST	(5,5)	4D	✓	✓	No
2	10,000 gallon heating oil UST	(2,7)	2D	✓	✓	No RA performed
3	1,000 gallon heating oil AGT	(2,6)	2D	✓	✓	No RA performed
4	300 gallon gasoline AGT	(6,7)	3D	✓	✓	No
5	Asbestos	None	None	✓	✓	No (removed)
6	Storage of drummed material	(3,7)	2D	✓	✓	No
7	Paint/solvent storage and use	(5,5)	4D	✓	✓	No RA performed
8	Equipment storage	Multiple	Multiple	✓	✓	No RA performed
9	Electrical equipment (PCB transformers)	(2,5) (1,3)	1P	✓	✓	No
10	Septic sewer system	(2,6)	2D	✓	✓	No RA performed
11	Radon gas	None	None	✓	✓	No RA performed
13	Drainage ditches	(3,7)	2D	✓	✓	No
14	Dehumidifiers blowdown	None	None	✓	✓	No

Key:

AREE	=	Area Requiring Environmental Evaluation
PCB	=	Polychlorinated Biphenyl
UST	=	Underground Storage Tank
AGT	=	Aboveground Storage Tank
RA	=	Risk Assessment

Note: Figure 5-1 is located at the end of Section 5.

1,000-gallon heating oil aboveground storage tank: This tank is located north and adjacent to the office area within Section E of the main facility. During the Environmental Site Investigations, six surface soil samples were collected near this tank. These samples were screened in the field with an organic vapor analyzer or HNu photoionization detector. The two soil samples with the highest associated readings were then submitted for analysis. TPH levels were detected as high as 14,300 ppm. On the basis of visual observations and the field screening, the depth of TPH contamination in the soil was believed to be less than 3 feet.

300-gallon unleaded gasoline aboveground storage tank: The tank identified as a 600-gallon unleaded gasoline tank in previous reports, was located east of Section A of the main facility. During remediation activities for the Environmental Closure Report, this tank and associated pumping system were removed in 1992 along with the surrounding fill material. Two surface soil samples were taken in the area of the tank. The samples were analyzed for benzene, toluene, ethylene, and xylene (BTEX), polynuclear aromatics (PNAs); and lead. Although no BTEX or PNA compounds were detected, between 3.1 and 39.2 milligram per kilogram (mg/kg) of lead was detected; these levels are far below the MDNR Type B closure criteria of 400 mg/kg.

260-gallon diesel fuel tank: This mobile aboveground storage tank was removed from Pontiac Storage Facility after Phase I of the Environmental Site Investigations. The location or condition of the tank while it was located at the facility is unknown. Following the environmental investigation and a risk assessment, this tank was not considered to be an area requiring environmental evaluation. For this report, the tank was not considered to be an area requiring environmental evaluation either and was not included in Figure 5-1.

Asbestos: An asbestos survey was conducted at the facility. Asbestos-containing material was detected in four areas: the pipe insulation in the boilerhouse, the main facility boiler room, the hot water pipes in the restrooms of the main facility, and the ceiling and floor tiles in the office area of the main facility. These areas requiring environmental evaluation were evaluated qualitatively for risk and found to pose only potential future occupational risk. All identified asbestos-containing material was removed in January 1993.

Storage of drummed material: This area located inside the boilerhouse was used for lubricating oil and roofing tar storage. All materials were removed from the site following the Enhanced PA. As part of the environmental investigation and risk assessment three wipe samples and one concrete chip sample were collected from oil-stained areas of the boilerhouse floor. The samples were analyzed for PCBs; none were detected. Two soil samples were also obtained from beneath the concrete floor in the boilerhouse and were analyzed for metals on the Target Analyte List and PNAs. All metals were below the Michigan Type B closure criteria except for arsenic (which was below background arsenic levels for the facility).

Paint/solvent storage and use: The paint/solvent storage area is within the maintenance area in Section C of the main facility. Paints and solvents were stored along the northern wall of this section and were used within the maintenance area. During sampling activities associated with the Environmental Investigation/Risk Assessment, a paint chip was collected from an apparent spill within the maintenance area, and was analyzed for lead. Lead was detected at 34,800 ppm.

During remediation activities for the Environmental Closure Report, this spill area was "scraped up" and the lead paint chips were properly disposed. No other evidence of paint spills and releases were present in the maintenance area during the CERFA site visit.

Equipment storage: Equipment was stored throughout the main facility. During the Environmental Investigation/Risk Assessment 42 wipe and 7 chip samples were collected from the floors of the main facility where equipment (potentially containing PCB-laden oil) had been stored. No PCBs were detected in any of the wipe samples. In some samples the pesticides PPDDE and PPDDT were detected at very low concentrations (<0.014 ppm and 0.22 ppm, respectively).

Electrical equipment (PCB transformers): There are six transformers at Pontiac Storage Facility: three are large and pad-mounted (owned by the Army) and three are small and pole-mounted (owned by Edison Electric, the local electrical utility company). During the Environmental Investigation/Risk Assessment, nine surface soil samples were taken from the two areas surrounding these transformers and analyzed for PCBs. Although no PCBs were detected, the pesticides PPDDE and PPDDT were detected in most of these samples (0.063 ppm and 0.551 ppm, respectively). According to the facility personnel, there is no history of pesticide/herbicide or fertilizer use at Pontiac Storage Facility. The Army-owned transformers do not contain PCBs; Edison Electric replaced the pole-mounted transformers with non-PCB containing transformers following the Army's inquiry regarding the transformers manufacture date and potential PCB content.

Septic sewer system: The septic system at Pontiac Storage Facility has been inactive since 1977, when the facility was connected to the city of Pontiac's sanitary sewer system. Wastewaters from the facility included sanitary wastes from the office areas restrooms and water from the sinks and floor drains located in the office area. The septic system consisted of a 1,500 gallon concrete septic tank that discharged into a tile leaching field. The septic tank was removed in 1977; the Enhanced PA states that it is not known if the tile leaching field was removed at the same time. (Typically, the tile field is not removed when a septic system is deactivated or when a septic tank is removed.) During the 1970s, solvents such as benzene, methylene chloride, and 1,1,1-trichloroethene were commonly added to septic systems in small quantities (generally less than 5 gallons per year). It is not known if this was the practice at Pontiac Storage Facility. Four samples were taken from two soil borings and analyzed for volatile organic compounds; none were detected in any of the samples.

Radon gas: A radon gas survey was conducted at Pontiac Storage Facility. Twelve alpha track detectors were placed in the facility's four buildings, and they indicated that radon levels were less than the U.S. Environmental Protection Agency action level of 4.0 picoCuries per liter. These radon levels did not warrant further attention.

Drainage ditches: As part of the Environmental Investigation/Risk Assessment, eight sediment samples were collected from the drainage ditches, and analyzed for TPH, volatile organics, lead, and PCBs. Five of the samples were taken from the drainage ditch located east of the main facility, one was taken in the northwest portion of the drainage ditch, just west of the boilerhouse, and two samples were taken along the eastern ditch of the access road from South

Boulevard. TPH levels between 12.4 ppm and 14,800 ppm were detected in all samples. The pesticides PPDDD and PPDDT were detected in low levels (<1.1 ppm and <1 ppm, respectively). Lead was also detected in all samples, with five samples exceeding the background lead level of 31.4 ppm. These lead concentrations were determined to be too low to warrant further action, according to Michigan Type B closure criteria.

Dehumidifiers: As part of the Environmental Investigation/Risk Assessment, a single surface soil sample was collected from below the Section E dehumidifier discharge point. This sample was analyzed for PCBs; none were found, although low concentrations of the pesticide PPDDT were present.

4.1.2 Existing Areas Requiring Environmental Evaluations That Have Expanded in Size

No existing areas requiring environmental evaluations at Pontiac Storage Facility have expanded in size since their identification.

4.2 Additional Areas Identified by the CERFA Investigation

No new environmental concerns were identified at Pontiac Storage Facility through the CERFA investigation.

4.3 Adjacent and Surrounding Properties

The BRAC property is bordered on the west and north by a railway right-of-way. The rail spur to the west is abandoned. Residential properties are located west, beyond the abandoned rail spur. An undeveloped wetland area and residential properties are located north, beyond the abandoned rail spur. Auburn Pontiac (an automobile dealership and service center), F.W. Moote Electric, Inc. (an electric parts service and warehouse center), and a city of Pontiac water storage yard border the facility to the east. Commercial enterprises, including a Mobil gasoline station, are also located to the east. GMC owns the property directly south of the facility; the property is open and undeveloped, and at one time GMC employees used it for parking. Large trailers to haul cars and parts were also parked here. One thousand feet south of the facility is South Boulevard. GMC Pontiac East and Pontiac Central Assembly Plant are located across South Boulevard.

4.3.1 Existing or Potential Pathways of Contamination Migration

Topographic and hydrogeological information of Pontiac Storage Facility (the BRAC property) provided in existing environmental documents was reviewed to assess potential contamination migration pathways onto Pontiac Storage Facility from adjacent properties. This information was used in combination with data on potential contamination sources on adjacent and surrounding property to determine if there were any existing or potential environmental impacts on Pontiac Storage Facility from off-site sources. Contamination source data were obtained through record searches, review of existing environmental reports, personnel interviews, and property site visits.

In general, the potential for the offsite introduction of contamination onto Pontiac Storage Facility is low, however, contaminants may be carried through the groundwater from the underground storage tanks listed in the Enhanced PA and the leaking tanks identified in the data base search. This risk is different for every tank and is dependent on several factors: the tank's age, contents, distance from Pontiac Storage Facility, and the susceptibility to corrosion; the regional groundwater flow patterns; and the geologic conditions beneath each tank. Three wells were drilled and sampled during remedial activities on the site to determine if off-site contamination was affecting the groundwater beneath Pontiac Storage Facility. No contaminants were detected.

4.3.2 Environmental Concerns from Adjacent and Surrounding Properties

In order to identify potential offsite contamination sources for Pontiac Storage Facility, a records search of Federal and State data bases (see Section 2.2) was conducted. The results of this search are provided in Appendix B. The search indicated the following:

- ★ No National Priority List sites are within a 2.5-mile radius.
- ★ One site within a 2.5-mile radius is currently under CERCLA review.
- ★ There are 11 Resource Conservation and Recovery Act large-quantity generators of hazardous waste within a 2.5-mile radius of Pontiac Storage Facility. A K-Mart store, approximately 0.25 miles from the facility, is the closest large-quantity generator.
- ★ There are 53 Resource Conservation and Recovery Act small-quantity generators of hazardous waste within a 2.5-mile radius of Pontiac Storage Facility. Two of these small-quantity generators, Auburn Pontiac, an automobile and service center, and F.W. Moote Electric, Inc., a parts and service electrical facility are located adjacent to the site.
- ★ According to the data base search, there are 14 leaking underground storage tanks located within a 0.5-mile radius of Pontiac Storage Facility. Three of these tanks have been removed, and groundwater monitoring is being conducted on the site.

During the Enhanced PA, there were over 100 underground storage tanks located within a 0.5-mile radius of the facility. According to the data base search, 14 of these tanks are leaking. During the Environmental Investigation and Risk Assessment process, three monitoring wells were installed at the site to determine the presence of contaminants from possible off-site sources. Three groundwater samples from these wells were analyzed, in addition to 12 soil samples collected from the borings. The groundwater samples were analyzed for TPH, volatile organic compounds, and lead. Lead was detected at a concentration of 0.026 ppm in one well, which is above the Michigan Type B closure criteria of 0.004 ppm but below the maximum contaminant level of 0.05 ppm. Carbon disulfide and acetone were each detected at low concentrations; their presence is believed to be the result of laboratory contamination. Soil samples were analyzed for TPH, volatile organic compounds, and lead, and the surface sample

also was analyzed for PCBs. TPH was detected in some samples, with the highest concentration being 97.8 ppm. Lead was also detected, but it was below the background level for these soils.

During the CERFA site visit, the following three adjacent properties were visited. Following the site visit, information regarding the tanks on these three properties was requested from the MDNR in Livonia.

- ★ F.W. Moote Electric, Inc., had the underground storage tank on its property removed in 1991. According to the facility representative, the tank was not leaking, although there was documented soil contamination from the routine spillage of product during filling activities. This site closed according to Michigan Type B Closure Certification by the MDNR.

- ★ Auburn Pontiac had three leaking underground storage tanks, which were removed as part of the purchase of the facility from the former owner. The State is monitoring the groundwater at this facility.

- ★ Duane's Mobil Service Center (at the corner of Opdyke Road and South Boulevard), which is over 0.25 miles from Pontiac Storage Facility, was also visited. Evidence of soil contamination was discovered during installation of spill containment and secondary vapor recovery systems at this site. A soil vapor extraction system/groundwater recovery system has been proposed for this site. At this time, the State is monitoring the groundwater at this facility.

GMC refused to grant written permission of access to its facility. Review of file material at the State office regarding underground storage tanks at GMC show that the State is involved in ongoing remediation and monitoring activities at this facility. GMC's leaking tanks are located approximately 0.5 miles from Pontiac Storage Facility. On the basis of the known hydrogeologic formations in the area, the perched water zones and unconsolidated clay deposits, and the distance from Pontiac Storage Facility, these 6 leaking tanks would not be expected to have significant impact on the soil or groundwater at the BRAC property.

The above-mentioned leaking underground storage tanks did not lead to the identification of new areas requiring environmental evaluations on adjacent or surrounding properties of Pontiac Storage Facility. However, the available site characterization and hydrogeologic information was insufficient for the quanitification of the potential environmental impact from GMC, south of the facility.

During the Environmental Investigation/Risk Assessment, PCB 1254 was detected south of the BRAC property, in one sediment sample taken from a storm sewer drain that connects to South Boulevard's stormwater drainage sewers. The sample contained 17 ppm; the Federally recommended PCB action level range for industrial soils is 10 to 25 ppm. This sampling location/storm sewer drain is not on the BRAC property. This sediment sample was taken from adjacent property to the east side of Pontiac Storage Facility's access road. The access road is located on a property easement that belongs to GMC.

4.4 Related Environmental, Hazards, and Safety Issues

Military installations frequently contain issues that the USAEC believes fall outside of the provisions of CERFA. For example, while a release of lead-based paint onto the ground may be a CERCLA concern, the application of lead-based paint to a building surface is generally not. However, a lead-based paint applied to buildings may represent a safety hazard to young children. Similarly, other substances or materials commonly applied to or found in buildings (for example, radon and asbestos) may not be explicitly regulated under CERCLA, but may require a notice to potential transferees and lessees that they exist.

USAEC has sought to balance the statutory requirements of CERFA with the law's intent to identify uncontaminated property to the public which can be expeditiously reused. Notice has been provided for those parcels which appear to be uncontaminated under the definition provided in CERFA, but which may contain environmental, hazard, or safety issues. Buildings which contain asbestos-containing materials, lead-based paint, or naturally occurring radon fall into this category and are identified as "CERFA Parcels with Qualifiers" in this CERFA report. Parcels which contain stored (not in use) equipment which contain some level of PCB oil, stored low level radionuclide-containing equipment such as dials and weapon site posts, and unexploded ordnance are also designated "CERFA Parcels with Qualifiers".

In those cases, however, where for example, asbestos or PCBs have been disposed in the environment, the parcel has been identified as "CERFA Disqualified". In this example, the designation indicates that a CERCLA hazard may exist at this location. The following discussion addresses the presence of asbestos-containing material, lead-based paint, PCB storage, radon, unexploded ordnance, and radionuclides.

4.4.1 Asbestos

A survey established that asbestos was present in two of the original four buildings on the site. All asbestos-containing material has been removed from Pontiac Storage Facility.

4.4.2 Lead-based Paint

On the basis of a survey conducted in 1992, three of the four buildings at Pontiac Storage Facility were identified as containing lead-based paint. Paint chips from the boilerhouse and pumphouse contained lead at 6,310 mg/kg and 3,170 mg/kg, respectively. The fire walls of the main facility showed lead levels of 219 mg/kg. Because of the high lead content of the paint in the boilerhouse and pumphouse, these structures were demolished in late 1992. The guidelines of the Department of Housing and Urban Development state that paint is lead-based if its lead content is 0.5 percent by weight or greater (equivalent to 5,000 micrograms per gram (μg/g) or greater). The paint on the fire walls of the main facility contains lead at 21.9 μg/g, which is not considered lead-based.

4.4.3 Polychlorinated Biphenyls

According to the environmental reports and the facility POC, only six transformers are located on Pontiac Storage Facility. The three pad-mounted transformers are owned by the U.S. Army and do not contain PCBs; these transformers are in good working condition. The three pole-mounted transformers owned by Edison Electric, were replaced with new ones within the last 5 years. Although the old transformers were working properly and not leaking, Edison Electric has a retroactive program to replace all "older" transformers. Wipe samples and chip concrete samples were taken from the floor of the main facility where there was evidence of minor oil releases from stored equipment. These samples were analyzed for PCBs; none were detected. PCBs are not considered an environmental issue at Pontiac Storage Facility.

4.4.4 Radon

A radon survey of Pontiac Storage Facility has been conducted, and the results indicated that radon levels are less than the U.S. Environmental Protection Agency action level of 4.0 picoCuries per liter. Therefore, radon is not considered an environmental issue at the facility.

4.4.5 Unexploded Ordnance

On the basis of all available data, no activities at Pontiac Storage Facility ever involved explosive ordnance; therefore, it is not considered an environmental issue at the facility.

4.4.6 Radionuclides

There are no known activities involving radioactive materials at Pontiac Storage Facility; therefore, radioactive materials are not considered an environmental issue at the facility.

4.5 REMEDIATION EFFORTS

The Army has conducted extensive remedial efforts at Pontiac Storage Facility. All remediation activities at the facility have been developed to meet Michigan Type B Closure Criteria (see Appendix D for the Michigan Type B Closure Criteria). Remedial activities since the Enhanced PA at the site included the following:

- ★ A 1,000-gallon heating oil underground storage tank has been removed along with surrounding contaminated soil.
- ★ A 300-gallon unleaded gasoline aboveground storage tank has been removed with the surrounding contaminated soil.
- ★ All asbestos-containing material at the facility has been remediated.
- ★ All drummed material has been removed.
- ★ Two buildings containing high lead-based paint levels have been demolished.

4.6 CERFA-EXCLUDED PARCELS

CERFA-Excluded parcels consist of those parcels to be retained by the Army or other Department of Defense agency or property that will be transferred to another Federal agency with restrictions by statute. At present, the Army does not have plans to retain any portion of Pontiac Storage Facility.

SECTION 5.0

SITE PARCELIZATION

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5.0 SITE PARCELIZATION

After reviewing investigation documents, regulatory records, personnel interviews, and visual inspections, TETC identified parcels on the installation as CERFA Parcels, CERFA Parcels with Qualifiers, CERFA Disqualified parcels, or CERFA-Excluded parcels in accordance with the definitions in Section 1.2. The parcels are delineated on a map of the BRAC portion of the installation using a 1-acre square grid for boundary definition. The Army chose a 1-acre grid system to aid in the presentation of data gathered during the CERFA report investigation, and to facilitate use of the document by reuse groups and others. The 1-acre grid provided a consistent method to report and locate environmental or other concerns. In the many cases where the concerns are much smaller than 1-acre, the grid system simplifies the depiction of the concern. Accordingly, the extent of many small areas of concern, such as underground storage tank sites, are liberally depicted in the CERFA report. Additionally, the 1-acre grid size was chosen as a generally redevelopable parcel size for either industrial or residential uses. However, the grid does not drive reuse nor restrict it. Reuse decisions should be made irrespective of the grid. The entire 1-acre grid square is colored or shaded to indicate the applicable parcel category on the basis of the history of storage or release for any portion of that square. Parcels are labelled according to a system outlined in Section 1.2 of this report to indicate the applicable parcel category and the contaminating circumstances. Parcel labels are connected to the respective parcel boundaries by a line or are located within the parcel boundaries.

Where CERFA Disqualified parcels and CERFA Parcels with Qualifiers have coincided, the overlapped area has been designated CERFA Disqualified. Labels for any such overlapped parcels also indicate the presence of the qualifying hazards. CERFA-Excluded parcels have been excluded from this investigation of contaminant locations and therefore do not overlap with CERFA Disqualified parcels or CERFA Parcels with Qualifiers. Structures within CERFA Disqualified parcels that contain qualifying safety hazards are designated with the applicable qualifying label, where map scale permits this level of detail.

TETC's investigation and subsequent parcelization of Pontiac Storage Facility determined that approximately 25 acres of the facility fall within the CERFA Parcel category. None of the property was categorized as CERFA Parcels with Qualifiers. Six acres constitute the CERFA Disqualified portion of the installation. None of the property was designated CERFA-Excluded. The CERFA Parcels are located predominantly in the northern portion of the installation.

In determining the applicable parcel categories for the installation property, TETC observed the following guidelines provided by the USAEC for specific circumstances:

- ★ Buildings constructed prior to 1978 are assumed to contain lead-based paint. A similar assumption is made for asbestos in buildings constructed prior to 1985.

- ★ Storage of petroleum products, petroleum derivatives, and CERCLA-regulated hazardous substances will prevent an area from becoming a CERFA Parcel as

long as that storage is for one year or longer. The quantity of substances stored is not relevant to determining the applicable parcel category. However, if the operation requiring such substances is in the immediate area, and the storage is in limited quantities for immediate use, the area is not precluded from being a CERFA Parcel.

- ★ Nonleaking equipment containing less than 50 ppm PCBs does not preclude an area from becoming a CERFA Parcel. Nonleaking, out-of-service equipment with greater than 50 ppm PCBs will place an area in the CERFA Parcel with Qualifier category. An area is designated CERFA Disqualified if there is a known release containing greater than 50 ppm PCBs.

- ★ Areas where there are transport systems or equipment that handle hazardous substances or petroleum products and on which there has been no release, storage, or disposal of these substances are categorized as CERFA Parcels.

- ★ Ordnance disposal locations are designated CERFA Disqualified. This does not include ordnance impact areas that are designated CERFA Parcels with Qualifiers.

- ★ Routine pesticide and herbicide application in accordance with manufacturer's directions and chlorofluorocarbons and halon in operational systems do not preclude an area from becoming a CERFA Parcel.

- ★ Coal storage piles and railroad tracks do not automatically preclude an area from becoming a CERFA Parcel.

5.1 Parcel Designation Maps

Table 5-1 and Figure 5-1 identify the breakdown of Pontiac Storage Facility property according to the criteria for parcel identification under CERFA. Appendix E contains the data bases from which Table 5-1 and Figure 5-1 are generated.

5.2 Tract Map

The property boundaries and all property transfers including prior ownership information is shown in Figure 5-2.

5.3 Summary CERFA Maps

Figure 5-3 summarizes the breakdown of Pontiac Storage Facility property according to the criteria for parcel identification under CERFA.

TABLE 5-1. Parcel Descriptions, Pontiac Storage Facility

PARCEL NUMBER	APPROX. SIZE (ACRES)*	COORD (X,Y) ON FIG 5-1	LOCATION	CATEGORY	BASIS	APP. A REF(S)	REMEDIATION OR MITIGATION
1P	25	5,8		CERFA Parcel	No hazardous substances or petroleum products have been stored, released or disposed in this area.		
2D-/PR/PS/HS	3	2,6	1,000 Gallon Above Ground Tank	Disqualified, Petroleum Release	Release of Heating oil associated with 1,000 Gallon Above Ground Tank	4,7,11	
		3,7	Ditch adjacent to former boiler house	Disqualified, Petroleum Release	Release of Total Petroleum Hydrocarbons (TPH=14,800 mg/kg) associated with Stormwater drainage ditch	5	
		2,7	Former 10,000 Gallon Underground Storage	Disqualified, Petroleum Storage	Heating oil stored in 10,000 gal UST -- Used from 1956 to 1984(area North of Section E)	4	Tank removed in 1984. No soil samples were taken.
		2,6	1,000 Gallon Above Ground Tank	Disqualified, Petroleum Storage	Heating oil stored in 1,000 gal AGT - First used in 1956(area North of Section E)	4,7,11	Tank active.
		3,7	Boilerhouse	Disqualified, Hazardous Substance Storage	Lubricating oils and roofing tar stored in 330 gals total/ 55 gal Drums -- Inactivated in 1990(North of Section E)	4	Drums of materials were removed from this location
3D-/PR/PS	1	6,7	300 gal Above Ground Tank	Disqualified, Petroleum Release	Release of Unleaded gasoline associated with 300 gal Above Ground Tank	4,7,11	Tank removed 1992. Soil sampled and remediated.
				Disqualified, Petroleum Storage	Unleaded gasoline stored in 300 gal AGT -- Used from 1955 to ~1985(area East of Section A)	4,7,11	Tank removed 1992. Soil samples taken and soil remediated.
4D-/PR/PS/HS	2	5,5	1,000 Gallon Underground Storage Tank	Disqualified, Petroleum Release	Release of Heating oil associated with 1,000 Gallon Underground Storage Tank	4,7,11	Tank removed 1992. Soil sampled and remediated.
				Disqualified, Petroleum Storage	Heating oil stored in 1,000 gal UST -- Used from 1956 to 1987(area East of Section C)	4,7,11	Tank removed 1992. Soil samples taken and soil remediated.
			Paint/Solvent Storage Area and Usage	Disqualified, Hazardous Substance Storage	Paints and solvent stored in Drums/cans -- Used from 1955 to 1987(Northeast corner of Section C)	4	Lead paint spill remediated

D=CERFA DISQUALIFIED PARCEL
E=CERFA EXCLUDED PARCEL
P=CERFA PARCEL
Q=CERFA PARCEL WITH QUALIFIERS

A=ASBESTOS
L=LEAD-BASED PAINT
P=PCB STORAGE
R=RADON
RD=RADIONUCLIDES
X=UNEXPLODED ORDNANCE

PR=PETROLEUM RELEASE
PS=PETROLEUM STORAGE
HR=HAZARDOUS SUBSTANCE RELEASE
HS=HAZARDOUS SUBSTANCE STORAGE

(P)=POSSIBLE QUALIFIER

* - Acre size is rounded up to the nearest whole acre.

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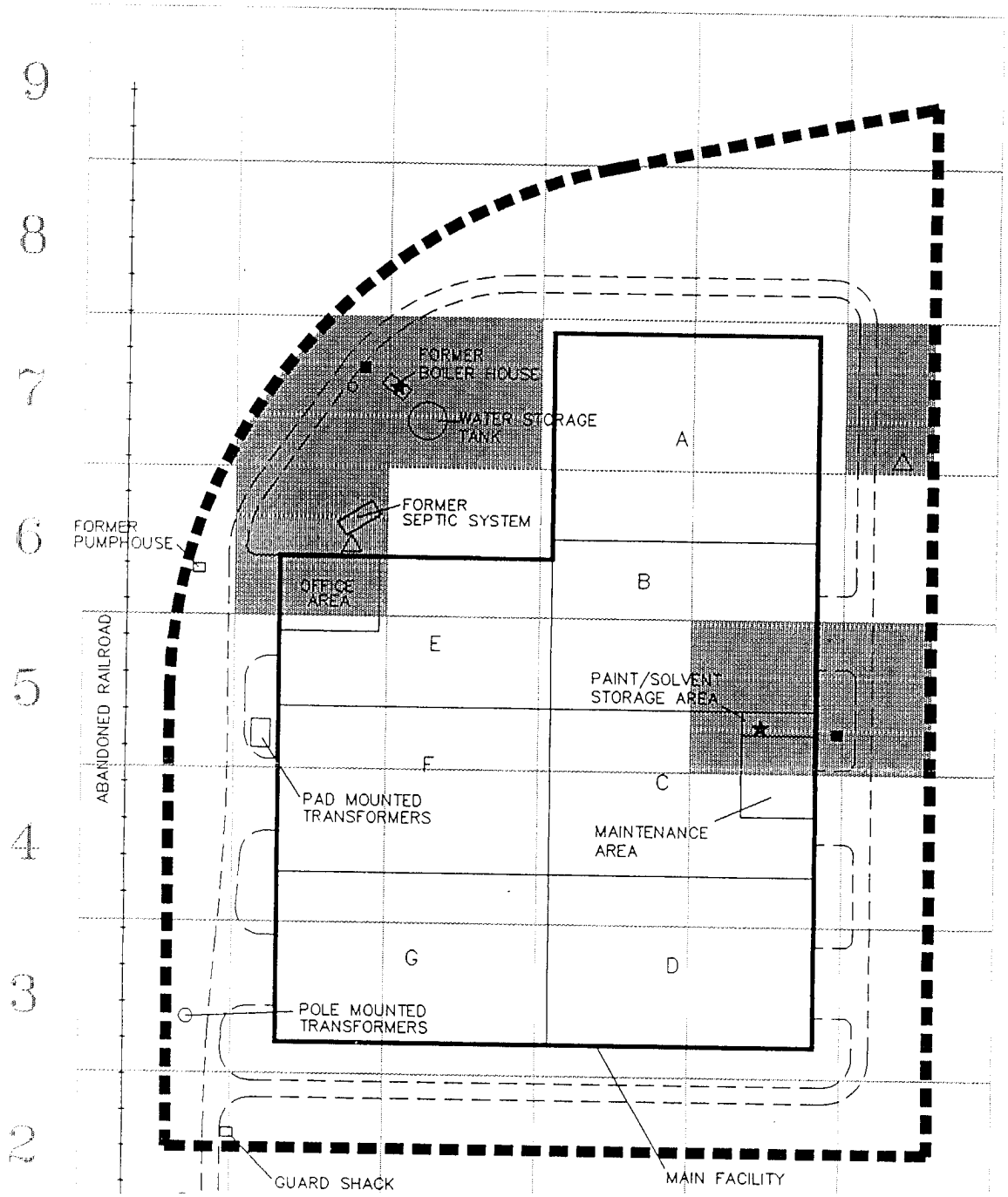
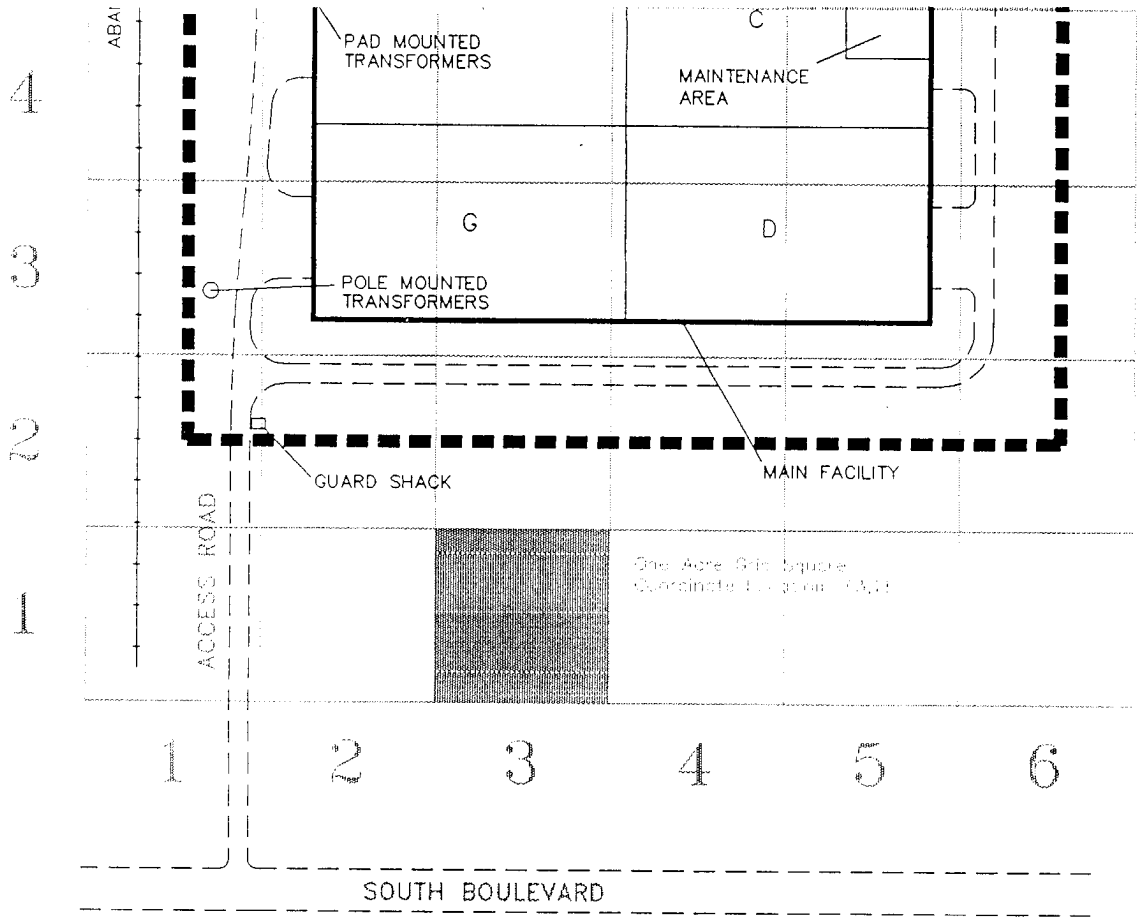
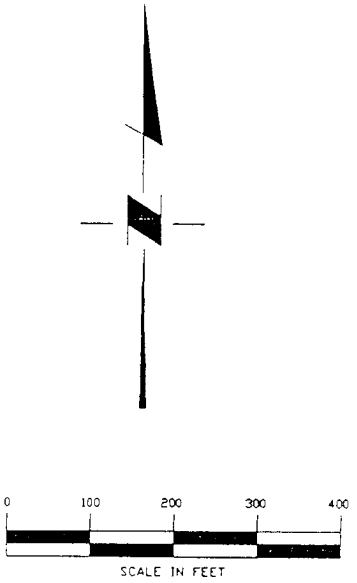
FIGURE 5-1
PARCEL DESIGNATION MAP, PONTIAC STORAGE FACILITY, PONTIAC, MICHIGAN

REVISION	DATE
0	11/24/93
1	03/25/94



- Sediment Contamination
- Hazardous Substance Storage or Waste Accumulation Area
- Underground Storage Tank
- Above Ground Storage Tank
- BRAC Property Boundary
- CERFA Parcel
- CERFA Parcel with Qualifiers
- CERFA Disqualified Parcel
- CERFA Excluded Parcel





PARCEL LABEL DEFINITIONS

13P−/A/L

- A = ASBESTOS
- L = LEAD−BASED PAINT
- P = PCB
- R = RADON
- X = UNEXPLODED ORDNANCE
- RD = RADIONUCLIDES
- PR = PETROLEUM RELEASE
- PS = PETROLEUM STORAGE
- HR = HAZARDOUS SUBSTANCE RELEASE
- HS = HAZARDOUS SUBSTANCE STORAGE
- (P) = POSSIBLE QUALIFIER

- P = CERFA PARCEL
- Q = CERFA PARCEL WITH QUALIFIER(S)
- D = CERFA DISQUALIFIED PARCEL
- E = CERFA EXCLUDED PARCEL

PARCEL NUMBER

Source: CERFA Investigation, March 1994

The Earth Technology Corporation

1420 KING STREET SUITE 600, ALEXANDRIA, VIRGINIA 22314

FIGURE 5−1
PARCEL DESIGNATION MAP
PONTIAC STORAGE FACILITY
PONTIAC, MICHIGAN

DRAWN BY: MTM, JGC	DESIGNED BY: N/A	SCALE: 1" = 224"
CHECKED BY: GLC	APPROVED BY BY	DATE: 03/25/94
TETC PROJECT NUMBER 931977−11	DRAWING NUMBER SHEET 1 OF 1	REV. NO. 1

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FIGURE 5-2
TRACT MAP, PONTIAC STORAGE FACILITY, PONTIAC, MICHIGAN

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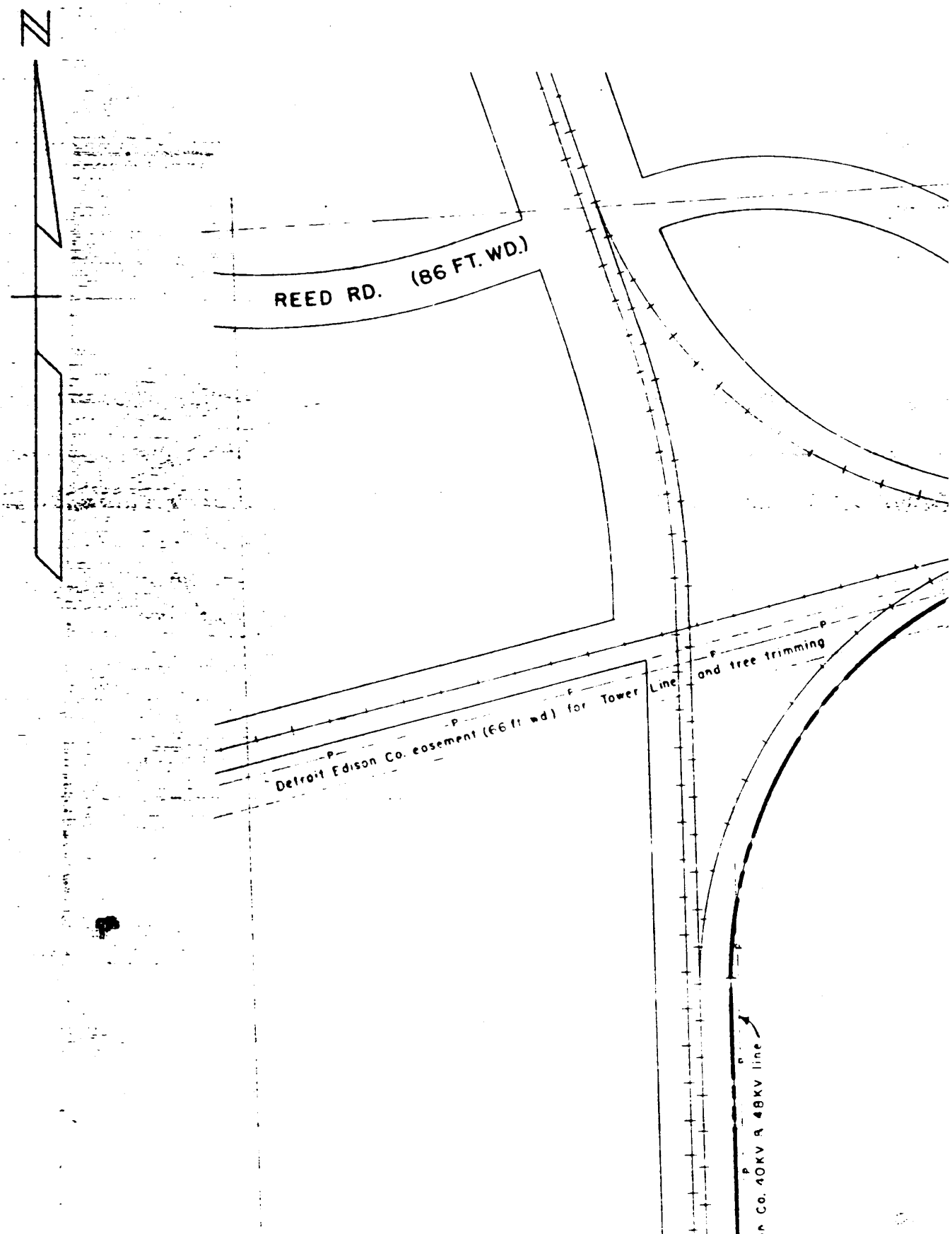
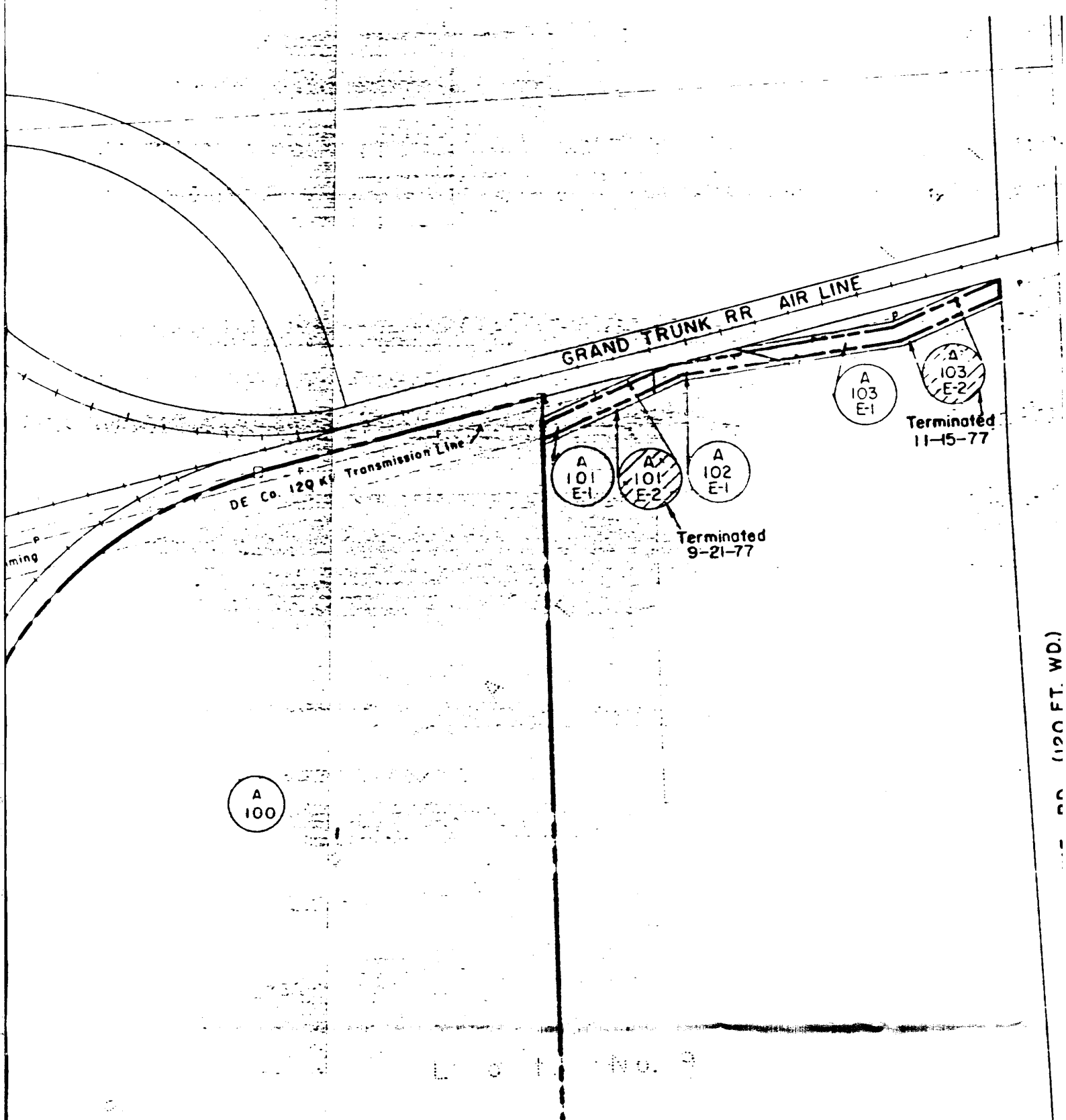
CORPS OF ENGINEERS

SE $\frac{1}{4}$ SI
CITY OF

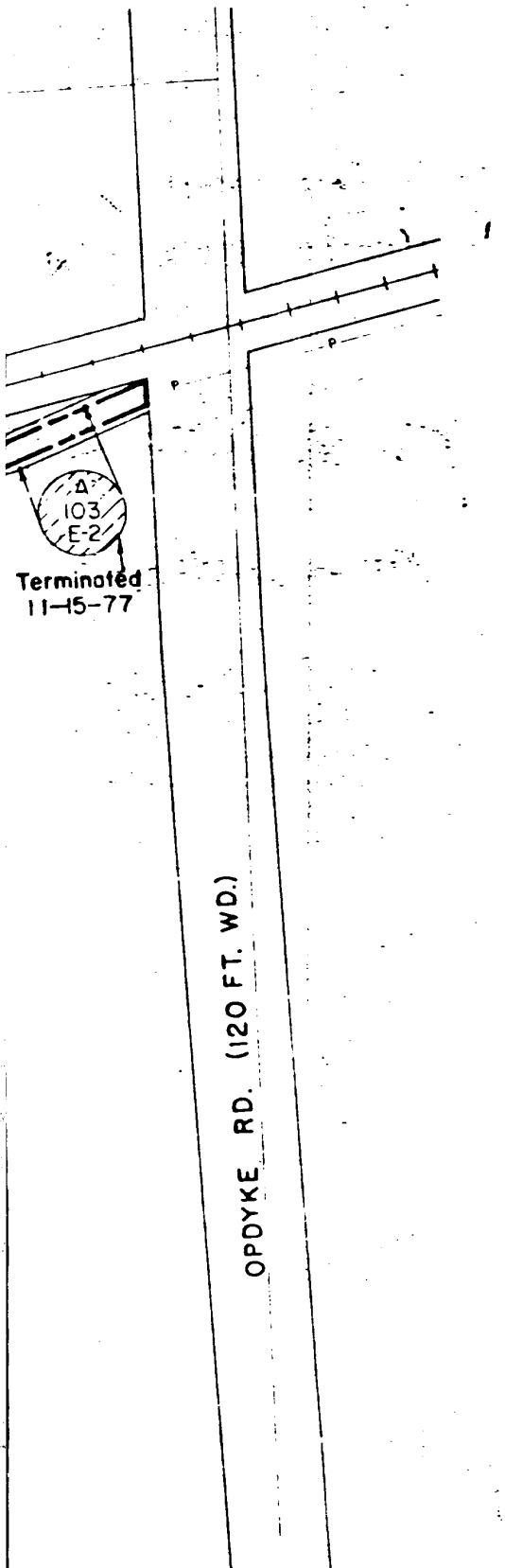


SE $\frac{1}{4}$ SEC. 34 - T 3 N, R 10 E - MICHIGAN MERIDIAN
CITY OF PONTIAC - OAKLAND COUNTY - MICHIGAN



TRACT REGISTER OF AC

	TRACT NO.	LAND OWNER
①	A-100	General Motors Corporation
	A-100E	" " "
②	A-101 E-1	DAVID B. EAMES, et. ux.
	A-101 E-2	DAVID B. EAMES, et. ux.
	A-102 E-1	THE PACKER CORPORATION
	A-102 E-2	Deleted
	A-103 E-1	CITY OF PONTIAC, MICH.
	A-103 E-2	CITY OF PONTIAC, MICH.



MICHI

ER OF ACQUISITIONS AFTER 1 JULY 1940 (MILITARY)

OWNER	ACREAGE FEE	ACREAGE EASE.	REMARKS
Corporation	29.38		Deed dtd 9-15-55
		1.86	Perpetual R/W easement for access road from 15 September 1955.
et. ux.		0.13	PERMANENT SEWER LINE EASEMENT FROM 9-22-76
et. ux.		0.08	TEMPORARY WORK AREA EASEMENT FROM 9-22-76 to 9-21-77
RPORATION		0.12	PERMANENT SEWER LINE EASEMENT FROM 3-30-78
, MICH.		0.28	PERMANENT SEWER LINE EASEMENT FROM 11-16-76
, MICH.		0.20	TEMPORARY WORK AREA EASEMENT FROM 11-16-76 to 11-15-77

FINAL

PROJECT

AGENCY: DEPARTMENT O

STATE MICHIGA

COUNTY OAKLA

DIVISION NORTH CENTF

DISTRICT ☆ DETRO

TO OMAHA DISTRICT ON 1 JU

ARMY AREA 5 TH

☆ TO LOUISVILLE DIST.

LOCATION OF

CITY (

MILES OF

TRANSPORTATION

RAILROADS GRAND TRUNK

STATE ROADS

FEDERAL ROADS U.S. HWY. 10,

AIR LINES

ACQUISIT

TOTAL ACRES ACQUIRED

ACRES FEE

ACRES TRANSFERRED

ACRES LEASED

ACRES LESSER INTERESTS

DISPOSA

TOTAL ACRES DISPOSED OF

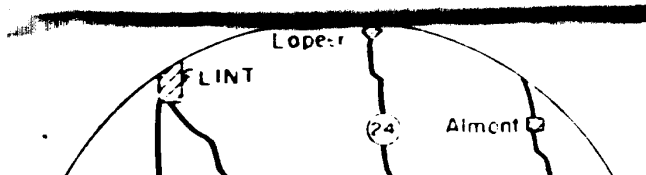
ACRES SOLD

ACRES TRANSFERRED

ACRES LESS. INT'S. TERMINATED

ACRES REASSIGNED

MICHIGAN



AFTER 1 JULY 1940 (MILITARY)

GE E.	REMARKS
	Deed dtd 9-15-55
36	Perpetual R/W easement for access road from 15 September 1955.
3	PERMANENT SEWER LINE EASEMENT FROM 9-22-76
08	TEMPORARY WORK AREA EASEMENT FROM 9-22-76 to 9-21-77
2	PERMANENT SEWER LINE EASEMENT FROM 3-30-78
8	PERMANENT SEWER LINE EASEMENT FROM 11-16-76
0	TEMPORARY WORK AREA EASEMENT FROM 11-16-76 to 11-15-77

FINAL

PROJECT MAP

AGENCY: DEPARTMENT OF THE ARMY

STATE MICHIGAN

COUNTY OAKLAND

DIVISION NORTH CENTRAL DIVISION

DISTRICT ☆ DETROIT
TO OMAHA DISTRICT ON 1 JULY 1970
ARMY AREA 5 TH
☆ TO LOUISVILLE DIST. 31MAR.82

LOCATION OF PROJECT

CITY OF PONTIAC

MILES OF

TRANSPORTATION FACILITIES

RAILROADS GRAND TRUNK WESTERN RR

STATE ROADS

FEDERAL ROADS U.S. HWY. 10, INTERSTATE NO. 75

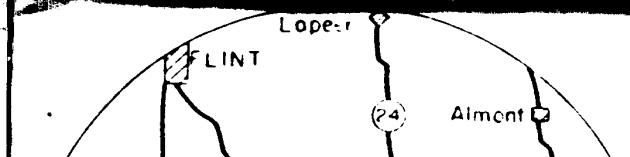
AIR LINES

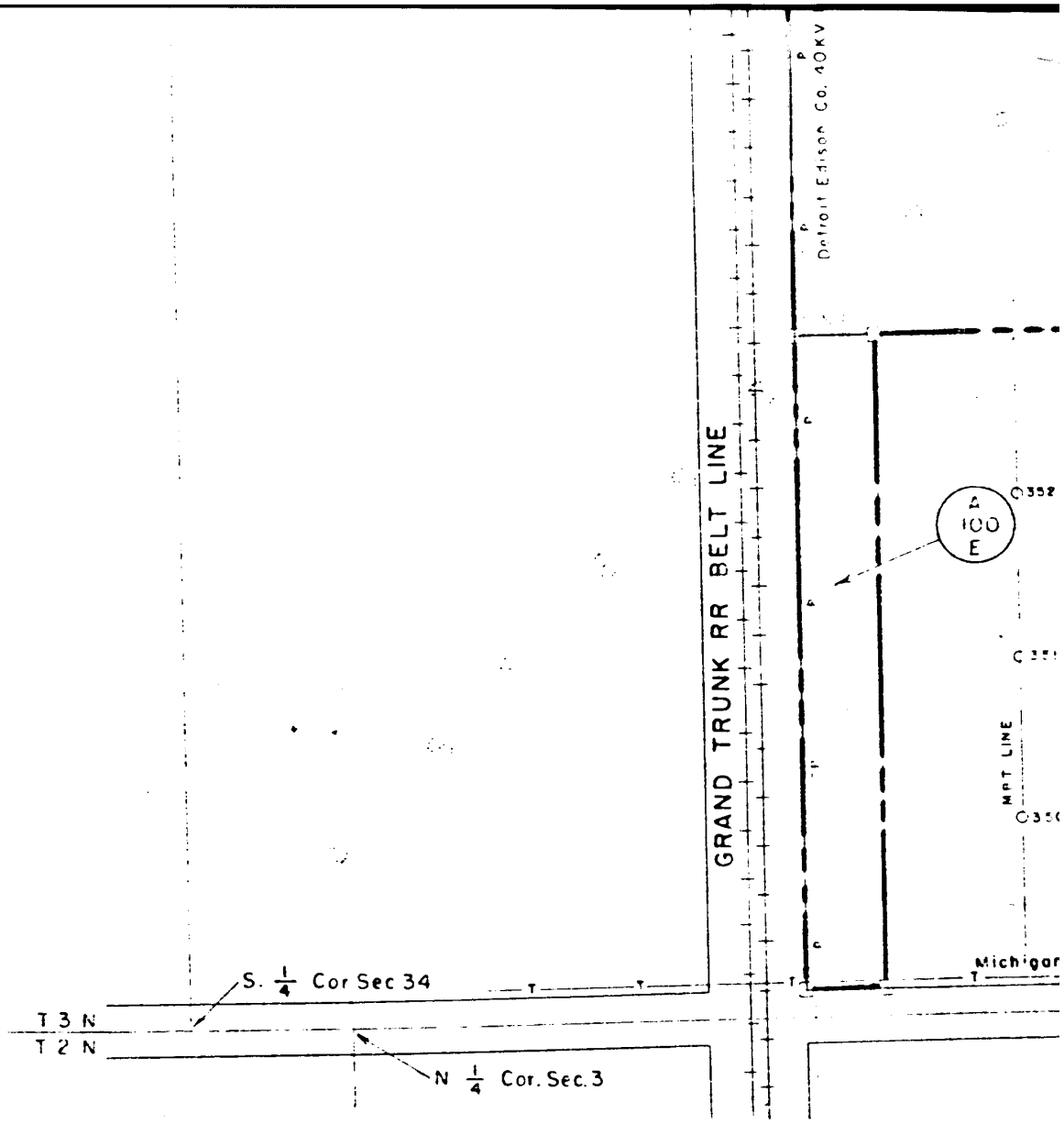
ACQUISITION

TOTAL ACRES ACQUIRED		32.05
ACRES FEE		29.38
ACRES TRANSFERRED		
ACRES LEASED		
ACRES LESSER INTERESTS	Eas.(6)	2.67

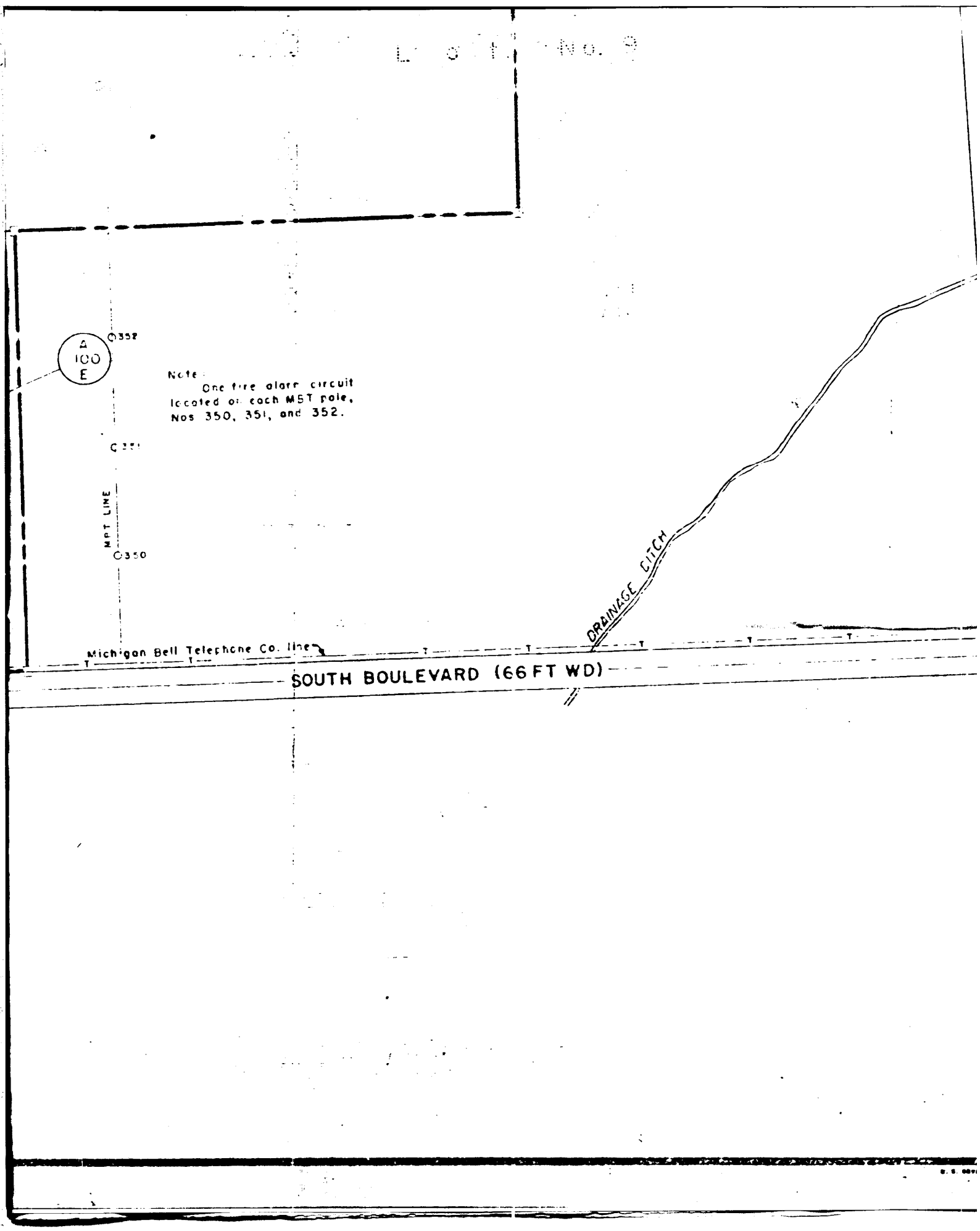
DISPOSAL

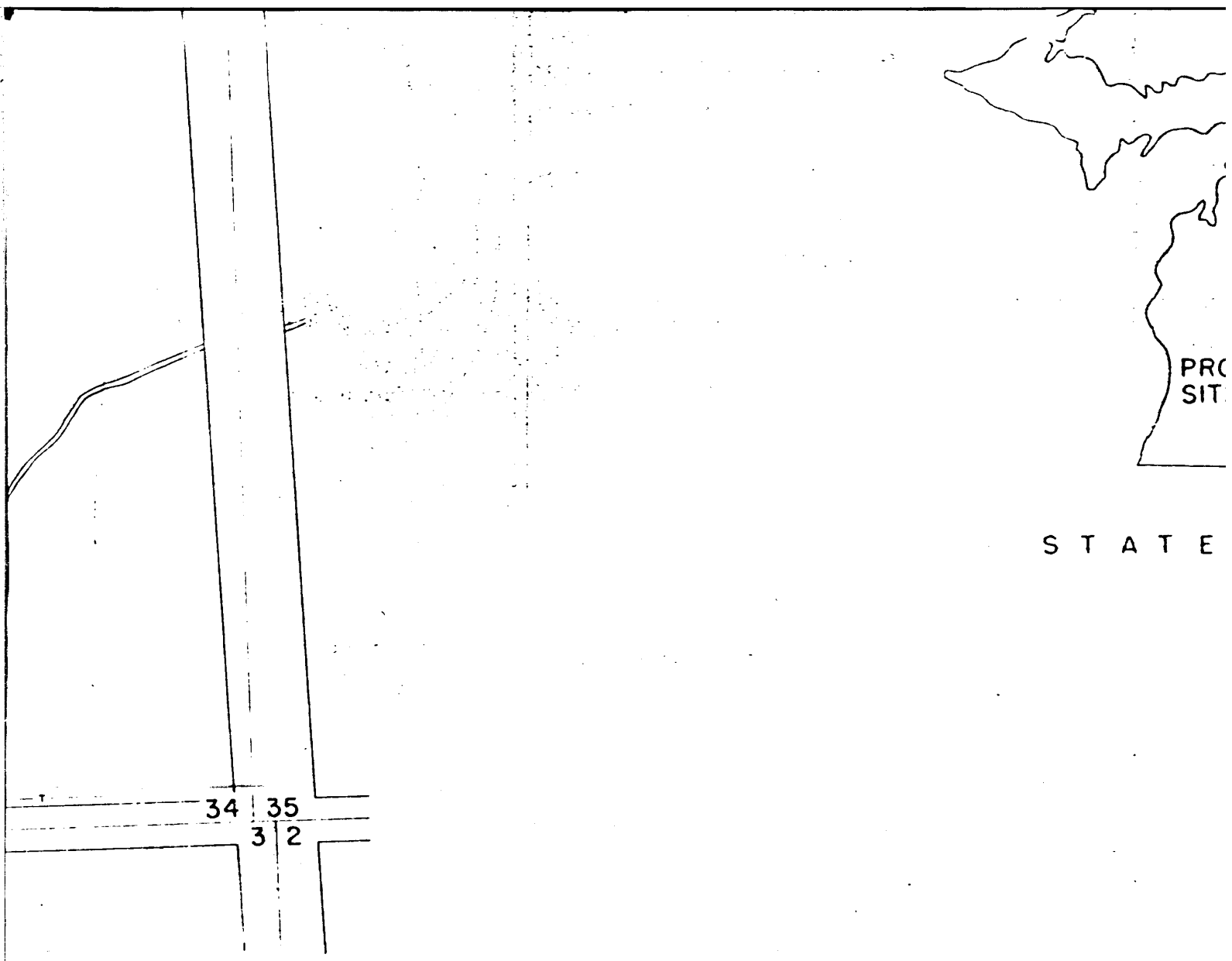
TOTAL ACRES DISPOSED OF		0.28
ACRES SOLD		
ACRES TRANSFERRED		
ACRES LESS. INT'S. TERMINATED	EASE.(2)	0.28
ACRES REASSIGNED		



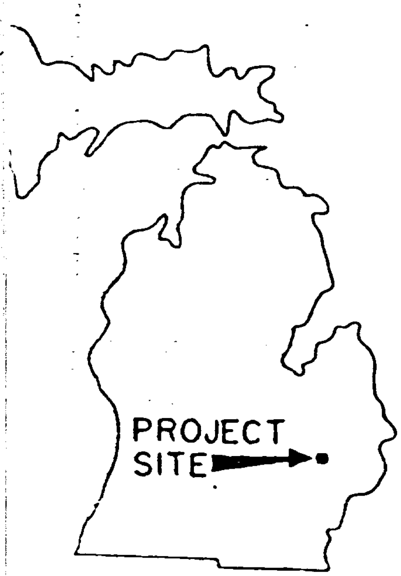


0.08 Acres, Temp. easements, Terminated 9-21-77
0.20 Acres, Temp. easements, Terminated 11-15-77

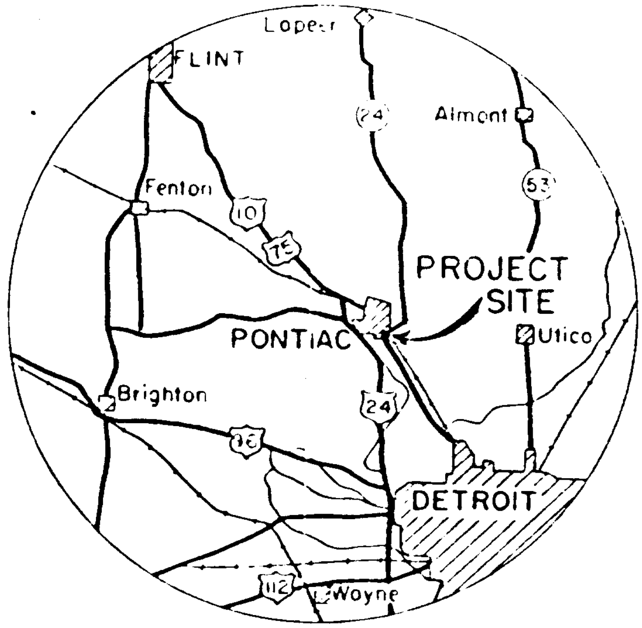

A
100
E
352
Note:
One fire alarm circuit
located on each MBT pole,
Nos 350, 351, and 352.
351
MBT LINE
350
DRAINAGE DITCH
Michigan Bell Telephone Co. line
SOUTH BOULEVARD (66 FT WD)



MICRO-FILMED	Date Audit Approved	DATE	REVISIONS
M	11-24-81	13 Oct 81	Revised Final Audit
		21 Oct 77	Revised Acreage for trs. A-101E-1, A-102E-1 & A-
		29 Sept. 77	Revised trs: A-101E-1, A-102 E-1 & A-103E-1
		16 Apr '76	Added trs A-101E-1 thru A-103 E-2.
		18 May '65	Revised Title from PONTIAC LAY-AWAY WAREHOUSE
	7-25-57	9 April '57	Final Audit



TATE INDEX



VICINITY MAP

STATUTE MILES

5 0 5 10 15 20 25

ACRES LEASES TERMINATED

ACRES LESS. INT'S. TERMINATED

ACRES REASSIGNED

ACRES TO

LEGEND

EXCEPT FOR THE SPECIAL SYMBOLS SHO
ARE STANDARD IN ARMY MAP SE
NO. 23

RESERVATION LINE

RESERVATION LINE Actual Survey

TRACT BOUNDARY LINE

TRACT NUMBER

AVIGATION EASEMENT

CONTOUR LINE

DISPOSAL

ACQUISITION AUTHORIZATION

(1) RE D 6103 dated 18 Nov. 1954
(2) RE D 8110 dated 12 Apr. 1976

	W.F.S.
02E-1 & A-103E-1	R.E.P.
3E-1	R.E.P.
	R.E.P.
AREHOUSE	W.T.R.
	J.F.J.
	BY

DEPARTMENT OF THE ARMY
OFFICE OF THE DETROIT DISTRICT ENGINEER
NORTH CENTRAL DIVISION

DRAWN BY J.F.J
TRACED BY J.F.J
CHECKED BY W.G.G

SUBMITTED BY:
W.G.G

RECOMMENDED BY:
CADASTRAL ENGINEER

REAL ESTATE

DETROIT ORDNANCE STORAGE FA

U.S. ARMY PONTIAC STORAG

MILITARY RESERVATIO

APPROVED BY:
REAL ESTATE OFFICER

OFFICE, CHIEF OF ENGINEERS, WASHINGTON 25, D. C.

AUDITED

INSTALLATION OR PROJECT NO. 3631

Scale
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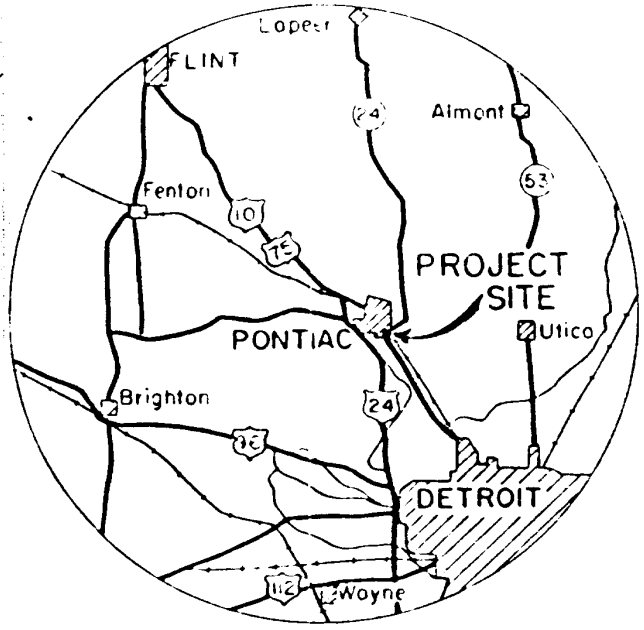
File No. 1-4/133 RE



VICINITY MAP

STATUTE MILES

5 0 5 10 15 20 25

ACRES LEASES TERMINATED

ACRES LESS. INT'S. TERMINATED EASE. (2) 0.28

ACRES REASSIGNED

ACRES TO

LEGEND

EXCEPT FOR THE SPECIAL SYMBOLS SHOWN BELOW, MAP SYMBOLS ARE STANDARD IN ARMY MAP SERVICE TECHNICAL MANUAL NO. 83

RESERVATION LINE

RESERVATION LINE Actual Survey

TRACT BOUNDARY LINE

TRACT NUMBER

AVIGATION EASEMENT

CONTOUR LINE

DISPOSAL

ACQUISITION AUTHORIZATION

(1) RE D 6103 dated 18 Nov. 1954

(2) RE D 8110 dated 12 Apr. 1976

DEPARTMENT OF THE ARMY
OFFICE OF THE DETROIT DISTRICT ENGINEER
NORTH CENTRAL DIVISION

DRAWN BY J.F.J
TRACED BY J.F.J
CHECKED BY W.G.G

SUBMITTED BY: W.G.G

RECOMMENDED BY: W. J. Graw
CADASTRAL ENGINEER

APPROVED BY: Victor H. Eichhorn
REAL ESTATE OFFICER

DATE 14 February 1955

REAL ESTATE

DETROIT ORDNANCE STORAGE FACILITY NO.4

U.S. ARMY PONTIAC STORAGE FACILITY

MILITARY RESERVATION

OFFICE, CHIEF OF ENGINEERS, WASHINGTON 25, D. C.

AUDITED

INSTALLATION OR PROJECT NO. 3631

Scale in Feet

100 0 100 200 300

SHEET 1 OF 1 DRAWING NO.

File No. I-4/133 RE

FIGURE 5-3
SUMMARY CERFA MAP, PONTIAC STORAGE FACILITY, PONTIAC, MICHIGAN

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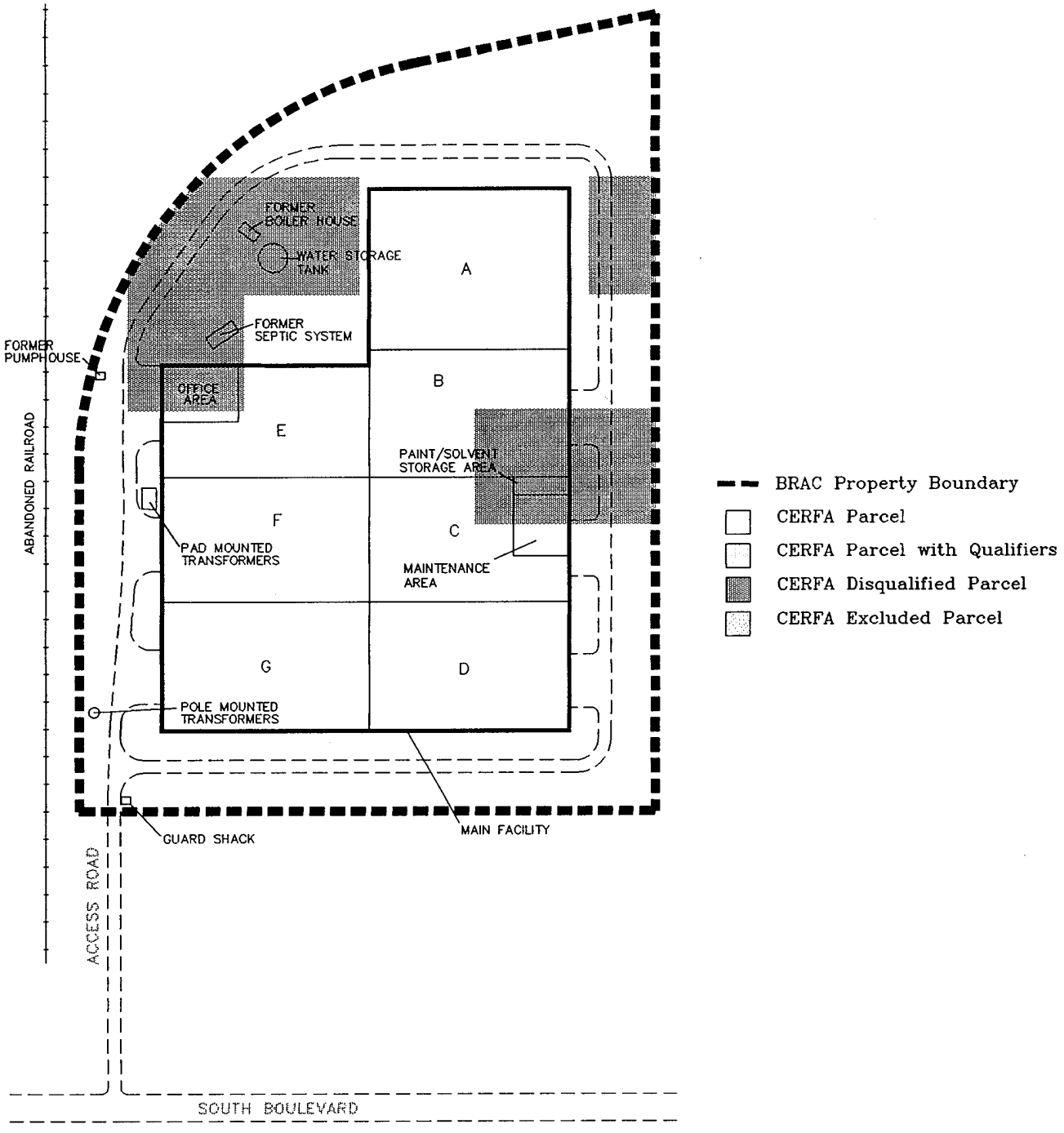
REVISION	DATE
0	11/24/93
1	03/25/94



Source: CERFA Investigation, March 1994

The Earth Technology Corporation

1420 KING STREET SUITE 600, ALEXANDRIA, VIRGINIA 22314

FIGURE 5-3
SUMMARY CERFA MAP
PONTIAC STORAGE FACILITY
PONTIAC, MICHIGAN

DRAWN BY: MTM, JGC	DESIGNED BY: N/A		
CHECKED BY: GLC	APPROVED BY: BY	DATE: 03/25/94	
TETC PROJECT NUMBER 931977-11	DRAWING NUMBER SHEET 1 OF 1	REV. NO. 1	

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APPENDIX A

REFERENCE LIST FOR PONTIAC STORAGE FACILITY

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APPENDIX A
REFERENCE LIST FOR PONTIAC STORAGE FACILITY

	Document	Date	Source
1.	Waste Site Characterization Study, U.S. Army Property Waste Site Summary, Category 3	August 10, 1990	
2.	Disposal and Reuse of Pontiac Storage Activity, Pontiac, Michigan, Draft Environmental Assessment	September 1993	USAEC
3.	Installation Assessment of Pontiac Storage Facility, Michigan Report No. 179	May 1979	USAEC
4.	Enhanced Preliminary Assessment Report: Pontiac Storage Activity Pontiac, Michigan	March 1990	USAEC
5.	Environmental Investigation Phase I Report Site Investigation and Risk Assessment Report	December 1992	USAEC
6.	Environmental Investigation Phase II Report/Alternatives Assessment Report/Applicable or Relevant and Appropriate Requirements Report	December 23, 1992	USAEC
7.	Draft Final Environmental Investigation Phase II Report Revision I - Alternatives Assessment Report, Applicable or Relevant and Appropriate Requirements Report, Metcalf & Eddy	May 12, 1993	USAEC
8.	Environmental Closure Report, U.S. Army Engineer District, Louisville, Kentucky	May 1993	USAEC
9.	Real Estate Transfer Register		USAEC
10.	Real Estate Tract Map	February 14, 1955	USAEC
11.	TETC Site Visit to Pontiac Storage Facility, October 12, 1993	October 12, 1993	TETC

Key: USAEC = U.S. Army Environmental Center
TETC = The Earth Technology Corporation

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APPENDIX B
ERIIS DATA BASE SEARCH REPORT

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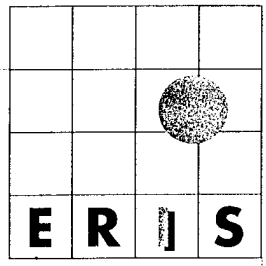

ENVIRONMENTAL RISK INFORMATION & IMAGING SERVICES REPORT

PERTAINING TO:

PONTIAC STORAGE FACILITY
PONTIAC, MI

ON BEHALF OF:

THE EARTH TECHNOLOGY CORP.
1420 KING ST., STE. 600
ALEXANDRIA, VA 22314

PREPARED ON:

August 23, 1993

ERIIS REPORT NUMBER:

28673

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ERIIS DISCLAIMER

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TABLE OF CONTENTS

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I. REPORT OVERVIEW

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ERIIS Report Overview

The ERIIS Report consists of five (5) basic sections:

* Digital Custom Plotted Map
* Database Records
* Statistical Profile
* Sanborn Fire Insurance Map(s)
* Topographical Map

Digital Custom Map

Each site-specific Digital Custom Map is plotted using U.S. Census TIGER Files. The cross in the center of the map represents the study site. The red circle represents the study radius, usually one mile. Reported federal/state hazardous waste and toxic chemical sites are plotted on the map and are easily distinguished by different symbols.

Statistical Profile

The Statistical Profile is an at-a-glance numeric summary of the data included in the ERIIS Report.

Database Records

This section presents detailed federal and state database information for each site within the study radius. Sites are easily located on the digital map by using the number in the MAP ID column of the report.

Note: Many of the sites reported in federal/state databases cannot be plotted due to inaccurate or incomplete addresses (e.g., PO Box number, street name with no number). Still, they are potentially within the study radius. ERIIS reports these sites using progressively broader search criteria to ensure that all potentially relevant hazardous sites are included. All zip codes within and intersected by the study radius are searched, as well as records that simply report the relevant city or county. Where applicable, federal and state database information is further subdivided.

Sanborn Fire Insurance Maps

ERIIS has assembled a collection of Historical Sanborn Fire Insurance Maps covering 14,000 cities and towns. In some cases, however, the ERIIS Report will include a notice that no maps were found. This notice should serve as evidence of due diligence.

Topographic Map

ERIIS provides a topographic map with each report which accurately depicts the natural and man-made features of the land. The shape and elevation of the terrain are represented by contour lines and specific features, such as roads, towns, and vegetation, are portrayed by map symbols and colors. Standard topographic maps are produced at a 1:24,000 scale, or one inch represents 2000 feet.

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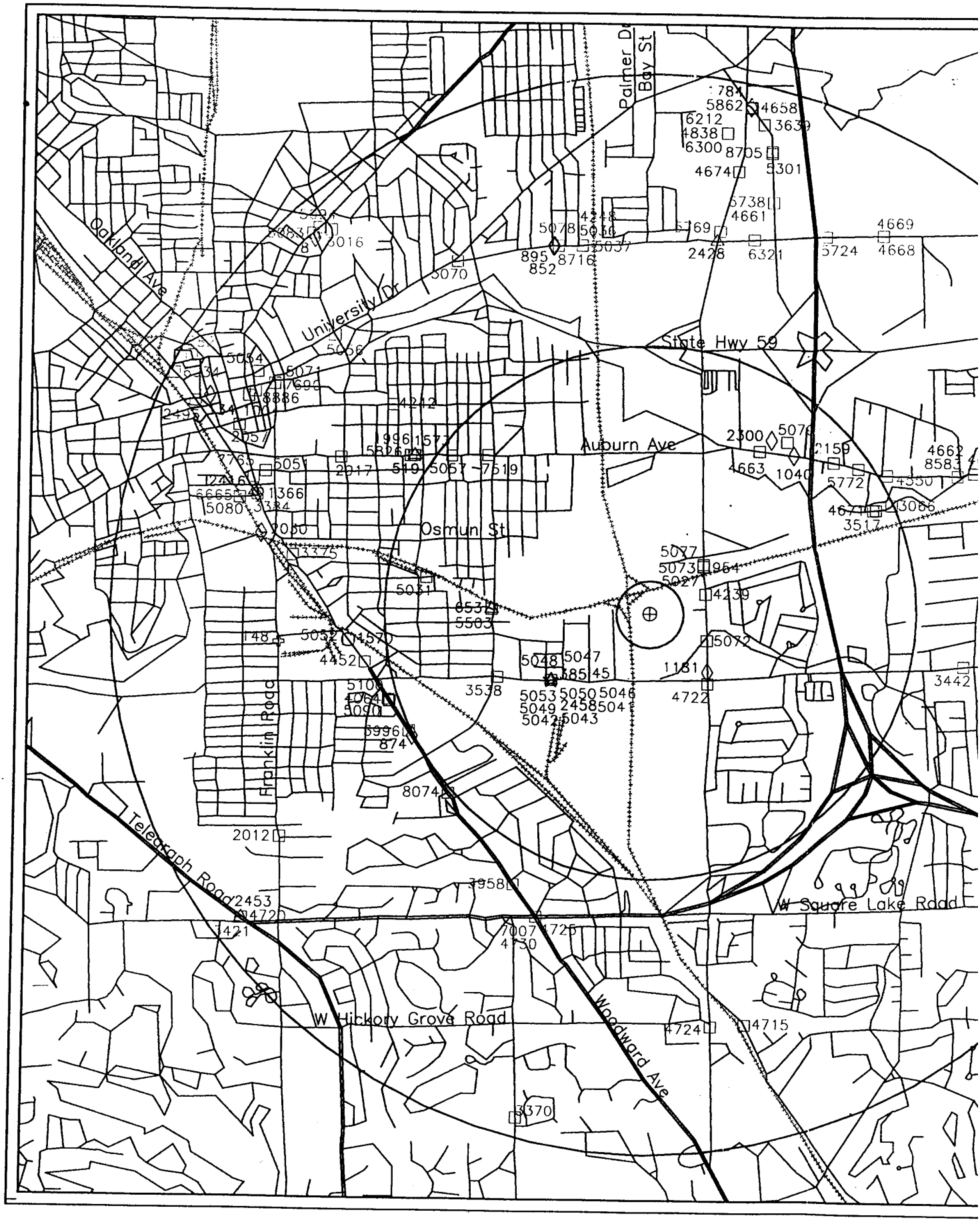
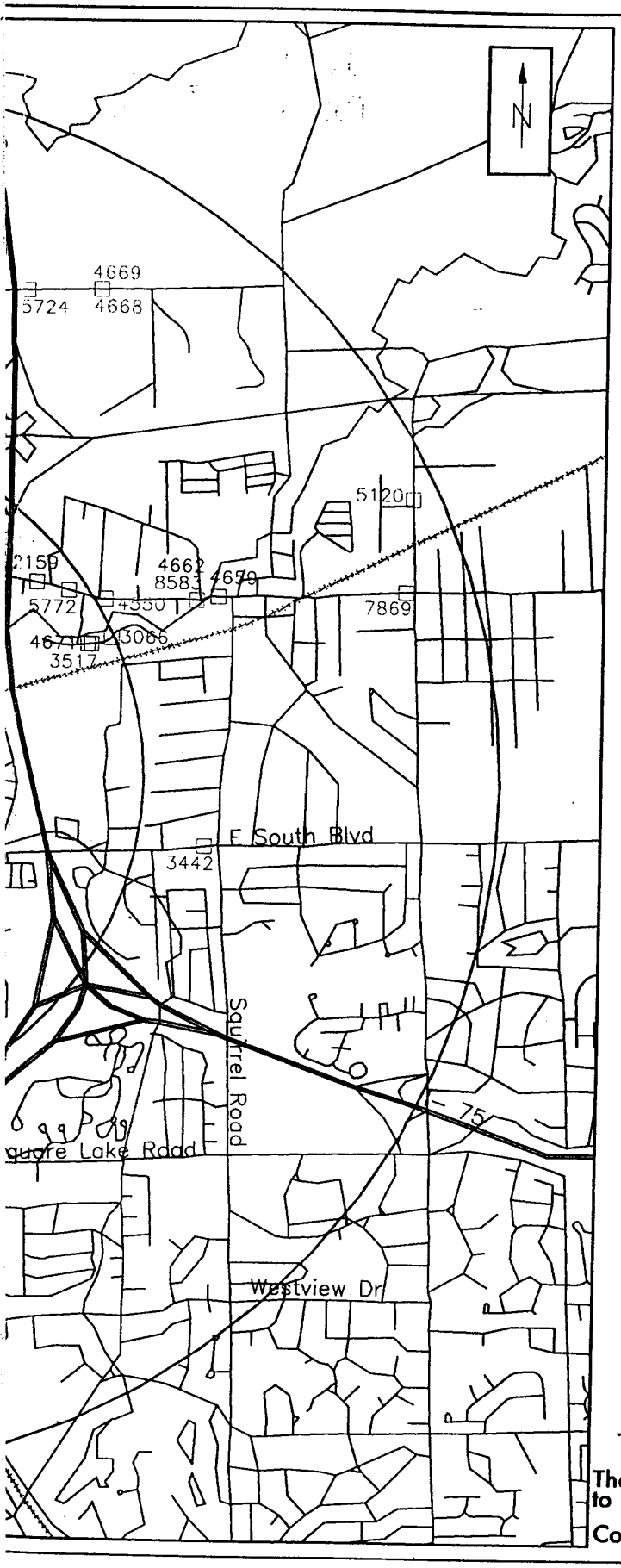
II. DIGITAL CUSTOM PLOTTED MAP


Palmer Dr
Bay St
Oakland Ave
University Dr
State Hwy 59
Auburn Ave
Osmun St
Franklin Road
Telegraph Road
W Square Lake Road
W Hickory Grove Road
Woodward Ave



ERIIS

1421 Prince Street, Ste 330
Alexandria, VA 22314
(703)836-0402 (800)989-0402
FAX: (703)836-0468

SITE INFORMATION

Pontiac Storage Facility
Pontiac, MI
Oakland County
Job Number: 28673
Map Plotted: Aug 20, 1993

MAP LEGEND

- Hydrography
- Railroads
- Roads
- Highways
- ○ CERCLIS 1 Site(s)
- △ ECL 4 Site(s)
- □ LUST 45 Site(s)
- ☆ NPL 0 Site(s)
- ◊ RCRIS_LG 11 Site(s)
- □ RCRIS_SG 53 Site(s)
- ✣ RCRIS_TS 2 Site(s)
- ☆ SWF 1 Site(s)
- △ TRI 2 Site(s)

Miles

0 0.5

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III. STATISTICAL PROFILE

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ENVIRONMENTAL RISK INFORMATION & IMAGING SERVICES

RADIUS REPORT

REPORT NUMBER: 28673

STATE: MI
LATITUDE: 42.623974
LONGITUDE: -83.253452
ZIP CODES SEARCHED: 48304 48302 48342 48326 48341 48340 48098 48309 48035 48343

DATABASE	RADIUS (MILES)	RADIUS REPORTED SITES					NOT RADIUS REPORTED		TOTAL SITES
		Property	Property-1/16	1/16-1/2	1/2-1	>1	ZIP CODE	CITY/COUNTY	
NPL	2.500	NO	0	0	0	0	0	0	0
CERCLIS	2.500	NO	0	0	0	1	4	0	5
TRI	2.500	NO	0	0	1	1	4	0	6
RCRIS_TS	2.500	NO	0	0	1	1	0	0	2
RCRIS_LG	2.500	NO	0	1	2	8	3	1	15
RCRIS_SG	2.500	NO	0	2	2	49	22	0	75
DOCKET	2.500	NO	0	0	0	0	0	0	0
ERNS	2.500	NO	0	0	0	3	2	2	7
FINDS	2.500	NO	0	6	6	55	139	0	206
NUCLEAR	2.500	NO	0	0	0	0	0	0	0
OPENDUMP	2.500	NO	0	0	0	0	0	0	0
LUST	2.500	NO	0	5	10	30	13	17	75
SWF	2.500	NO	0	0	1	0	1	0	2
ECL	2.500	NO	0	0	1	3	5	1	10
			0	14	24	151	193	21	403

STATE DATA IN PAPER FORMAT: FACILITY/TANK

Selection of PROPERTY records requires an accurate street address in the ERIIS job order.

ZIP CODE and CITY/COUNTY sites are not radius reportable due to insufficient and/or inaccurate addresses reported by federal/state agency. These sites are reported within the study site zip code(s) and/or city/county and may be within the study site radius. These sites require further investigation to accurately assess proximity to the study site.

A blank radius count indicates that the database was not searched by this radius per client instructions.

NR in a radius or zip code count indicates that the database cannot be reported by this search criteria due to insufficient and/or inaccurate addresses reported by a federal/state agency.

State data in paper format is sorted using the most specific secondary search criteria available (zip code, city, or county).

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APPENDIX C

REGULATORY COMMENTS TO DRAFT PONTIAC STORAGE FACILITY CERFA REPORT

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STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF NATURAL RESOURCES

ROLAND HARMES, Director

SOUTHEAST MICHIGAN DISTRICT HEADQUARTERS
ENVIRONMENTAL RESPONSE DIVISION
38980 Seven Mile Road
Livonia, Michigan 48152

March 11, 1994

Lt. Col. Paul Wojciechowski
Acting Chief, Base Closure Division
Aberdeen Proving Ground
Maryland 21010-5401

Dear Col. Wojciechowski:

Subject: Pontiac Storage Facility
871 South Boulevard and Opdyke
Pontiac, Oakland County, MI
MERA Site # 630860

This letter is in response to the Community Environmental Response Facilitation Act (CERFA) Report, dated December 3, 1993, and received in this office, December 13, 1993, regarding the above referenced site. In your submittal, you have requested our concurrence pursuant to 42 U.S.C. § 9620 (h)4(A). Based on information you have submitted, it appears that you have determined that no hazardous substances, petroleum products or their derivatives were found to have been stored for one year or more, or were known to have been released, or disposed of or migrated from the areas described in the report. We do not have any information that conflicts with your findings subject to the following qualification. The property designated as 'CERFA Disqualified Parcel' in Figures 5-1 and 5-3 of the Report, does include that area where high concentrations of Total Petroleum Hydrocarbons (TPH) were identified in the drainage ditch.

Further, this response is provided only for purposes of 42 U.S.C. § 9620(h)4, and is based upon the information submitted by you. It is not intended for any other use. This concurrence shall not be interpreted or deemed to be a waiver of any right of the State of Michigan to require any remedial or removal action under state or other applicable law by any appropriate party (including the transferees) if information obtained in the future from any source indicates that the United States or the appropriate party is responsible for such action. Furthermore, this response shall not be deemed or interpreted as an estoppel against the State of Michigan; nor should this response be deemed to be or interpreted

as a guaranty or warranty as to the condition of the subject property at any time.

If you have any questions regarding this matter please contact me or Benjamin Mathews at (313)-953-1447.

Sincerely,

James O. Stroud II, Acting

Oladipo Oyinsan
Southeast Michigan District Supervisor

cc: Mr. Stanley F. Pruss, Assistant Attorney General
Ms. Diana Mally, EPA Region 5
Ms. Patricia McKay, MDNR
Mr. James Thomas, MDNR

APPENDIX D

MICHIGAN TYPE B CLOSURE CRITERIA

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MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

July 16, 1993

TO: Environmental Response Division Staff

FROM: Alan J. Howard, Chief, Environmental Response Division

SUBJECT: MERA Operational Memorandum #8, Revision 2 — Type B Criteria
Rules 299.5709, 299.5711(2), 299.5711(5) and 299.5713

The attached table lists Type B cleanup criteria which have been developed according to the algorithms set forth in the specific rules identified below. This table replaces the previously issued list of Type B criteria dated March 20, 1992. The criteria were developed using currently available toxicological and other data and are subject to change as new data become available. These criteria differ from the criteria in the previous list in two ways: 1) they are presented in two significant figures as opposed to one; and 2) the reference doses and slope factors used to generate the criteria were also in two significant figures. Cleanup criteria from the attached table should be compared to analytical data also presented in two significant figures. The updated list also presents noncarcinogens and carcinogens together; carcinogens are presented in italics. Chemicals beginning with numbers (such as 1,1,2-trichloroethane) are incorporated alphabetically within the list. Criteria on these lists should be considered draft; final cleanup criteria will be confirmed by Environmental Response Division (ERD) toxicologists and approved as part of a site-specific remedial action plan. This table addresses only those rules which include a specific algorithm or regulatory standard. Staff are reminded that Type B remedial action plans must address all elements required by the rules, including those for which specific criteria are not shown here. Additional guidance for applying the criteria for each rule follows.

Note that in cases where Type B criteria are less than Type A criteria (either method detection limits or background), Type A criteria become the cleanup goal. Type B criteria are not applicable in these cases.

Rule 299.5709 — Groundwater in aquifers

Subrules (2)(a) and (b) of this rule specify the criteria for carcinogens and noncarcinogens, respectively. The values in the first column of the table were developed using the algorithms in Rules 299.5723 (for carcinogens) and 299.5725 (for noncarcinogens). The values in the second column of the table were established, where sufficient data are available, to protect against adverse aesthetic impacts of hazardous substances on groundwater.

The most restrictive of the values in the first two columns of the table is the cleanup criteria required to satisfy Rule 299.5709. Note that this rule requires that aquifer cleanup criteria take into account adverse aesthetic impacts resulting from one or a combination of hazardous substances. If adverse aesthetic impacts remain when health based criteria have been achieved, further remedial measures may be required. Consult your Supervisor if you encounter such a case.

Rule 299.5711 — Soil

The table presents values for the subrules that are most often expected to be the controlling factor in determining soil cleanup criteria. However, a Type B remedial action plan must include rationale that supports the conclusions drawn from the assessment of pertinent pathways (i.e., some discussion of each pertinent pathway must be included which assesses whether more restrictive criteria are required; See R 299.5711(1)(a-e) and Rule Interpretation Memo #5 dated March 8, 1991).

Note that the rules allow for a value higher than twenty times the groundwater cleanup criteria to be established as the soil cleanup criteria protective of groundwater through the use of a leachate test or other method which better represents in situ conditions. The "20X" values in the table are provided for convenience and are not mandatory if leachate tests or other methods support the use of a higher value. For certain materials, such as PCBs, carcinogenic PNAs, 4,4'-methylene-bis-2-chloro-aniline (MBOCA) and some pesticides, which strongly adsorb to soil and are known not to leach at significant concentrations, the direct contact value is accepted as the soil cleanup criteria without site-specific leachate tests or other evaluations to determine mobility. Consult an ERD toxicologist if you have questions about whether other substances may be handled in this manner.

Staff should be aware that direct contact criteria only consider long-term exposure from ingestion and dermal contact of contaminated soil. Consequently, direct contact criteria for chemicals that are highly toxic on an acute basis (but not on a long-term basis) may not be protective against short-term exposure hazards. In addition, many chemicals at concentrations nearing saturation would pose a hazard to crops and plants. In these cases the Department would be responsible for developing soil cleanup criteria based on Rule 299.5711(6). If you believe these issues will affect a project you are working on, consult your supervisor and/or an ERD toxicologist.

Rule 299.5713 — Impacts of groundwater contaminants on surface water

The third column in the table lists values based on calculations done by Surface Water Quality Division (SWQD) in accordance with Rule 323.1057 of the Water Resources Commission Act, 1929 PA 245, as amended. For use in ERD programs, the Rule 57 values have been identified as the groundwater surface water interface (GSI) values. The GSI values are the criteria used to judge compliance with Rule 299.5713. GSI values are developed for surface water which is not used as a drinking water source and also for surface water which serves as a source of drinking water. GSI values presented in the list are for surface waters not protected as a drinking

water source. If the surface water at a site serves as a drinking water source, contact an ERD toxicologist to obtain the correct GSI value. In cases where data are inadequate to calculate a GSI value, the party proposing the remedial action may generate the minimum data necessary to propose a value for Department review and approval.

Rule 299.5713 requires that the GSI value not be exceeded at a point where groundwater naturally discharges to surface water. Demonstration of compliance with this rule may be made by monitoring at the groundwater-surface water interface, or by predictive modeling. It is not necessary that the GSI value be achieved throughout the aquifer; however, a remedial action plan which proposes to meet the GSI value throughout the aquifer in lieu of monitoring at the interface or modeling will be acceptable. Note that the sixth column on the table will show 20 times the GSI values. This value is shown for ease of reference in cases where soil is to be remediated to that level as a source control measure. Rule 299.5711 does not require that soil meet the "20 times GSI values", as long as the GSI value is not exceeded at the groundwater-surface water interface.

Acceptable Method Detection Limits

The table includes the acceptable method detection limit for each hazardous substance, where one has been determined. These acceptable method detection limits are taken from Operational Memorandum #6, dated February 22, 1993 and are provided to allow for convenient comparison between Type B criteria and potential Type A criteria. Consult Operational Memorandum #6 for a full description of the use of acceptable method detection limits and proper methods for analysis.

Keep in mind that use of particular methods and detection limits listed in Operational Memorandum #6 are not mandatory. Other methods or detection limits may be approved as part of a site-specific remedial action plan.

These acceptable method detection limits are applicable to environmental investigations and monitoring performed pursuant to Act 307 response activities. These detection limits may not be applicable to environmental monitoring activities performed pursuant to other environmental statutes. Facilities subject to regulation under other environmental statutes should consult with the appropriate DNR Division for further information regarding appropriate analytical detection limits.

This memo is intended to provide guidance to Division staff to foster consistent application of the Michigan Environmental Response Act, 1982 PA 307, as amended, and the Administrative Rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

Questions about values in the attached table should be directed to one of the ERD toxicologists: Chris Flaga, telephone 517-373-0160 or Jeff Crum, telephone 517-335-3092. Other questions about this memorandum should be directed to Lynelle Marolf at 517-373-9893.

Attachment
rev. 2

ACT 307 TYPE B CLEANUP CRITERIA FOR GROUNDWATER AND SOIL

Jul-93

Type B criteria were calculated using currently available toxicological data and the algorithms set forth in the Act 307 Rules. These criteria may change as new toxicity data become available. They are not necessarily final cleanup standards. Please read the attached introduction for details. Carcinogenic chemicals are shown in italics. All values are expressed in units of parts per billion (ppb); ug/l in water and ug/kg in soil. Scientific notation is represented by E+ or E- a value, for example 2×10^6 is reported as 2E+6. Please refer to Operational Memorandum #6 for additional information concerning method detection limits.

	GROUNDWATER (ug/l)				SOIL (ug/kg)			
Chemical	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value {A} [R 713]	Acceptable Method Detection Limit in Water {B}	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil {B}
Acenaphthene	1,200	NA	{D}	5	24,000	{D}	4.5E+7	330
Acenaphthylene	25	NA	{D}	5	500	{D}	9.3E+5	330
Acetone	700	NA	500	50	14,000	10,000	7.8E+6	100
Acetonitrile	130	NA	810	10	2,600	16,000	1.5E+6	100
Acrolein	110	NA	2.5	5	2,200	50	1.2E+6	10
Acrylamide	0.0077	NA	9.1	0.5	0.15	180	280	5
Acrylic acid	580	NA	{D}	NA	12,000	{D}	6.4E+6	NA
Acrylonitrile	0.063	NA	2.2	1	1.3	44	700	10
Alachlor	0.42	NA	{D}	NA	8.4	{D}	16,000	NA
Aldrin	0.0021	NA	0.0014	0.01	{G}	{G}	76	1.7
Aluminum	ID	50 {H}	{D}	20	1,000 {C}	{C,D}	ID	500
Aniline	6.3	NA	4	20	130	80	2.3E+5	1,700
Anthracene	7,000	NA	1.1E+5	5	1.4E+5	2.2E+6	2.6E+8	330
Antimony	2.4 {C}	NA	4,300	5	48 {C}	86,000	91,000	500
Arsenic	0.02 {C}	NA	180	1	{C}	3,600 {C}	{C}	100
Atrazine	0.16	NA	{D}	1	3.2	{D}	5,800	50

	GROUNDWATER (ug/l)				SOIL (ug/kg)			
Chemical	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value {A} [R 713]	Acceptable Method Detection Limit in Water {B}	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil {B}
Azobenzene	0.32	NA	{D}	NA	6.4	{D}	12,000	NA
Barium	2,400 {C}	NA	{D}	200	48,000 {C}	{D}	9.1E+7	1,000
Benzene	1.2	NA	60	1	24	1,200	13,000	10
Benzidine	0.00015	NA	0.04	50	0.003	0.8	5.6	5,000
Benzo(a)anthracene	0.0049	NA	0.31	5	{G}	{G}	180	330
Benzo(b)fluoranthene	0.0049	NA	0.31	5	{G}	{G}	180	330
Benzo(k)fluoranthene	0.0049	NA	0.31	5	{G}	{G}	180	330
Benzo(g,h,i)perylene	25	NA	{D}	5	{G}	{G}	9.3E+5	330
Benzo(a)pyrene	0.0049	NA	0.31	5	{G}	{G}	180	330
Benzoic acid	31,000	NA	{D}	50	6.2E+5	{D}	1E+9 {P}	3,300
Benzyl alcohol	9,800	NA	22	50	2E+5	440	1.1E+8	1,300
Benzyl Chloride	0.21	NA	{D}	0.5	4.2	{D}	2,300	200
Bis(2-chloroethoxy)ethane	ID	NA	{D}	5	ID	{D}	ID	330
bis(2-Chloroethyl)ether	0.032	NA	4.2	5	0.64	84	350	330
bis(2-Ethylhexyl)phthalate	2.5	NA	59	5	{G}	{G}	92,000	330
Boron	420 {C}	NA	{D}	10	8,400 {C}	{D}	1.6E+7	2,000
Bromobenzene	ID	NA	{D}	1	ID	{D}	ID	10
Bromodichloromethane	0.56	NA	24	1	11	480	6,200	10
Bromoform	4.6	NA	65	1	92	1,300	50,000	10
Bromomethane	9.8	NA	11	1	200	220	1.1E+5	10

Chemical	GROUNDWATER (ug/l)				SOIL (ug/kg)			
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value {A} [R 713]	Acceptable Method Detection Limit in Water {B}	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil {B}
2-Butanone	320	NA	4,100	50	6,400	82,000	3.6E+6	100
2-Butoxyethanol	ID	NA	{D}	NA	ID	{D}	ID	NA
t-Butyl alcohol	550	NA	{D}	NA	11,000	{D}	6.1E+6	NA
Butyl benzyl phthalate	1,100	NA	{D}	5	22,000	{D}	4.1E+7	330
Cadmium	3.5 {C}	NA	0.64 {E}	0.2	70 {C}	{D}	1.3E+5	50
Camphene	ID	NA	{D}	NA	ID	{D}	ID	NA
Caprolactam	5,800	NA	{D}	NA	1.2E+5	{D}	2.2E+8	NA
Carbon disulfide	770	NA	{D}	50	15,000	{D}	8.6E+6	100
Carbon tetrachloride	0.27	NA	21	1	5.4	420	3,000	10
Chlordane	0.027	NA	0.00053	0.02	0.54	0.011	1,000	3.3
Chloride	ID	250,000	{D}	NA	5E+5 {I}	{D}	ID	NA
Chlorobenzene	130	NA	71	1	2,600	1,400	1.5E+6	10
Chloroethane	9.1	NA	{D}	1	180	{D}	1E+5	10
2-Chloroethyl vinyl ether	ID	NA	{D}	10	ID	{D}	ID	100
Chloroform	5.6	NA	43	1	110	860	62,000	10
Chloromethane	2.7	NA	{D}	1	54	NA(N)	30,000	10
2-Chlorophenol	43	NA	9.8	5	860	200	4.8E+5	330
Chlorpyrifos	21	NA	{D}	NA	420	{D}	7.8E+5	NA
Chromium {J}	120 {C}	NA	4.3	1	2,400 {C}	86 {C}	4.4E+6	200
Chrysene	0.0049	NA	0.31	5	{G}	{G}	180	330

Chemical	GROUNDWATER (ug/l)				SOIL (ug/kg)			
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value {A} [R 713]	Acceptable Method Detection Limit in Water {B}	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil {B}
Copper	1,300 {C}	1,000	18 {E}	25	20,000 {C}	370 {C}	9.8E+6	1,000
Cyanazine	9.8	NA	{D}	10	200	{D}	3.6E+5	500
Cyanide (Free)	150	NA	5.5	5	3,000 {C}	110 {C}	5.7E+6	200
Dacthal	5,300	NA	{D}	NA	1.1E+5	{D}	2E+8	NA
DDD	0.15	NA	0.0084	0.02	{G}	{G}	5,400	3.3
DDE	0.1	NA	0.0059	0.02	{G}	{G}	3,800	3.3
DDT	0.1	NA	0.00023	0.02	{G}	{G}	3,800	3.3
Di-n-butyl phthalate	840	NA	{D}	5	17,000	{D}	3.1E+7	330
Di-n-octyl phthalate	130	NA	{D}	5	2,600	{D}	4.7E+6	330
Diacetone alcohol	ID	NA	{D}	NA	ID	{D}	ID	NA
Diazinon	0.63	NA	{D}	NA	13	{D}	23,000	NA
Dibenzo(a,h)anthracene	0.0049	NA	0.31	5	{G}	{G}	180	330
Dibenzofuran	ID	NA	{D}	5	ID	{D}	ID	330
Dibromochloromethane	0.42	NA	29	1	8.4	580	4,700	10
Dibromomethane	77	NA	{D}	5	1,500	{D}	8.6E+5	10
1,2-Dichlorobenzene	600	NA	7	1	12,000	140	6.7E+6	10
1,3-Dichlorobenzene	600	NA	180	1	12,000	3,600	6.7E+6	10
1,4-Dichlorobenzene	1.5	NA	15	1	30	300	16,000	10
3,3'-Dichlorobenzidine	0.077	NA	0.063	20	1.5	1.3	2,800	2,000
Dichlorodifluoromethane	1,600	NA	{D}	1	32,000	{D}	1.8E+7	10

Chemical	GROUNDWATER (ug/l)				SOIL (ug/kg)			
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value {A} [R 713]	Acceptable Method Detection Limit in Water {B}	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil {B}
1,1-Dichloroethane	840	NA	{D}	1	17,000	{D}	9.3E+6	10
1,2-Dichloroethane	0.38	NA	560	1	7.6	11,000	4,300	10
1,1-Dichloroethylene	7	NA	67	1	140	1,300	78,000	10
cis-1,2-Dichloroethylene	77	NA	{D}	1	1,500	{D}	8.6E+5	10
trans-1,2-Dichloroethylene	120	NA	300	1	2,400	6,000	1.3E+6	10
2,4-Dichlorophenol	21	NA	34	5	420	680	7.8E+5	330
2,4-Dichlorophenoxyacetic acid	70	NA	47	10	1,400	940	2.6E+6	200
1,2-Dichloropropane	0.52	NA	64	1	10	1,300	5,800	10
1,3-Dichloropropene {K}	0.2	NA	3	1	4	60	2,200	10
Dichlorovos	0.12	NA	{D}	0.1	2.4	{D}	4,400	50
Dicyclohexyl phthalate	ID	NA	{D}	5	ID	{D}	ID	330
Dieldrin	0.0022	NA	3.2E-5	0.02	{G}	{G}	80	3.3
Diethyl ether	3,500	NA	{D}	1	70,000	{D}	3.9E+7	10
Diethyl phthalate	5,200	NA	{D}	5	1E+5	{D}	1.9E+8	330
Diethylene glycol monobutyl ether	84	NA	{D}	NA	1,700	{D}	3.1E+6	NA
Dimethyl phthalate	70,000	NA	{D}	5	1.4E+6	{D}	1E+9 {P}	330
N,N-Dimethylaniline	15	NA	{D}	NA	300	{D}	1.7E+5	NA
2,4-Dimethylphenol	350	NA	31	5	7,000	620	1.3E+7	330
2,6-Dimethylphenol	4.2	NA	{D}	5	84	{D}	1.6E+5	330
3,4-Dimethylphenol	9.8	NA	{D}	5	200	{D}	3.6E+5	330

	GROUNDWATER (ug/l)				SOIL (ug/kg)			
Chemical	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value {A} [R 713]	Acceptable Method Detection Limit in Water {B}	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil {B}
2,4-Dinitrotoluene	0.052	NA	{D}	5	1	{D}	1,900	330
Dinoseb	7	NA	0.5 {F}	1	140	10	2.6E+5	20
1,4-Dioxane	3.2	NA	2,000	1	64	40,000	35,000	10
Endosulfan {L}	1.6	NA	0.056	0.01	{G}	{G}	60,000	3.3
Endrin	1.2	NA	0.0023	0.02	{G}	{G}	44,000	3.3
Epichlorohydrin	3.5	NA	{D}	5	70	{D}	39,000	10
Ethyl acetate	6,300	NA	1,000	NA	1.3E+5	20,000	7E+7	NA
Ethylbenzene	680	74	31	1	1,500	620	7.5E+6	10
Ethylene dibromide	0.00042	NA	1.1	1	0.0084	22	4.7	10
Ethylene glycol	14,000	NA	68,000	5,000	2.8E+5	1.4E+6	5.2E+8	5,000
Ethylene glycol acetate	ID	NA	{D}	NA	ID	{D}	ID	NA
1-Ethyl-2-methylbenzene	ID	NA	{D}	NA	ID	{D}	ID	NA
Fluoranthene	840	NA	370	5	17,000	7,400	3.1E+7	330
Fluorene	840	NA	14,000	5	17,000	2.8E+5	3.1E+7	330
Fluorine	2,100 {C}	2,000	1,900	NA	42,000 {C}	38,000 {C}	7.8E+7	NA
Formaldehyde	1,300	NA	170	100	26,000	3,400	1.4E+7	500
Gentian violet	0.35	NA	{D}	NA	7	{D}	13,000	NA
Heptachlor	0.0077	NA	0.0016	0.01	{G}	{G}	280	1.7
Heptachlor epoxide	0.0038	NA	{D}	0.01	0.076	{D}	140	1.7
n-Heptane	31,000	NA	{D}	NA	6.2E+5	{D}	3.4E+8	NA

Chemical	GROUNDWATER (ug/l)				SOIL (ug/kg)			
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value {A} [R 713]	Acceptable Method Detection Limit in Water {B}	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil {B}
Hexabromobenzene	20	NA	{D}	NA	400	{D}	7.3E+5	NA
Hexachlorobenzene (C-66)	0.022	NA	0.0018	0.01	0.44	0.036	800	50
Hexachlorobutadiene (C-46)	0.46	NA	{D}	0.01	9.2	{D}	17,000	50
alpha-Hexachlorocyclohexane	0.0056	NA	{D}	0.01	0.11	{D}	210	1.7
beta-Hexachlorocyclohexane	0.02	NA	{D}	0.01	0.4	{D}	720	1.7
Hexachlorocyclopentadiene (C-56)	50	NA	0.54	0.01	1,000	11	1.8E+6	50
Hexachloroethane	2.5	NA	13	5	50	260	28,000	330
n-Hexane	2,900	NA	{D}	NA	58,000	{D}	3.2E+7	NA
2-Hexanone	980	NA	{D}	50	20,000	{D}	1.1E+7	100
Indeno(1,2,3-cd)pyrene	0.0049	NA	0.31	5	{G}	{G}	180	330
Iron	ID	300 {C}	{D}	100	6,000 {C}	{D}	ID	2,000
Isobutyl alcohol	2,200	NA	{D}	NA	44,000	{D}	2.5E+7	NA
Isophorone	38	NA	860	5	760	17,000	4.3E+5	330
Isopropyl alcohol	450	NA	21,000	NA	9,000	4.2E+5	5E+6	NA
Lead	4 {C,O}	NA	8 {C,E}	3	{C}	{C}	4E+5	1,000
Lindane	0.027	NA	0.08	0.01	0.54	1.6	1,000	1.7
Manganese	170 {C}	50 {C}	{D}	20	1,000 {C}	{D}	6.2E+6	2,000
Mercury (Inorganic)	2.1 {C}	NA	0.0013	0.2	42 {C}	0.026 {C}	78,000	100
Methanol	3,500	NA	41,000	800	70,000	8.2E+5	3.9E+7	800
Methoxychlor	35	NA	{D}	NA	700	{D}	1.3E+6	NA

Chemical	GROUNDWATER (ug/l)				SOIL (ug/kg)			
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value {A} [R 713]	Acceptable Method Detection Limit in Water {B}	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil {B}
2-Methoxyethanol	28	NA	{D}	NA	560	{D}	3.1E+5	NA
2-Methyl-4-chlorophenoxyacetic acid	7	NA	{D}	0.5	140	{D}	2.6E+5	20
2-Methyl-4,6-dinitrophenol	2.4	NA	0.59	20	48	12	91,000	1,700
4-Methyl-2-pentanone	350	NA	{D}	50	7,000	{D}	3.9E+6	100
Methyl-tert-butyl ether (MTBE)	230	NA	380	50	4,600	7,600	2.6E+6	100
Methylcyclopentane	ID	NA	{D}	NA	ID	NA(N)	ID	NA
4,4'-Methylene-bis-2-chloroaniline {M}	0.035	NA	{D}	NA	{G}	{G}	1,300	NA
Methylene chloride	4.6	NA	59	1	92	1,200	51,000	10
2-Methylnaphthalene	11	NA	{D}	NA	220	{D}	4.1E+5	NA
2-Methylphenol	350	NA	38	NA	7,000	760	3.9E+6	NA
3-Methylphenol	350	NA	{D}	NA	7,000	{D}	1.3E+7	NA
4-Methylphenol	35	NA	24	NA	700	480	1.3E+6	NA
Metolachlor	1,600	NA	{D}	0.1	32,000	{D}	6E+7	20
Naphthalene	250	NA	29	5	5,000	580	9.3E+6	330
Nickel	530 {C}	NA	57 {C,E}	50	11,000 {C}	1,100 {C}	2E+7	1,000
Nitrate	11,000	NA	{D}	NA	2.2E+5	{D}	4.1E+8	NA
Nitrite	1,000	NA	{D}	NA	20,000	{D}	2.6E+7	NA
Nitrobenzene	3.2	NA	1,900	5	64	38,000	36,000	330
n-Nitroso-di-n-Propylamine	0.0049	NA	{D}	5	0.098	{D}	54	330
N-Nitrosodiphenylamine	7	NA	160	5	140	3,200	78,000	330

Chemical	GROUNDWATER (ug/l)				SOIL (ug/kg)			
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value {A} [R 713]	Acceptable Method Detection Limit in Water {B}	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil {B}
Pendimethalin	840	NA	{D}	0.1	17,000	{D}	3.1E+7	20
Pentachlorobenzene	5.8	NA	{D}	0.5	120	{D}	2.2E+5	50
Pentachlorophenol	0.29	NA	0.8 {F}	1	5.8	16	11,000	1,700
2-Pentene	ID	NA	{D}	NA	ID	{D}	ID	NA
Phenanthrene	25	NA	{D}	5	500	{D}	9.3E+5	330
Phenol	4,200	NA	1,100	5	84,000	22,000	4.7E+7	330
Polybrominated biphenyls	0.0038	NA	{D}	NA	0.076	{D}	140	NA
Polychlorinated biphenyls {N}	0.018	NA	2E-5	0.2	{G}	{G}	1,000	330
Prometon	150	NA	{D}	0.1	3,000	{D}	5.7E+6	20
Propachlor	91	NA	{D}	0.5	1,800	{D}	3.4E+6	20
Propazine	190	NA	{D}	0.1	3,800	{D}	7E+6	20
Propyl alcohol	1,300	NA	8.2E+5	NA	26,000	1.6E+7	1.5E+7	NA
Propylene glycol	1.4E+5	NA	1.9E+5	5,000	2.8E+6	3.8E+6	1E+9 {P}	5,000
Pyrene	520	NA	11,000	5	10,000	2.2E+5	1.9E+7	330
Pyridine	7	NA	20	NA	140	400	78,000	NA
Selenium	35 {C}	NA	22 {C}	5	700 {C}	440 {C}	1.3E+6	500
Silver	33 {C}	100	0.1 {C}	0.5	660 {C}	2 {C}	1.2E+6	500
Sodium	1.5E+5	NA	{D}	NA	3E+6 {C}	{D}	1E+9 {P}	NA
Styrene	1.2	NA	19	1	24	380	13,000	10
Sulfate	ID	2.5E+5	{D}	NA	5E+6	{D}	ID	NA

Chemical	GROUNDWATER (ug/l)				SOIL (ug/kg)			
	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value {A} [R 713]	Acceptable Method Detection Limit in Water {B}	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil {B}
Tebuthiuron	490	NA	{D}	NA	9,800	{D}	1.8E+7	NA
1,2,4,5-Tetrachlorobenzene	2,400	NA	0.4	0.1	48,000	8	8.8E+7	20
2,3,7,8-Tetrachlorodibenzo-p-dioxin	4.6E-7	NA	1.4E-8	1E-5	9.2E-6	2.8E-7	0.017	0.001
1,1,1,2-Tetrachloroethane	1.3	NA	{D}	1	26	{D}	15,000	10
1,1,2,2-Tetrachloroethane	0.18	NA	32	1	3.6	640	1,900	10
Tetrachloroethylene	0.7	NA	22	1	14	440	7,800	10
Tetrahydrofuran	230	NA	3,300	NA	4,600	66,000	2.6E+6	NA
Thallium	0.58 {C}	NA	6.3 {C}	2	12 {C}	130 {C}	22,000	500
Toluene	1,500	790	110	1	16,000	2,200	1.7E+7	10
p-Toluidine	0.18	NA	{D}	NA	3.6	{D}	6,900	NA
Toxaphene	0.032	NA	0.00024	1	0.64	0.0048	350	170
Triallate	91	NA	{D}	1	1,800	{D}	3.4E+6	20
1,2,4-Trichlorobenzene	110	NA	22	1	2,200	440	1.2E+6	10
1,1,1-Trichloroethane	200	NA	120	1	4,000	2,400	2.2E+6	10
1,1,2-Trichloroethane	0.63	NA	65	1	13	1,300	7,000	10
Trichloroethylene	2.2	NA	94	1	44	1,900	24,000	10
Trichlorofluoromethane	2,400	NA	{D}	1	48,000	{D}	2.7E+7	10
2,4,5-Trichlorophenol	700	NA	{D}	50	14,000	{D}	2.6E+7	1,700
2,4,6-Trichlorophenol	3.2	NA	1.5	5	64	30	1.2E+5	330
2(2,4,5-Trichlorophenoxy)propionic acid	52	NA	21	NA	1,000	420	1.9E+6	NA

	GROUNDWATER (ug/l)				SOIL (ug/kg)			
Chemical	Health-Based Drinking Water Value [R 709(2)(a)(b)]	Aesthetic Drinking Water Value [R 709(2)(c)(d)]	GSI Value {A} [R 713]	Acceptable Method Detection Limit in Water {B}	20X Drinking Water Value [R 711(2)]	20X GSI Value	Direct Contact Value [R 711(5)]	Acceptable Method Detection Limit in Soil {B}
1,2,3-Trichloropropane	40	NA	{D}	1	800	{D}	4.4E+5	10
1,1,2-Trichloro-1,2,2-trifluoroethane	1.9E+5	NA	{D}	NA	3.8E+6	{D}	1E+9 {P}	NA
Trifluralin	4.6	NA	{D}	NA	92	{D}	1.7E+5	NA
2,2,4-Trimethyl-2-pentene	ID	NA	{D}	NA	ID	{D}	ID	NA
1,3,5-Trimethylbenzene	ID	NA	{D}	1	ID	{D}	ID	10
tris(2,3-Dibromopropyl)phosphate	0.02	NA	{D}	NA	0.4	{D}	720	NA
Vanadium	61 {C}	NA	8 {C}	20	1,200 {C}	160 {C}	2.2E+6	1,000
Vinyl chloride	0.016	NA	3.1	1	0.32	62	180	10
Xylenes	13,000	280	59	1	5,600	1,200	1.4E+8	10
Zinc	2,300 {C}	5,000 {C}	81 {C,E}	20	46,000 {C}	1,600 {C}	8.6E+7	1,000

Footnotes

{A} Groundwater surface water interface (GSI) values are based on Rule 57 of Act 245. The GSI values are presented only to establish groundwater criteria which are protective of surface water.

{B} Acceptable method detection limits for groundwater and soil samples, the latter expressed in ug/kg dry weight.

{C} Background, as defined in Rule 701(c), may be substituted as the cleanup criteria if higher than the Type B cleanup criterion.

{D} Chemical has either not been evaluated or an inadequate data base precludes the development of a GSI value. MDNR should be contacted to determine whether a chemical is being evaluated or has been evaluated since this list was prepared. If no value exists, the responsible party (RP) may develop a proposed GSI value for MDNR review and approval. Guidance can be obtained from MDNR. If a GSI value cannot be developed from data in the scientific literature, the RP can either perform a Type A cleanup or generate the minimum toxicity data required to develop the GSI value.

{E} GSI value is dependant on water hardness. Value presented was calculated assuming a hardness of 178 mg/l of CaCO3. If site-specific water hardness is expected to be significantly different, contact an ERD toxicologist.

{F} GSI value is pH dependant. Value presented was calculated assuming a pH of 7.7. If site-specific pH is expected to be significantly diferent, contact an ERD toxicologist.

{G} Chemical, due to its physicochemical properties, is not expected to leach through soils to groundwater under most conditions. Therefore, the direct contact soil criterion is considered to be protective of groundwater. However, the presence of organic solvents in the soil may increase the solubility of these chemicals, thereby increasing their potential to leach from soil to groundwater. Under these conditions site-specific leachate testing may be required.

(H) Professional judgement used to determine that 50 ppb of aluminum in drinking water is protective of human health.

{I} Criteria is based on agricultural impacts (phytotoxicity), not 20X groundwater criterion.

{J} All chromium data should be compared to the criteria for hexavalent chromium (Cr+6). Trivalent chromium (Cr+3) has the potential to be oxidized to Cr+6 in the presence of an oxidant such as chlorine at concentrations similar to those used to disinfect drinking water. Cr+3 criteria can be used only in those situations where Cr+6 is known/demonstrated not to exist at the site and use of the groundwater as a public water supply is prevented. If applicable, contact an ERD toxicologist for Cr+3 criteria.

{K} Criteria for 1,3-dichloropropene can be applied to the cis- and trans-1,3-dichloropropene isomers. The toxicity data used for criteria development was generated using a mixture of both isomers (Telone II).

{L} Criteria for endosulfan can be applied to endosulfan I (alpha-endosulfan) and endosulfan II (beta-endosulfan).

{M} Also known as MBOCA.

{N} Criteria apply to each Aroclor separately (Aroclor 1016, 1221, 1232, 1242, 1248, 1254 and 1260).

{O} Higher level may be acceptable if soil concentration is less than 400 ppm and groundwater migrating off-site will not impact adjacent properties. Contact an ERD toxicologist for further explanation.

{P} Direct contact criterion is at saturation in soil. Criterion is actually greater than 100% in soil, hence it is reduced to 100%.

ID = Inadequate data to develop criterion.

NA = Not available.

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APPENDIX E

DETAILED DATA BASE PONTIAC STORAGE FACILITY

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PONTIAC STORAGE FACILITY
CERFA CATEGORY MATRIX

LOCATION	CERFA PARCEL WITH QUALIFIERS CATEGORIES						CERFA DISQUALIFIED CATEGORIES			
	ASBESTOS	LEAD	RADON	RADIO-NUCLIDES	UNEXPLODED ORDNANCE	PCBs STORAGE	PETROLEUM RELEASE	PETROLEUM STORAGE	HAZARDOUS SUBSTANCE RELEASE	HAZARDOUS SUBSTANCE STORAGE
300 gal Above Ground Tank							Y	Y		
1,000 Gallon Above Ground Tank							Y	Y		
Boilerhouse										Y
Paint/Solvent Storage Area and Usage										Y
Former 10,000 Gallon Underground Storage Tank								Y		
1,000 Gallon Underground Storage Tank							Y	Y		

Records printed: 6

PETROLEUM RELEASE

LOCATION	STATUS	LOCATION COMMENTS	TYPE	SUBSTANCE	QUANTITY	DATE RELEASE	APPENDIX A REFERENCE(S)	REMEDIATION OR MITIGATION
300 gal Above Ground Tank	Y	area East of Section A	AGT	Unleaded gasoline		1955-1987	4,7,11	Tank removed 1992. Soil sampled and remediated.
1,000 Gallon Above Ground Tank	Y	area North of Section E	AGT	Heating oil			4,7,11	
Stormwater drainage ditch	Y	Ditch adjacent to former boiler house	Ditch	Total Petroleum Hydrocarbons (TPH=14,800 mg/kg)			5	
1,000 Gallon Underground Storage Tank	Y	area East of Section C	UST	Heating oil			4,7,11	Tank removed 1992. Soil sampled and remediated.

STATUS=Y - SUBSTANCE PRESENT
STATUS=P - POSSIBLE SUBSTANCE PRESENT

Records printed: 4

PETROLEUM STORAGE

LOCATION	STATUS	LOCATION COMMENTS	TYPE	SUBSTANCE	QUANTITY	DATE START	DATE INACTIVATED	APPENDIX A REFERENCE(S)	REMEDIATION OR MITIGATION
300 gal Above Ground Tank	Y	area East of Section A	AGT	Unleaded gasoline	300 gal	1955	~1985	4,7,11	Tank removed 1992. Soil samples taken and soil remediated.
1,000 Gallon Above Ground Tank	Y	area North of Section E	AGT	Heating oil	1,000 gal	1956		4,7,11	Tank active.
Former 10,000 Gallon Underground Storage Tank	Y	area North of Section E	UST	Heating oil	10,000 gal	1956	1984	4	Tank removed in 1984. No soil samples were taken.
1,000 Gallon Underground Storage Tank	Y	area East of Section C	UST	Heating oil	1,000 gal	1956	1987	4,7,11	Tank removed 1992. Soil samples taken and soil remediated.

STATUS=Y - SUBSTANCE PRESENT
STATUS=P - POSSIBLE SUBSTANCE PRESENT

Records printed: 4

HAZARDOUS SUBSTANCE STORAGE

LOCATION	STATUS	LOCATION COMMENTS	TYPE	SUBSTANCE	QUANTITY	DATE START	DATE INACTIVATED	APPENDIX A REFERENCE(S)	REMEDIATION OR MITIGATION
Boilerhouse	Y	North of Section E	55 gal Drums	Lubricating oils and roofing tar	330 gals total/		1990	4	Drums of materials were removed from this location
Paint/Solvent Storage Area and Usage	Y	Northeast corner of Section C	Drums/cans	Paints and solvent		1955	1987	4	Lead paint spill remediated

STATUS=Y - SUBSTANCE PRESENT
STATUS=P - POSSIBLE SUBSTANCE PRESENT

Records printed: 2