



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

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EPA Region 5 Records Ctr.




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REPLY TO THE ATTENTION OF

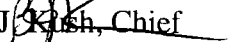
MEMORANDUM

SUBJECT: **ENFORCEMENT ACTION MEMORANDUM** -Determination of Threat to Public Health or Welfare at the Millennium Inorganic Chemical Plant at the Fields Brook Superfund Site (Site ID# 054606)

FROM: Partap C. Lahiri,  Scene Coordinator
Oil Planning & Response Section

TO: Ralph H. Dollhopf, Acting Director
Superfund Division

THRU: Jason El-Zein, Acting Chief
Emergency Response Branch 1

ATTN: Beverly J.  Kish, Chief
Oil Planning & Response Section
Emergency Response Branch 1

I. PURPOSE

The purpose of this memorandum is to document the determination of an imminent and substantial threat to public health and the environment at the Millennium Inorganic Chemical Plant at the Fields Brook Superfund Site in Ashtabula, Ohio. The proposed removal action is necessary to mitigate the immediate threat to public health and the environment posed by the presence and possible migration of PCBs.

The response action proposed herein will mitigate Site conditions by containing and removing all PCB liquids, contaminated soil and sediment, and conducting proper disposal. The presence of pure PCB oil in the subsurface, the presence of high levels of PCBs in sediment and sub-surface soil and the possibility that this contamination may migrate into Fields Brook to the Ashtabula River and then Lake Erie, resulting in recontamination of areas previously addressed under the Records of Decision for the Fields Brook Site, requires that this action be classified as a time critical removal.

Additional activities will include performing an investigation to determine all sources of PCBs migrating to Fields Brook from the Millennium plant, preventing discharges of PCB oil from identified seeps and other sources that are identified during investigation at the Millennium property, conducting an investigation of the extent of PCB contamination in Exposure Unit (EU) 8 and EU6 of the Fields Brook Site; and testing and treating as needed any stormwater or groundwater in the ponded area, excavation trench or any other area that stormwater or groundwater from the Site collects. This removal is considered to be time-critical. The project will require an estimated 10 months to complete.

There are no nationally significant or precedent setting issues associated with the Millennium Plant Site. The Fields Brook Site is on the National Priorities List (NPL), and the Millennium Plant was one of the areas identified in the Remedial Investigation at the Fields Brook Site as presenting a threat of recontamination to the Fields Brook.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID # OHD980614572

A. Physical Location and Description

The Fields Brook site, located approximately 55 miles east of Cleveland, is in the city and county of Ashtabula, Ohio, 44004. It is a six square-mile watershed of a brook. Fields Brook flows into the Ashtabula River, which flows into Lake Erie approximately 1-1/2 miles downstream of the site. Approximately 23,000 people live within one mile of the site, in the city of Ashtabula. The main channel of Fields Brook is 3.9 miles long, and is shallow until it nears its confluence with the Ashtabula River. The eastern portion of Fields Brook runs through an active industrial area. The western portion of the brook runs through a residential area. The industrial zone of Ashtabula is concentrated around Fields Brook and includes several chemical industries and waste disposal sites. The Millennium TiCl₄, (titanium tetrachloride) facility is located in the south-central portion of the industrialized area adjacent to Fields Brook.

To meet Region 5's Environmental Justice (EJ) concern criteria, the area within 1 mile of a site must have a population that is at least twice the state's average low-income percentage and/or twice the state minority percentage. Among all Ohio residents, the low-income percentage is 30% and the minority percentage is 16%. To meet EJ concern criteria, the area must be at least 60% low-income or 32% minority. U.S. EPA's EJ analysis of the population within 1 mile of the Fields Brook site area determined that the low-income percentage is 31% and the minority percentage is 5%. Therefore, the Fields Brook site area does not meet the Region's EJ criteria based on demographics, as identified in "Region 5 Interim Guidelines for Identifying and Addressing a Potential EJ Case, June 1998."

B. Site Background

From 1940 to the present, up to 19 separate industrial facilities operated in close proximity to Fields Brook. Activities ranged from metals fabrication to chemical production. Sediments and floodplain/wetland soil within Fields Brook are contaminated with a wide variety of contaminants including polychlorinated biphenyls (PCBs), chlorinated solvents and metals. The Fields Brook Site includes approximately 3.6 miles of the brook and six source control properties that were identified as current or potential sources of recontamination to the brook. The Fields Brook Site was placed on the National Priorities List on September 8, 1983. Until 1974, the Millennium $TiCl_4$ utilized a heat transfer system that used Aroclor-based fluids. Releases and subsequent movement of contaminated soil led to PCB contamination over a large portion of the property. Millennium also imports titanium ores. In processing the ores, the facility produces wastes containing Technologically-Enhanced Naturally Occurring Radioactive Material.

C. Site Sampling and investigations

The Fields Brook Site was placed on the NPL on September 8, 1983. U.S. EPA conducted a fund-lead investigation of the brook sediment. In 1986, a final cleanup decision for the Fields Brook Sediment Operable Unit was reached between the United States Environmental Protection Agency (U.S. EPA) and the State of Ohio. In 1989, U.S. EPA issued a Unilateral Administrative Order to require the potentially responsible parties (PRPs) to design and implement the 1986 Record of Decision (ROD) for the Fields Brook sediment. Recognizing that contaminated sediment was only part of the problem, U.S. EPA required the PRPs to also investigate the adjacent floodplain/wetland area and conduct a search for the source(s) of site contamination.

The investigation of the floodplain/wetland areas along Fields Brook found that contamination, especially PCBs, did extend into the soils adjacent to the Brook. U.S. EPA issued a ROD on June 30, 1997, to select the remedy for the floodplain/wetlands Operable Unit (OU). The remedy required the excavation and disposal of PCB-contaminated soil in both industrial and residential portions of the OU. An on-site landfill was to be built within the industrial area of the Fields Brook watershed to house PCB-contaminated soils and sediment from the site.

In August, 1997, U.S. EPA issued an Explanation of Significant Differences (ESD) which modified the original 1986 sediment OU ROD. The ESD eliminated the need for on-site thermal treatment by allowing off-site treatment of contaminated sediment. The ESD also decreased the volume of sediment requiring excavation and eliminated the solidification requirement for sediments to be landfilled.

On September 30, 1997, U.S. EPA issued a ROD to select remedies for six source areas that could potentially recontaminate the brook. In general, the remedies required excavation and containment.

The Millennium Inorganic Chemicals $TiCl_4$ facility was one of the Site's six source control operable units addressed under the September 1997 Source Control ROD. The remedy selected for the Millennium $TiCl_4$ plant required excavation of soils with PCB concentrations greater than or equal to 50 ppm.

In 1998, low-level radionuclides were discovered in the soil and mining residuals at the Millennium $TiCl_4$ facility and in Fields Brook sediment and floodplain/wetland soils. The discovery of the low-level radionuclides (primarily radium-226 and radium-228) complicated the cleanup designs that were then underway. On April 8, 1999, U.S. EPA issued a Site-Wide ESD which modified all existing RODs for the site, established radionuclide cleanup levels, and outlined the design modifications necessitated by the presence of the radionuclides.

In August 2001, U.S. EPA issued another ESD to address the discovery of chlorinated solvent Dense Non-Aqueous Phase Liquid (DNAPL) found below brook sediments and floodplain soils. The chlorinated solvent DNAPL was found in Exposure Units 6 and 8 during Remedial Action excavation activities. The Fields Brook Action Group (FBAG) and U.S. EPA determined that the chlorinated solvent DNAPL below the stream came from historical Detrex Corporation discharges. This 2001 ESD reversed a previous change in the thermal treatment location (made in the 1997 Sediment ESD) and allowed on-site thermal treatment of impacted soils and sediments.

Millennium conducted Remedial Design/Remedial Action work under a "friendly" Unilateral Administrative Order (UAO) from U.S. EPA. Millennium paid U.S. EPA's associated oversight costs. In 1999, Millennium excavated approximately 60,000 cubic yards of PCB- and radium-contaminated soil and mining residuals from its facility. The excavated material was disposed of in the existing Millennium on-site landfill. U.S. EPA had reviewed the Millennium landfill and found that it met Toxic Substances Control Act requirements. The Millennium UAO was closed upon completion of work.

The FBAG conducted Remedial Design/Remedial Action work under a Consent Decree. Cleanup began with the construction of an on-site landfill during the summer of 2000. Excavation of Fields Brook soil and floodplain/wetland sediment and DNAPL-contaminated soil and sediment was completed in December 2002. Thermal treatment was performed onsite for DNAPL-impacted soils and sediment. Restoration activities were completed in Spring 2003. At completion:

- 53,094 cubic yards of sediment and soil were removed from brook
- 1,435 cubic yards went off-site for thermal treatment
- 20,420 cubic yards were thermally treated on site
- 30,514 cubic yards went to the on-site landfill

Since completion of the Remedial Action in Fields Brook, the FBAG has conducted yearly Operations and Monitoring (O&M) sampling of brook sediment and floodplain soil. During the 2005 sampling event, the PRPs identified one grid that had a slightly elevated PCB concentration. The PRPs performed follow-up sampling to properly scope the excavation work being planned for the area with elevated PCBs. During this field work, the PRPs identified small pockets of chlorinated solvent DNAPL. This DNAPL was identical to the chlorinated solvent DNAPL addressed during Remedial Action. On August 2, 2007, U.S. EPA approved a work plan for the PRPs to excavate the pockets of soil and sediment contaminated with PCBs and chlorinated solvent DNAPL.

The FBAG mobilized to the Site on August 20, 2007. During excavation work on August 29, 2007, the field crew encountered an oily DNAPL in the top of the clay layer of the brook, near the Millennium TiCl_4 plant. On August 30th, the field crews tried to identify the extent of oil in the brook and in the floodplain alongside the Millennium property boundary. Samples were collected and the crew disbanded early on the 31st for the holiday weekend. This DNAPL was different than the Detrex chlorinated solvent DNAPL, since it did not have high VOC concentrations and the characteristic Detrex DNAPL odor. According to the FBAG project coordinator, a representative from Millennium took a look at the oil and stated that it was not Therminol, the heat transfer fluid historically used at Millennium, because Therminol was black. The oil found in Fields Brook was dark, but had a reddish brown tinge to it. During the week of September 4, more free product was encountered in excavations and results from the earlier sampling began to arrive. The laboratory results indicated areas of very high PCB contamination in sediment and floodplain soil.

Late on September 6th, the laboratory notified the FBAG that the oil was pure Therminol (Aroclor 1248). U.S. EPA's field oversight representative also expressed concern that storms were approaching. The FBAG sandbagged and tied down tarping over excavation areas. Over the weekend, Ashtabula was hit with heavy storms and high winds. The Fields Brook floodplain received a large volume of water, and additional protective measures were necessary to protect the brook. The FBAG excavated a secondary channel for Fields Brook, dug a surface water intercept channel between the excavation areas and Millennium, pumped water out of the excavation area, and constructed a soil berm when it was determined that there was too much water to handle in real time.

On September 10th and 11th, the FBAG continued to recover from the flooding and continued other work outside of the Therminol-impacted areas. An On-Scene Coordinator (OSC) was assigned to handle the extensive work that was anticipated at the Site. On the morning of the 13th, the Remedial Project Manager (RPM) approached Remedial and Removal management about getting Removal support on a more expedited schedule, that day, to assist with the management of the bermed contact water. The RPM was concerned that the berms could not handle another storm.

Two OSCs responded to the Site on the 13th. Region 5 issued a verbal order to Millennium to bring in the storage necessary to address the bermed contact water. Millennium was cooperative, and mobilized approximately 40 frac tanks to the Site to hold the pumped water. In addition, the OSCs directed the installation of collection sumps in the Therminol DNAPL excavations and closed these areas off from short-term surface water intrusion.

While conditions at the Site have been stabilized, a removal action is needed to remove the PCB oil, excavate sediment and soil contaminated with PCBs and to prevent any recontamination risk to the Fields Brook and the Ashtabula River.

III. THREATS TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at the Millennium Plant Site at Fields Brook present an imminent and substantial threat to the public health, or welfare, and the environment, and meet the criteria for a removal action provided for in the National Contingency Plan (NCP), Section 300.415, Paragraph (b)(2). 40 C.F.R. 300.415(b)(2)(i), (iii), and (vi), respectively, specifically allows removal actions for:

A. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

The sample results found PCBs at levels far in excess of 50 ppm. One sample was identified as pure Therminol, with a concentration of 1,000,000 ppm Aroclor 1248. A sample in the brook downstream of the previously bermed area was found to contain PCBs above 1,000 ppm. There is an ecological risk from the presence of pure PCB oil and highly-contaminated sediment in the waterway. Storms and scour could expose the areas of highest contamination and move contamination downstream to residential areas, leading to possible human contact with sediment containing unacceptable levels of contamination. The extent of surface sediment contamination is unknown at this time.

B. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate.

The excavation work conducted by the Fields Brook Action Group in August and September of 2007 demonstrated that PCBs are actively entering the floodplain. Preliminary data indicate that Therminol and/or high concentrations of PCBs are present at the top of the clay, or in the top few feet of clay, below portions of the brook and floodplain. The extent of Therminol in the floodplain is not yet known. The presence of Therminol at the interface between free sediment and clay would heavily contaminate the sediment. Although sediment overlays the clay in the brook, the sediment layer in the brook is relatively shallow. Erosion cuts channels in the brook and could move contaminated sediment downstream of the industrial area of the brook. Any Therminol that is exposed to surface water would be mobile and would significantly contaminate any sediment encountered.

C. Actual or potential contamination of drinking water supplies or sensitive ecosystems.

Major surface water bodies in the immediate vicinity of the Site include the Fields Brook, the Ashtabula River and Lake Eire. Natural surface water is directed toward the Brook.

D. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

As noted, there is the existence of PCB contaminated soils/sediments that are moving toward and into the Brook. During times of heavy rainfall, flow through Fields Brook increases, and erosion can occur. Therefore, the possibility of contaminants being transported downstream into the Ashtabula River may exist. Such migration could also lead to deposition of materials in uncontaminated areas.

IV. ENDANGERMENT DETERMINATION

Given the Site conditions, the nature of the suspected hazardous substances on the Site, and potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this Action Memorandum, present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS

The OSC proposes to undertake the following actions to mitigate threats posed by the presence of hazardous substances at the Millennium Plant Site in Fields Brook:

- A. Perform an investigation to determine all sources of PCBs migrating to Fields Brook from the Millennium plant. Prevent discharges of PCB oil from identified seeps and other sources that are identified during investigation at the Millennium property. Contain and remove all PCB liquids, contaminated soil and sediment and conduct proper disposal.
- B. Remove, and treat as appropriate, all PCB contaminated liquid. Also remove any PCB contaminated soil, to a level of 50 ppm, within the plant area.
- C. Conduct an investigation of the extent of PCB contamination in EU8 and EU6 of the Fields Brook Site.
- D. Test and treat as needed any stormwater or groundwater in the ponded area, excavation trench or any other area that stormwater or groundwater from the Site collects. Water should be treated to a level of 0.1 ug/L total PCBs before discharge.
- E. If discovered, remove, to a level not to exceed 50 ppm, all PCB-contaminated soil in the floodplain, to achieve an overall average of no greater than 8 ppm total PCBs. The floodplain/wetland cleanup level has been established to be consistent with past remedial requirements at the Site. Remove all PCB contaminated liquid, excluding water, in and below the floodplain.

- F. If discovered, remove, to a level of 3.1 ppm total PCBs, all contaminated sediment in Fields Brook and in exposed or easily-erodible areas of the floodplain. The sediment cleanup level has been established to be consistent with past remedial requirements at the Site. Remove all PCB-contaminated free products in and below Fields Brook sediments.
- G. Implement a Site Health and Safety plan; and
- H. Develop and implement a Site security plan;

The OSC has planned for the provision of post-removal Site control consistent with the provisions of Section 300.415(l) of the NCP. It is anticipated that any post-removal Site control will be undertaken by PRPs.

The activities described in this memorandum will require an estimated 10 months to complete.

The response actions described in this memorandum directly address the actual or threatened release at the Site of a hazardous substance, or of a pollutant, or of a contaminant which may pose an imminent and substantial endangerment to public health or welfare or to the environment. These response actions do not impose a burden on affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

All hazardous substances, pollutants or contaminants removed off Site pursuant to this removal action for treatment, storage, and disposal will be treated, stored, or disposed of at a facility in compliance, as determined by U.S. EPA, with the U.S. EPA Off-Site Rule, 40 CFR ' 300.440.

Applicable or Relevant and Appropriate Requirements

All Federal and State applicable, relevant, and appropriate requirements (ARARs) will be complied with to the extent practicable.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Continued risk to public health and the environment will result if no action or delayed action ensues.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this Site is contained in the Enforcement Confidential Addendum.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Millennium Plant Site in Fields Brook developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision was based upon information now presented in the Administrative Record (see Attachment A) for the Site. Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a removal and I recommend your approval of the removal action.

APPROVE:

for 
 Acting Director, Superfund Division

DATE:

10/18/07

DISAPPROVE: _____

DATE: _____

Acting Director, Superfund Division

Enforcement Addendum

Attachments

- A. Administrative Record Index
- B. EJ Analysis

cc: D. Chung, U.S. EPA, 5202-G
 M. Chezick, U.S. Department of the Interior, **w/o Enf. Addendum**
 J. Koncelik, Director, Ohio EPA, **w/o Enf. Addendum**
 J. Petro, Ohio Attorney General, **w/o Enf. Addendum**

**ENFORCEMENT ADDENDUM
MILLENNIUM PLANT SITE
ASHTABULA, OHIO
OCTOBER 2007**

(REDACTED 1 PAGE)

**ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY**

ATTACHMENT A

INDEX TO THE ADMINISTRATIVE RECORD
MILLENNIUM INORGANIC CHEMICAL PLANT
FIELDS BROOK SUPERFUND SITE
ASHTABULA, OHIO, 44004

OCTOBER 2007



ATTACHMENT A

U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL ACTION

ADMINISTRATIVE RECORD FOR UNILATERAL ADMINISTRATIVE ORDER FOR THE FIELDS BROOK SITE OPERABLE UNIT #6 ASHTABULA, OHIO

ORIGINAL
OCTOBER 16, 2007

| <u>NO.</u> | <u>DATE</u> | <u>AUTHOR</u> | <u>RECIPIENT</u> | <u>TITLE/DESCRIPTION</u> | <u>PAGES</u> |
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| 1 | 09/30/05 | Fields Brook Action Group | U.S. EPA | Fields Brook Action Group Report of 2005 DNAPL Investigation for the Fields Brook Site | 54 |
| 2 | 12/00/06 | de maximus, inc. | U.S. EPA | Phase 2 Supplemental Sampling and Analysis Work Plan for the Fields Brook Site | 23 |
| 3 | 07/09/07 | de maximus, inc. | U.S. EPA | Excavation Work Plan for EU-6 and EU-8 Soils and Sediments for the Fields Brook Site | 234 |
| 4 | 08/20/07- 09/15/07 | Walsch, K., SulTRAC | File | Field Notes for the Fields Brook Site | 33 |
| 5 | 09/05/07 | Microbac Laboratories Inc. | U.S. EPA | Analysis of Sampling Data Collected Between 8/29/07 and 9/4/07 at the Fields Brook Site | 16 |
| 6 | 09/07/07 | Van Donsel, T., U.S. EPA | Short, T., U.S. EPA | E-mail Transmission re: Therminol Release at the Fields Brook Site | 1 |
| 7 | 09/15/07 | Fredle, J., U.S. EPA | Distribution List | Pollution Report (POLREP) Initial and Final for the Fields Brook/Millennium Response | 3 |
| 8 | 10/04/07 | Earle, W., SulTRAC | Van Donsel, T., U.S. EPA | Photographs and Videos from the Fields Brook Site w/Cover Letter | |

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| 9 | 10/05/07 | Rule, R., de maximus, Inc. | Van Donsel, T., U.S. EPA | E-mail Transmission: Transmittal of As-Built Information for EU-8 at the Fields Brook Site w/Reply History | 2 |
| 10 | 00/00/00 | U.S. EPA | Respondent | Unilateral Administrative Order: Millennium Inorganic Chemicals at the Fields Brook Site (PENDING) | |
| 11 | 00/00/00 | Partap, L., U.S. EPA | Dollhopf, R., U.S. EPA | Enforcement Action Memorandum: Determination of Threat to Public Health or Welfare at the Millennium Inorganic Chemical Plant at the Fields Brook Site (PENDING) | |

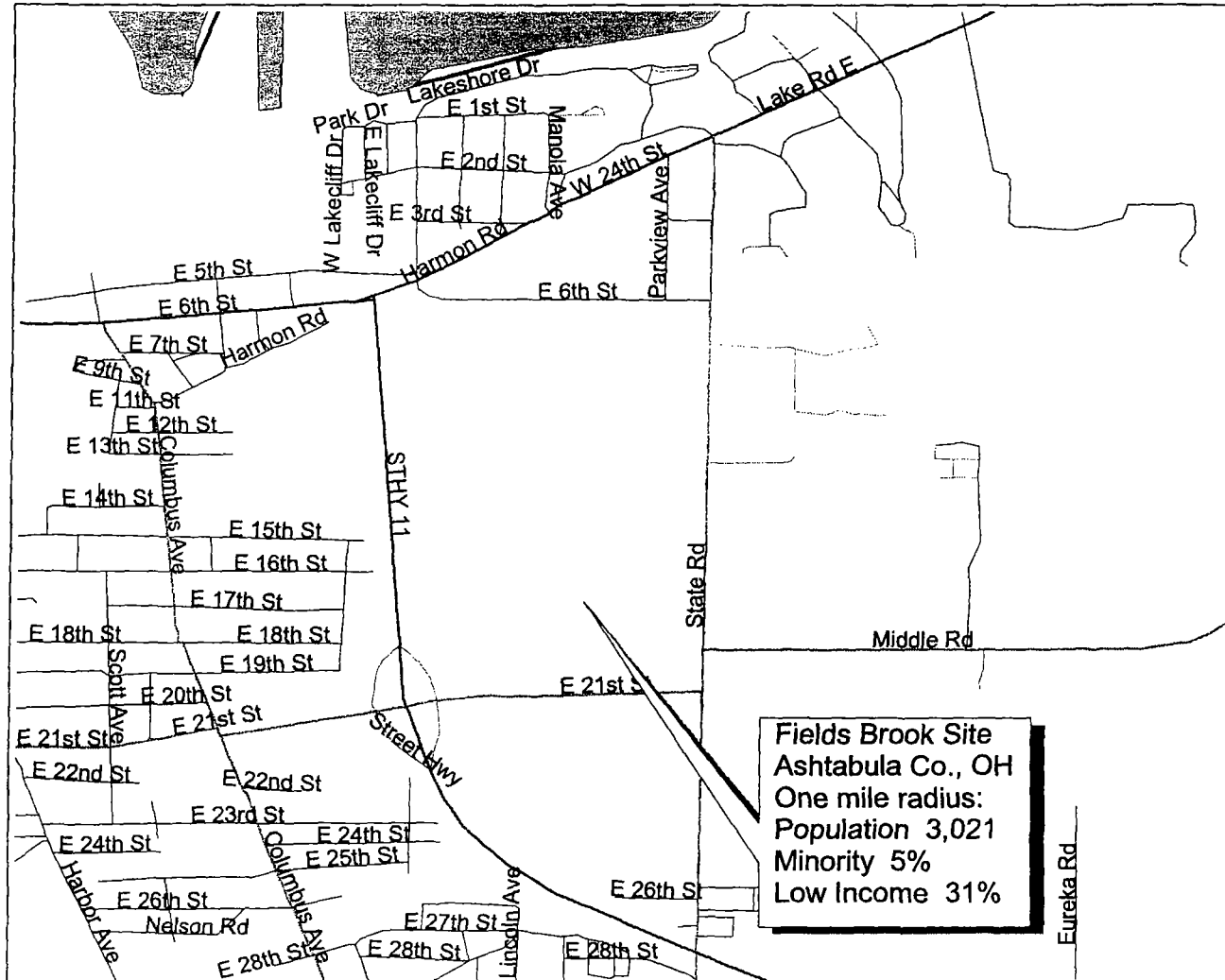
ATTACHMENT B

REGION 5 EJ ANALYSIS
MILLENNIUM INORGANIC CHEMICAL PLANT
FIELDS BROOK SUPERFUND SITE
ASHTABULA, OHIO, 44004

OCTOBER 2007

Region 5 Superfund EJ Analysis

Fields Brook / Millennium Site Ashtabula, OH



State of Ohio averages:
 Minority: 16%
 Low Income: 30%

U.S. EPA Region 5
 Environmental Justice Case Criteria
 for State of Ohio

Minority: 32% or greater
 Low Income: 60% or greater

Fields Brook Site
 Ashtabula Co., OH
 One mile radius:
 Population 3,021
 Minority 5%
 Low Income 31%



0 0.5 1 1.5 2 Miles



Date of Map: 10/12/07

Source of Map: Census 2000 Database/
 ArcView 3.0