UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

MAY 07 2002

Site: Union Electric - Ashley Plant
ID #: MOD000805499
Break: 17.7
Other:
05-7-02

MEMORANDUM

SUBJECT: Union Electric - Ashley Plant Site
Site Transfer Request

FROM: Steve Auchterlonie, Remedial Project Manager
MOKS/SUPR

THRU: Steve Kovac, Chief
MOKS/SUPR

Ron King, Site Assessment Team Leader
EFLR/SUPR

Dave Hoefer, Assistant Regional Counsel
SUPR/CNSL

TO: Bryant Burnett, Missouri Site Assessment Manager
EFLR/SUPR

The purpose of this correspondence is two-fold: 1) request the transfer of site management responsibilities to EFLR/SUPR; and 2) summarize historical site information. The decision to transfer the site to EFLR was based upon conducting the following activities within the last six months: a review of the site file; a site visit and discussions with Dave Hoefer, Regional Counsel, Steve Kovac, MOKS Branch Chief, and Ron King, SUPR site assessment coordinator.

SITE TRANSFER

The MOKS Branch requests the EFLR Branch to accept the transfer of the Superfund site known as Union Electric - Ashley Plant, MOD000805499 (Ashley site). The purpose for the transfer lies in improved utilization of Superfund Division resources. Simply, the MOKS Branch works primarily on remedial or larger scale removal sites, and the Ashley site is potentially a small removal site currently at the screening stage.

40000025

RECYCLE

Please refer to the Site Summary section of this memorandum for detailed information about the historical activities. However, for transfer purposes the following facts are important to highlight:

1. Sampling conducted at the Ashley site actually covered several properties including the Ashley Plant, an adjacent salvage yard, and a background sampling area;

2. Historical sampling results for the Ashley plant itself do not indicate that an unacceptable environmental threat exists on the property. Thus, the Ashley Plant, intended to be the Ashley site, should be archived in CERCLIS by the EFLR Branch, consistent with a 1984 letter telling Union Electric as much; and

3. Historical sampling results for the salvage yard and background sampling area (two separate properties) indicate the potential for unacceptable environmental threats. Each of these properties should be considered for screening level assessments by the EFLR Branch.

SITE SUMMARY

The Ashley Plant was self-reported by Union Electric after the Superfund law became effective in 1980. A 1984 screening level, sampling activity was conducted to determine to what extent the soils were contaminated. Contamination was found, but at levels which did not appear to pose unacceptable risks. As a result, Union Electric was notified in a 1984 letter from the EPA that no further action was required at the plant. However, the "Ashley Site" was not removed from the Region's list of active sites because a background sample indicated contamination levels of concern. A second, more extensive screening level, soil sampling event occurred in 1987. Again, the results did not show an immediate threat, but lead and polynuclear aromatic hydrocarbon (PAH) contamination were documented on property adjacent to a salvage yard.

Eventually, the site was assigned to the Missouri/Kansas Remedial Branch in the remedial program. The following list of activities, documents, and attachments, provides a summary of the file information for the Ashley site.

1. Union Electric (UE) self-reported many of its properties in 1981, including the Ashley Plant.

2. The EPA sent an information request letter to UE in 1983.

3. The EPA's contractor produced a preliminary assessment and on-site inspection report in February 1983 (Attachment 1). The report recommended no further action.

4. In 1984, EPA analyzed two soil samples from the Ashley site, determined that no further action was required at the Ashley site, and documented that position in a letter sent to UE (Attachments 2 and 3). The two sampling locations included the Ashley Plant and an adjacent property next to a salvage yard.

	AQ0701 (background)	AQ0702 (Ashley Plant)
Lead	1440 ppm	216 ppm
PCBs	21.5	0
Total Contaminants	65.5	4.9

5. Later in 1984, EPA's site inspection section authored a memorandum requesting additional sampling due to the high lead level, 1440 parts per million (ppm), found in the background sample (Attachment 4).

6. In 1987, EPA's contractor completed a report entitled, "Conclusions and Recommendations for the Follow-up Site Investigation of the Union Electric Ashley Substation, St. Louis, Missouri" (Attachment 5). A draft HRS score of 24.84 was developed as part of the report. Primarily, the report concluded that additional sampling was required to adequately determine both background and area-wide concentrations of metals and PAHs. A major product of the report was data produced from a screening level, sampling effort on and around the Ashley Pant. Figures 1 through 6 summarize and identify the levels and locations of contamination.

7. Conclusions from the historic sampling results and year 2001 site visit:

   a. Additional area-wide sampling would identify contamination. However, who are the receptors? Reasonable maximum exposures are difficult to identify. Land-use is a down-trodden business district with very low contact threat. (See Figure 1);

   b. Railroad, petroleum tank farm, Ashley Plant, salvage yard, and other commercial ventures - both current and historic - make a complicated potentially responsible party (PRP) scenario. (See Figure 1);

   c. High metals levels, both lead and arsenic, are concentrated on the property adjacent to and north of the salvage yard. The source, arguably, could be either the salvage yard or the railroad. However, the metals levels decrease at the other sampling locations positioned around the railroad tracks. In addition, the lower total PAH levels around the tracks do not indicate the tracks as the source;.

   d. The highest PAH levels were identified in the "background" sample located on an open lot (sample AKJ3B012). The site visit did not identify visible dumping on the lot; and

e. Only two samples were analyzed for PCBs, but the one result of concern was from the property located adjacent to the salvage yard.

8. The data support the no further action decision for the Ashley Plant property. Thus, the UE - Ashley Plant site should be archived in CERCLIS.

9. The data identify a concern for contamination originating from the salvage yard. MOKS recommends that EFLR conduct a screening level preliminary assessment for the salvage yard, as a separate site from the Ashley site.

10. The data identify a concern for contamination on the background, open lot. Again, MOKS recommends that EFLR conduct a screening level preliminary assessment for the open lot, as a separate site from the Ashley site and the salvage yard.

If you have any questions, please call me at x7778.

Attachments

Run Date: 4/15/02 13:26:43

Site Name: UNION ELECTRIC CO - ASHLEY PLANT

S	▲	C		OU	Action Name	Sq	Ld	Planned Start	Planned FYQ	Planned Complete	Planned FYQ	Actual Start	Actual Complete		H	Qual	Takeover Phased	SCAP Note	EPA Person
				00	DISCOVERY	1	F	00/00/0000		00/00/0000		00/00/0000	08/01/1980						
				00	NON-NPL PRP SEARCH	1	FE	00/00/0000		06/30/1986	1986/3	00/00/0000	05/15/1986			VC			
		C		00	PRP REMOVAL	1	RP	04/01/1985	1985/3	06/30/1985	1985/3	05/15/1985	05/15/1985			S			
		C		00	PRELIMINARY ASSESSMENT	1	F	00/00/0000		03/31/1984	1984/2	00/00/0000	03/01/1984			N			
				00	Final Disposition	2	F	00/00/0000		09/30/1984	1984/4	00/00/0000	09/27/1984					BY CRAWFORD	
				00	Data Transmittal	1	F	00/00/0000		12/31/1984	1985/1	00/00/0000	10/09/1984					FROM R MORBY	
				00	Tentative Disposition	1	F	00/00/0000		03/31/1984	1984/2	00/00/0000	03/31/1984						
		C		00	SITE INSPECTION	1	F	01/01/1983	1983/2	03/31/1983	1983/2	01/19/1983	02/23/1983			H			
				00	Final Disposition	1	F	00/00/0000		09/30/1983	1983/4	00/00/0000	07/07/1983						
				00	NEGOTIATION (GENERIC)	1	FE	04/01/1985	1985/3	09/30/1985	1985/4	05/15/1985	08/15/1985					SETTLEMENT	
				00	ADMIN ORDER ON CONSENT	1	FE	00/00/0000		06/30/1985	1985/3	00/00/0000	06/30/1985						
				00	Effective Date	1	FE	00/00/0000		06/30/1985	1985/3	00/00/0000	06/30/1985						

* No outstanding activities remaining or projected.

AT 4/17/02

Attachment I

FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES

FIT PROJECT

TASK REPORT TO THE
ENVIRONMENTAL PROTECTION AGENCY

CONTRACT NO. 68-01-6692

Preliminary Assessment and On-site Inspection
at the Ashley Power Plant, St. Louis, Missouri
Operated by the Union Electric Co., St. Louis, Missouri

Report Prepared by: James Jackson and Joyce Bailey

TDD #R-07-8301-10

February 23, 1983

ecology and environment, inc.

International Specialists in the Environmental Sciences

On January 13, 1983, Ecology and Environment, Inc.'s Field Investigation Team (FIT) was tasked under Technical Direction Document (TDD) R-7-8301-10 to conduct Preliminary Assessments of twelve Union Electric Company sites in eastern Missouri. Five-hundred person hours were allotted for the completion of this task.

To determine the apparent seriousness of the problem posed by these sites, background data was gathered and reviewed, interviews were made with knowledgeable parties, and site inspection were made if it was deemed necessary.

Included in this report will be information regarding the Ashley Electric Power Plant which is located in St. Louis, Missouri. This site has a Potential Hazardous Waste Site Number of MO-000010503.

SECTION 2: HISTORY

Along with five other sites, the Union Electric Company listed seven of their power plants as potential hazardous waste sites as required by Section 103 (c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). These plants were listed because small quantities of waste oils and solvents may have been disposed of on the properties for the purpose of dust or weed control. The Ashley facility was included in this list of potential sites along with the Labadie, Meramec, Osage, Rush Island, Sioux, and Taum Sauk power plants.

The Ashley facility is a Number 6 fuel oil-fired steam generating power plant located at Ashley and Wharf Streets along the Mississippi River about 1,300 yards north of the Jefferson National Expansion Memorial (the Arch) near downtown St. Louis. The power plant is bounded on the non-river sides by industrial and commercial development, however, many of the surrounding buildings and the power plant itself may be considered of historical value.

The plant sits on about 3 acres of flat, asphalt, concrete, brick, or gravel covered land. There is no vegetation to speak of growing on the site. The legal description of the site is T45N, R7E, St. Louis County, Missouri. It is operated 24 hours a day and the off-street area around the plant is fenced. It is also locked and lighted at night. A flood wall runs between the site and the Mississippi River. The area around the plant is serviced by municipal drinking water and there are no nearby wells.

SECTION 4: CHEMICALS INVOLVED

A check of records indicates that this plant has a National Pollutant Discharge Elimination System (NPDES) permit (MO-0000345) for discharges of condenser cooling water, floor drainage, boiler blowdown, and intake screen wash water. The facility is also listed as a Resource Conservation and Recovery Act (RCRA) small quantity generator (MOD00-0805499) for the following material classes:

F001: The spent halogenated solvents used in degreasing such as tetrachloroethylene, trichlorcethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and the chlorinated fluorocarbons and sludges from the recovery of these solvents in degreasing operations.

F002: The spent halogenated solvents, tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, o-dichlorbenzene, trichlorofluoromethane and the still bottoms from the recovery of these solvents.

F003: The spent non-halogenated solvents, xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, n-butyl alcohol, cyclohexanone, and the still bottom from the recovery of these solvents.

F005: The spent non-halogenated solvents, methanol, toluene, methyl ethyl ketone, methyl isobutyl ketone, carbon disulfide, isobutanol, pyridine and the still bottoms from the recovery of these solvents.

The Union Electric Company submitted an EPA Notification of Hazardous Waste Site form for this location because small quantities of waste oils, solvents, and cleaning chemicals may have been disposed of on the grounds of the plant between 1975 and 1979.

On January 19, 1983, Joyce Bailey and James Jackson interviewed Dave Wambold and Paul Pike of Union Electric's Environmental Services Department. They said that small quantities (less than 10 gallons) of non-PCB containing waste oils and halogenated and non-halogenated waste solvents such as trichlorethylene, 1,1,1-trichloroethane, methylene chloride, xylene, toluene, methyl ethyl ketone, and stoddard solvent may have been dumped onto the plant's property on occassion prior to the enactment of environmental regulations for the purpose of dust and weed control. These practices have since been discontinued. These materials are now being mixed with the #6 fuel oil normally used to fire the boilers at this plant. This is done under the appropriate state air and waste permits.

Some inorganic acids and caustics such as sulfuric acid and sodium hydroxide are also used in cleaning and demineralizing operations. These may have contained lead levels in the range of 7-10 ppm by weight. The acids were disposed of at near neutral pH conditions and the caustics at a pH of about 12.7 onto the ground in the same manner as the solvents. These solutions are now disposed of into the sanitary sewer system in a near neutral state with the approval of the Metropolitan Sewer District.

Mr. Wambold and Mr. Pike also indicated that to the best of their knowledge, that no PCB-containing wastes had been disposed of at any of the power plant sites. They also

stated that all of the Union Electric power plants typically have the same types of chemicals on hand and typically follow the same disposal practices.

That same day, Mr. Jackson, Ms. Bailey, Mr. Wambold, and Mr. Pike traveled to the Ashley power plant. This plant was chosen as a representative of the situations at the other Union Electric plants. This site was also chosen because it was the oldest Union Electric site and therefore was assumed to have the most past dumping. It was also near other sites under investigation and could be accomplished at a minimum of additional cost.

The location of the past dumping was observed about 250-400 yards north of the main plant building. No stains or odors were noticable in the cindery, gravelly area along the landward side of the flood wall. The photos included in the appendix show dark areas on the ground, however, these were due to wet areas caused by recent rains. Visual observation of a storm drain in an old coal unloading area and the banks of the Mississippi from the plant showed no signs of any off-site contamination seepage.

Inside the plant, it was found that sodium hydroxide was utilized in a 9% heated solution to dissolve deposits off of boiler burner tips. The container for this operation appeared to hold about 30 gallons of the solution which was recirculated until the solution became too weak or dirty to be effective. The lead concentrations mentioned earlier were associated with this solution. The frequency that this used

solution is discarded depends upon the seasonal use of the boilers but it was estimated that the container would have been dumped about once a month on the average. About 200 pounds of sodium hydroxide granules were stocked in the plant for use in this process at the time of our inspection.

About 350 gallons of muriatic acid (28% hydrochloric acid solution) and sulfuric acid were stored in the plant. These were kept in 1 gallon jugs and 30 gallon carboys for use in cleaning masonry, tile, restrooms, etc. as well as to clean mineral deposits off of metal parts. It was estimated that no more than 10 gallons of neutralized acids were dumped in an average month.

About 500-600 gallons of trade name, non-halogenated hydrocarbon cleaning solvents were stored in the plant in 55 gallons drums. It is estimated that no more than 1 gallon per month was dumped due to the manner in which the solvent was poured out of the drums into small pans for use.

About 10 gallons of halogenated solvents and aromatic paint solvents were stored in the plant in one pint to one quart containers. These did not appear to represent a significant disposal hazard as these solvents were used to thin paint and to clean small metal parts by hand. It is estimated that no more than 1 gallon per month of these materials had been dumped in the past.

From the above estimations, it can be calculated that a maximum of 41 gallons of wastes were dumped along the site during an average month. This would equal a maximum of 492

gallons per year or 1,968 gallons over the 4 year period in question. About 27% of these figures represent the amount of solvents dumped with the other 73% representing the mostly neutralized inorganics.

SECTION 5: SAMPLING DONE

No sampling was done during this inspection at the direction of EPA.

SECTION 6: SITE GEOLOGY

The Granite City Quadrangle of the St. Louis County and City Soil Survey completed by the U.S. Department of Agriculture's Soil Conservation Service in 1982 indicates that this site is located in Urban bottom land which has a 0-3% slope. This map unit consists of areas in which more than 85% of the surface is covered by asphalt, concrete, buildings, or other impervious materials. The area was originally bottom land which has been built up with fill material. Composition of the soil material capable of supporting vegetation is quite variable and identification of the soils and soil-like materials in this unit is impractical because of the variability.

There are no wells in the immediate vicinity of the site and the area around the plant is serviced by municipal drinking water. Precipitation would percolate through the soil on-site or run into storm drains before reaching the Mississippi River. The plant is situated behind a flood wall which protects it from flooding.

SECTION 7: CLIMATOLOGY

The Local Climatological Data for St. Louis, Missouri compiled by the U.S. Department of Commerce in 1981 indicates that the following climatological conditions typically exist in the area of this site:

TEMPERATURE:

lowest = -23°F

highest = 115°F

average = 56°F

PRECIPITATION:

average = 37 inches (20 inches snow)

thunderstorms occur an average of 45 days per year

WIND:

prevailing direction = South

average speed = 10 mph

average maximum = 60 mph

BAROMETRIC PRESSURE:

average = 997 mb

HUMIDITY:

averge = 62-84%

LIGHT:

% of possible sunshine = 60%

SECTION 8: CONCLUSIONS

Given the manner in which the materials were spread upon the surface of the soil, during the time frame in question, it must be assumed that most of this material has either per-

colated through the soil and seeped into the adjacent river, been washed into the river by rains, or has evaporated. Any residual left in the soil at this site probably would not pose a significant risk to the public health or the environment.

From the interviews and observations gathered, it was determined that the potential for a hazardous waste site being present was extremely low at this site and was probably low at the other power plant sites. Therefore, it was decided that inspections of the other Union Electric power plant sites (which are widely dispersed) would not be done during the Preliminary Assessment phase in order to conserve resources.

It is our recommendation that this site no longer be considered as a potential hazardous waste site and that further investigation is not necessary. However, the other power plants not inspected should undergo low priority on-site inspections to be certain that their conditions are not appreciably different than those found at the Ashley plant.

TABLE OF CONTENTS

		Page
SECTION 1:	INTRODUCTION	1
SECTION 2:	HISTORY	1
SECTION 3:	LAND USE OF THE SITE AND SURROUNDING AREA.	2
SECTION 4:	CHEMICALS INVOLVED	2
SECTION 5:	SAMPLING DONE	7
SECTION 6:	SITE GEOLOGY	7
SECTION 7:	CLIMATOLOGY	8
SECTION 8:	CONCLUSIONS	8
APPENDIX		10

Attachment 2

Memo

September 27, 1984

From: DAve Crawford, Superfund Section (SPFD)

To: Craig Smith, TEam Leader, SPFD
Katie Biggs, Chief SPFD

Re: Union Electric Company, Ashley Plant; St. Louis, Mo.

Background/History

This facility was one of several plant sites in Missouri on which Union Electric submitted Superfund (103c) Notifications. The notification reported that small quantities of chlorinated and nonchlorinated solvents, inorganic acids, and non-polychlorinated biphenol (PCB) oil may have been disposed at the site.

SPFD previously did a Final Strategy Determination on this site, which was submitted in July of 1983 and classified this site as No Action Necessary. This is the site's classification in the ERRIS data base of sites. The Field Investigative Team (FIT) did a site inspection in January, 1983. The FIT inspection report also recommended that this site be classified as no action necessary.

However subsequently SPFD decided to reevaluate this site and requested that FIT conduct another site inpsection and collect a soil sample. FIT then collected one soil sample from the plant site and one background soil sample near the plant in February, 1984. The following table briefly summarizes the contaminant levels reported in these two samples:

	AQ0701 (background)	AQ 0702 (Ashley plant)	
lead	1440 ppm	216 ppm	(Due to excessive holding time until the samples were analyzed ENSV/LABO reported all organic data as "J values as estimated concentrations.)
PCBs	21.5	0	
total of all priority pollutants (including PCBs)	65.5	4.9	

Site Setting/Potential Endangerments

The site is located in an industrial setting approximately 3/4 miles north of The Arch in downtown St. Louis. The power plant is adjacent to the Mississippi River. FIT reported that there are no wells used for drinking (either public or private) in the vicinity of this site. Nor are there any downriver surface drinking water intakes. (The City of St. Louis receives its drinking water from a surface intake in the River several miles upriver of this site.) FIT reported, due to the setting of the site and the permeability of surface and near surface soils, that any contaminants percolating into the ground would discharge relatively quickly to the adjacent River. (i.e. Groundwater contamination at this site is unlikely to have any other fate or impact than to discharge into and be diluted with the surface water of the River.)

The potential for direct contact exposures or via the air route also appears to be limited. The site is located in an industrial section of St. Louis. There are several other industrial or manufacturing facilities in addition to the power plant in the vicinity. Pedestrian traffic around the site is reported to be quite limited and would consist primarily of employees walking to or from their place of employment.

Based upon the above-described setting of the site and populations which would be scored by the Hazard Ranking System (HRS) via the surface water and groundwater routes this site has an extremely low potential to be realistically considered as a candidate for the National Priority List (NPL.) . This would be true even if significant quantities of hazardous wastes or substances were present or being released from the site. A larger population could be scored via the air route; however releases via the air route would be unlikely at the background sample location and even less likely at the Ashley plant.

Recommendation

This recommendation is limited to the Ashley plant. The site of the background sample location will be addressed in a separate memo. As previously described this site has no realistic potential to be an NPL candidate site. In addition based upon the available information this site does not appear to pose a threat to health or the environment as either a direct contact or fire and explosion site, which the HRS scores separately. I am, therefore, recommending that we write this site off as no action necessary with the following conditions. I have drafted a Final Strategy Determination (FSD) to be submitted if you concur. Even though an FSD has previously been submitted I recommend we go ahead and submit this one, in order to reflect the more recently generated information.

agree [illegible] disagree_____ comments_____

I recommend we send a modified form letter to UE advising them that we believe no further action is necessary under our program at the Ashley plant. I recommend we modify the letter to reflect the fact that additional investigation or actions may be needed regarding the site of the background sample.

agree [illegible] disagree_____ comments [illegible] need to be carefully worded

PCBs were found in the soil in the background sample adjacent to the Ashley plant. Without necessarily concluding the the Ashley plant is the source of these PCBs I recommend that we advise TOPE of this information and recommend that they add this site to the list of sites that they are developing for follow up under TSCA.

agree [illegible] disagree_____ comments_____

[illegible] 9/25/84

cc: site file
reading file

Nevertheless the contaminant concentrations, especially on lead may warrant further investigation. If this concentration (1440 ppm) of lead is representative of a considerable portion of land I would be concerned regarding the potential for direct contact exposures, even though relatively few people will have occation or opportunity to contact the contaminated soil. Additional soil sample would have to be collected and analyzed in order to make this determination. I assume that if we are to request more soil sampling to generate more data that we would eventually request a health assessment from CDC. In order for CDC to give us a health assessment they will need more information than is contained in the file regarding the potential for, and number of, people to contact soil at the site.

Recommendation

I believe that the concentration of lead would pose some threat to public health if it were representative of a fairly large piece of property. I therefore recommend that we request additional soil samples be collected and analyzed to allow this determination (regarding the potential for direct contact exposures) to be made. When the samples are collected additonal information regarding land uses and potential exposures should be gathered and reported. However if we are to pursue this we should recognize that this site will not be on the NPL, even though the site might pose a threat to public health. Given the likely low number of people who could come in contact with substances on the site, action levels for any contaminants at this site will probably be somewhat higher than sites where the potential for exposure would be greater.

agree L. Biggs disagree_____ comments Low priority for follow-up

POTENTIAL HAZARDOUS WASTE SITE FIN. STRATEGY DETERMINATION	REGION VII	SITE NUMBER MO-000010503

...Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency, Sit... Waste Enforcement Task Force (EN-335), 401 M St., SW, Washington, DC 20460.

I. SITE IDENTIFICATION

:tric Company Ashley Power Plant	B. STREET: AShley & Wharf streets	
›uis	C. STATE: Missouri	E. ZIP CODE: 63103

II. FINAL DETERMINATION

...ended action(s) and agency(ies) that should be involved by marking "X" in the appropriate boxes.

RECOMMENDATION	MANDATORY	ACTION AGENCY: EPA	STATE	LOCAL	PRIVATE
:ED		XXX			
›N NEEDED, BUT NO RESOURCES AVAILABLE (Section III.)					
›N (If yes, complete Section IV.)					
›CTION (If yes, specify in Part E whether the case will be primarily ›A or the State and what type of enforcement action is anticipated.)					

FINAL STRATEGY DETERMINATION This site was identified to EPA when the company sub- 03c Notification reporting the disposal in years past of small quantities of waste oil (not PCB) and inorganic acids. The quantities of wastes disposed appear to be small. There are no wells or water supplies in the vicinity at ›ntamination. A soil sample collected and analyzed by EPA did not contain sig- evels of contamination. Due to the inaccessible setting of the site the poten- irect contact exposures at the site is limited. A background soil sample was by EPA near, but not on, this site. * CONTINUED BELOW III.A.

›CEMENT PLAN HAS BEEN PREPARED. SPECIFY ›nd (mo., day, & yr.)	G. IF AN ENFORCEMENT CASE HAS BEEN FILED, SPECIFY THE DATE FILED (mo., day, & yr.)

›ATION V. Crawford	(816) 374-6864	9/27/84

III. REMEDIAL ACTIONS TO BE TAKEN WHEN RESOURCES BECOME AVAILABLE

...ions, such as excavation, removal, etc. to be taken as soon as resources become available. See instructions ...s for each of the actions to be used in the spaces below. Provide an estimate of the approximate cost of the

›IAL ACTION	D. ESTIMATED COST	C. REMARKS
FROM II.E. ABOVE * That sample contained higher levels of contamination that ...ll evaluating. This is being addressed as a separate site. This determination ...pon currently available information and would be reassessed upon receipt of ...ation warranting such reassessment.		
	$	
	$	
	$	
	$	
	$	
	$	
›COST	$	

...91)

Continue On Reverse

Attachment 3

OCT 9 1984

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Jorrell D. Smith
General Manager, Environmental Services,
Safety and Health
Union Electric Company
Post Office Box 149
St. Louis, Missouri 63166

RE: Ashley Power Plant

Dear Mr. Smith:

Hazardous waste has been characterized as the major environmental problem of the decade. The Environmental Protection Agency (EPA) has been tasked with developing a program for hazardous waste management under the Resource Conservation and Recovery Act (RCRA) and the various regulations promulgated since May 19, 1980, that implement RCRA. Additionally, EPA is investigating sites where hazardous wastes or substances were disposed of prior to their regulation or where wastes were disposed of without regard for human health or the environment under the authority of RCRA and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund).

Each region of EPA has developed a list of potential and/or confirmed sites where improper hazardous waste disposal has occurred. Sites may be placed on the list by several different means including CERCLA 103(c) notification and through knowledge of the site by EPA staff, by knowledge of the state environmental agency, or by information provided by other responsible parties. Regardless of the source of information, all sites are independently evaluated by EPA or the state environmental agency.

As you are probably aware, EPA Region VII has the Union Electric Company Ashley Power Plant at Ashley and Wharf Streets in St. Louis, Missouri listed as a site where wastes may have been disposed or managed prior to their regulation or without regard for human health or the environment. The EPA has now completed its investigation and evaluation of this site.

Based on all of our currently available information, we do not believe this site poses a public health or environmental hazard. We anticipate no further action on this site unless we receive additional information which would lead us to believe this site does pose a public health or an environmental hazard.

ARWM/WMBR/SPFD/DCrawford/dh/10/2/84/Form Letter

SPFD	SPFD	WMBR
CRAWFORD	BIGGS	MORBY
DCR 10/2/84	KBiggs 10/2/84	10/5/84

Attachment 4

OCT 1 6 1984

MEMORANDUM

SUBJECT: Sample #AQ0701

FROM: Robert L. Morby
Chief, Waste Management Branch

TO: Paul Doherty
Chief, Site Inspection Section

THRU: John C. Wicklund, Director
Environmental Services Division

During a Preliminary Assessment/site sampling of the Union Electic Company Ashley Plant in St. Louis, MO, members of the Field Investigative Team (FIT) collected two environmental samples. Sample #AQ0701 was a background soil sample collected near, but not on, the Ashley plant. Sample #AQ0702 was collected on the site in an area where wastes may have been previously disposed. The following is a brief summary of the analytical data reported on these two samples:

	AQ0701 (background soil)	AQ0702 (Ashley plant soil)
lead	1440 ppm	210 ppm
PCBs	21.5	0
total of all priority pollutants (including PCBs)	65.5	4.9

At the present time we do not feel that the Ashley site poses any problem and, based upon currently available information, have written that site off as no action necessary. However, the 1440 ppm of lead reported in sample #AQ0702 causes us some concern and we believe should be further investigated. While conceding that the potential for direct contact exposures to the area where the background sample was collected is remote because of the relative inaccessibility of the area, we nevertheless would be concerned about even limited exposures, if 1440 ppm lead is representative of the contaminant level present in the soil at that site. We concur with the preliminary assessment of the Ashley Plant, that the potential for and consequences of groundwater contamination at this site are very unlikely to be significant.

ARWM:WMBR:SUPF:DCRAWFORD:odw:X6864:10/3/84:disk 7

SUPF	SUPF	WMBR
CRAWFORD	BIGGS	MORBY
10/3/84	10/12/84	10/15/84

We are requesting that additional soil samples be collected and analyzed for metals at the background soil sample site. In addition, since the sample also contained 21.8 ppm of PCBs we believe at least PCBs, and possibly other organics which were reported in quantifiable concentrations, should be run. We are requesting this as a routine priority for the first or second quarter of FY-85. This site does not appear on the first quarter work request but should be considered an addendum to that request.

When visiting the site to collect the samples FIT should attempt to determine what sources or facilities might be a cause of this contamination. Conversations with FIT personnel since this data was received indicated that this site is not near a major thoroughfare and that automobile exhaust is not a likely cause of the lead concentrations. Please contact me, or Katie Biggs, Chief of the Superfund Section, or Dave Crawford if there are any questions regarding this work request.

cc: Charles Hensley, Chief, ENSV/LABO
Ed Skowronski, CDC

ecology and environment, inc.
CLOVERLEAF BUILDING 3, 6405 METCALF, OVERLAND PARK, KANSAS 66202, TEL. 913/432-9961
International Specialists in the Environment

9-17-87

Attachment 5

MEMORANDUM

S00069343
SUPERFUND RECORDS

SEP 18 1987

TO: Paul Doherty, RPO

THRU: Phil Dula, E&E/FIT

FROM: Anne Melia, E&E/FIT

DATE: September 17, 1987

SUBJECT: Conclusions and Recommendations for the Follow-up Site Investigation of the Union Electric Ashley Substation
St. Louis, Missouri
TDD #F-07-8612-09/FM0059SA
Site #03B Project #001
Superfund Contact: Gene Gunn

At the request of the Region VII U.S. Environmental Protection Agency, the Ecology and Environment, Inc. Field Investigation Team (E&E/FIT) performed a follow-up Site Investigation of the Union Electric Ashley Substation located in St. Louis, Missouri.

The follow-up Site Investigation of the Union Electric Ashley Substation was performed on July 8, 1986. Ten soil samples (0 to 6 inches deep) were collected; five on-site, four upgradient, and one downgradient. The samples were submitted for total metals, semi-volatile organic compounds, and pH analysis.

Analysis of the samples indicated metal and semi-volatile organic contamination of the on-site and off-site samples. The distribution of the contaminants indicates that the on-site contamination may be due to both on and off-site activities. However, because the former disposal area is located in an industrial section of St. Louis, identifying the sources of contamination is difficult. The contaminant concentrations identified in the upgradient soil samples may be representative of the entire industrial area surrounding the site. It is recommended that a comprehensive soil sampling be conducted in the industrial area surrounding the site. This study would provide the data necessary to adequately determine background concentrations of metals and semi-volatile organic compounds.

The draft HRS score for the site is 24.84, but the direct contact score is 50 because the former disposal area where the contaminants were detected is unfenced. Additional on-site sampling is recommended to more accurately determine the extent of on-site contamination.

EP toxicity tests also should be performed on all the samples to characterize the toxicity of the contaminants present.

recycled paper

SECTION 5: 1986 INVESTIGATION

The E&E/FIT conducted sampling at the Union Electric Ashley site on July 8, 1986. Five soil samples were collected from the Ashley Power plant former disposal area, (AKJ3B003, 004, 004D, 005, 006). Four samples were collected upgradient from the site (AKJ3B001, 002, 008, 012), and one sample was collected downgradient from the site (AKJ3B007). The former disposal area is located directly north of the Ashley Power Plant (Figure 2). The soil samples consisted of three aliquots collected from a depth of 0 to 6 inches. After thorough mixing, each sample was placed in an 8-ounce glass jar and submitted to the Region VII EPA for metals, semi-volatile organic compounds, and pH analysis. Table 3 provides a summary of the samples collected during this investigation.

FEBRUARY 29, 1984

Figure 6: Sample Locations for Ashley Power Plant

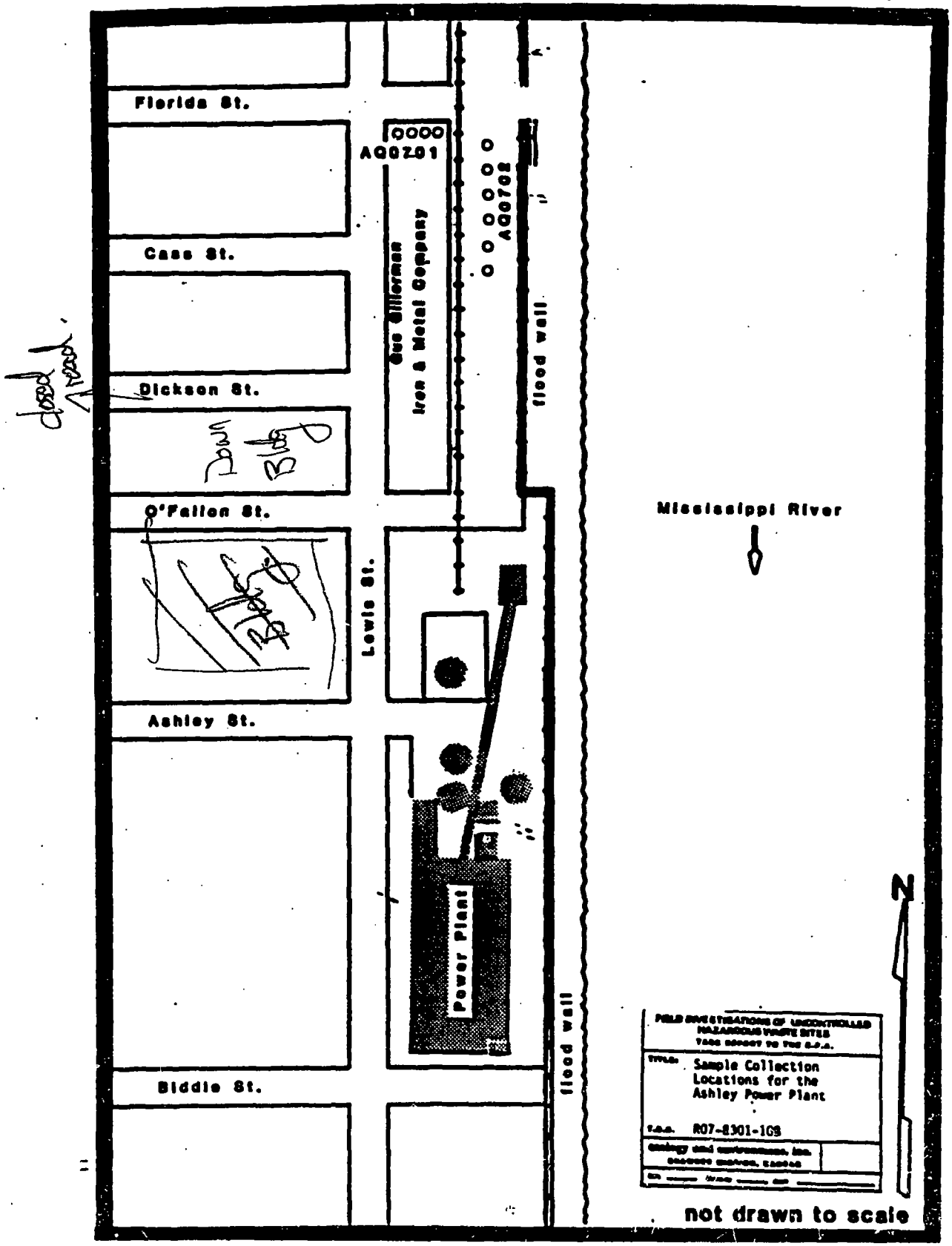
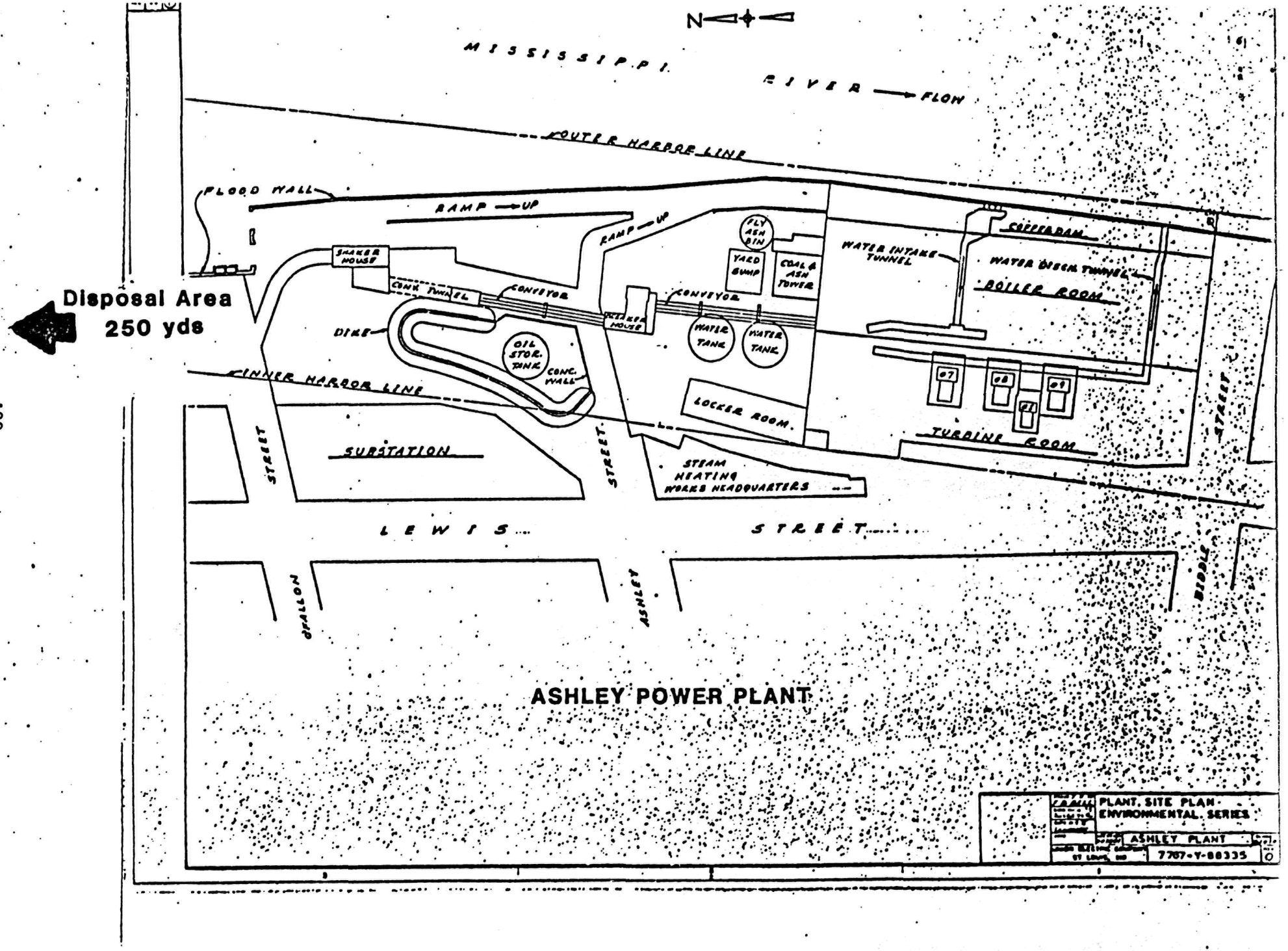


Table 2
Analytical Results from the
February 29, 1984, Investigation

Compound	Background Sample AQ0701	On-Site Sample AQ0702
pH	7.98	7.89
Lead	1,440,000	216,000
Fluoranthene	4,500 J	1,100 J
Naphthalene	770 J	-------
Di-n-Butyl Phthalate	290 J	-------
Benzo (A) Pyrene	4.500 J	2,700 J
Benzo (B) Fluoranthene and/or Benzo (K) Fluoranthene	7,900 J	-------
Chrysene	4,900 J	-------
Acenaphthylene	490 J	-------
Benzo (GHI) Perylene	6,000 J	-------
Phenanthrene	3,100 J	1,100 J
Indeno (1,2,3,CD) Pyrene	7,500 J	-------
Pyrene	8,100 J	-------
Dieldrin	1,400 J	-------
PCB 1248	16,000 J	-------
PCB 1260	5,500 J	-------
2-Methylnaphthalene	460 J	-------

All concentrations in ppb.
J = Compound was qualitatively identified; however, compound failed to meet all QA criteria and therefore is an estimated value.
Values not shown are below the detection limit.

The contaminants identified in the background upgradient soil sample (AQ0701) prompted the Region VII EPA to request additional sampling at the Ashley Power Plant (TDD #F-07-8612-09).

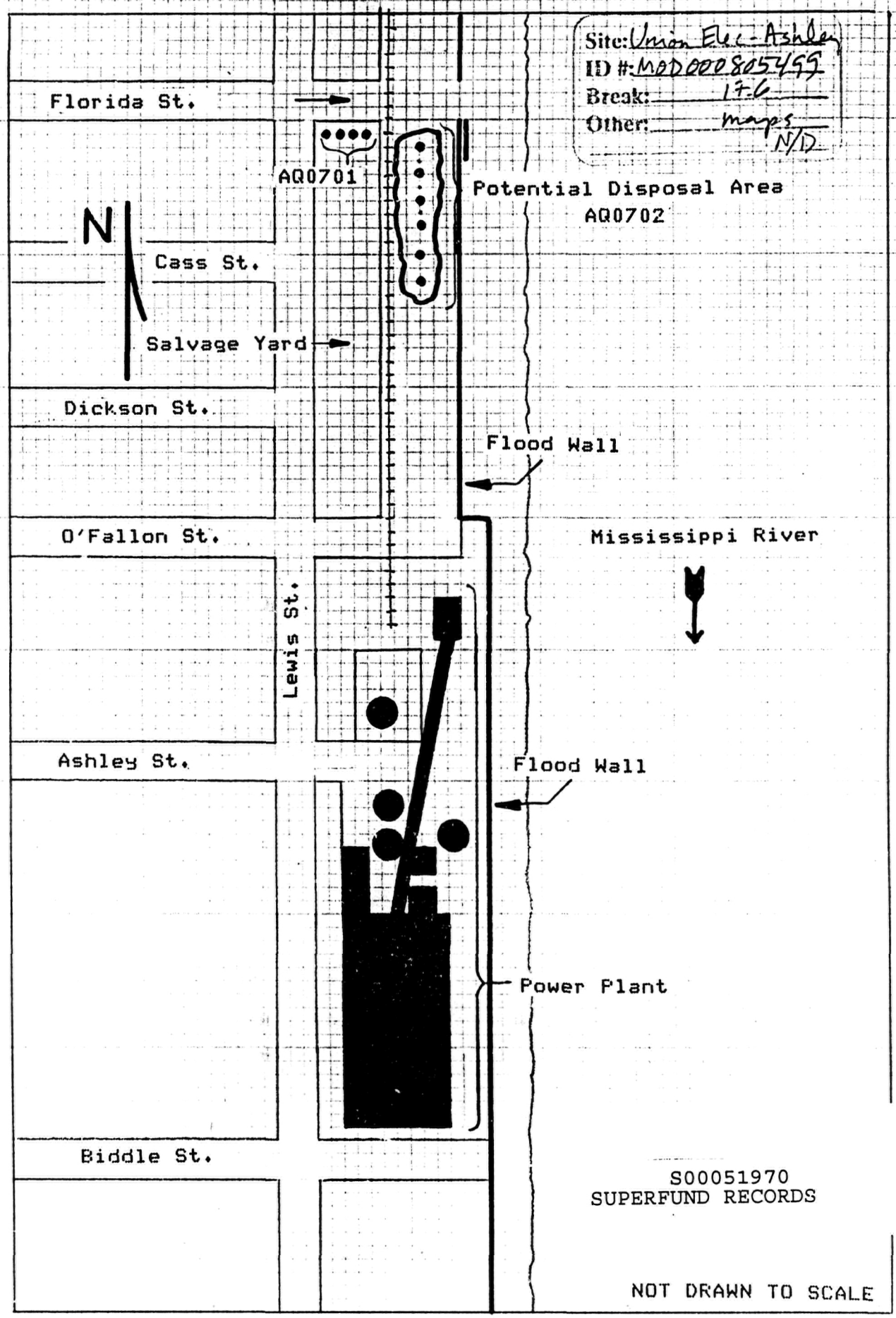


Disposal Area
250 yds

SITE SKETCH
ASHLEY POWER PLANT

08

Site: Union Elec - Ashley
ID #: MOD000805455
Break: 17.6
Other: maps N/D



S00051970
SUPERFUND RECORDS

NOT DRAWN TO SCALE

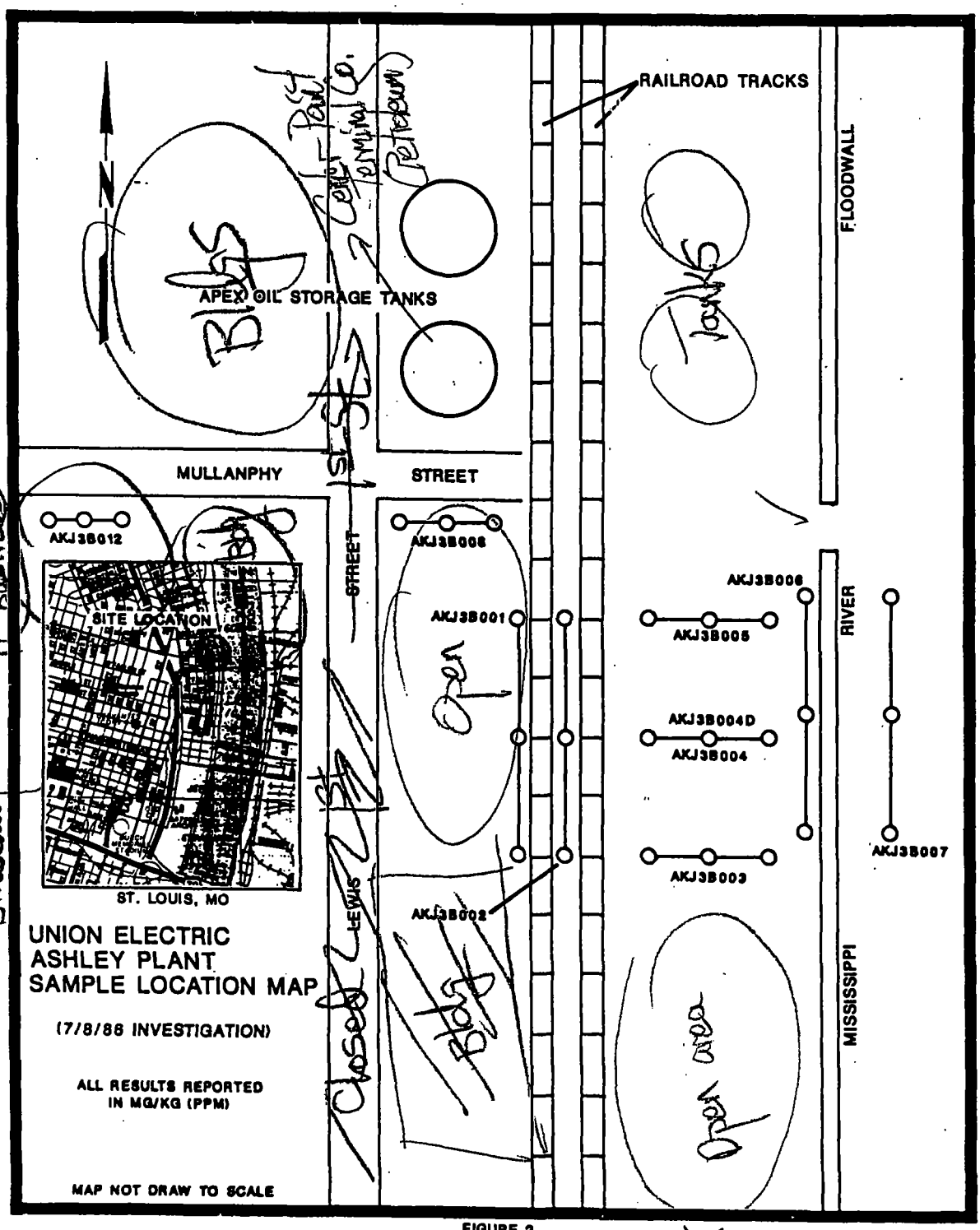

RAILROAD TRACKS
FLOODWALL
APEX OIL STORAGE TANKS
MULLANPHY
STREET
STREET
AKJ3B012
AKJ3B008
AKJ3B006
AKJ3B001
AKJ3B005
RIVER
AKJ3B004D
AKJ3B004
AKJ3B007
AKJ3B003
AKJ3B002
SITE LOCATION
ST. LOUIS, MO
UNION ELECTRIC
ASHLEY PLANT
SAMPLE LOCATION MAP
(7/8/86 INVESTIGATION)
ALL RESULTS REPORTED
IN MG/KG (PPM)
MAP NOT DRAW TO SCALE
MISSISSIPPI

FIGURE 2

TABLE 3
SAMPLE SUMMARY FROM THE 1986
INVESTIGATION

AKJ3B001	Upgradient, west of the railroad tracks.
AKJ3B002	Upgradient, between railroad tracks.
AKJ3B003	On site, southern most sample.
AKJ3B004	On site, center sample.
AKJ3B004D	On site, center sample.
AKJ3B005	On site, northern most sample taken.
AKJ3B006	On site, along the Mississippi flood wall.
AKJ3B007	Downgradient, east of the Mississippi flood wall.
AKJ3B008	Upgradient, along the southside of Mullanphy Street, and east of Lewis Street.
AKJ3B012	Upgradient, along the southside of Mullanphy Street and west of Lewis Street.

Note: Sample numbers 009, 010, 011 were not used.

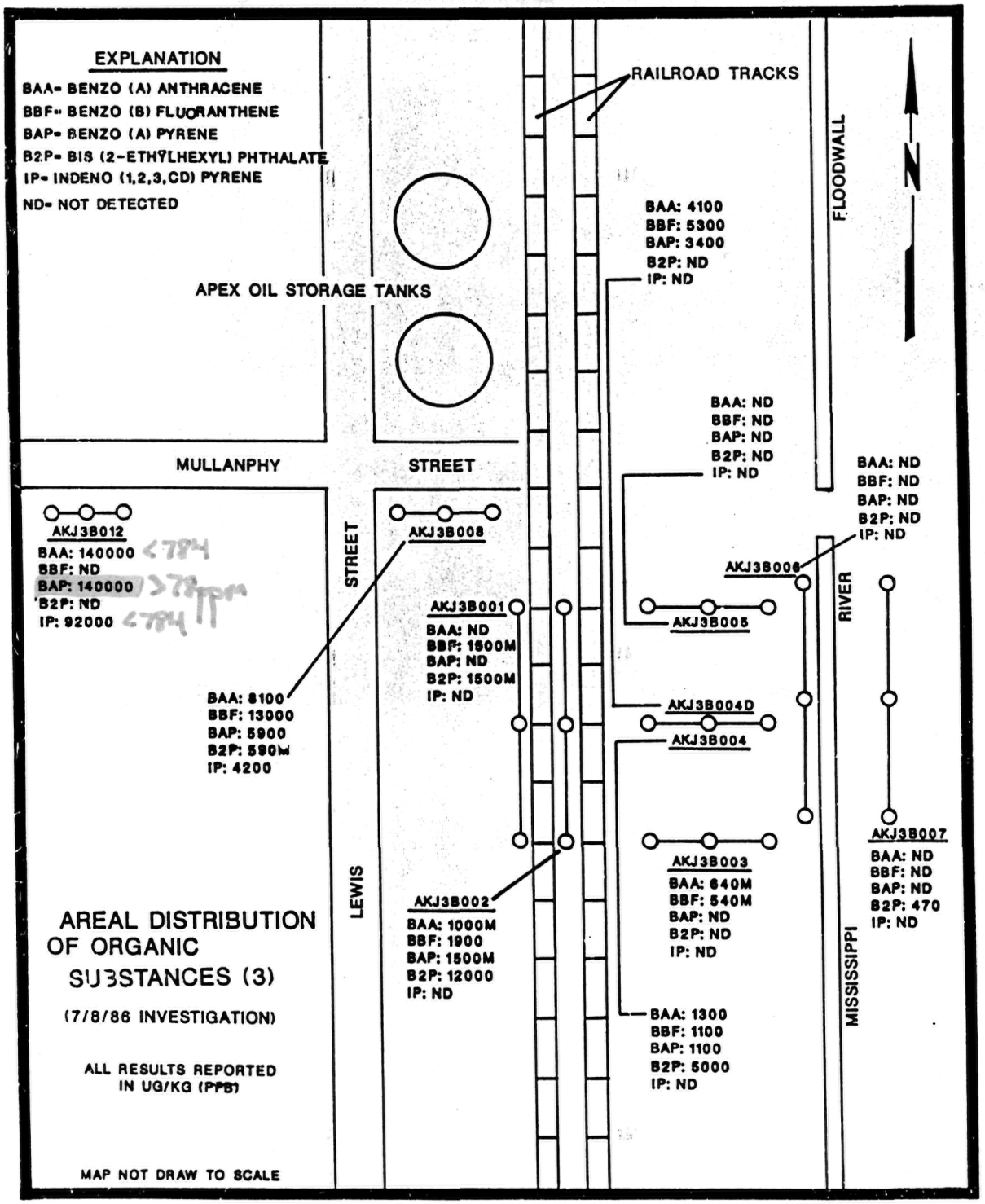

EXPLANATION
BAA= BENZO (A) ANTHRACENE
BBF= BENZO (B) FLUORANTHENE
BAP= BENZO (A) PYRENE
B2P= BIS (2-ETHYLHEXYL) PHTHALATE
IP= INDENO (1,2,3,CD) PYRENE
ND= NOT DETECTED
RAILROAD TRACKS
FLOODWALL
N
APEX OIL STORAGE TANKS
BAA: 4100
BBF: 5300
BAP: 3400
B2P: ND
IP: ND
BAA: ND
BBF: ND
BAP: ND
B2P: ND
IP: ND
MULLANPHY
STREET
BAA: ND
BBF: ND
BAP: ND
B2P: ND
IP: ND
AKJ3B012
BAA: 140000 <784
BBF: ND
BAP: 140000 >78ppm
B2P: ND
IP: 92000 <784
STREET
AKJ3B008
AKJ3B006
RIVER
AKJ3B001
BAA: ND
BBF: 1500M
BAP: ND
B2P: 1500M
IP: ND
AKJ3B005
BAA: 8100
BBF: 13000
BAP: 5900
B2P: 590M
IP: 4200
AKJ3B004D
AKJ3B004
AKJ3B007
BAA: ND
BBF: ND
BAP: ND
B2P: 470
IP: ND
AKJ3B003
BAA: 640M
BBF: 540M
BAP: ND
B2P: ND
IP: ND
LEWIS
AREAL DISTRIBUTION
OF ORGANIC
SUBSTANCES (3)
(7/8/86 INVESTIGATION)
AKJ3B002
BAA: 1000M
BBF: 1900
BAP: 1500M
B2P: 12000
IP: ND
MISSISSIPPI
BAA: 1300
BBF: 1100
BAP: 1100
B2P: 5000
IP: ND
ALL RESULTS REPORTED
IN UG/KG (PPB)
MAP NOT DRAW TO SCALE

FIG. 12

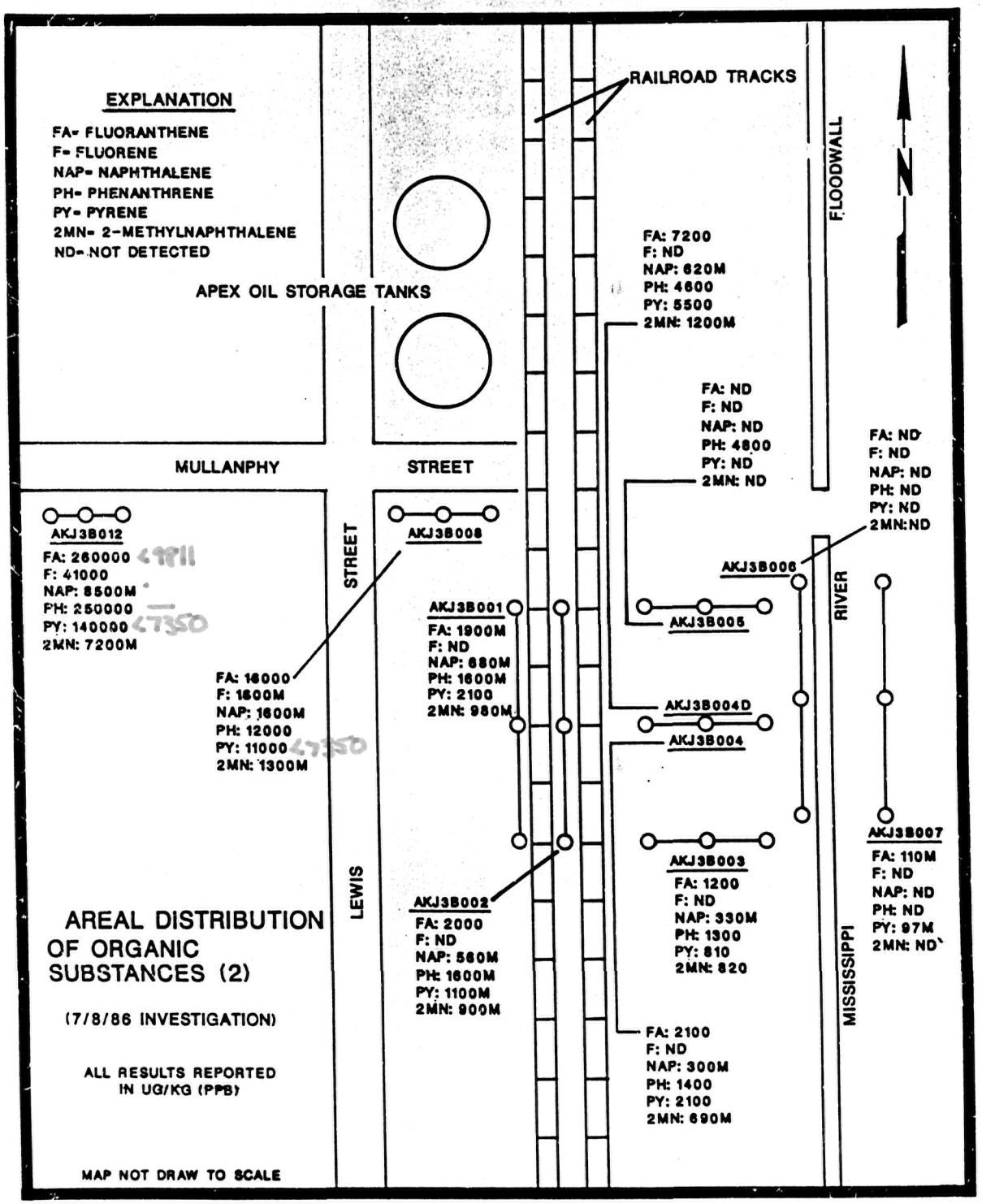

EXPLANATION
FA- FLUORANTHENE
F- FLUORENE
NAP- NAPHTHALENE
PH- PHENANTHRENE
PY- PYRENE
2MN- 2-METHYLNAPHTHALENE
ND- NOT DETECTED
APEX OIL STORAGE TANKS
RAILROAD TRACKS
FLOODWALL
N
MULLANPHY
STREET
LEWIS
STREET
RIVER
MISSISSIPPI
AKJ3B012
FA: 260000
F: 41000
NAP: 8500M
PH: 250000
PY: 140000
2MN: 7200M
AKJ3B008
FA: 16000
F: 1600M
NAP: 1600M
PH: 12000
PY: 11000
2MN: 1300M
AKJ3B001
FA: 1900M
F: ND
NAP: 680M
PH: 1600M
PY: 2100
2MN: 980M
AKJ3B002
FA: 2000
F: ND
NAP: 560M
PH: 1600M
PY: 1100M
2MN: 900M
FA: 7200
F: ND
NAP: 620M
PH: 4600
PY: 5500
2MN: 1200M
FA: ND
F: ND
NAP: ND
PH: 4800
PY: ND
2MN: ND
AKJ3B006
AKJ3B005
AKJ3B004D
AKJ3B004
AKJ3B003
FA: 1200
F: ND
NAP: 330M
PH: 1300
PY: 810
2MN: 820
FA: 2100
F: ND
NAP: 300M
PH: 1400
PY: 2100
2MN: 690M
FA: ND
F: ND
NAP: ND
PH: ND
PY: ND
2MN: ND
AKJ3B007
FA: 110M
F: ND
NAP: ND
PH: ND
PY: 97M
2MN: ND
AREAL DISTRIBUTION OF ORGANIC SUBSTANCES (2)
(7/8/86 INVESTIGATION)
ALL RESULTS REPORTED IN UG/KG (PPB)
MAP NOT DRAW TO SCALE

FIG. 11

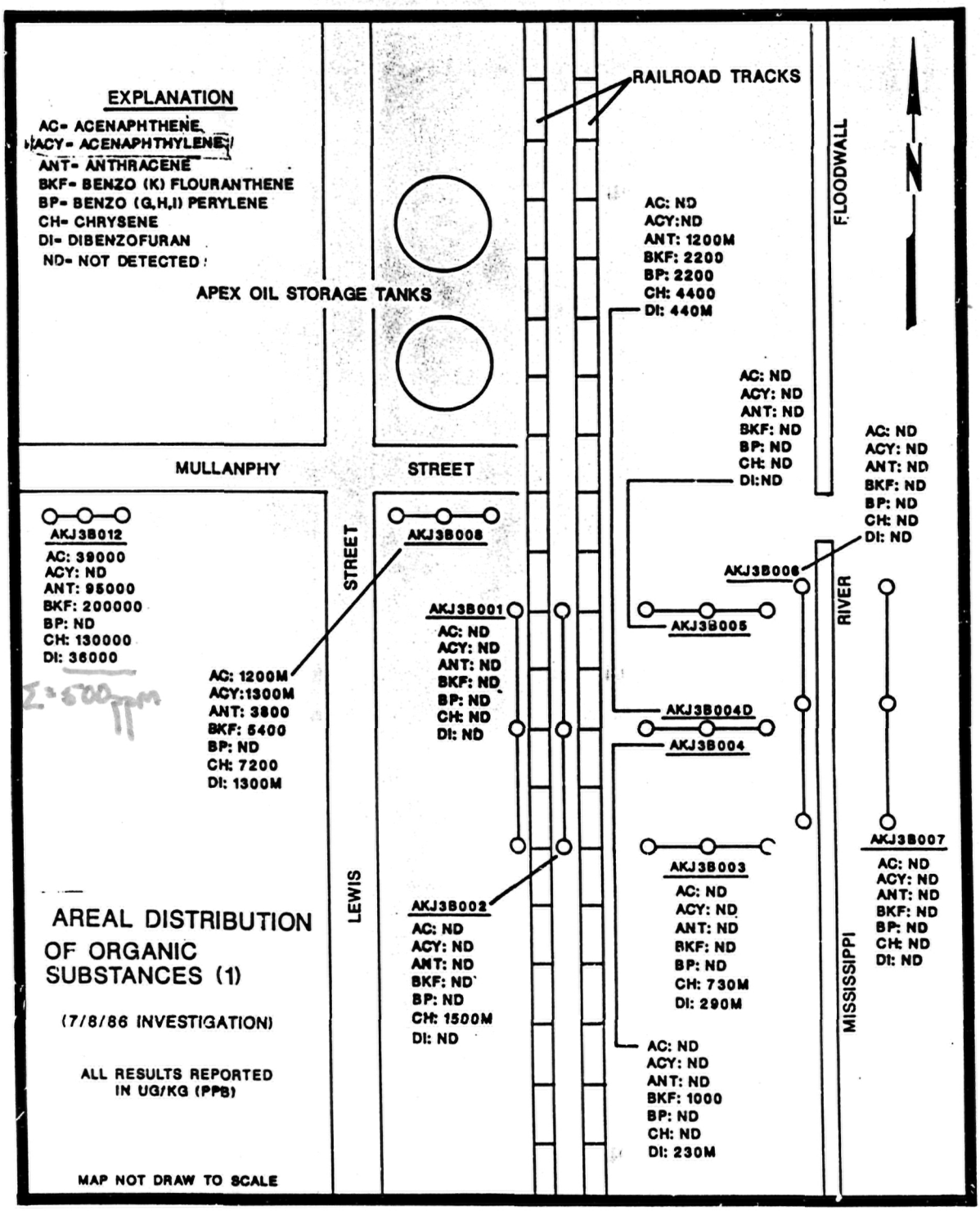

EXPLANATION
AC- ACENAPHTHENE
ACY- ACENAPHTHYLENE
ANT- ANTHRACENE
BKF- BENZO (K) FLOURANTHENE
BP- BENZO (G,H,I) PERYLENE
CH- CHRYSENE
DI- DIBENZOFURAN
ND- NOT DETECTED
APEX OIL STORAGE TANKS
RAILROAD TRACKS
FLOODWALL
N
MULLANPHY
STREET
LEWIS
STREET
RIVER
MISSISSIPPI
AKJ3B012
AC: 39000
ACY: ND
ANT: 95000
BKF: 200000
BP: ND
CH: 130000
DI: 36000
Σ = 500 ppm
AKJ3B008
AC: 1200M
ACY:1300M
ANT: 3800
BKF: 5400
BP: ND
CH: 7200
DI: 1300M
AKJ3B001
AC: ND
ACY: ND
ANT: ND
BKF: ND
BP: ND
CH: ND
DI: ND
AKJ3B002
AC: ND
ACY: ND
ANT: ND
BKF: ND
BP: ND
CH: 1500M
DI: ND
AC: ND
ACY:ND
ANT: 1200M
BKF: 2200
BP: 2200
CH: 4400
DI: 440M
AC: ND
ACY: ND
ANT: ND
BKF: ND
BP: ND
CH: ND
DI:ND
AKJ3B005
AKJ3B004D
AKJ3B004
AC: ND
ACY: ND
ANT: ND
BKF: 1000
BP: ND
CH: ND
DI: 230M
AKJ3B003
AC: ND
ACY: ND
ANT: ND
BKF: ND
BP: ND
CH: 730M
DI: 290M
AKJ3B006
AC: ND
ACY: ND
ANT: ND
BKF: ND
BP: ND
CH: ND
DI: ND
AKJ3B007
AC: ND
ACY: ND
ANT: ND
BKF: ND
BP: ND
CH: ND
DI: ND
AREAL DISTRIBUTION
OF ORGANIC
SUBSTANCES (1)
(7/8/86 INVESTIGATION)
ALL RESULTS REPORTED
IN UG/KG (PPB)
MAP NOT DRAW TO SCALE

FIG. 10

Table 6
Semi-Volatile Compounds Analysis Results - Union Electric
Ashley Site
July 8, 1986, Investigation

	001	002	003	004	004D	005	006	007	008	0012
Naphthalene	680M	560M	330M	300M	620M	-----	----	-----	1600M	8500M
2-Methylnaphthalene	980M	900M	820	690M	1200M	-----	----	-----	1300M	7200M
Dibenzofuran	-----	-----	290M	230M	440M	-----	----	-----	1300M	36000
Phenanthrene	1600M	1600M	1300	1400	4600	4800	----	-----	12000	250000
Fluoranthene	1900M	2000	1200	2100	7200	-----	----	110M	16000	260000
Pyrene	2100	1100M	810	2100	5500	-----	----	97M	11000	140000
Benzo(A)anthracene	-----	1000M	640M	1300	4100	-----	----	-----	8100	140000
Bis(2-ethylhexyl)phthalate	1500M	12000	-----	5000	-----	-----	----	470	590M	-----
Chrysene	-----	1500M	730M	-----	4400	-----	----	-----	7200	130000
Benzo(B)fluoranthene	1500M	1900	540M	1100	5300	-----	----	-----	13000	-----
Benzo(K)fluoranthene	-----	-----	-----	1000	2200	-----	----	-----	5400	200000
Benzo(A)pyrene	-----	1500M	-----	1100	3400	-----	----	-----	5900	140000
Anthracene	-----	-----	-----	-----	1200M	-----	----	-----	3800	95000
Benzo(G,H,I)perylene	-----	-----	-----	-----	2200	-----	----	-----	-----	-----
Acenaphthylene	-----	-----	-----	-----	-----	-----	----	-----	1300M	-----
Acenaphthene	-----	-----	-----	-----	-----	-----	----	-----	1200M	39000
Fluorene	-----	-----	-----	-----	-----	-----	----	-----	1600M	41000
Indeno(1,2,3-CD)pyrene	-----	-----	-----	-----	-----	-----	----	-----	4200	92000

M - Compound was qualitatively identified; however, quantitative value is less than contract required detection limit.

J - Compound was quantitatively identified; however, failed to meet all QA criteria and is therefore only an estimated value.

D - Duplicate

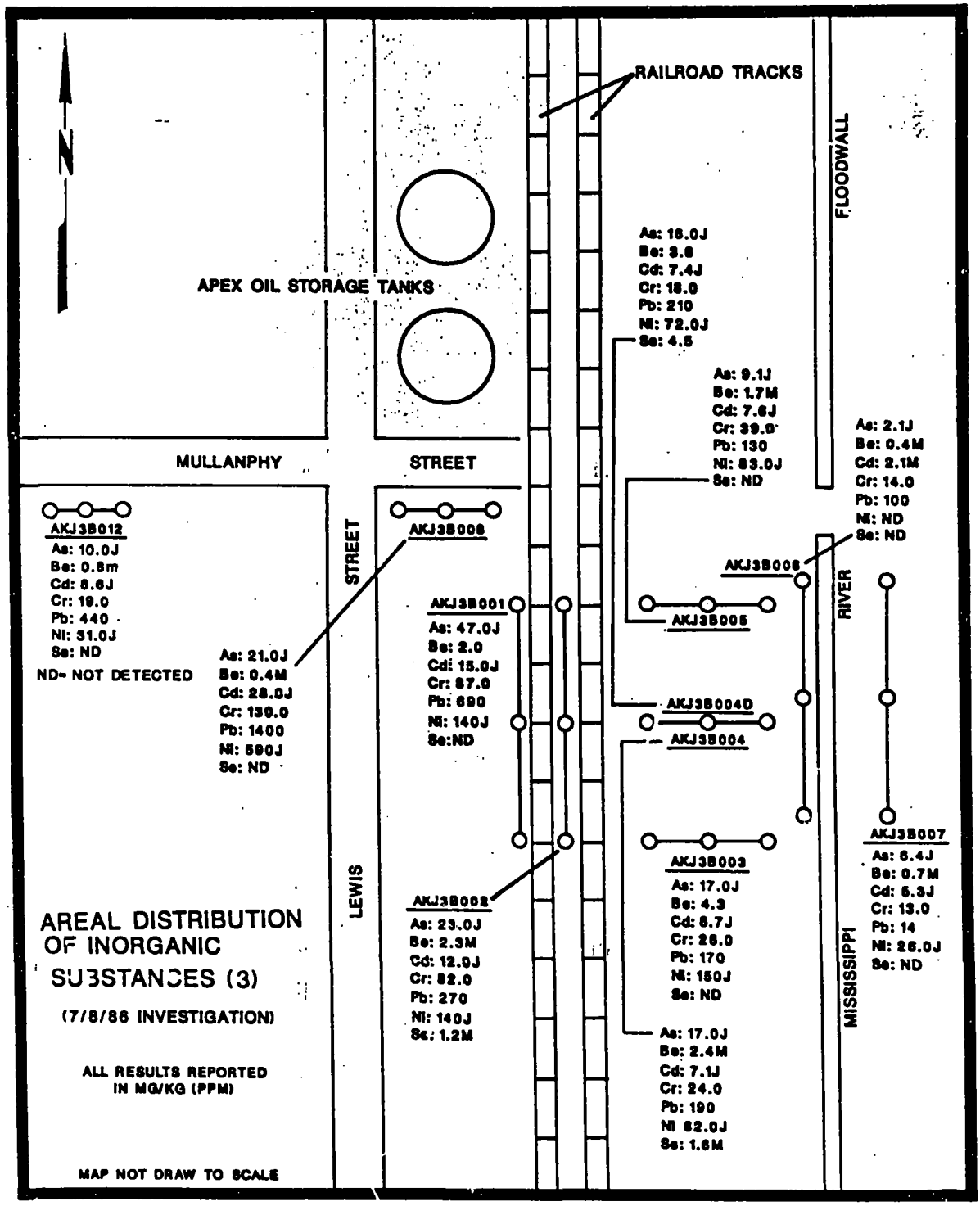

RAILROAD TRACKS
FLOODWALL
N
APEX OIL STORAGE TANKS
As: 16.0J
Be: 3.6
Cd: 7.4J
Cr: 18.0
Pb: 210
Ni: 72.0J
Se: 4.5
As: 9.1J
Be: 1.7M
Cd: 7.6J
Cr: 39.0
Pb: 130
Ni: 83.0J
Se: ND
As: 2.1J
Be: 0.4M
Cd: 2.1M
Cr: 14.0
Pb: 100
Ni: ND
Se: ND
MULLANPHY
STREET
AKJ3B012
As: 10.0J
Be: 0.8m
Cd: 8.6J
Cr: 19.0
Pb: 440
Ni: 31.0J
Se: ND
ND= NOT DETECTED
STREET
AKJ3B008
As: 21.0J
Be: 0.4M
Cd: 28.0J
Cr: 130.0
Pb: 1400
Ni: 590J
Se: ND
AKJ3B001
As: 47.0J
Be: 2.0
Cd: 15.0J
Cr: 87.0
Pb: 690
Ni: 140J
Se:ND
AKJ3B006
AKJ3B005
RIVER
AKJ3B004D
AKJ3B004
AKJ3B007
As: 6.4J
Be: 0.7M
Cd: 5.3J
Cr: 13.0
Pb: 14
Ni: 26.0J
Se: ND
AKJ3B003
As: 17.0J
Be: 4.3
Cd: 8.7J
Cr: 26.0
Pb: 170
Ni: 150J
Se: ND
LEWIS
AKJ3B002
As: 23.0J
Be: 2.3M
Cd: 12.0J
Cr: 82.0
Pb: 270
Ni: 140J
Se: 1.2M
As: 17.0J
Be: 2.4M
Cd: 7.1J
Cr: 24.0
Pb: 190
Ni 62.0J
Se: 1.6M
MISSISSIPPI
AREAL DISTRIBUTION OF INORGANIC SUBSTANCES (3)
(7/8/86 INVESTIGATION)
ALL RESULTS REPORTED IN MG/KG (PPM)
MAP NOT DRAW TO SCALE

FIG.9

Table 5
Background Metals Concentrations in the Surface
Soil Horizon of Missouri (Ref. 5)

Metal	Range in Concentration (mg/kg)	Geometric Mean Concentration (mg/kg)
Aluminum	11,000 - 79,000	*41,000
Arsenic	2.5 - 72	8.7
Barium	100 - 1,500	580
Beryllium	<1.0 - 2	0.8
Cadmium	<1.0 - 1.5	<1.0
Calcium	700 - 56,000	3,300
Chromium	10 - 150	54
Copper	5 - 150	13
Iron	4,900 - 54,000	*21,000
Lead	10 - 70	20
Magnesium	500 - 28,000	2,600
Manganese	15 - 3,000	740
Mercury	<0.1 - 0.8	0.039
Nickel	<5.0 - 70	14
Potassium	3,300 - 37,000	*14,000
Selenium	<0.1 - 2.7	0.28
Sodium	700 - 12,000	* 5,300
Vanadium	15 - 150	69
Zinc	18 - 640	49

*Arithmetic mean concentration.

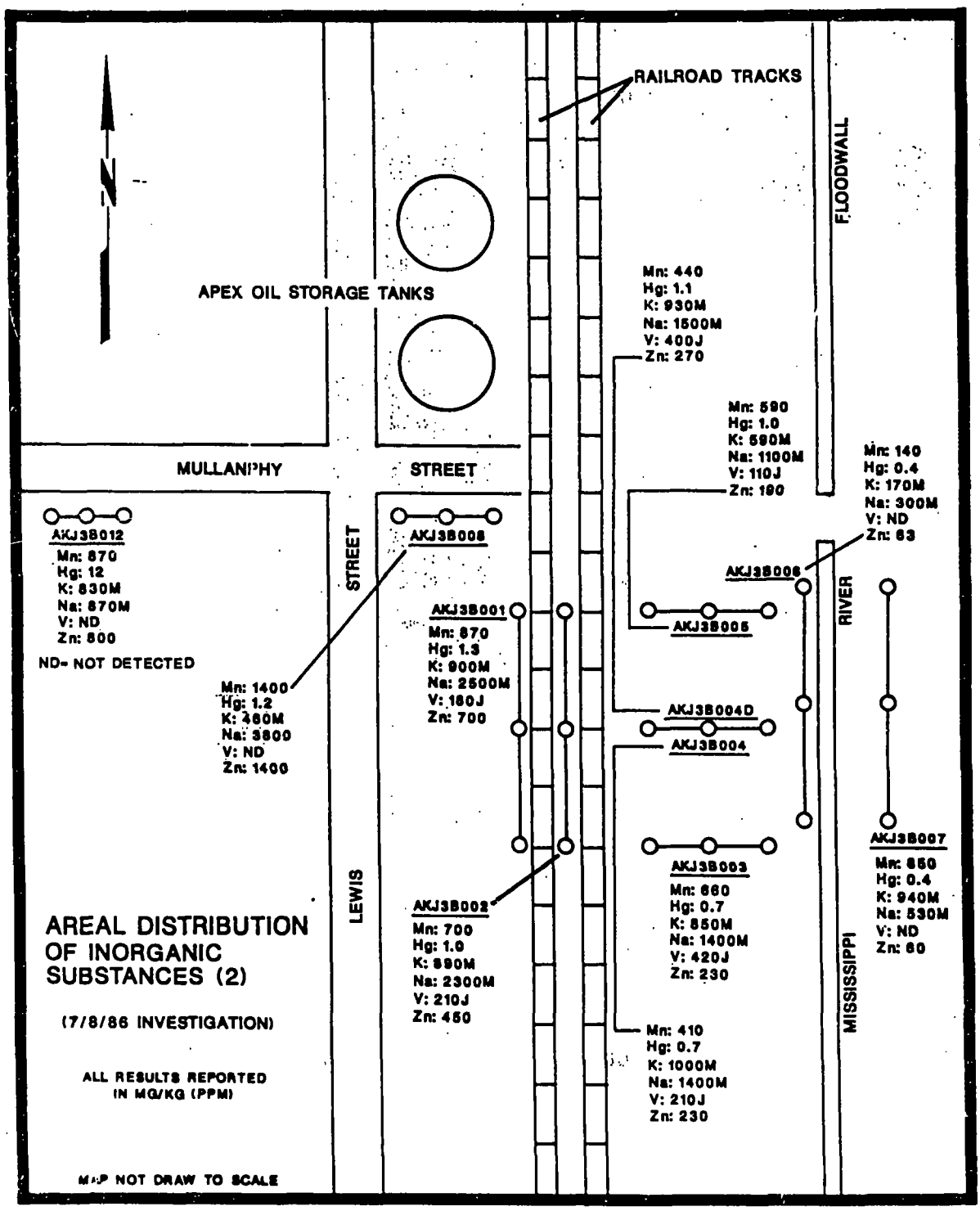

RAILROAD TRACKS
FLOODWALL
APEX OIL STORAGE TANKS
MULLANIPHY
STREET
LEWIS
STREET
RIVER
MISSISSIPPI
Mn: 440
Hg: 1.1
K: 930M
Na: 1500M
V: 400J
Zn: 270
Mn: 590
Hg: 1.0
K: 590M
Na: 1100M
V: 110J
Zn: 190
Mn: 140
Hg: 0.4
K: 170M
Na: 300M
V: ND
Zn: 63
AKJ3B012
Mn: 870
Hg: 12
K: 830M
Na: 870M
V: ND
Zn: 800
ND- NOT DETECTED
AKJ3B008
Mn: 1400
Hg: 1.2
K: 460M
Na: 3800
V: ND
Zn: 1400
AKJ3B001
Mn: 870
Hg: 1.3
K: 900M
Na: 2500M
V: 180J
Zn: 700
AKJ3B006
AKJ3B005
AKJ3B004D
AKJ3B004
AKJ3B003
Mn: 660
Hg: 0.7
K: 850M
Na: 1400M
V: 420J
Zn: 230
AKJ3B007
Mn: 850
Hg: 0.4
K: 940M
Na: 530M
V: ND
Zn: 60
AKJ3B002
Mn: 700
Hg: 1.0
K: 890M
Na: 2300M
V: 210J
Zn: 450
Mn: 410
Hg: 0.7
K: 1000M
Na: 1400M
V: 210J
Zn: 230
AREAL DISTRIBUTION OF INORGANIC SUBSTANCES (2)
(7/8/86 INVESTIGATION)
ALL RESULTS REPORTED IN MG/KG (PPM)
MAP NOT DRAW TO SCALE

FIG. 8

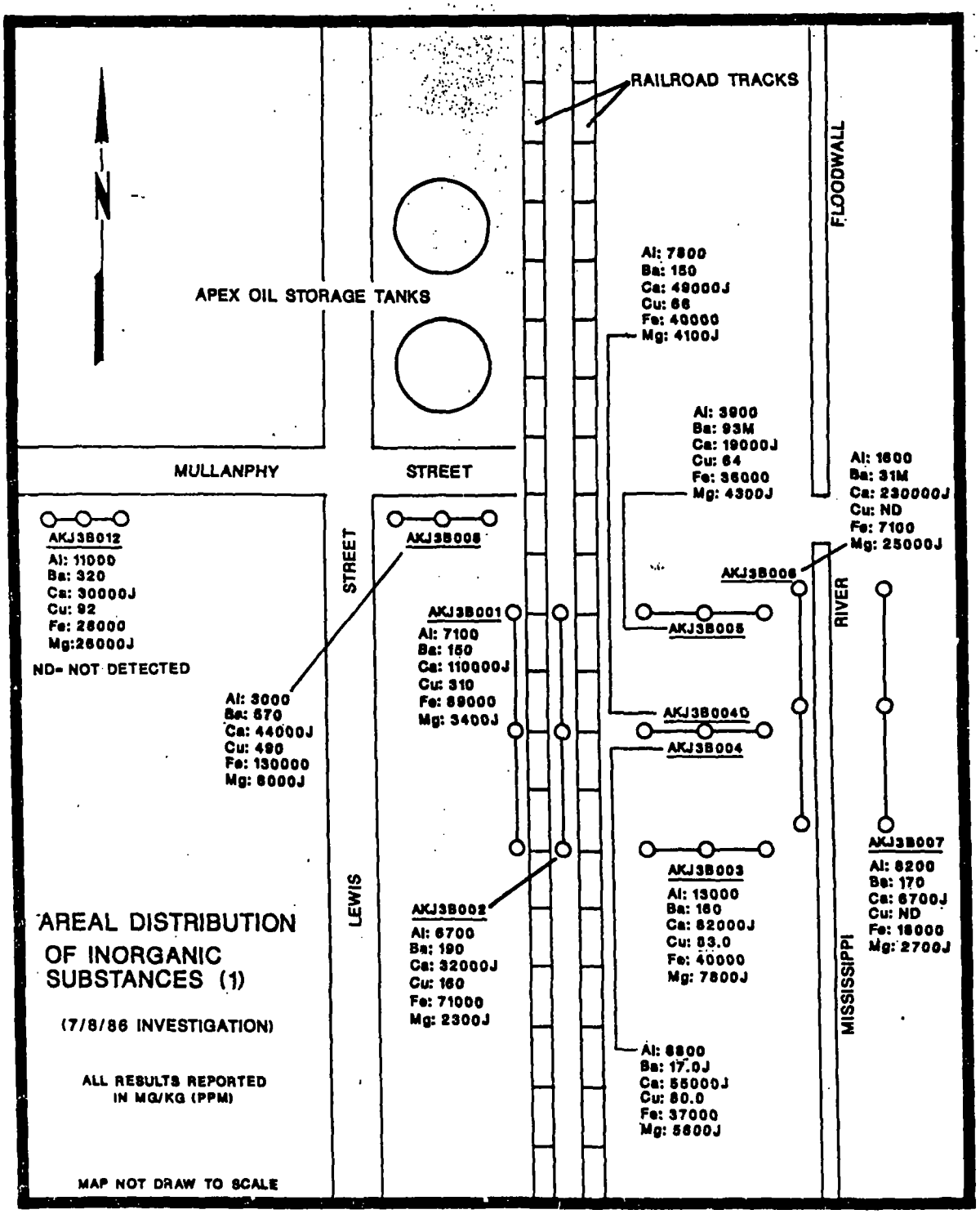

RAILROAD TRACKS
FLOODWALL
N
APEX OIL STORAGE TANKS
MULLANPHY
STREET
STREET
LEWIS
RIVER
MISSISSIPPI
AKJ3B012
Al: 11000
Ba: 320
Ca: 30000J
Cu: 92
Fe: 28000
Mg:26000J
ND= NOT DETECTED
AKJ3B006
Al: 3000
Ba: 670
Ca: 44000J
Cu: 490
Fe: 130000
Mg: 6000J
AKJ3B001
Al: 7100
Ba: 150
Ca: 110000J
Cu: 310
Fe: 89000
Mg: 3400J
AKJ3B002
Al: 6700
Ba: 190
Ca: 32000J
Cu: 160
Fe: 71000
Mg: 2300J
Al: 7800
Ba: 150
Ca: 49000J
Cu: 66
Fe: 40000
Mg: 4100J
Al: 3900
Ba: 93M
Ca: 19000J
Cu: 64
Fe: 36000
Mg: 4300J
AKJ3B005
AKJ3B004D
AKJ3B004
AKJ3B003
Al: 13000
Ba: 160
Ca: 82000J
Cu: 83.0
Fe: 40000
Mg: 7800J
Al: 6800
Ba: 17.0J
Ca: 55000J
Cu: 80.0
Fe: 37000
Mg: 5600J
Al: 1600
Ba: 31M
Ca: 230000J
Cu: ND
Fe: 7100
Mg: 25000J
AKJ3B008
AKJ3B007
Al: 8200
Ba: 170
Ca: 6700J
Cu: ND
Fe: 18000
Mg: 2700J
AREAL DISTRIBUTION
OF INORGANIC
SUBSTANCES (1)
(7/8/86 INVESTIGATION)
ALL RESULTS REPORTED
IN MG/KG (PPM)
MAP NOT DRAW TO SCALE

FIG. 7

Table 4
Metals Results from the July 8, 1986
Sample Series AKJ3B

	001	002	003	004	004D	005	006	007	008	012
Aluminum	7100.0	6700.0	13000.0	8800.0	7800.0	3900.0	1600.0	8200.0	3000.0	11000.0
Arsenic	47.0J	23.0J	17.0J	17.0J	16J	9.1J	2.1J	6.4J	21J	10J
Barium	150.0	190	160	160	150	93M	31M	170	570	320
Beryllium	2.00M	2.30M	4.3	2.4M	3.6	1.7M	0.4M	0.7M	0.4M	0.8M
Cadmium	15.0J	12.0J	8.7J	7.1J	7.4J	7.6J	2.1M	5.3J	28J	8.6J
Calcium	110000J	32000J	82000J	55000J	49000J	19000J	230000J	6700J	44000J	30000J
Chromium	87.0	82.0	26.0	24.0	18.0	39	14	13	130	19
Copper	310	160.0	83.0	80.0	66.0	64	------	-----	490	92
Iron	89000	71000	40000	37000	40000	36000	7100	18000	130000	28000
Lead	690	270.0	170	190	210	130	100	14	1400	440
Magnesium	3400J	2300J	7800J	5600J	4100J	4300J	25000J	2700J	6000J	26000J
Manganese	870	700	660	410	440	590	140	850	1400	870
Mercury	1.30	1.00	0.7	0.7	1.1	1.0	0.4	0.4	1.2	12
Nickel	140J	140J	150J	62.0J	72J	83J	------	26J	590J	31J
Potassium	900M	890M	850M	1000M	930M	590M	170M	940M	460M	830M
Selenium	------	1.2M	------	1.6M	4.5	-----	-----	----	-----	----
Sodium	2500M	2300M	1400M	1400M	1500M	1100M	300M	530M	3800	870M
Vanadium	180J	210J	420J	210J	400J	110J	-----	----	-----	----
Zinc	700	450	230	230	270	190	63	60	1400	800

All results reported in mg/kg (ppm).

M - Compound was qualitatively identified; however, quantitative value is less than contract required detection limits.

J - Compound was qualitatively identified; however, compound failed to meet all QA criteria and is therefore only an estimated value.

D - Duplicate.

Aerial Distribution of Arsenic

(7/8/86 Investigation)

All results reported in mg/Kg (ppm)

N

Map not drawn to scale

Site: Omaha Lead - Omaha
ID #: NEA000805499
Break: 17.6
Other: 7/8/96

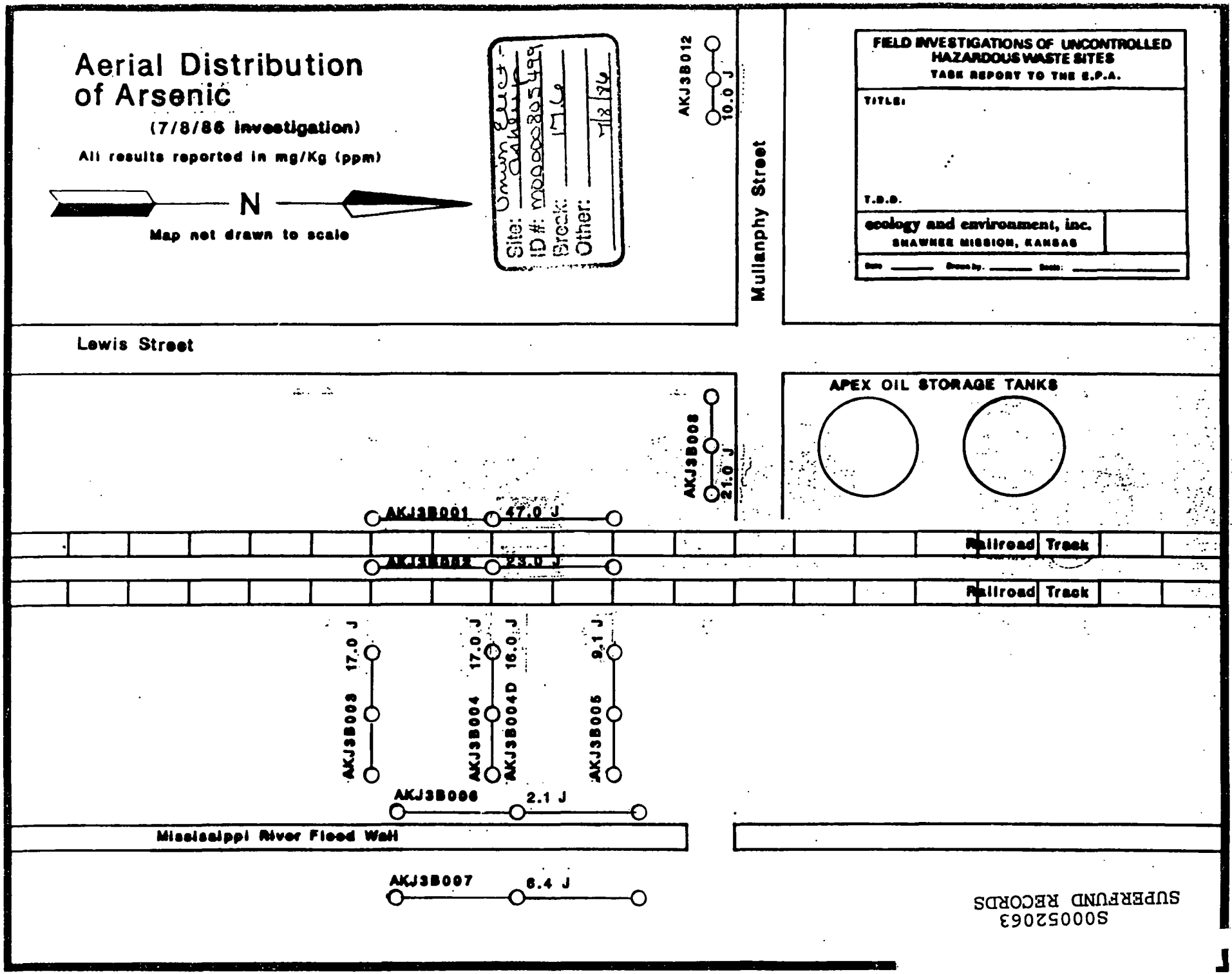
FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES
TASK REPORT TO THE E.P.A.

TITLE:

T.B.D.

ecology and environment, inc.
SHAWNEE MISSION, KANSAS

Date: Drawn by: Scale:



S0005206 3
SUPERFUND RECORDS

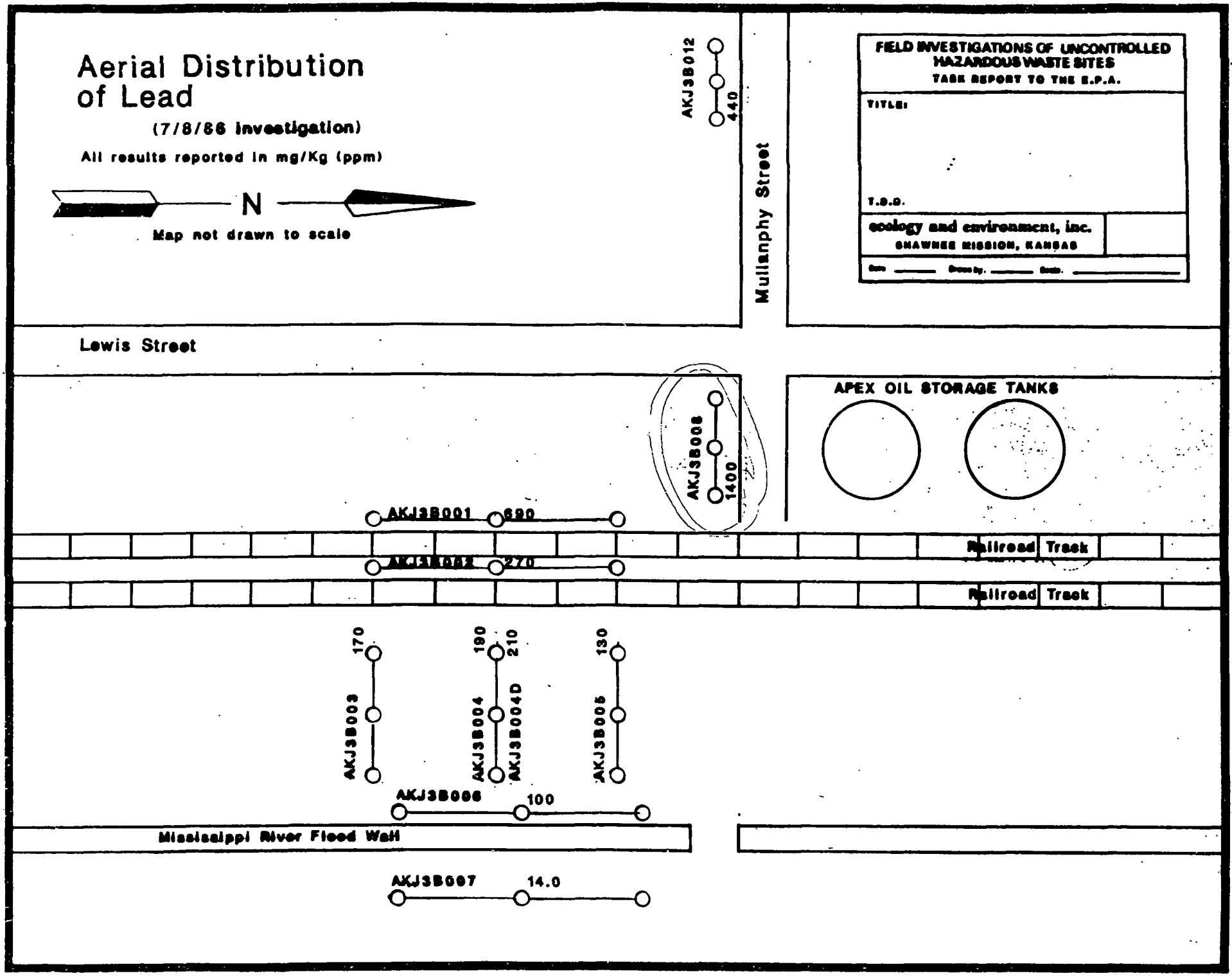
Aerial Distribution of Lead

(7/8/86 Investigation)

All results reported in mg/Kg (ppm)

N

Map not drawn to scale



FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES

TASK REPORT TO THE E.P.A.

TITLE:

T.D.D.

ecology and environment, inc.

SHAWNEE MISSION, KANSAS

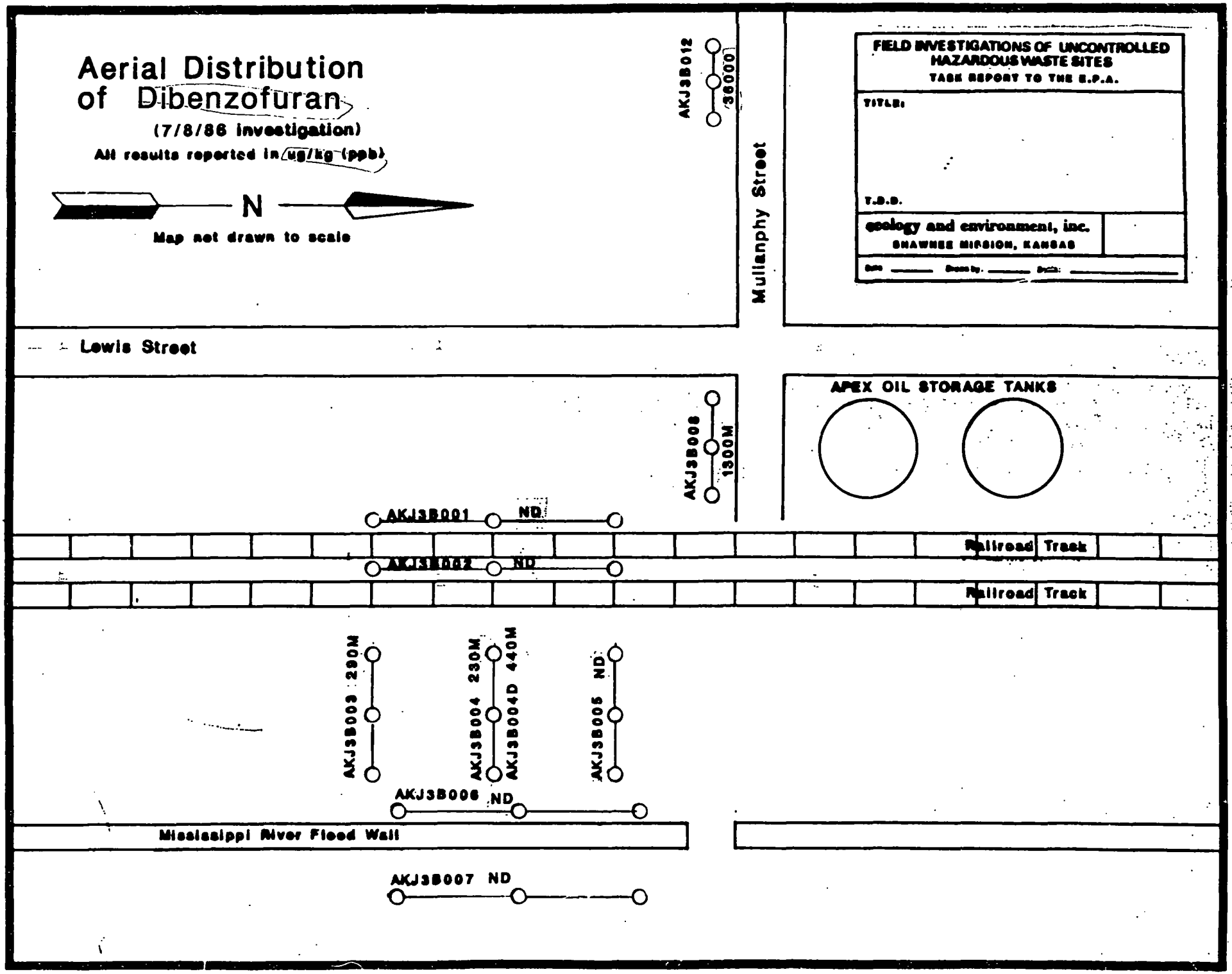
Date ____ Drawn by ____ Scale ____

Aerial Distribution of Dibenzofuran

(7/8/86 investigation)

All results reported in ug/kg (ppb)

Map not drawn to scale



Aerial Distribution of Benzo(A)Pyrene

(7/8/86 Investigation)

All results reported in ug/kg (ppb)

N

Map not drawn to scale

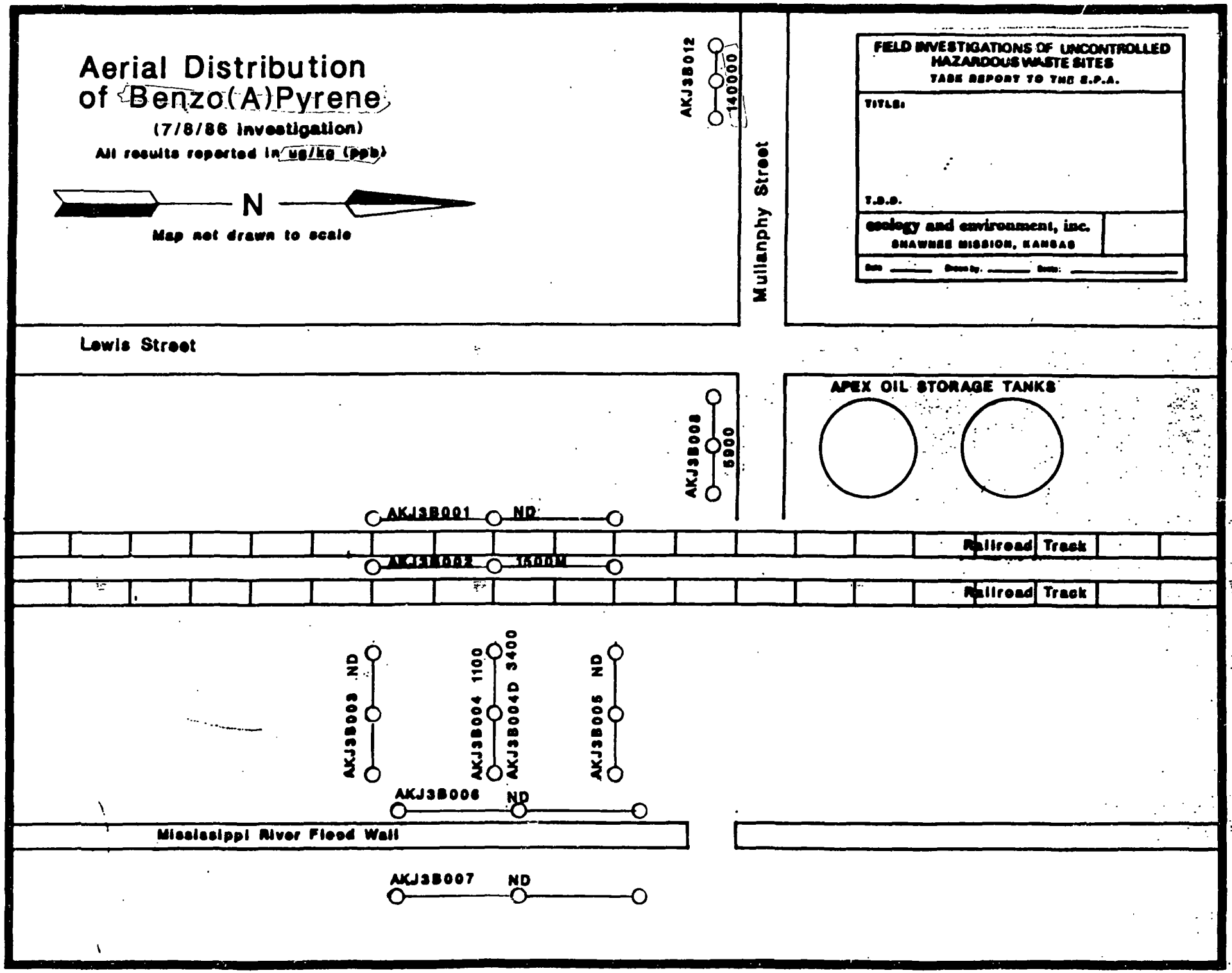
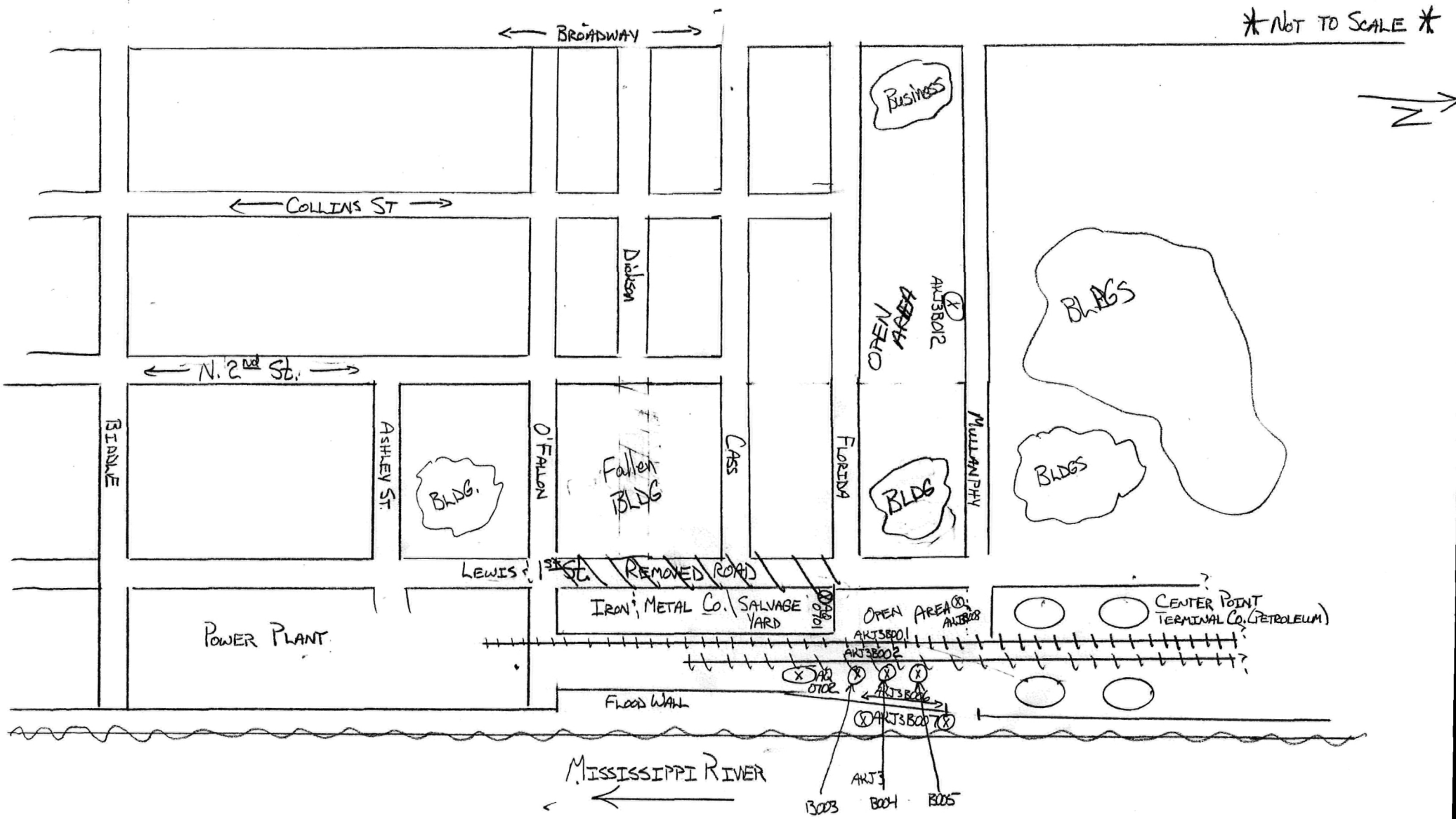


FIGURE 1


* NOT TO SCALE *
N
BROADWAY
COLLINS ST
N. 2nd St.
BIRDLE
ASHLEY ST.
BLDG.
O'FALLON
Dickson
Fallen BLDG
CASS
FLORIDA
BUSINESS
OPEN AREA
AKJ3B012
BLDG
MULLANPHY
BLDGS
BLDGS
LEWIS 1st St.
REMOVED ROAD
IRON METAL CO. SALVAGE YARD
OPEN AREA
AKJ3B008
CENTER POINT TERMINAL CO. (PETROLEUM)
POWER PLANT
AKJ3B001
AKJ3B002
AKJ3B006
AKJ3B007
FLOOD WALL
MISSISSIPPI RIVER
B003
AKJ3 B004
B005

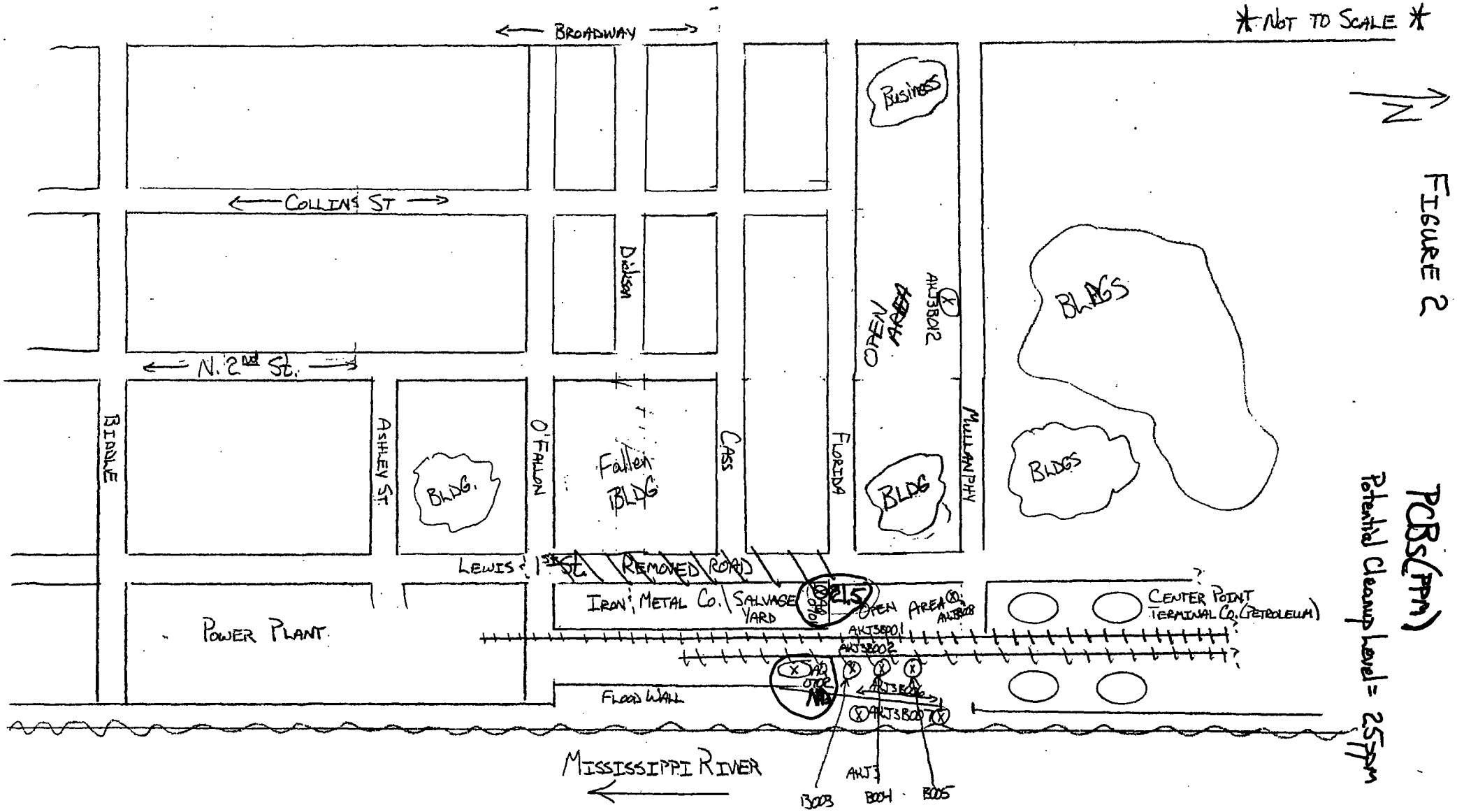


FIGURE 2

PCBs (PPM)

Potential Cleanup Level = 25 PPM

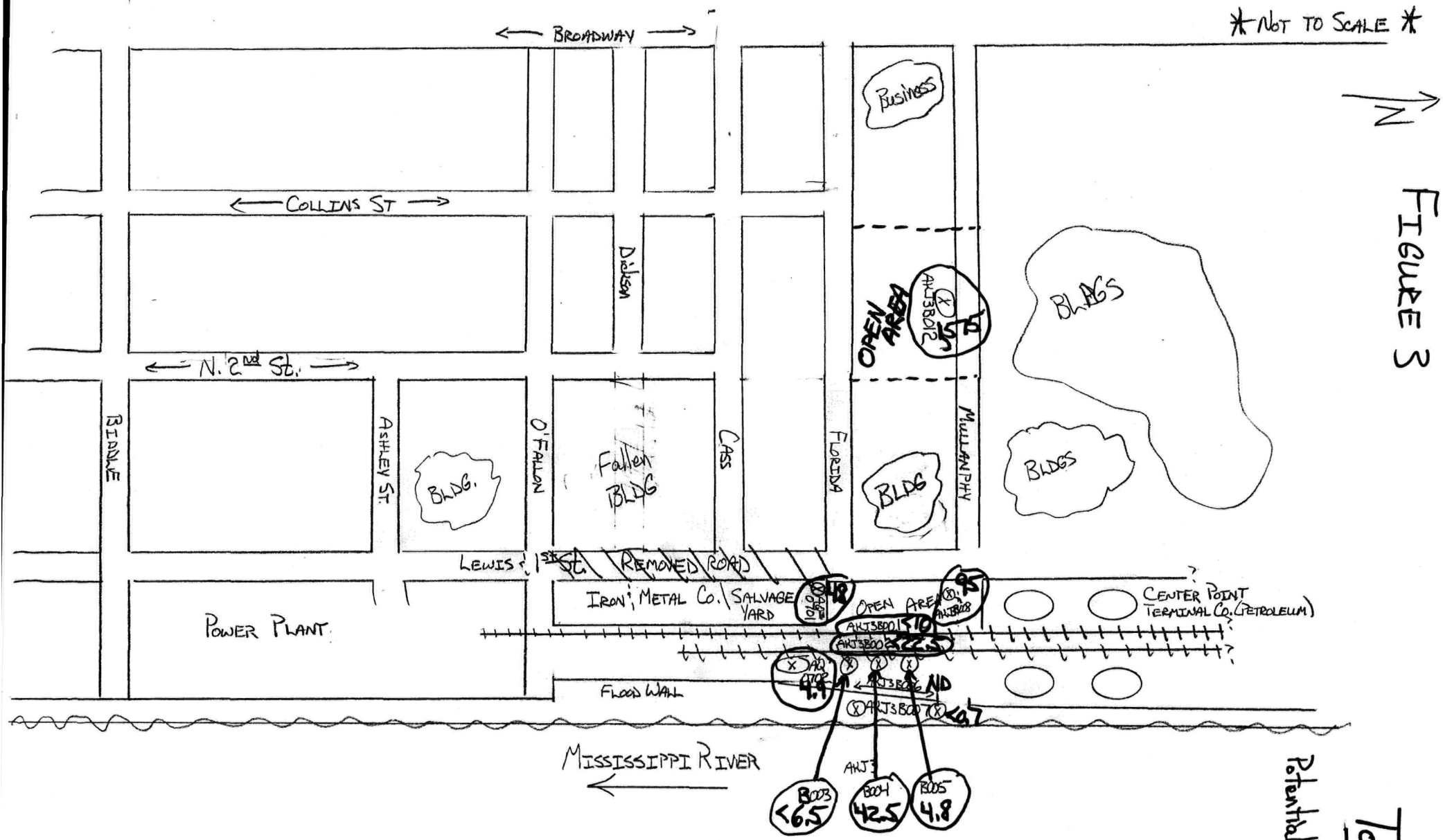


FIGURE 3

TOTAL PAHS (PPM)

Potential Cleanup level = Not Specified

FIGURE 4

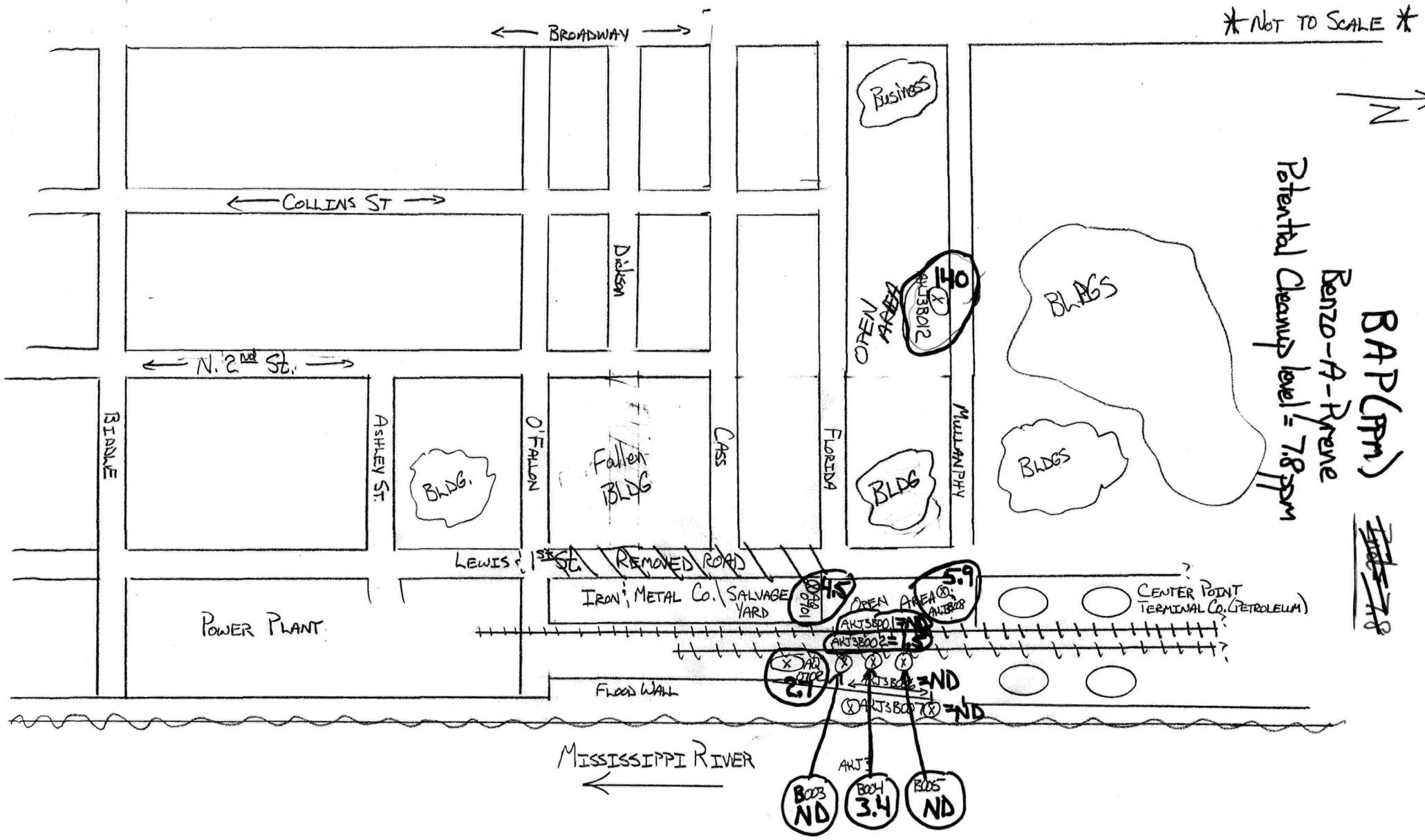
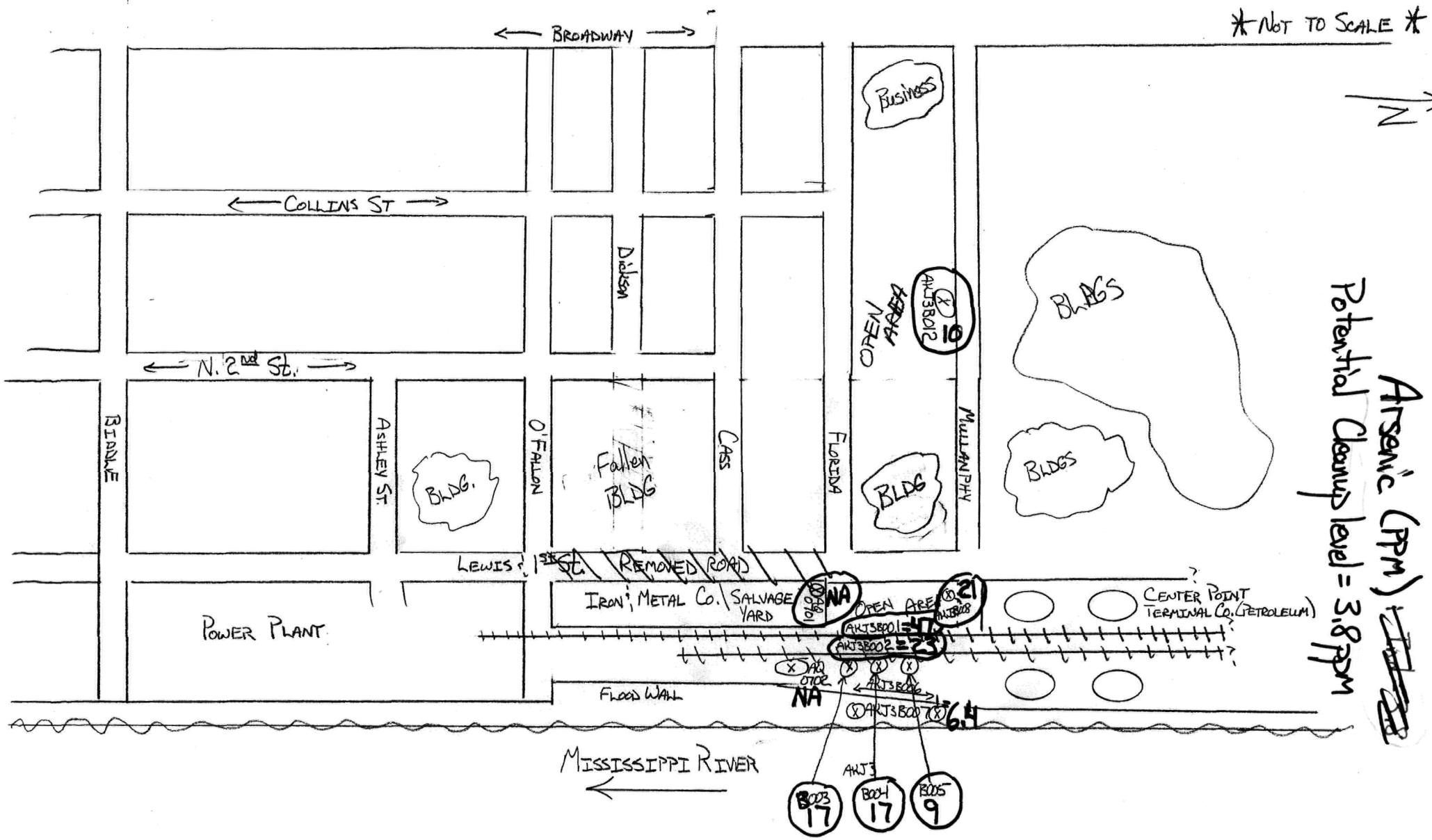
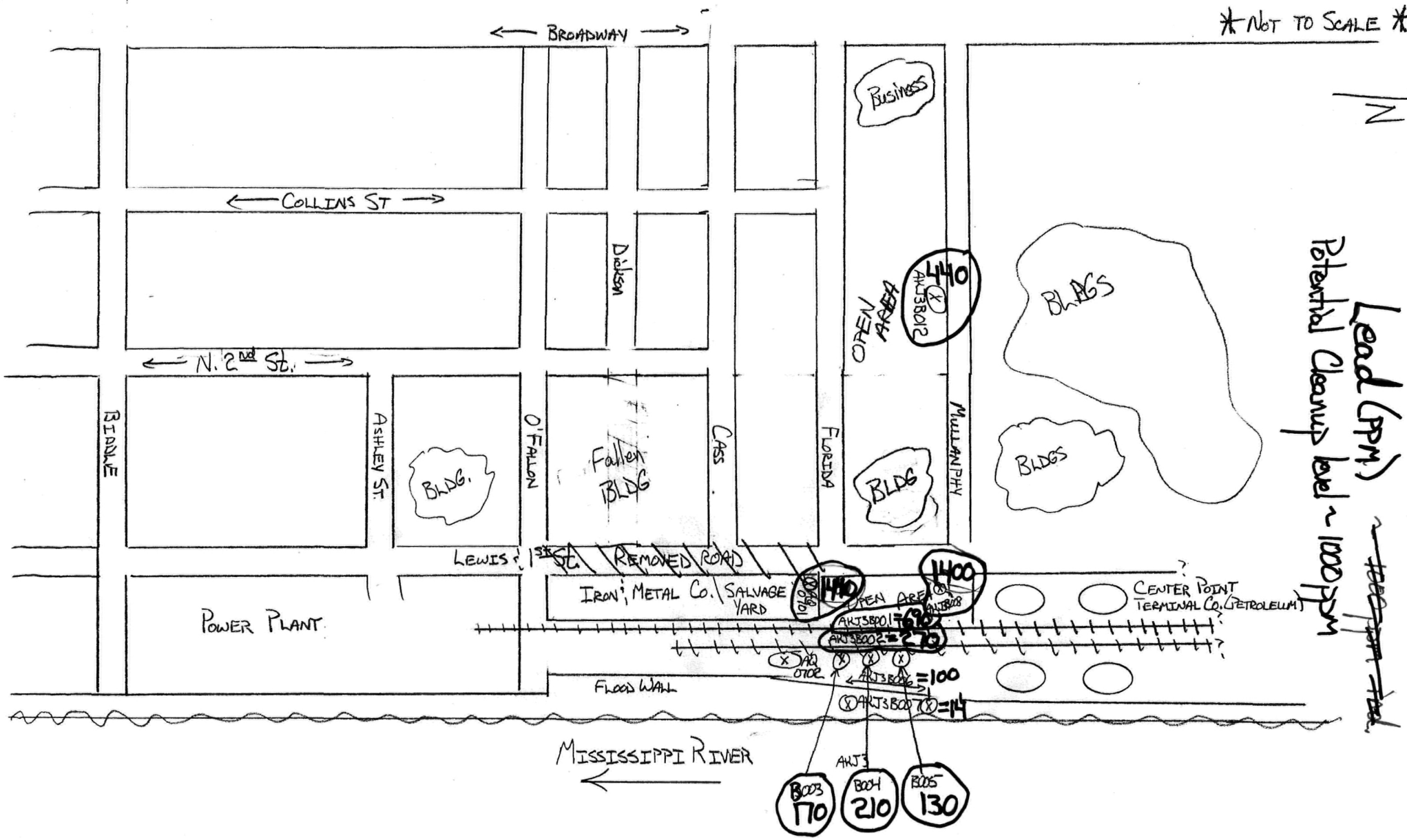

BAP (ppm)
Benzo-A-Pyrene
Potential Cleanup level = 7.8 ppm
* NOT TO SCALE *
N
BROADWAY
COLLINS ST
N. 2nd St.
BIRDLE
ASHLEY ST.
BLDG.
O'FALLON
Fallen BLDG
Dickson
CASS
FLORIDA
MULLANPHY
BUSINESS
OPEN AREA
BLDG
BLDGS
BLDGS
LEWIS 1st St.
REMOVED ROAD
IRON, METAL Co. SALVAGE YARD
OPEN AREA
CENTER POINT TERMINAL Co. (PETROLEUM)
POWER PLANT
FLOOD WALL
MISSISSIPPI RIVER
140
AKJ3B012
4.5
5.9
AKJ3B001 = ND
AKJ3B002 = 1.5
AKJ3B007 = ND
2.1
B003 ND
B004 3.4
B005 ND

FIGURE 6



Arsenic (PPM)
Potential Cleanup level = 3.8 PPM

FIGURE 5

Lead (PPM)
Potential Cleanup level ~ 1000 PPM