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

REPLY TO THE ATTENTION OF

MEMORANDUM

SUBJECT: ACTION MEMORANDUM - Request for a Time-Critical Removal Action at the Jacobsville Neighborhood Soil Contamination Site in Evansville, Vanderburgh County, IN (Site ID# B51Z)

FROM: Kevin Turner, On-Scene Coordinator MDYJ for K.T
Emergency Response Branch 2 - Response Section 2

TO: Richard C. Karl, Director
Superfund Division

THRU: Linda M. Nachowicz, Chief
Emergency Response Branch 2

I. PURPOSE

The purpose of this memorandum is to request and document your approval to expend up to $942,010.00 to abate an imminent and substantial threat to public health, welfare, and the environment posed by the presence of hazardous waste and hazardous substances, including lead and arsenic from the Jacobsville Neighborhood Soil Contamination Site (Jacobsville Site) in Evansville, Indiana (Latitude - 37° 98' 047" North and Longitude - 87° 56' 592" West). The Jacobsville Site currently is a residential/commercial area that formally had several manufacturing facilities which likely contributed to the elevated soil levels of lead and arsenic.

The proposed action will seek to mitigate the threats to public health, welfare, and the environment posed by the presence and release of uncontrolled hazardous substances located at the site. The proposed response action proposed herein will mitigate Site conditions by removal and off-site disposal of the most severely contaminated soil. The levels of lead and arsenic in surface soil at elevated concentrations are considered hazardous; the Site's proximity to residential properties and other businesses requires that this action be classified as a time critical removal. The project will require an estimated 45 working days to complete.

There are no nationally significant or precedent setting issues associated with the Jacobsville Neighborhood Soil Contamination Site. The Site is on the National Priorities List (NPL).

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID #INN000508142

A. Site Description and Physical Location

The Jacobsville Neighborhood Soil Contamination Site is located in Evansville, Indiana and encompasses approximately 5 square miles of residential properties that have soils with concentrations above the remedial clean up levels determined in the proposed plan for the remedial action of 400 ppm for lead and 30 ppm for arsenic. The Site is roughly bounded by Pigeon Creek to the west, Diamond Avenue Expressway to the north, U.S. Highway 41 to the east, and Veterans Memorial Highway to the south. The Phase 1 Area, the area addressed in this Action Memorandum, is bounded by the Lloyd Expressway (State Highway 62) to the south, Mary Street to the west, Iowa Street to the north, and Elliot Street to the east. The Phase 1 Area contains the highest levels of lead and arsenic in soils found at the Site, and the four former facilities thought to be responsible for the contamination are within the boundaries of the Phase 1 Area. The Phase 1 Area has a mixture of residential, commercial, and industrial properties. The Phase 1 Area encompasses 141 acres and 508 residential properties. Surficial residential soils contaminated with lead and arsenic present an exposure risk to children and adults at residential and recreational properties within the Site boundaries. Sampling thus far has found lead and arsenic concentrations above cleanup levels at depths of one foot or less. There are two surface water bodies near the Site, Pigeon Creek, which is the westerly boundary and is approximately ½ mile from the Phase 1 Area, and the Ohio River, which is ¼ mile from the Site, and approximately 1 mile southeast of the Phase 1 Area. The Site does not lie within a floodplain.

In Indiana, the low-income percentage is 58 or greater and the minority percentage is 28 or greater. To meet the Environmental Justice (EJ) concern criteria, the area within 1 mile of the site must have a population that is twice the state low-income percentage and/or twice the state minority percentage. In other words, that area must be either 100% low income or 56% minority. At this Site, the low-income percentage is 59 and the minority percentage is 22, as determined by Arc View 3.0 EJ analysis using Census 2000 Database. Therefore, the Site 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

IDEM identified four former facilities that likely contributed to the contamination at the site: Blount Plow Works, (operated from the 1880s to about the 1940s), Advance Stove Works (operated from the turn of the century to about the 1950s), Newton-Kelsay (operated from the turn of the century to about the 1950s), and Sharpes Shot Works (operated from 1878 to an unknown date) (Figure 1). The facilities were located within the boundaries of the Phase 1 Area. Current conditions at these facilities are as follows:

- The Blount Plow Works building has been demolished. A supermarket, Buehler's IGA, and an asphalt parking lot are now present at the site.

- A one-story brick storage building with a gravel parking lot occupies part of the former Newton-Kelsay property. A McDonald's restaurant occupies the eastern part of the property.

- The former Sharpes Shot Works and the original Advance Stove Works facilities are now gravel parking lots. A chain-link fence encompasses the two sites.

In addition to the four facilities described above, Evansville Plating Works also may have contributed to the contamination. The company which began operations in 1897, used zinc, brass, nickel, copper, iron black (iron oxide), cadmium, and chromium as plating compounds for individuals and industry. Evansville Plating Works is located at 100 West Indiana Street, south of the Jacobsville Neighborhood (Figure 1). The 1-acre site formerly was occupied by a large, dilapidated, one-story building. The building was demolished, and the lot is now an open field and a parking lot. Land use surrounding the site is predominantly residential with small and light industrial businesses nearby.

Lead and arsenic are commonly found nearby foundry operations. Historic photos of the area indicate that the foundries operated outdoors, allowing dust from the operations to be released into the air in large quantities. The foundry dust, containing lead and arsenic may have contaminated residential soils by wind dispersion. This is supported by the fact that the extent of contamination is consistent with the wind patterns in Evansville.

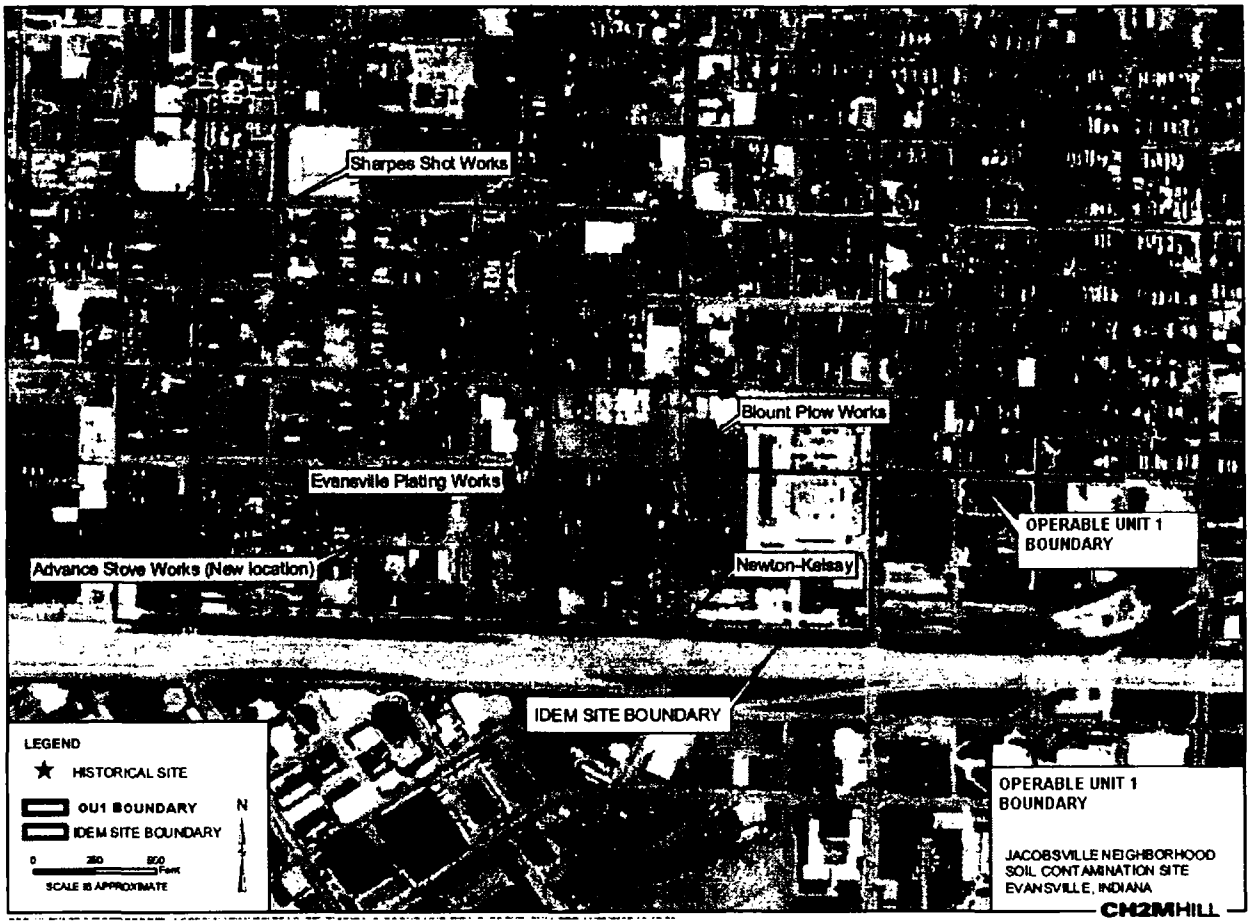


Figure 1. Original IDEM Site Boundary and Boundary of the Phase 1 Area

Site Investigation Results

A total of 189 five-point composite soil samples were collected by IDEM in 2001 as part of the Site Investigation for Jacobsville Neighborhood Soil Contamination Site. All samples were analyzed on-site using a portable x-ray fluorescence (XRF) unit, and 57 samples were sent to a laboratory for verification of XRF results. All lead concentrations above 400 ppm were found within the Phase 1 Area at the Site.

Two hundred and fifty-four soil samples were collected during the three U.S. EPA sampling events in 2004 and 2005. The samples were five-point composite samples taken from either the front or back lawns of residential properties or parks or recreational areas. An XRF unit was used for in-field analysis of the samples, and twenty percent of the samples were also sent to a lab for verification of the XRF results. The use of the XRF limited the detection of arsenic, because lead masks arsenic on the XRF if the lead levels are greater than ten times the arsenic levels. However, all arsenic was found to be co-located with lead in all samples it was detected in, so the aerial extent of contamination for lead encompasses the entire aerial extent of contamination for arsenic. The aerial extent encompassed approximately 5 square miles, centered near the four facilities thought to be responsible for the lead and arsenic contamination and consistent with the historical wind patterns of Evansville.

During the January 2006 remedial investigation (RI) sampling event, after the aerial extent of contamination was defined, two hundred and thirteen soil samples were collected from within the Site boundaries and twelve samples were collected outside of the site limits to serve as background locations.

Background Levels

Twelve samples were collected as background samples from a depth interval of 0 to 2 inches below ground surface (bgs). Four of the samples were analyzed for arsenic, lead, and iron, and the remaining eight samples were analyzed for TAL inorganic. The background threshold statistic approved by U.S. EPA for this study is the 95 percent/95 percent background upper tolerance limit (UTL), that is, an upper bound (with 95 percent confidence) of the background 95^{th} percentile. The calculation of the UTLs and other summary statistics are based on the complete background data set without excluding any detected concentrations. Outlier tests were performed on the background data set, in accordance with U.S. EPA guidance, and it was determined that no data would be excluded as outliers. Three metals were found to have background concentrations above typical background concentrations: lead, arsenic, and iron. The site specific background concentrations for these metals are 277 ppm, 16.9 ppm, and 30,400 ppm, respectively.

High Access Properties

Seventy-five samples were collected from potentially high access properties (parks, playgrounds, schools, and day care facilities). The soil samples were collected at an interval of 0 to 2 inches below ground and analyzed for lead, arsenic, and iron. Samples were taken at every high access property found within the Phase 1 Area boundaries. No high access properties within the Phase 1 Area were found to have elevated levels of lead, arsenic, or iron.

Residential Properties

During the January 2006 sampling event, samples were collected from the yards of 28 residential properties within the Phase 1 Area at four discrete intervals: 0 to 2, 0 to 6, 6 to 12, and 12 to 18 inches bgs. Drip zone samples were collected from 0 to 2 inches bgs at 26 of the residential properties. Iron was not found above background levels at any residential properties within the Phase 1 Area. Arsenic was found at four properties within the Phase 1 Area at concentrations above the clean up level of 30 ppm:

- 0 to 2 inch interval—1 of 28 properties, with detected concentrations ranging from 3.9 to 31.2 ppm.

- 0 to 6 inch interval—1 of 28 properties, with detected concentrations ranging from 2.5 to 31.8 ppm.

- 6 to 12 inch interval—2 of 28 properties, with detected concentrations ranging from 7.0 to 37 ppm.

Lead was found at concentrations greater than 400 ppm at the following intervals and frequencies:

- 0 to 2 inch interval—20 of 28 properties, with detected concentrations ranging from 136 to 1,900 ppm.
- 0 to 6 inch interval—19 of 28 properties, with detected concentrations ranging from 88 to 1,070 ppm.
- 6 to 12 inch interval—8 of 28 properties, with detected concentrations ranging from 49.8 to 2,040 ppm.
- Drip zone samples—25 of 26 properties, with detected concentrations ranging from 20 to 8,210 ppm.

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

The conditions at the Jacobsville Site present both a release and a potential threat of release of a CERCLA hazardous substance, presenting an imminent and substantial endangerment to the public health, welfare, and the environment, and meet criteria for an emergency removal action provided for in the National Contingency Plan (NCP), 40 C.F.R. §300.415(b), (2) (i), (ii), (v), and (vii). These criteria include:

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants

The following three routes of exposure and their corresponding chemicals of concern (COCs) were identified for the Jacobsville Neighborhood Soil Contamination Site:

- Surface Soil, Residential (yard) – arsenic and lead
- Surface Soil, Daycare – arsenic
- Surface Soil, Other – arsenic and lead

Per the remedial risk assessment, arsenic was detected in residential soils at 25 of 25 locations, at concentrations ranging from 4.8 to 31.2 ppm. Lead was detected in residential soils at 25 of 25 locations, at concentrations ranging from 20 to 8,210 ppm. Lead was detected in "other" soils at 70 of 70 locations, at concentrations ranging from 9.3 to 1,520 ppm.

The superfund Lead-Contaminated Residential Sites Handbook states that "Tier 1 properties have both sensitive populations (children up to 7 years old or pregnant women) and soil concentrations

in the surface soils (0–1" depth) at or above 1,200 ppm (EPA, 1997b, 1997c). Based upon the Remedial Investigation thirty six (36) properties are considered Tier 1 properties and qualify for a time critical removal action (TCRA). The remedial risk assessment determined that the contaminants of concern (COCs) for the Site are lead and arsenic in residential soils. The associated cleanup levels of 400 ppm and 30 ppm, respectively, will be protective of human health and the environment at the site for current and future residential use.

Lead:

The effects of lead exposure through direct contact, ingestion and inhalation are more severe for young children and the developing fetus through exposure to pregnant women. The harmful effects of lead included premature births, lower birth weight, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. In adults, lead increases blood pressure, induces anemia as a result of the inhibition of hemoglobin synthesis, decreases reaction time, affects memory, and damages the male reproductive system. Lead is also considered by U.S. EPA to be a class B2 or probable human carcinogen.

Reference: ATSDR. 1993. Toxicological Profile for Lead. Agency for Toxic Substances and Disease Registry, Division of Toxicology. Atlanta, GA. U.S. Department of Health and Human Services, Public Health Service.

During dry conditions, winds could cause dust particles to further migrate both on and off site. The high concentrations of lead in the area above health standards, and exposure to lead through direct contact and inhalation threatens public health, welfare or the environment should continued exposure persist. These conditions meet the criteria for a removal action.

(ii) Hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate or pose a threat of release

As documented in the Remedial Investigation Report lead was consistently found at concentrations greater than 400 ppm at all three of the sampling depths (0 to 2", 0 to 6" and 6' to 12"). U.S. EPA extent of contamination sampling confirmed thirty six residential lots had surface soil (0 to 6") lead concentrations greater than 1200 ppm. The potential for exposure to elevated lead contamination is greater when the contamination is at or near the surface. The potential for hazardous substances to migrate as run-off during storm events or to become air-borne as contaminated dust exists. Winds could cause dust particles containing lead to migrate off Site to the surrounding residential areas

(v) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released

Sampling has documented that the surface soils in at least thirty six residential lots contain lead well above health standards. Due to the residential nature of this area, heavy rains and/or winds could cause migration of contaminants into the surrounding community. These weather

conditions could result in a continued release of the contaminants of concern described herein to the surrounding residential neighborhoods.

(vii) The availability of other appropriate federal or state response mechanisms to respond to the release

The Jacobsville Site was added to the NPL on July 22, 2004. The site is a U.S. EPA lead. A proposed plan was released for public comment in January 2007. The proposed plan is to excavate to a depth of one foot and dispose of all lead contaminated soils at the site which exceed 400 ppm. However, the Record of Decision has not yet been issued The State of Indiana has no funds available to commit to this clean-up.

IV. ENDANGERMENT DETERMINATION

Given site conditions, the nature of the suspected hazardous substances on-site, and the 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, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

The purpose of this time-critical removal (TCRA) action is to mitigate the immediate threats posed to the public health, welfare, or the environment by the presence of lead in the residential soils by addressing the most severely contaminated properties. As per Superfund Lead-Contaminated Residential Sites Handbook, CERCLA provides EPA with the authority to perform "removal" and "remedial" actions. Removal actions can be performed on mining and mineral processing (primary lead and other metals smelters) sites, and other sites with lead releases to the environment. The OSC proposes the following actions to mitigate threats posed by the presence of hazardous substances at the Jacobsville Site:

1) Develop and implement a Site Health and Safety Plan, including an air monitoring plan and Site contingency plan.

2) Develop and implement a Site security plan.

3) Develop and implement a fugitive dust control plan sufficient to stabilize the Site.

4) Confirm and characterize vertical and horizontal extent of lead soil contamination at the Site. Site Investigation sampling to date has delineated the vertical extent of contamination at 1 foot below ground surface. Horizontal extent of contamination sampling to date has indicated thirty six residential yards are contaminated >1200 ppm lead.

5) Remove and properly dispose of (in accordance with U.S. EPA's Off-Site Rule (40 CFR §

300.440)) soil and debris contaminated with lead at greater than 1200 ppm from areas of the Site determined to require cleanup by sampling and characterization performed.

6) Develop and implement a post excavation sampling plan to confirm that the lead cleanup goal (400 ppm) has been achieved at the residential properties addressed by this emergency removal action.

7) Backfill excavated areas with clean fill and restore properties to pre-removal conditions.

Removal activities will require approximately 45 on-site working days to complete. The threats posed by the released lead found on site at levels of 1200 ppm or greater are considered hazardous and meet the criteria listed in Section 300.415(b)(2) of the NCP and are consistent with any long-term actions that may be required. The OSC initiated planning for the provision of post-removal Site control consistent with the provisions of Section 300.415(l) of the NCP. The nature of this time-critical removal action will eliminate the need for any post-removal Site Control at the properties addressed by this removal action.

The detailed cleanup contractor cost estimate is presented in Attachment 1 and estimated project costs are summarized below:

REMOVAL ACTION CEILING ESTIMATE

EXTRAMURAL COSTS:		**ESTIMATE**
Cleanup Contractors		$739,175.00
Contingency (20 percent)		$147,835.00
	Subtotal	$887,010.00
Total START		$ 55,000.00
TOTAL REMOVAL ACTION PROJECT CEILING ESTIMATE		**$942,010.00**

The response actions described in this memorandum directly address the actual or threatened releases of hazardous substances, pollutants, or contaminants at this Site, which may pose an imminent and substantial endangerment to public health, welfare, or 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.

Applicable or Relevant and Appropriate Requirements

All applicable, relevant, and appropriate requirements (ARARs) will be complied with to the extent practicable. Also, a letter was received from Kevin Herron of the Indiana Department of Environmental Management on January 25, 2007 transmitting State ARARs. A list of potential ARARs for the site is provided in the administrative record for the remedial action.

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

Given the conditions at the Jacobsville Site, the nature of the hazardous substances documented on-site, and the potential exposure pathways to nearby populations described in Sections II and III above, the actual or threatened release of hazardous substances from the Site, if not addressed by implementing the response actions selected in this Action Memorandum, presents an imminent and substantial endangerment to public health, welfare, or the environment.

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. The total EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be $1,507,297. [1]

($942,010 + $29,500) + (55.15% x $971,510) = $1,507,297

[1] Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United State's right to cost recovery.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Jacobsville Site developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision was based upon the Administrative Record for the Site (See Attachment 2). Because the conditions at the Site met the NCP § 300.415(b)(2) criteria for a time-critical removal action, I recommend your approval of this removal action. The total project ceiling will be $ 942,010. An estimated $887,010 of that amount may be used for cleanup contractor costs. You may indicate your decision by signing below:

APPROVE: Richard Kol DATE: 8-27-07
Director, Superfund Division

DISAPPROVE: _____ DATE: _____
Director, Superfund Division

Enforcement Addendum

Attachments
1. Detailed Cleanup Contractor Cost Estimate
2. Administrative Record Index
3. Region V EJ Analysis
4. Independent Government Cost Estimate

cc: M. Chezik, U.S. Department of the Interior, **w/o Enf. Addendum**
D. Chung, U.S. EPA HQ
K. Herron, IDEM, **w/o Enf. Addendum**

ENFORCEMENT ADDENDUM

JACOBSVILLE NEIGHBORHOOD SOIL CONTAMINATION SITE
EVANSVILLE, VANDERBURGH COUNTY, INDIANA

(REDACTED 1 PAGE)

ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY

ATTACHMENT 1

DETAILED CLEANUP CONTRACTOR ESTIMATE

JACOBSVILLE NEIGHBORHOOD SOIL CONTAMINATION SITE
EVANSVILLE, VANDERBURGH COUNTY, ILLINOIS

AUGUST 2007

The estimated cleanup contractor costs necessary to complete the removal action at the Jacobsville Neighborhood Soil Contamination site are as follows:

Personnel	$160,350
Equipment	$ 87,825
Subcontractors	$209,000
Transportation and Disposal	$282,000
Total	$739,175
20% Contingency	$147,835
START	$ 55,000
TOTAL (including START costs)	**$942,010**

ATTACHMENT 2

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR
JACOBSVILLE NEIGHBORHOOD SOIL CONTAMINATION SITE
EVANSVILLE, VANDERBURGH COUNTY, INDIANA

UPDATE #3
AUGUST 16, 2007

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	01/00/07	U.S. EPA	Public	Proposed Plan for the Jacobsville Neighborhood Soil Contamination Site	8
2	00/00/00	Turner, K., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum: Request for a Time Critical Removal Action at the Jacobsville Neighborhood Soil Contamination Site **(PENDING)**	

ATTACHMENT 3

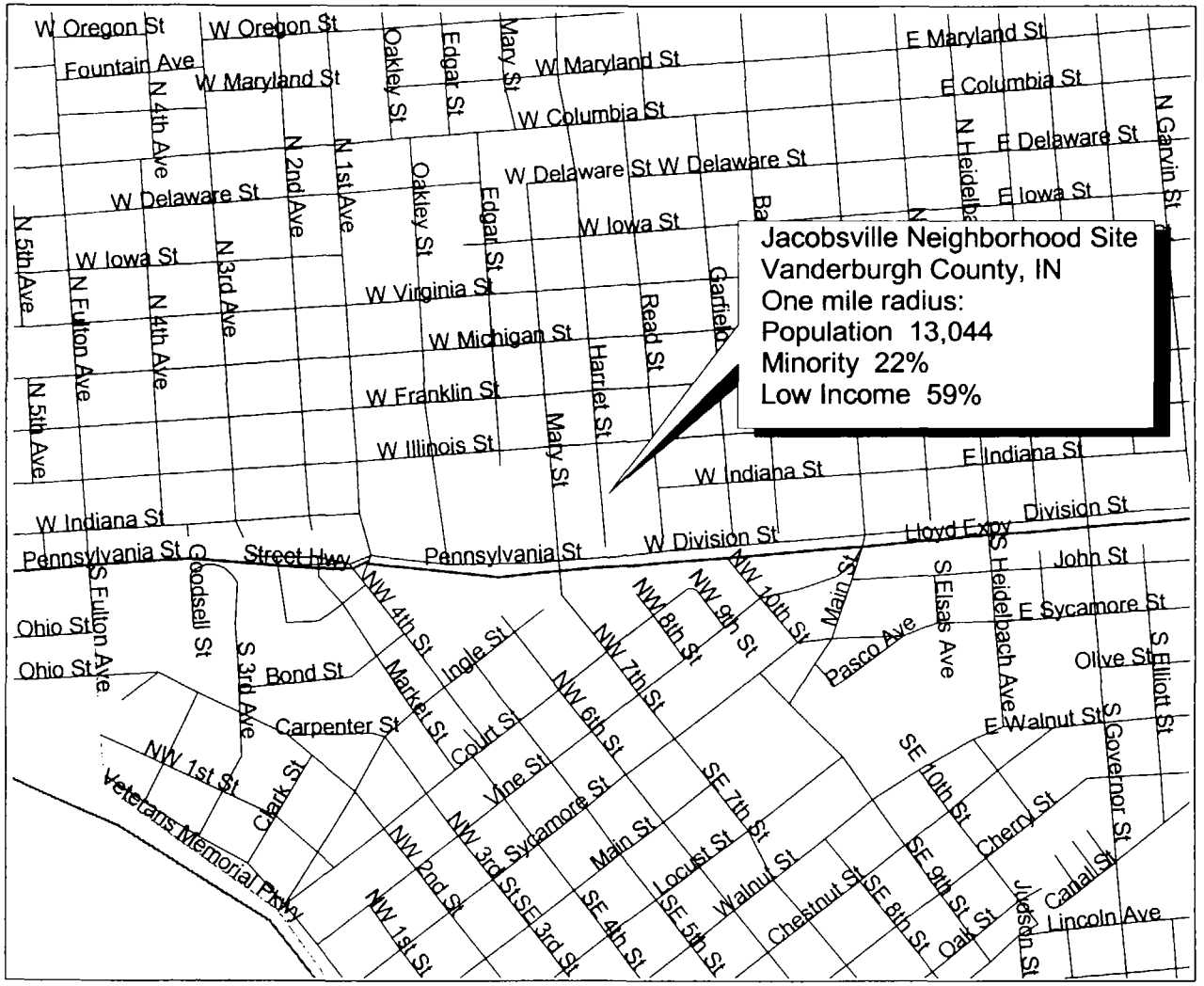
REGION V EJ ANALYSIS

JACOBSVILLE NEIGHBORHOOD SOIL CONTAMINATION SITE
EVANSVILLE, VANDERBURGH COUNTY, ILLINOIS

AUGUST 2007

Region 5 Superfund EJ Analysis

Jacobsville Neighborhood Site Evansville, IN



State of Indiana averages:
Minority: 14%
Low Income: 29%

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

Minority: 28% or greater

Low Income: 58% or greater

Date of Map 6/29/07

Source of Map Census 2000 Database/
ArcView 3 0

ATTACHMENT 4

INDEPENDENT GOVERNMENT COST ESTIMATE

JACOBSVILLE NEIGHBORHOOD SOIL CONTAMINATION SITE
EVANSVILLE, VANDERBURGH COUNTY, INDIANA

AUGUST 2007

NOT RELEVANT TO THE SELECTION OF THE REMOVAL ACTION

(REDACTED 1 PAGE)