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**RE-EVALUATION OF SELECT
REMOVAL ACTION ALTERNATIVES:
ADDENDUM TO EECA**

**Textile Road Site
Ypsilanti Township
Washtenaw County, Michigan**

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FEBRUARY 1996

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CONESTOGA-ROVERS & ASSOCIATES

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1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) was retained by the Respondents for the Textile Road Site (Site) to develop this document entitled "Re-Evaluation of Select Removal Action Alternatives: Addendum to EECA (Report)". An Extent of Contamination Study (EOC, 1994), Engineering Evaluation and Cost Analysis (EECA, 1995), and an Additional Investigation (AI, 1995) Study, have been conducted at the Site. The EOC/EECA activities completed at this Site were conducted pursuant to the requirements of an Administrative Order by Consent (Consent Order) entered into by General Motors Corporation (GM) and Holtzman-Silverman Realty Company (HS) (collectively GM and HS are referred to as the Respondents) with the United States Environmental Protection Agency (U.S. EPA). The Respondents' obligations under Consent Order were completed with the U.S. EPA approval of the EECA Report in February, 1995, and the Respondents' payment of oversight costs. The AI Study was conducted by the Respondents for the Site in 1995 to provide supplemental information to the EOC/EECA Reports.

This document presents the Re-Evaluation of the on-Site Disposal Cell (Alternative 5A from the EECA) and off-Site Disposal (Alternative 5B from the EECA) Removal Action Alternatives for the Site, at the request of the U.S. EPA, Region V.

1.1 STATEMENT OF PURPOSE

The primary objective of this Report is to present a more current analysis and comparison of the on-Site Disposal Cell and off-Site Disposal Removal Action Alternatives initially discussed in the EECA Report prepared by the Respondents in 1994.

Re-evaluation of the two Removal Action Alternatives is presented for the following reasons:

- 1) a more precise estimate of the volumes of soil containing PCB concentrations in the ranges of 21 to 50 mg/kg. and greater than 50 mg/kg were developed during the AI;
- 2) changes in applicable State environmental regulations, including clean-up criteria (State of Michigan, Public Act 451, Part 201 which replaced Act 327);
- 3) current market costs have changed; particularly excavation, transportation, and off-Site disposal rates (both non TSCA and TSCA materials); and
- 4) the potential for a new TSCA permitted landfill cell for the disposal of PCBs nearby the Site (within 5 miles).

1.2 BASIS FOR RE-EVALUATION OF ALTERNATIVES 5A/5B

As Removal Action Alternatives 5A and 5B are re-evaluated in this Report based upon a variety of conditions as stated below.

The re-evaluation of the on-Site Disposal Cell is based on using the Michigan generic industrial cleanup criteria for PCBs of 21 mg/kg. This cleanup standard was promulgated by the State of Michigan under Act 451, Part 201 after the completion of the EECA Report in early 1995.

The re-evaluation of off-Site Disposal is based on the use of the Michigan generic industrial cleanup criteria of 21 mg/kg for PCBs and a change in market conditions related to off-Site disposal of both TSCA and non TSCA materials. These market condition changes include the potential permitting of a TSCA permitted landfill nearby the Site. When the EECA Report was prepared in 1994 the closest TSCA permitted landfill was located approximately 500 miles from the Site (in New York) and TSCA waste disposal rates were extremely high. Currently, a local landfill has a TSCA disposal permit pending, expecting approval in spring of 1996, which, if

approved, will significantly reduce the cost of the off-Site Disposal Removal Action.

1.3 SITE DESCRIPTION

The Site is an inactive industrial property located to the southeast corner of Textile Road and Bunton Road in Ypsilanti Township, Washtenaw County, Michigan. The location of the Site is presented in Figure 1.1. The Site is bounded to the north by Textile Road, to the west by Bunton Road, to the east by a Ford Motor Company facility and to the south by an agricultural property. A Site plan is presented in Figure 1.2.

The Site is generally flat with occasional fill mounds (also referred to as hummocks) located across the Site. Three man-made ponds are located on the Site as shown on Figure 1.2. The ponds were formed after sand and gravel was removed from beneath the groundwater surface table.

The surface materials at the Site consist of various amounts of earth fill, building rubble, and native soils. The majority of the surface soils are covered with relatively heavy vegetation, including trees, shrubs and grass.

A gravel road traverses the Site from the entrance point off of Textile Road, southward to the area of the ponds. The gravel road forks at several locations to permit access to various parts of the Site. A cinder block building exists near the entrance off of Textile Road.

Access to the Site is restricted by the presence of a security fence maintained by the Respondents which completely encloses the Site. Entry to the Site is controlled at two locked truck gates located on each of the northern and southern fence lines.

1.4 REPORT ORGANIZATION

The remainder of this Report is presented in the following sections:

Section 2.0	Background
Section 3.0	Removal Action Alternatives
Section 4.0	Analysis of Removal Action Alternatives
Section 5.0	Schedule

2.0 BACKGROUND

To characterize the nature and extent of affected or potentially affected media at the Site an EOC study, EECA, and AI were performed. The EOC study was performed and the results documented in the EOC Study Report, February 1994. To identify the objectives of the removal action and analyze the effectiveness, implementability and cost of various removal action alternatives an EECA Report was prepared in September 1994 and approved by the U.S. EPA in February 1995. An AI Study was completed and submitted in December 1995 to further define the volume estimate of PCB impacted soil at the Site.

The EOC study Report, EECA Report and AI Study Report are summarized in the following titled sections.

2.1 EOC AND EECA STUDY REPORTS

Summary of the EOC Study Report and the EECA Report are presented below:

2.1.1 Extent of Contamination Study Summary (1994)

2.1.1.1 EOC Field Investigation

The field investigation at the Textile Road Site included the following activities:

- Site survey and base map preparation;
- installation of fifty (50) boreholes;
- installation of nine monitoring wells;
- single well response testing of selected monitoring wells - upper water table zone and lower sands aquifer;
- collection of soil, groundwater and pond sediment samples for laboratory analysis; and

- water level measurements in monitoring wells and three on-Site ponds.

2.1.1.2 EOC Chemical Distribution

The EOC's findings on chemical distribution at the Textile Road Site is summarized as follows:

A. Soil

- VOCs, BNAs and inorganic parameters were identified at relatively low concentrations in the upper sands.
- There were no exceedances of the Michigan generic residential or industrial 20x drinking water soil cleanup criteria in the clay aquitard or lower sands
- PCBs were identified in four areas at the north end of the Site at levels below 310 mg/kg (generally detected in the 5 to 100 mg/kg range).

B. Groundwater

- VOCs, BNAs and inorganic parameters were identified at relatively low concentrations.
- PCBs were identified at 8.4/12 µg/L (round 1 sampling/round 2 sampling) in monitoring well MW-1U-93 at the north end of the Site. It should be noted that no PCBs were identified in any of the other 8 monitoring wells.

C. Pond Sediment

- No exceedances of Michigan generic residential or industrial 20x drinking water soil cleanup criteria.
- PCBs were not detected.

In general, the shallow fill/sand to the north and west of Pond 1 was identified to contain PCBs (and associated constituents) at concentrations above the Michigan generic industrial cleanup criteria. Groundwater in the affected soil/fill zone (i.e. upper water table zone) to the north and west of Pond 1 was also identified to contain constituents at concentrations above the Michigan generic industrial cleanup criteria. The clay aquitard soils, lower sands soil and groundwater and pond sediments were identified to be unimpacted by Site related constituents.

2.1.2 Engineering Evaluation and Cost Analysis Summary (1994/1995)

To meet the objectives of the EECA, the following removal action alternatives were identified, developed, reviewed and evaluated:

Alternative 1	No Action
Alternative 2	Limited Action
Alternative 3	Physical Site Containment
Alternative 3A	Capping
Alternative 3B	Capping and Groundwater Cutoff Wall
Alternative 4	Source Removal/Treatment
Alternative 4A	Solidification/Stabilization and Capping
Alternative 4B	Solidification/Stabilization, Capping and Groundwater Cutoff Wall
Alternative 4C	Solvent Extraction, Solidification/Stabilization and Capping
Alternative 4D	Gas-Phase Chemical Reduction, Solidification/Stabilization and Capping
Alternative 4E	Low Temperature Thermal Desorption, Solidification/Stabilization and Capping
Alternative 4F	On-Site Incineration, Solidification/Stabilization and Capping
Alternative 5	Disposal
Alternative 5A	On-Site Disposal
Alternative 5B	Off-Site Disposal

These alternatives are described in detail in Section 7.0 of the EECA (1995).

The detailed analysis of removal alternatives consisted of the refinement and further development of each proposed alternative against the following seven criteria:

- overall protection of human health and the environment;
- consideration of applicable or appropriate and relevant requirements (ARARs);
- short-term impacts and effectiveness;
- long-term effectiveness and permanence;
- reduction of toxicity, mobility and volume;
- implementability; and
- cost.

2.2 AI STUDY REPORT (1995)

The purpose of the AI Study Report was to collect additional analytical information concerning PCBs in the area north of Pond 1 and in the northwest area of the Site (areas identified to contain PCBs above the Michigan Act 451, Part 201 generic industrial cleanup criteria). The additional information collected was used to develop a more precise estimate of the volume of soil which contained PCB concentrations in the ranges of 21 to 50 mg/kg (non-TSCA) and greater than 50 mg/kg (TSCA).

The AI was completed in a manner consistent with the U.S. EPA approved AI Study Work Plan, Quality Assurance Project Plan (QAPP), and the Health and Safety Plan (HASP).

The AI activities at the Site included the following:

- installation of 24 boreholes;
- collection of 88 soil samples for laboratory analysis;

- excavation of eleven test trenches; and
- survey of borehole and test trench locations

Figure 2.1 indicates the locations of the boreholes and test trenches completed at the Site during the EOC (1994) and AI (1995).

Chemical Distribution

The chemical distribution identified by evaluating data collected during the EOC and AI is summarized as follows:

- PCB concentrations identified in soil samples ranged from not detected to 310 mg/kg;
- PCBs were not detected above 21 mg/kg in any soil samples analyzed from below the 6 to 8 feet bgs sample interval; and
- There were no exceedances of the Michigan Act 451, Part 201 generic industrial direct contact cleanup criteria for VOCs or SVOCs.

Estimated Volume of Soil Containing PCBs

The volume of soil containing PCBs ranging from 21 to 50 mg/kg (non TSCA) and above 50 mg/kg (TSCA) were estimated based on analytical data collected during the EOC Study and the AI Study.

Isoconcentration contours for PCBs at 2 to 4 and 6 to 8 feet bgs are presented on Figures 2.2 and 2.3, respectively. In order to estimate the volume of soil containing PCBs the following assumptions were made:

- PCB analytical results for samples collected from the 2 to 4 feet bgs interval represent soil from 0 to 5 feet bgs.
- PCB analytical results for samples collected from the 6 to 8 foot bgs interval represent soil from 5 to 10 feet bgs (to the approximate depth of the water table).

The estimated volume of soil containing PCBs ranging from 21 to 50 mg/kg and above 50 mg/kg is presented on Table 2.1. The total estimated volume of soil containing PCBs ranging from 21 to 50 mg/kg is 7.781 cubic yards (cy) and the total estimated volume of soil containing PCBs above 50 mg/kg is 7.026 cy.

3.0 REMOVAL ACTION ALTERNATIVES

The purpose of this section is to present a description of the On-Site Disposal Cell and Off-Site Disposal Removal Action Alternatives.

3.1 ON-SITE DISPOSAL CELL- ALTERNATIVE 5A

The on-Site cell consists of construction of a soil containment cell, or vault, to completely contain all soils exceeding the Michigan generic industrial direct contact cleanup criteria for PCBs of 21 mg/kg. The estimated excavation areas, soil containing PCBs above 21 mg/kg, are presented on Figure 3.1. Figure 3.2 indicates the conceptual size and location of the cell in relation to the areas to be excavated.

The cell would be constructed at the north east corner of the property. The cell would have plan dimensions of approximately 200 by 300 feet. The base liner would be comprised of compacted low permeability clays and a high density polyethylene (HDPE) flexible membrane liner (FML) to meet the requirements of Act 451 (formerly Act 64) and TSCA. The liner would be constructed entirely above the water table and include a leachate collection and leak detection system.

The cell from its base, would have maximum thickness of approximately 20 feet. The top of the cell would be covered with an Act 451/TSCA compliant cap, including an FML.

Specifically, implementation of the On-Site Disposal Cell Removal Action would be comprised of the following:

- Institutional controls and access restrictions;
- Site preparation;
- Supply of soil material;
- On-Site landfill cell construction (liner, cap);
- Site controls including water management;
- Material handling;
- Verification sampling (PCBs);

- Monitoring and Site evaluation. and
- General Site operation and maintenance.

Institutional Controls Access Restrictions

The implementation of institutional controls and access restrictions would reduce potential future human contact with Site-related constituents. This action could involve the placement of a restriction within the deed, preventing certain activities, or some type of formed notice placed in the registry of deeds to inform prospective future purchasers of the past history and condition of the property. In addition, zoning or building code changes could be adopted, as necessary.

Access to the Site may be further restricted by upgrading the existing security fence, constructing additional security fencing and maintaining warning signs, or instituting other controls to minimize entry to the Site by wildlife or unauthorized personnel. The security fence and signs would initially be inspected on a semi-annual basis during the implementation of the Site monitoring program.

Site Preparation

Preparation of the Site involves some general pre-construction activities, including:

- clearing and grubbing of excavation, stockpile, and on-Site cell areas;
- the construction of temporary access roads around the interior of the Site;
- upgrading the existing equipment decontamination pad, as necessary; and
- installing temporary utility services (e.g. power, telephone) and an on-Site office.

Supply of Soil Material

To supply the construction of the on-Site cell, appropriate soil material sources must be identified and approved prior to being transported to the Site for use. Whenever possible on-Site virgin soil

material sources will be used (i.e. sand, gravel, etc.). These soil materials include:

- low permeability clay (liner, cap);
- common fill (cap);
- sand/gravel (leachate collection, drainage layers); and
- topsoil (cap).

On-Site Cell Liner Construction

Construction of the on-Site cell will be in accordance with the approved design, essentially compliant with Act 451 and TSCA requirements. The liner construction tasks will basically involve:

- excavating the cell area to the design dimensions and stockpile the soils;
- placing and compacting clay and sand/gravel as necessary for barrier protection and leachate collection;
- install the HDPE FML;
- install the leachate collection piping;
- install the leachate collection sump; and
- install the leachate pumping system.

Material Handling

With the exception of transporting and placing the excavated soils on-Site, the material handling aspect is essentially the same as with the off-Site disposal alternative (5B). Generally, this work phase involves the following:

- excavating and stockpiling targeted soils with considerations of maintaining a dewatered excavation area and limiting groundwater impact and treatment;
- dewatering excavated soils/water management;
- disposal of water from soils;
- placing and compacting dewatered soils in the on-Site cell;

- restore the excavation areas by backfilling with materials obtained from the cell construction and elsewhere on Site; and
- grading and contouring the backfilled excavations as necessary.

On-Site Cell Cap Construction

After placement of the excavated and dewatered soil into the cell, the cap will be constructed in accordance with the approved design. The cap construction components include:

- placing and compacting low permeable clay and drainage sand;
- placing the drainage structure and associated piping;
- install the HDPE FML;
- placing and compacting common fill and topsoil; and
- placing seed and mulch on topsoil.

Verification Sampling

Throughout the soil excavation of the material handling phase, verification soil sampling will be conducted to evaluate the limits of the excavation. Soil samples will be analyzed for PCBs. When the verification sample results indicate PCB concentrations in the soil are less than 21 mg/kg then the soil removal will be considered completed in that area of the excavation. The frequency and location of verification soil sampling will be conducted in general accordance with the Michigan Department of Environmental Quality's (MDEQ) Guidance Document, Verification of Soil Remediation.

Monitoring and Site Evaluation

A general Site groundwater monitoring and cell performance evaluation program would be implemented.

The objective of the groundwater monitoring program would be used to evaluate the effectiveness of the removal action and the performance of the on-Site containment cell. The cell performance

monitoring program would include the installation of a series of piezometers to monitor hydraulic gradients into the cell. The proposed Site groundwater monitoring locations are presented on Figure 3.3. Monitoring will be conducted on a semi-annual basis for the first five years, and on an annual basis thereafter. The monitoring program would be reviewed and evaluated on a yearly basis to determine future monitoring requirements. The frequency for the monitoring program would be modified as required dependent upon Site conditions. Each sample would be analyzed for a Site Specific Parameter List (SSPL) which would be comprised of PCBs and inorganic parameters identifies as COCs in the EOC. Monitoring would be conducted in accordance with a Quality Assurance Project Plan (QAPP) developed for removal action monitoring. A groundwater contingency plan would be developed to address adverse impacts identified in groundwater during the monitoring program. The mechanism for the development of the contingency plan will be established during the design phase of the project.

An annual report will be prepared which will document sampling activities, present analytical results and provide an evaluation of the data with respect to the performance of the removal action and cell.

A complete Site evaluation review of the on-Site cell would be conducted every five years during the groundwater monitoring program. The Site Evaluation report would present a summary of the annual reports and an assessment of the need to revise the monitoring schedule or implement the groundwater contingency plan.

The final monitoring and evaluation program will be developed/finalized in the approved design.

General Site Operation & Maintenance (O & M)

General O & M tasks that will be performed after construction activities have been completed include:

- maintaining the Institutional Controls over the Site (including security fence inspections);

- monitoring and maintaining the integrity of the on-Site cell cap; and
- operating and maintaining off-Site leachate disposal, as necessary.

3.2 OFF-SITE DISPOSAL - ALTERNATIVE 5B

Alternative 5B consists of the off-Site disposal of soil exceeding the Michigan generic industrial direct contact cleanup criteria for PCBs to a Michigan Type II sanitary landfill or a TSCA approved landfill.

Disposal options for the excavated soil depend upon the concentration of PCB contained within the soil, as follows:

- 21 - 50 mg/kg - Disposal in a Michigan Type II sanitary landfill
- above 50 mg/kg - Disposal in TSCA permitted landfill

Specifically, implementation of Off-Site Disposal Removal Action would be comprised of the following:

- Notice of Approved Environmental Remediation and access restrictions (as required);
- Site preparation;
- Soil excavation and associated work;
- Transportation and disposal of soil to a TSCA permitted landfill;
- Transportation and disposal of soil to a Michigan Type II landfill;
- Monitoring and Site evaluations; and
- General Site operation and maintenance.

Notice of Approved Environmental Remediation/Access Restrictions

After the implementation of the Alternative 5B contaminant concentrations in soil remaining on-Site will be below those those levels identified in Act 451, Part 201 for generic industrial cleanups. Alternative 5B will include filing of a Notice of Remediation with Washtenaw County as specified in Act 451, Section 324.201b (2). As an

additional benefit, the access to the Site may be further restricted by maintaining the existing security fence.

Site Preparation

Preparation of the Site involves some general pre-construction activities, including:

- clearing and grubbing of excavation and stockpile areas;
- the construction of temporary access roads around the interior of the Site; and
- upgrading the existing equipment decontamination pad, as necessary.

Site Excavation/Associated Work

Similar to the material handling phase of the on-Site disposal Alternative (5A), soil with PCB concentrations greater than 21 mg/kg will be excavated, stockpiled, characterized and transported to a TSCA permitted or Michigan Type II landfill for disposal, as necessary. The general detail of this work phase includes the following:

- excavating target soils with considerations of maintaining a dewatered excavation and limiting groundwater impact and treatment;
- segregating and stockpiling excavated soils on-Site;
- characterizing stockpiled soils;
- dewater excavated soils prior to loading/hauling;
- loading and hauling stockpiled soils off-Site to the proper disposal facility, either Michigan Type II or TSCA;
- disposed of water off-Site (as required);
- restoring the excavation areas by backfilling with materials obtained from elsewhere on the Site; and
- grading and contouring the backfilled excavations, as necessary.

Verification Sampling

Verification sampling will be conducted to evaluate the limits of the excavation. Soil samples will be analyzed for PCBs. When the

verification sample results indicate PCB concentrations in the soil are less than 21 mg/kg then the soil removal will be considered completed in that area of the excavation. The frequency and location of verification soil sampling will be conducted in general accordance with the MDEQ Guidance Document, Verification of Soil Remediation.

Transportation and Disposal of Soil to a TSCA Permitted Landfill

Soil characterized as having concentrations of PCBs greater than 50 mg/kg will be transported to and disposed of at a TSCA permitted waste landfill. Transportation of the waste materials shall be accomplished by a properly licensed and permitted hazardous waste hauler. All wastes shall be properly manifested before leaving the Site. Implementation of this alternative is dependent on a local landfill receiving a TSCA permit and charging reasonable disposal fees.

Transportation and Disposal of Soil to a Michigan Type II Landfill

Soil characterized as having concentrations of PCBs ranging from 21 to 50 mg/kg shall be transported to and disposed of at a Michigan Type II waste landfill. Transportation of the waste materials shall be accomplished by a properly licensed and permitted waste hauler. All wastes shall be properly manifested before leaving the Site.

Monitoring and Site Evaluations

A general Site groundwater monitoring evaluation program would be implemented.

The objective of the groundwater monitoring program would be used to evaluate the effectiveness of the removal action. The proposed Site groundwater monitoring locations are presented on Figure 3.3. Monitoring will be conducted on a semi-annual basis for the first five years, and on an annual basis thereafter. The monitoring program would be reviewed and evaluated on a yearly basis to determine future monitoring requirements. The frequency for the monitoring program would be modified

as required dependent upon Site conditions. Each sample would be analyzed for a SSPL which would be comprised of PCBs and inorganic parameters identified as COCs in the EOC. Monitoring would be conducted in accordance with a QAPP developed for removal action monitoring. A groundwater contingency plan would be developed to address adverse impacts identified in groundwater during the monitoring program. The mechanism for the development of the contingency plan will be established during the design phase of the project.

An annual report will be prepared which will document sampling activities, present analytical results and provide an evaluation of the data with respect to the performance of the removal action.

A complete Site evaluation review of the off-Site Disposal would be conducted every five years after completion of the removal action. The Site Evaluation report would present a summary of the annual reports and an assessment of the need to revise the monitoring schedule or implement the groundwater contingency plan.

The final monitoring and evaluation program will be developed/finalized in the approved design. It should be noted that the monitoring program associated with this alternative may be able to be discontinued faster than that associated with Alternative 5A.

General Site Operation & Maintenance (O&M)

General O&M tasks that shall be performed annually after the construction activities have been completed include:

- maintaining the Institutional Controls over the Site (including security fence inspections).

4.0 ANALYSIS OF REMOVAL ACTION ALTERNATIVES

4.1 ON-SITE DISPOSAL CELL - ALTERNATIVE 5A

This alternative involves the construction of a Michigan Act 451 compliant clay liner and cap (e.g., containment cell), to contain all Site soils exceeding the soil cleanup standards. Institutional controls would be implemented to limit Site use. Deed restrictions would also be implemented to prevent the disturbance of the cell. A detailed description of this alternative is presented in Section 3.1.

Overall Protection of Human Health and the Environment

This alternative would reduce the risks to human health and the environment for all exposure scenarios. The placement of the cell would eliminate the direct contact with chemicals in the surface soils and potential surface runoff to Site trespassers and reduce potential emissions to the atmosphere of chemicals in the near surface soils. Access to the Site would be restricted by existing Site security fencing or constructing additional fencing, if required. Construction of the cell liner and cap would reduce infiltration and thereby reduce the potential for chemical migration into surrounding areas.

Consideration of ARARs

All materials exceeding the Act 451, part 201 generic industrial cleanup level for PCEs (21 mg/kg) would be placed in the constructed cell on Site. As a result, alternative 5A would meet the requirements of a limited industrial cleanup pursuant to Act 451, Part 201.

The cell would be constructed in accordance with Michigan standards for a hazardous waste landfill. All construction activities would be completed in accordance with Federal and State regulations regarding worker safety, dust control and air emissions, erosion control, and work within flood plains or wetlands.

This alternative would meet the TSCA requirement of being protective of human health and the environment in addition to reducing the mobility of the chemicals of concern. This alternative would not reduce the toxicity or volume of the contaminants.

Long-Term Effectiveness and Permanence

Implementation of this alternative would eliminate potential risks due to direct contact/ingestion of soil and reduce risks due to consumption of groundwater. Potential risks from chemicals in the ambient air would also be reduced by the capping action. Provided that the cell is regularly maintained, this action is considered to have high reliability. A review of the removal action would be required every five years.

Reduction of Toxicity, Mobility or Volume Through Treatment

The cell provides no additional short term reduction in the toxicity or volume of chemicals at the Site. It should be noted however, that due to natural degradation, a reduction in toxicity could be expected over the long term. The containment cell will also serve to reduce the mobility of Site constituents.

Short-Term Effectiveness

The excavation activities may result in temporary dust production and chemical emissions to the atmosphere. Workers would be required to wear appropriate personal protective equipment and adhere to safe construction practices to minimize potential hazards. It is estimated that the cell could be installed within one construction season after approval of the removal action design. The benefits of the removal action would be realized immediately upon installation. It should also be noted that the certain components of the cell could be construction using on Site soil sources thereby minimizing local truck traffic impacts.

Implementability

Implementation of this alternative would involve common construction procedures and the services and materials are readily available. It should also be noted that certain component of the cell can be constructed with available soil materials on Site. The containment cell would require regular maintenance to ensure its effectiveness. Future actions could be implemented at a later date, if required. Future actions would be determined based upon the analytical results obtained in the groundwater monitoring program.

The effectiveness of the alternative would be monitored through implementation of the general Site monitoring program presented in Section 3.1

Cost

A cost breakdown for the on-Site Disposal Cell is presented in Table 4.1. The total capital cost is estimated to be \$1,211,418.00 and the estimated annual operation and maintenance cost is estimated to be \$40,580.06. The total present worth of this alternative is estimated to be \$1,714,977.70 based upon a 7 percent interest rate over a 30-year period.

4.2 OFF-SITE DISPOSAL - ALTERNATIVE 5B

This alternative would require the excavation, transportation, and off-Site landfilling of contaminated soil. PCB-contaminated materials would be disposed as follows:

PCB Concentration

Disposal

21 - 50 mg/kg (non-TSCA)
above 50 mg/kg TSCA)

Michigan Type II sanitary landfill
TSCA permitted landfill

Also included in this alternative is the restoration of the excavation area to its original state. It is estimated that approximately 14,800 cubic yards of soil would require off-Site transport and disposal. This alternative is evaluated for off-Site disposal options including the proposed disposal facility in Michigan and existing facilities out of State. This alternative is further discussed in Section 3.2.

Overall Protection of Human Health and the Environment

This alternative may be performed in a manner which is protective of human health and the environment. However, concerns exist regarding the shipment of waste materials over public roads as well as the potential for release of PCBs and inorganics from the off-Site disposal facility. Shipment of waste material will be kept to a minimum if a local landfill receives a TSCA permit.

Consideration of ARARs

Off-Site Disposal is expected to meet all chemical and performance-specific ARARs with respect to air emissions and organic contaminant concentrations. Chemical and performance-specific ARARs pertaining to the disposal of soils are expected to be met through proper disposal.

All off-Site transportation of contaminated materials under this option would be required to meet State and Federal performance-specific ARARs for the transport of hazardous materials.

Long-Term Effectiveness and Permanence

The removal of contaminated media from the Site and subsequent land disposal will permanently remove the source of risk from the Site. It should be noted that O&M and monitoring programs on Site may be discontinued in a relatively short period of time due to the "removal" action nature of this alternative.

Reduction of Toxicity, Mobility or Volume Through Treatment

This alternative effectively reduces the mobility, toxicity and volume of organic and inorganic contaminants at the Site through off-Site disposal. The proper off-Site land disposal of soil will reduce the mobility of PCBs and inorganic contaminants in the soil. It should be noted that contaminants will only be relocated to alternate sites and no reduction in toxicity or volume will occur.

Short-Term Effectiveness

Implementation of Alternative 5B would involve some worker contact with materials containing chemicals potentially exceeding the cleanup levels. Workers would be required to wear appropriate personal protective equipment and adhere to safe construction practices to minimize potential hazards. It should be noted that significantly less impacts will be associated with the off-Site option if a local landfill becomes available.

Implementability

This alternative is technically feasible. The requisite equipment, labor and material are available.

Public or community opposition to increased truck traffic associated with transportation of hazardous waste materials is not expected because of the relatively small volume of soil to be removed and short duration of the removal activity. Concerns regarding this issue would be increased if a local landfill does not become available.

Cost

Table 4.2 identifies the cost associated with Alternative 5B if a local TSCA landfill becomes available. Table 4.3 identifies the revised cost for off Site disposal if a local TSCA landfill is not established.

Cost breakdowns for off-Site Disposal are presented in Tables 4.2 and 4.3. The total capital cost for the local off Site option is estimated to be \$1,980,991.20 and the annual operation and maintenance cost is estimated to be \$23,590.03. The total present with of this alternative is estimated to be \$2,273,720.88 based upon a 7 percent interest rate over a 30-year period.

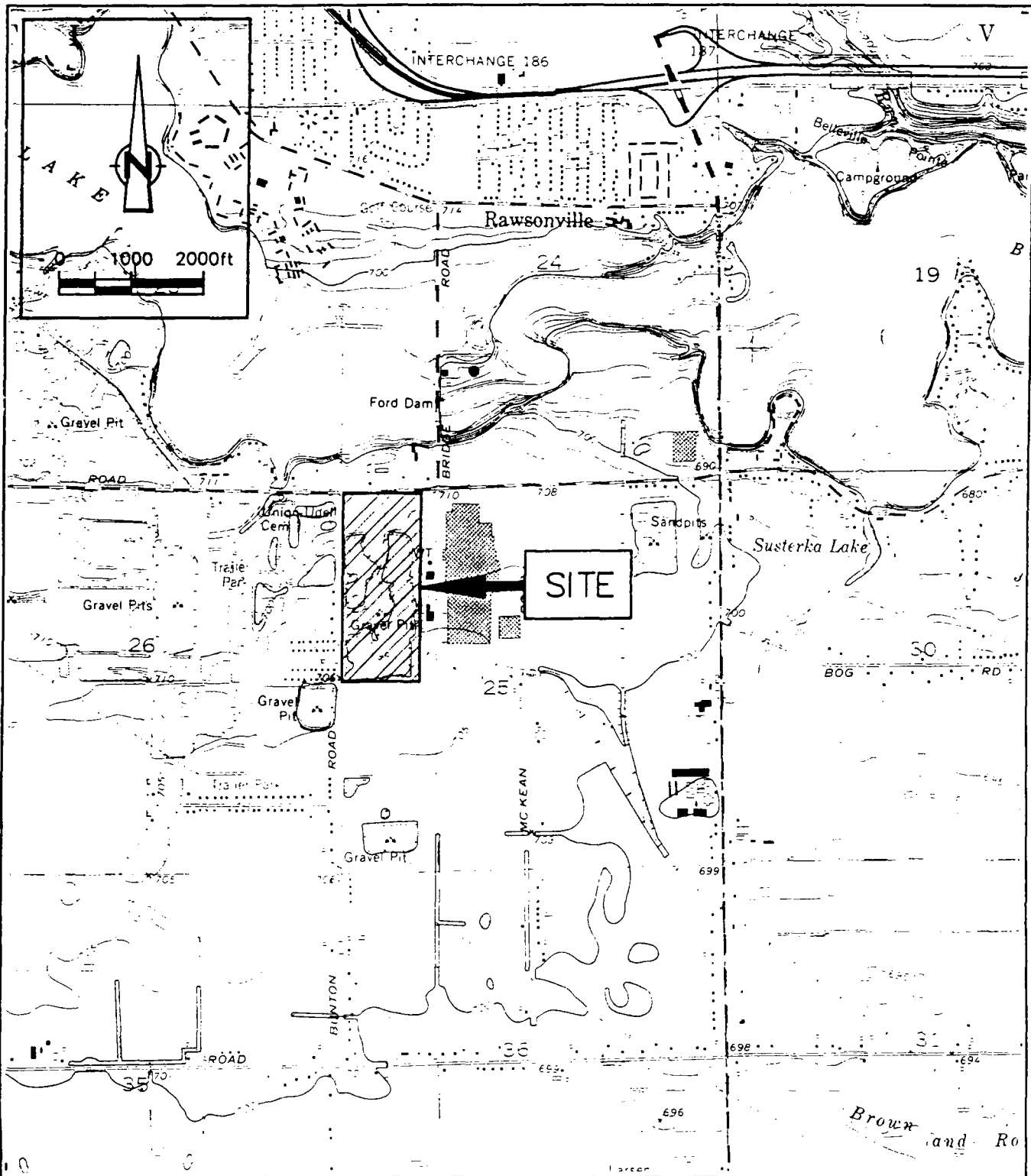
4.3 SUMMARY

Each removal action alternative was evaluated separately in Sections 4.1 and 4.2 using the seven evaluation criteria in a detailed analysis. Table 4.4 presents a summary comparison of the two removal actions.

5.0 SCHEDULE

The removal action schedule will be determined after a removal action alternative has been selected. The removal action schedule will be determined by the U.S. EPA and detailed in the Remedial Design Work Plan. The estimated time frames to implement the On-Site Disposal Cell and Off-Site Disposal are summarized as follows:

<u>Alternative</u>		<u>Duration</u>
Selection of a removal action alternative		N/A
5A:	On-Site Disposal Cell (2 construction seasons)	12
5B:	Off-Site Disposal (1 construction season) (dependent on local landfill obtaining a TSCA permit)	6-12 months

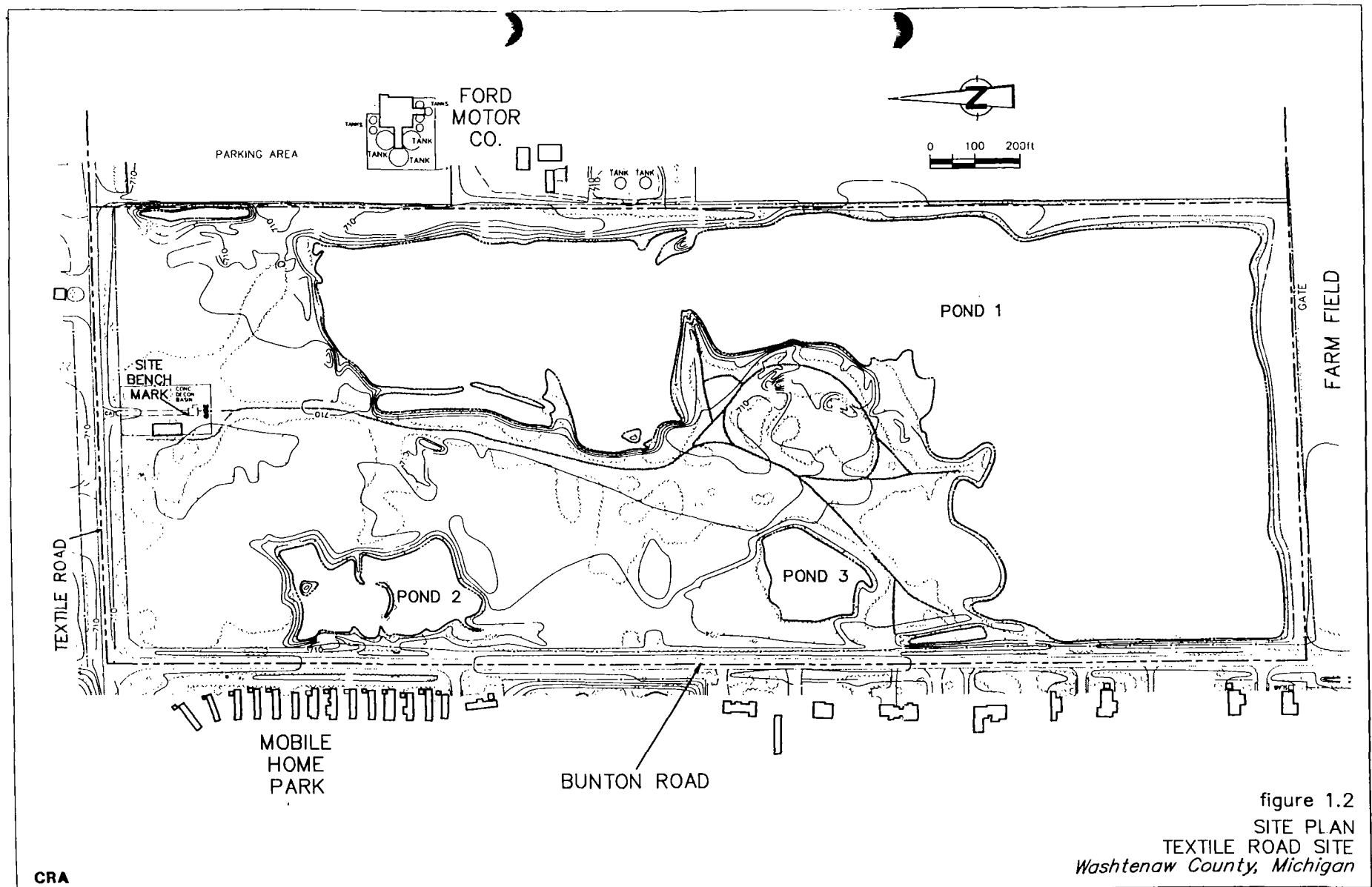


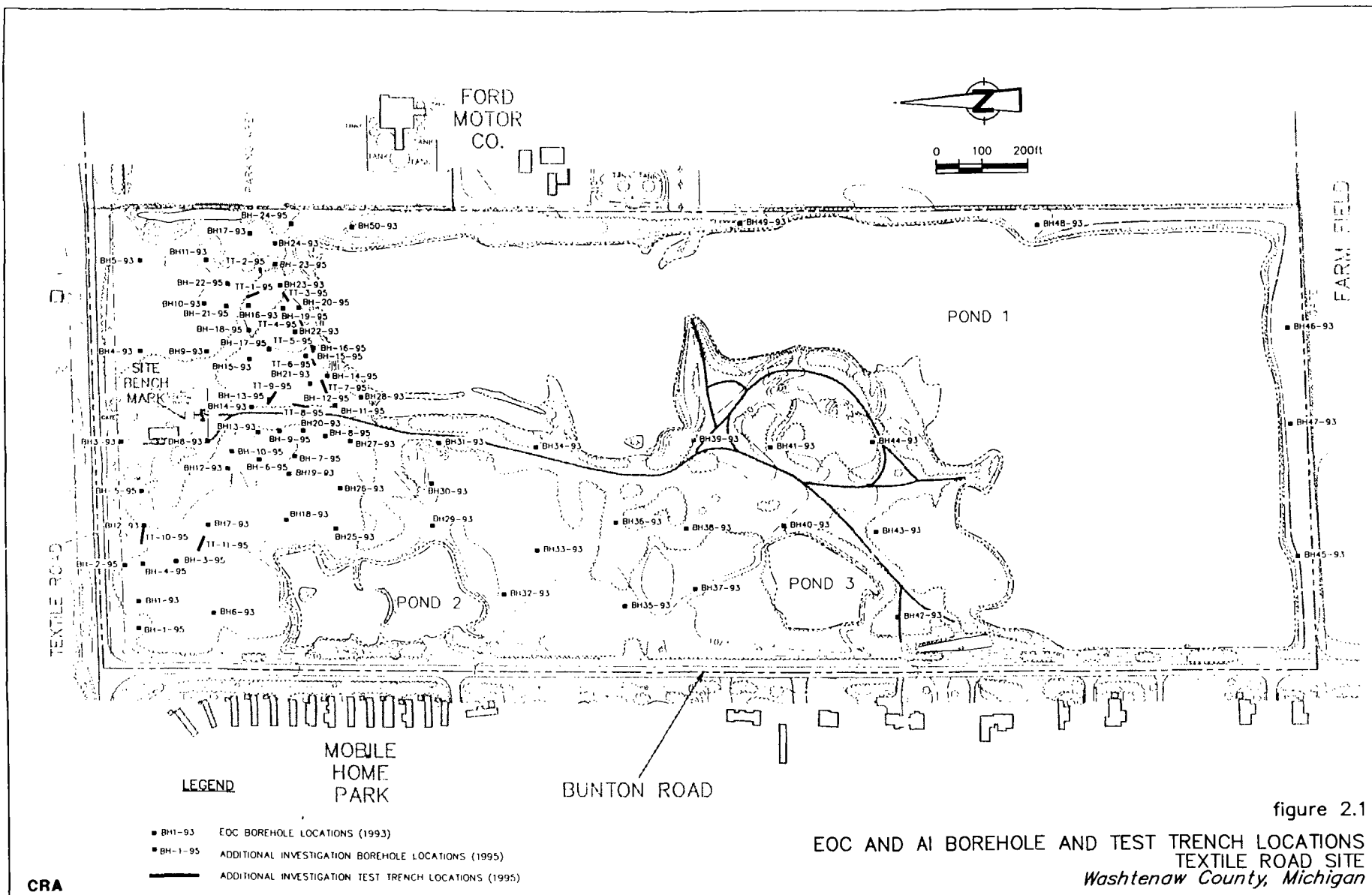
SOURCE: USGS QUADRANGLE MAP;
YPSILANTI EAST, MICHIGAN

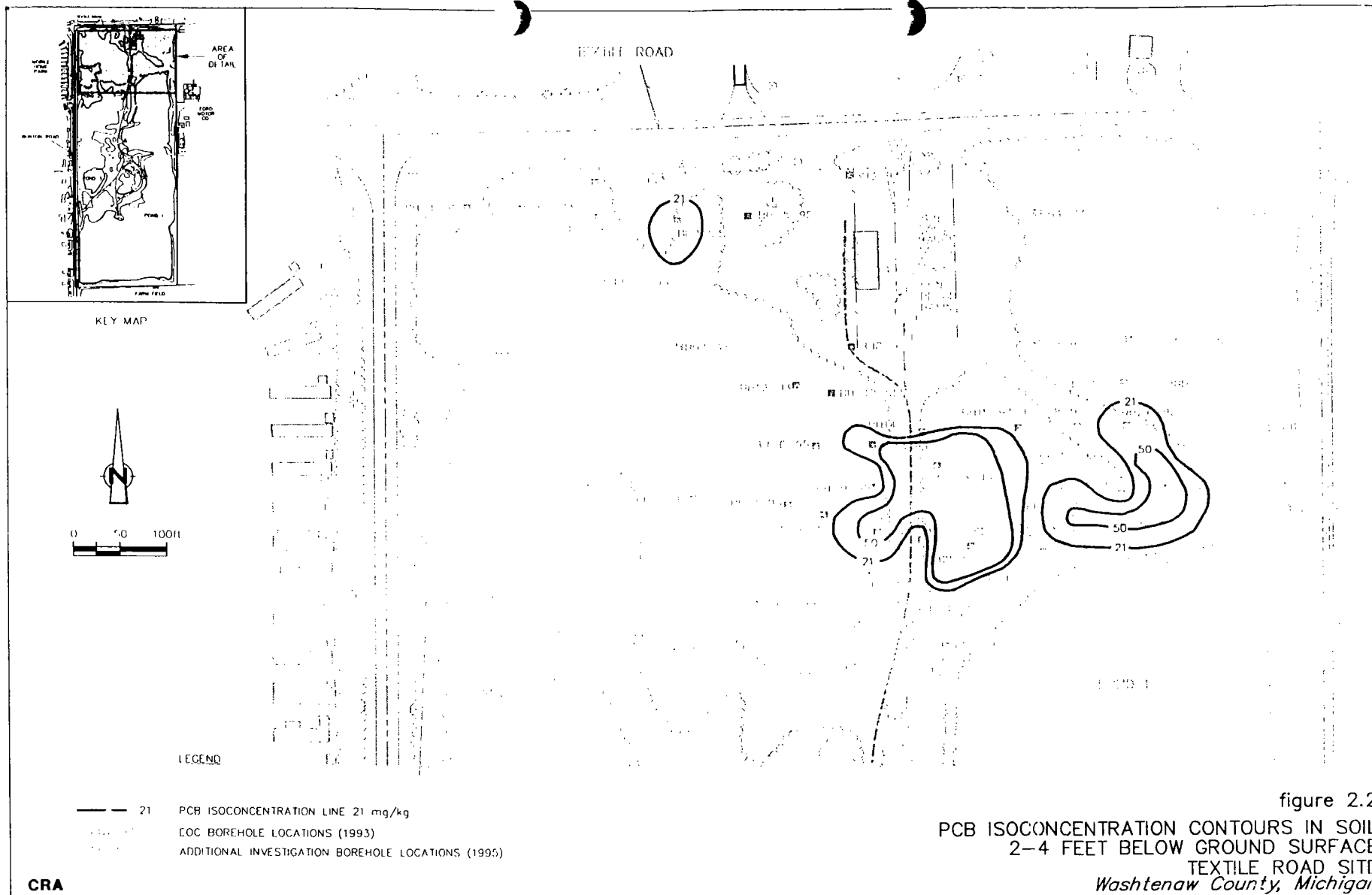
figure 1.1

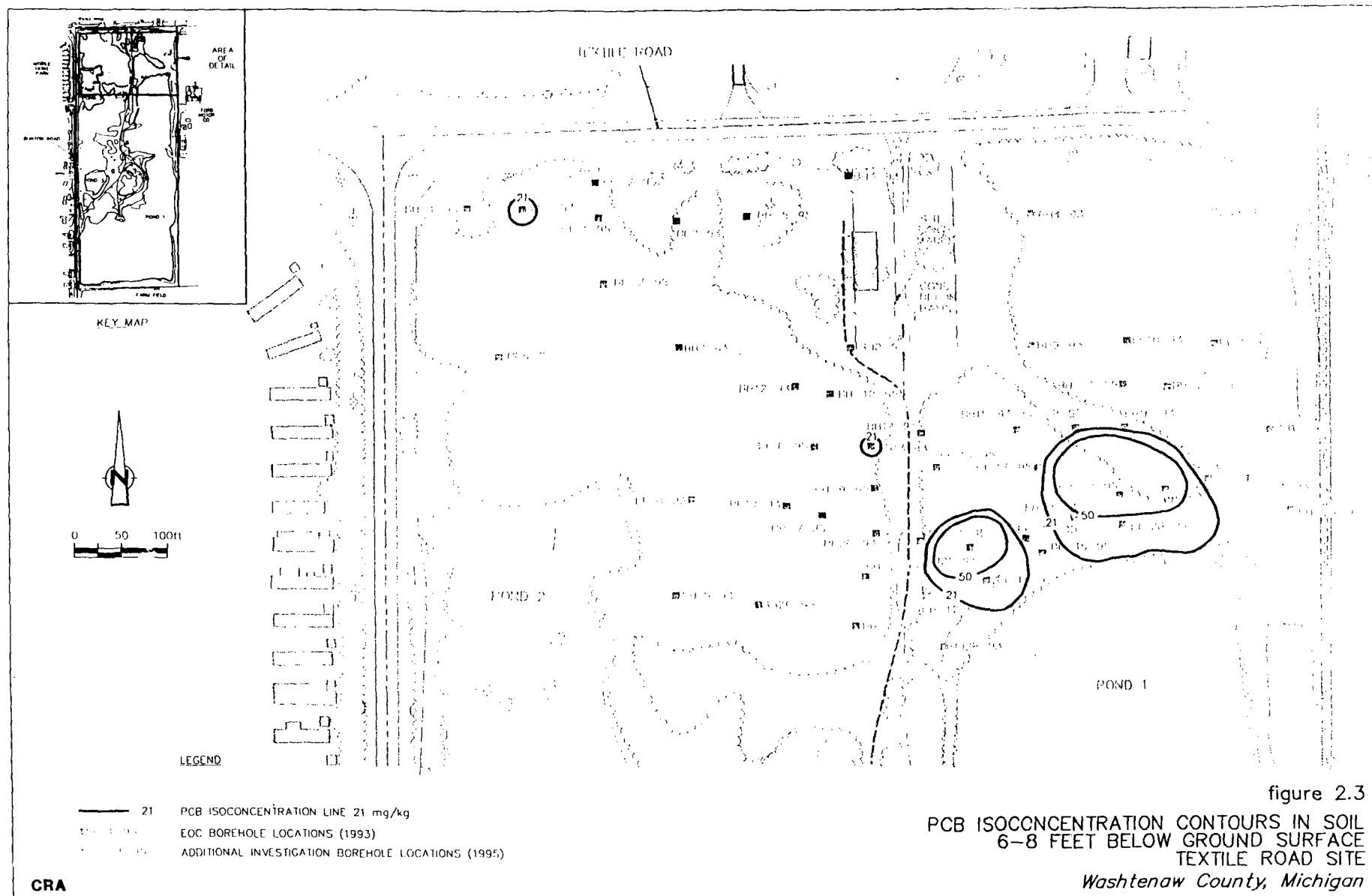
SITE LOCATION
TEXTILE ROAD SITE
Washtenaw County, Michigan

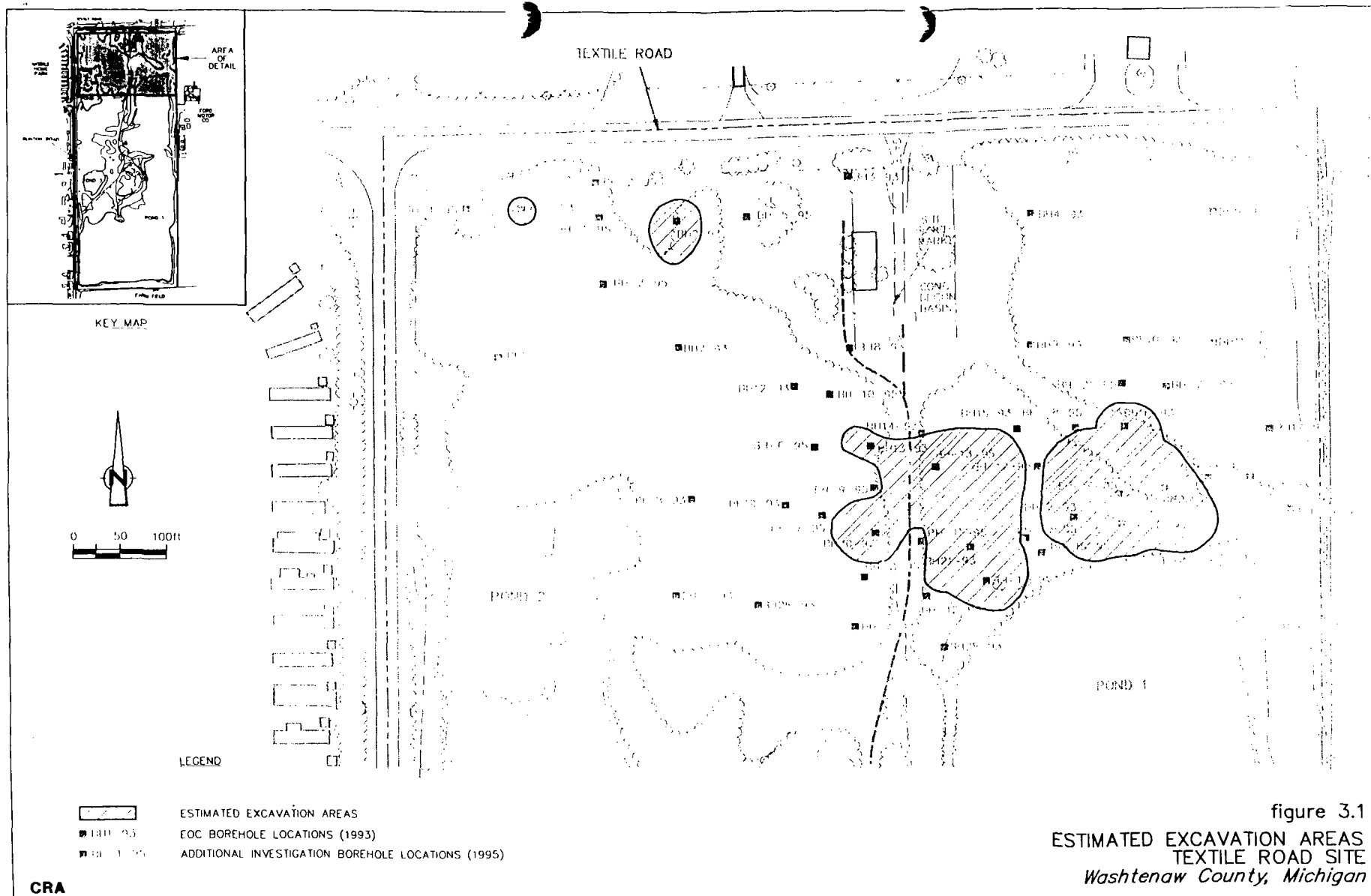
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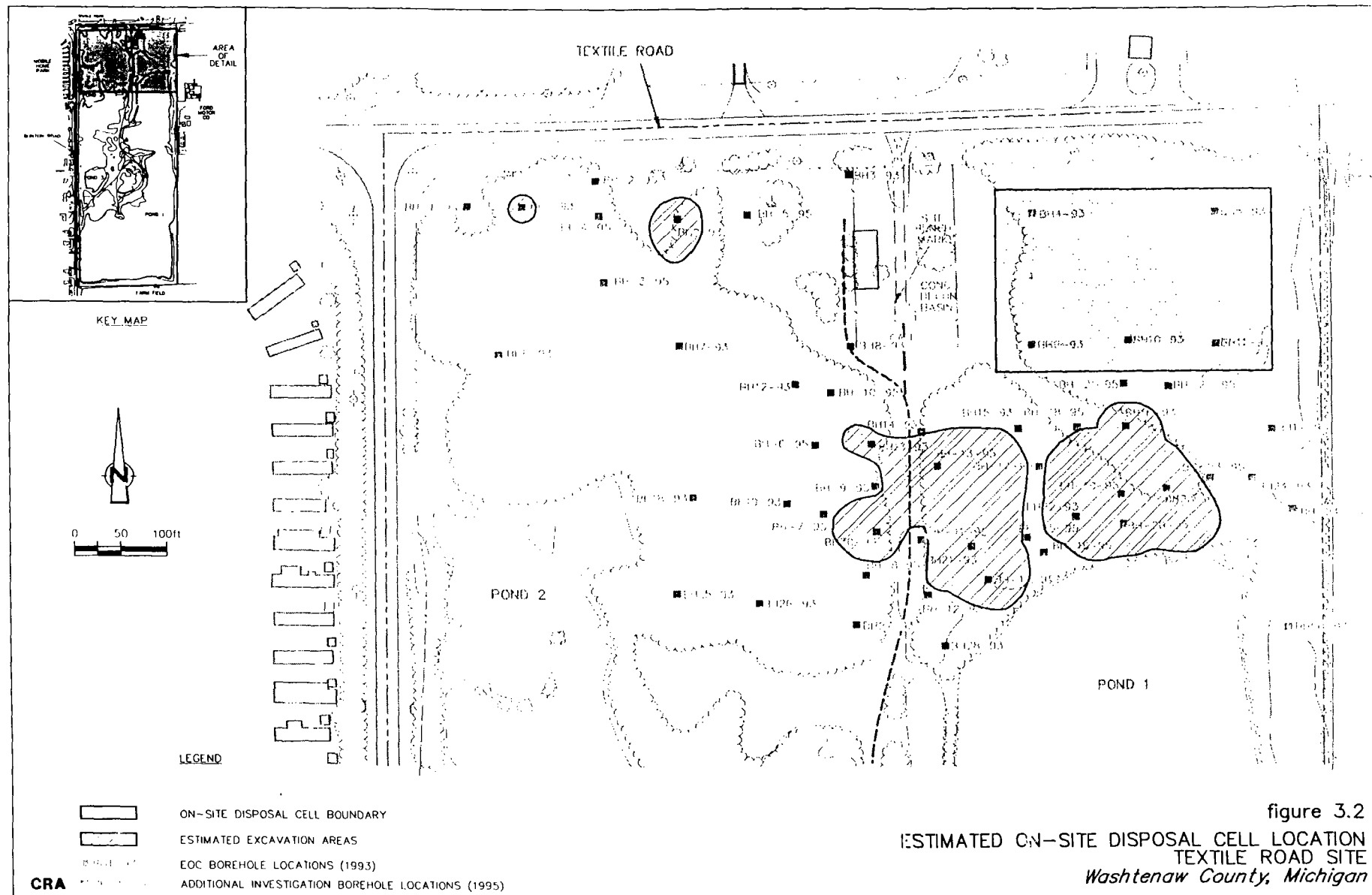












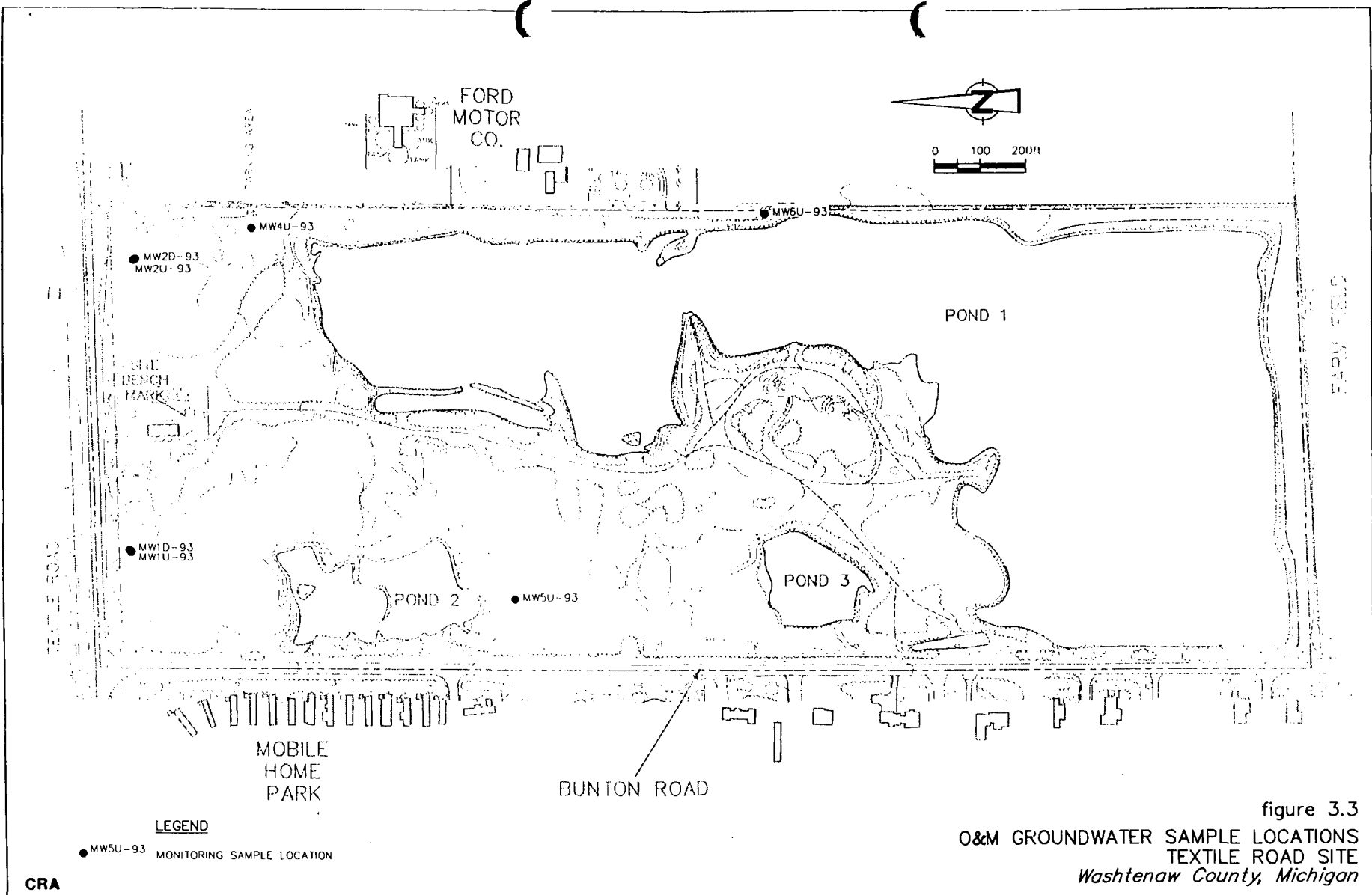


TABLE 2.1

ESTIMATED VOLUME OF SOIL
CONTAINING PCBs AT 21-50 MG/KG AND ABOVE 50 MG/KG
TEXTILE ROAD SITE
WASHTENAW COUNTY, MICHIGAN

<i>Depth (ft. BGS)</i>	<i>Volume (CY)</i>	
	<i>21-50 mg/kg</i>	<i>50+ mg/kg</i>
0 - 5' (1)	4,427	4,312
5 - 10' (2)	3,354	2,714
<i>Total</i>	7,781	7,026

Notes:

CY - cubic yards.

- (1) - assumed soil at a depth of 0-5 feet bgs is represented by samples collected from 2-4 feet bgs.
- (2) - assumed soil at a depth of 5-10 feet bgs is represented by samples collected from 6-8 feet bgs.

TABLE 4.1

REVISED COST ESTIMATE FOR
ALTERNATIVE 5A: ON-SITE DISPOSAL CELL
TEXTILE ROAD SITE
WASHTENAW COUNTY, MICHIGAN

	Item	Quantity	Unit	Unit Cost	Cost
Capital Costs					
1	MOBILIZATION/DEMOBILIZATION	-	L.S.	-	\$20,000.00
2	INSTITUTIONAL CONTROLS:				
	a. deed restrictions	-	L.S.	-	\$10,000.00
3	SITE PREPARATION				
	a. clearing/grubbing	2	acre	\$3,000.00	\$6,000.00
4	SUPPLY OF SOIL MATERIAL				
	a. clay	25,400	cu.yd	\$8.00	\$203,200.00
	b. common fill	4,400	cu.yd	\$4.00	\$17,600.00
	c. sand/drainage layer	5,100	cu.yd	\$9.00	\$45,900.00
	d. topsoil	1,100	cu.yd	\$9.00	\$9,900.00
5	LANDFILL CONSTRUCTION:				
	<u>LINER</u>				
	a. excavation of vault and stockpiling of soils	13,500	cu.yd	\$3.00	\$40,500.00
	b. placement and compaction of clay	16,700	cu.yd	\$5.00	\$83,500.00
	c. placement and compaction of sand	2,200	cu.yd	\$4.00	\$8,800.00
	d. supply and installation of HDPE liner	60,000	sq.ft.	\$0.30	\$18,000.00
	e. supply and installation of leachate collection pipe	1,000	lf.	\$85.00	\$85,000.00
	f. leachate collection sump	-	L.S.	-	\$10,000.00
	<u>CAP</u>				
	a. placement and compaction of clay	8,700	cu.yd	\$5.00	\$43,500.00
	b. supply and installation of HDPE liner	60,000	sq.ft.	\$0.30	\$18,000.00
	c. placement and compaction of sand	2,900	cu.yd	\$4.00	\$11,600.00
	d. placement and compaction of common fill	4,400	cu.yd	\$5.00	\$22,000.00
	e. placement and compaction of topsoil	1,100	cu.yd	\$3.00	\$3,300.00
	f. seed and mulch	6,700	sq.yd	\$0.45	\$3,015.00
	g. drainage structure/piping	-	L.S.	-	\$5,000.00
	<u>PIEZOMETER INSTALLATION</u>				
	a. piezometers	10	each	\$1,500.00	\$15,000.00
6	MATERIAL HANDLING				
	a. excavation and stockpiling material	14,500	cu.yd	\$6.00	\$88,800.00
	b. dewater and placement of soil in landfill	14,500	cu.yd	\$5.00	\$74,000.00
	c. stockpile controls and water treatment	-	L.S.	-	\$50,000.00
	d. backfilling of excavation areas	14,500	cu.yd	\$3.00	\$44,400.00
	e. excavation controls	-	L.S.	-	\$50,000.00

TABLE 4.1

REVISED COST ESTIMATE FOR
ALTERNATIVE 5A: ON-SITE DISPOSAL CELL
TEXTILE ROAD SITE
WASHTENAW COUNTY, MICHIGAN

<i>Item</i>	<i>Quantity</i>	<i>Unit</i>	<i>Unit Cost</i>	<i>Cost</i>
7. VERIFICATION SAMPLING (PCBs)	150	@	\$150.00	\$22,500.00
Estimated Capital Cost				\$1,009,515.00
Contingency (20%)				\$201,903.00
Total Estimated Capital Cost				\$1,211,418.00

Operation and Maintenance (O&M) Annual Costs

1. MONITORING AND SITE EVALUATION

a) Groundwater Monitoring - 7 monitoring well samples analyzed for PCBs and Inorganics	2	Round	\$5,000.00	\$10,000.00
b) Cell Performance Monitoring	2	Round	\$1,000.00	\$2,000.00
c) Annual Monitoring Report	-	L.S.	-	\$5,000.00
d) Site Evaluation (\$30,000 every 5 years)	-	L.S.	-	\$7,316.72

2. GENERAL SITE OPERATION & MAINTENANCE

a) General Site Maintenance - Institutional Controls	-	L.S.	-	\$2,500.00
b) General Cap Maintenance	-	L.S.	-	\$3,000.00
c) Off-Site Leachate Disposal	20,000	gallons	\$0.20	\$4,000.00

Estimated Annual Operation and Maintenance Cost	\$33,816.72
Contingency (20%)	\$6,763.34
Total Annual Operation and Maintenance Cost	\$40,580.06
Total Present Worth (30 Years at 7%)	\$503,559.70

Total Present Worth On-Site Disposal Cell **\$1,714,977.70**

Note:

(1) Cost for Institutional Controls was estimated to be \$100,000.00 in the EE/CA Report.

REVISED COST ESTIMATE FOR
ALTERNATIVE 5B OFF-SITE DISPOSAL (LOCAL OPTION)
TEXTILE ROAD SITE
WASHTENAW COUNTY, MICHIGAN

	<i>Item</i>	<i>Quantity</i>	<i>Unit</i>	<i>Unit Cost</i>	<i>Cost</i>
<u>Capital Costs</u>					
1	MOBILIZATION DEMOBILIZATION	-	L.S.	-	\$10,000.00
2	INSTITUTIONAL CONTROLS :				
a	deed restrictions	-	L.S.	-	\$10,000.00
3	SITE PREPARATION				
a	clearing grubbing	2	acre	\$3,000.00	\$6,000.00
4	SOIL EXCAVATION AND ASSOCIATED WORK				
a	excavation and segregation of contaminated soil	14,800	cu.yd	\$10.00	\$148,000.00
b	verification sampling (PCBs)	200	each	\$150.00	\$30,000.00
c	stockpile controls and water treatment	-	L.S.	-	\$50,000.00
d	backfilling of excavation areas	14,800	cu.yd	\$3.00	\$44,400.00
e	temporary weigh scale facility	-	L.S.	-	\$20,000.00
f	excavation controls	-	L.S.	-	\$50,000.00
5	TRANSPORTATION AND DISPOSAL OF SOIL TO A TSCA PERMITTED LANDFILL	11,242	tons	\$103.00	\$1,157,926.00
6	TRANSPORTATION AND DISPOSAL OF SOIL TO A TYPE II PERMITTED LANDFILL	12,450	tons	\$10.00	\$124,500.00
Estimated Capital Cost					\$1,650,826.00
Contingency (20%)					\$330,165.20
Total Estimated Capital Cost:					\$1,980,991.20

REVISED COST ESTIMATE FOR
ALTERNATIVE 5B: OFF-SITE DISPOSAL (LOCAL OPTION)
TEXTILE ROAD SITE
WASHTENAW COUNTY, MICHIGAN

<i>Item</i>	<i>Quantity</i>	<i>Unit</i>	<i>Unit Cost</i>	<i>Cost</i>
<u>Operation and Maintenance (O&M) Annual Costs</u>				
1. MONITORING AND SITE EVALUATION				
a) Groundwater Monitoring	2	Round	\$5,000.00	\$10,000.00
- 7 monitoring well samples analyzed for PCBs and Inorganics				
b) Annual Monitoring Report	-	L.S.	-	\$4,000.00
c) Site Evaluation	-	L.S.	-	\$3,658.36
(\$15,000 every 5 years)				
2. GENERAL SITE OPERATION & MAINTENANCE				
a) General Site Maintenance	-	L.S.	-	\$2,000.00
- Institutional Controls				
Estimated Annual Operation and Maintenance Cost				\$19,658.36
Contingency (20%)				\$3,931.67
Total Annual Operation and Maintenance Cost				\$23,590.03
Total Present Worth (30 Years at 7%)				\$292,729.68
Total Present Worth Off-Site Disposal				<u>\$2,273,720.88</u>

Note:

(1) Cost for Institutional Controls was estimated to be \$100,000.00 in the EE/CA Report.

REVISED COST ESTIMATE FOR
ALTERNATIVE 5B: OFF-SITE DISPOSAL (OUT OF STATE)
TEXTILE ROAD SITE
WASHTENAW COUNTY, MICHIGAN

	Item	Quantity	Unit	Unit Cost	Cost
Capital Costs					
1	MOBILIZATION/DEMOBILIZATION	-	L.S.	-	\$10,000.00
2	INSTITUTIONAL CONTROLS:				
	a. deed restrictions	-	L.S.	-	\$10,000.00
3	SITE PREPARATION				
	a. clearing/grubbing	2	acre	\$3,000.00	\$6,000.00
4	SOIL EXCAVATION AND ASSOCIATED WORK				
	a. excavation and segregation of contaminated soil	14,800	cu.yd	\$10.00	\$148,000.00
	b. verification sampling PCBs	200	each	\$150.00	\$30,000.00
	c. stockpile controls and water treatment	-	L.S.	-	\$50,000.00
	d. backfilling of excavation areas	14,800	cu.yd	\$3.00	\$44,400.00
	e. temporary weigh scale facility	-	L.S.	-	\$20,000.00
	f. excavation controls	-	L.S.	-	\$50,000.00
5	TRANSPORTATION AND DISPOSAL OF SOIL TO A TSCA PERMITTED LANDFILL	11,242	tons	\$170.00	\$1,911,140.00
6	TRANSPORTATION AND DISPOSAL OF SOIL TO A TYPE II PERMITTED LANDFILL	12,450	tons	\$10.00	\$124,500.00
Estimated Capital Cost:					\$2,404,040.00
Contingency (20%)					\$480,808.00
Total Estimated Capital Cost:					\$2,884,848.00

REVISED COST ESTIMATE FOR
ALTERNATIVE 5B: OFF-SITE DISPOSAL (OUT OF STATE)
TEXTILE ROAD SITE
WASHTENAW COUNTY, MICHIGAN

<i>Item</i>	<i>Quantity</i>	<i>Unit</i>	<i>Unit Cost</i>	<i>Cost</i>
<u>Operation and Maintenance (O&M) Annual Costs</u>				
1. MONITORING AND SITE EVALUATION				
a) Groundwater Monitoring	2	Round	\$5,000.00	\$10,000.00
- 7 monitoring well samples analyzed for PCBs and Inorganics				
b) Annual Monitoring Report	-	L.S.	-	\$4,000.00
c) Site Evaluation	-	L.S.	-	\$3,658.36
(\$15,000 every 5 years)				
2. GENERAL SITE OPERATION & MAINTENANCE				
a) General Site Maintenance	-	L.S.	-	\$2,000.00
- Institutional Controls				
Estimated Annual Operation and Maintenance Cost				\$19,658.36
Contingency (20%)				\$3,931.67
Total Annual Operation and Maintenance Cost				\$23,590.03
Total Present Worth (30 Years at 7%)				\$292,729.68
Total Present Worth Off-Site Disposal				<u>\$3,177,577.68</u>

Note:

(1) Cost for Institutional Controls was estimated to be \$100,000.00 in the EE/CA Report.

TABLE 4.4
SUMMARY COMPARISON OF REMEDIAL ACTION ALTERNATIVES
TEXTILE ROAD SITE
WASHTENAW COUNTY, MICHIGAN

<i>Alternative Identification</i>	<i>Remedy Components</i>	<i>Short-Term Effectiveness</i>	<i>Long-Term Effectiveness</i>	<i>Reduction In Mobility Toxicity and Volume</i>	<i>Technical Feasibility</i>	<i>Administrative Feasibility</i>	<i>Cost</i>	<i>Overall Protection of Human Health and the Environment</i>
On-Site Disposal Cell Alternative 5A	- monitoring program - institutional controls • fence, warning signs • deed restrictions (or similar measures) - excavation of soil - on-site landfill	no	yes	yes	yes	yes	\$1,714,977.70 Table 4.1	protective
Off-Site Disposal Alternative 5B	- monitoring program - institutional controls • fence • deed restrictions (or similar measures) - excavation of soil - off-site disposal	no	yes	yes	yes	yes	\$2,373,720.88 Table 4.2 local \$3,177,977.68 Table 4.3 out of state	protective