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14 September 1994

Ms. Jan Pels, HSM-5J
Work Assignment Manager
U.S. Environmental Protection Agency
77 West Jackson Blvd.
Chicago, IL 60604

U.S. EPA Contract No.: 68-W8-0089
Work Assignment No.: 49-5JZZ/ESI
Document Control No.: 4500-49-AJPP

Subject: ESI Report for the Area West of Bendix Oil Tank
(IND980904262)

Dear Ms. Pels:

Per your letter of 8 September 1994, attached is the ESI report for the above site. This is a NFRAP report and as such does not require HRS scoring information. Therefore, Tables 2 through 6 submitted previously is not necessary for the NFRAP report.

For your information, WESTON has included the range and average concentration of inorganics in Table 1 to support IDEM's observation regarding contamination levels in site soils. Please attach the PA and CERCLA notification letter previously included in our site report dated 5 October 1993.

The attached report with the inclusion of the PA and CERCLA notification letter should be sufficient for public release. If you have any questions, please call.

Very truly yours,

ROY F. WESTON, INC.

P. Krishnan, Ph.D., P.E.
Site Manager

PK:ieh

cc: Mr. H. Atkinson, IDEM
Ms. P. Vogtman, U.S. EPA (letter only)

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4500-49-AJPP

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**EXPANDED SITE INSPECTION REPORT
AREA WEST OF BENDIX OIL TANK
SOUTH BEND, ST. JOSEPH COUNTY,
INDIANA
IND980904262**

SEPTEMBER 1994

This document was prepared in accordance with U.S. EPA Contract No. 68-W8-0089, WESTON Region V Alternative Remedial Contract Strategy (ARCS).

Work Assignment No.: 049-5JZZ

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EXPANDED SITE INSPECTION REPORT
AREA WEST OF BENDIX OIL TANK
SOUTH BEND, ST. JOSEPH COUNTY
INDIANA
IND980904262

Roy F. Weston, Inc. (WESTON®) was tasked by the United States Environmental Protection Agency (U.S. EPA) to conduct a expanded site inspection (ESI) of the Area Waste of Bendix Oil Tank site under Contract Number 68-W8-0089 and work assignment number 49-5JZZ.

The site was initially evaluated in the form of a Preliminary Assessment (PA) that was submitted to the U.S. EPA. The Preliminary Assessment (PA) for the site was prepared by the Indiana State Board of Health (ISBH) on 19 June 1985 (Reference 1 and Attachment 1).

CERCLIS LISTED SITE INVESTIGATION NEEDS

The purpose of assessment of sites listed in CERCLIS data base is to determine whether these sites are candidate for inclusion in the National Priority List (NPL). This determination is made using the Hazard Ranking System (HRS). Any site eligible for placement in NPL must at least have an overall score of 28.50. Additional investigation in the form of Screening Site Investigation (SSI) and/or Expanded Site Investigation (ESI) are conducted for those sites whose preliminary HRS Score is greater than 28.50. The site is scored or rescored after SSI and/or ESI to determine its eligibility for placement in NPL.

If the existing information supports the determination that additional investigation is not necessary, the site is designated as requiring no further remedial action (NFRAP). Sites can also be NFRAPed without scoring if the following conditions exist:

- No waste is present at the site.

- Site at which the only known or suspected releases to the environment are due to petroleum products.
- Site is regulated under RCRA.

SITE LOCATION

The Area West of Bendix Oil Tank site is located in South Bend, St. Joseph County, Indiana (Township 37 North, Range 2 East, Section 4). The Area West of Bendix Oil Tank is bounded by the Chicago South Bend and South Shore Railroad spur to the north, the access road to the Bendix Corporation oil tank to the east, and Linden Avenue to the south. The western boundary of the site corresponds approximately to an imaginary line formed by continuing Kenmore Street north across the site. Figure 1 is a site location map.

SITE DESCRIPTION

The Area West of Bendix Oil Tank is approximately 18 acres in area. The surface topography in the area consists of flat, wooded terrain. A low-lying swampy area of approximately 1 acre is located in the center of the site. Berms are located on the north, south, and east boundaries of the site. Several trenches are located near the eastern berm and the western area of the site near the southern boundary. A small pit is located at the northern boundary of the site and a scrap iron area is located near the eastern berm. A pile of telephone poles are located at the northeast corner of the site and debris piles with a few scattered burned areas are located adjacent to the swamp area to the east. The site is covered with grass and trees and 15-foot high berms are located on both sides of a locked gate at the entrance of the site.

Land use surrounding the site includes an industrial facility of the Aircraft Brake and Strut Division of Bendix Corporation to the north, residential areas and LaSalle Park to the south, a Bendix Corporation oil tank to the east, and a wooded area to the west. The closest residence is approximately 100 feet southwest of the site.

SITE HISTORY

The Area West of Bendix Oil Tank site was an open dump that was formerly used by local industries and citizens for waste disposal. In the 1960s, the approximately 18 acre site was an open field. Woodruff and Sons, Inc. purchased the property in 1966 and until 1968 disposed of demolition debris on-site from the construction of LaSalle Park. LaSalle Park is adjacent to the site on the south. During the period of construction of LaSalle Park, household waste was dumped illegally on-site by area residents. At some time between 1966 and 1968, berms were constructed for security reasons along the access road to the site.

In accordance with Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Bendix Corporation submitted a CERCLA Section 103(c) notification to the U.S. EPA (Attachment 2). According to the 103 (c) notification, types of waste that may have been disposed at the site include solvents, heavy metals, acids, bases, and asbestos.

GEOLOGICAL SETTING

Based on 16 water well records, located within a 2-mile radius of the site, the site is underlain by unconsolidated glacial till deposits of the Atherton Formation which are approximately 200 feet thick. These glacial deposits occur within an extensive bedrock valley which trends in a northeast to southwest direction. The bedrock which underlies this material consists of Mississippian and Devonian aged Ellsworth shale.

The unconsolidated deposits can be divided into three basic units. Unit 1 consists of top soil and sandy loam and extends from the ground surface to approximately 10 to 15 feet below ground surface (bgs). Unit 2 consists of sand and gravel which ranges in texture from a very fine sand to a coarse gravel. This is a valley train glacial outwash of the Atherton Formation. This unit generally extends from the base of Unit 1 to the top of the shale bedrock which occurs at approximately 200 feet bgs. A third stratigraphic unit (Unit 3)

underlies much of the area; however, this unit varies greatly in depth and thickness. This unit consists of what appears to be a glacial till described as a gravelly clay. From the site and southward, this unit occurs as discontinuous, relatively thin (3 to 25 feet) layers within the sands and gravels of Unit 2. However, approximately 1/4 to 1/2 mile north of the site, this unit becomes much more continuous with a thickness up to 140 feet. In one water well record, this unit becomes the lowermost unit, lying directly on top of the bedrock with a maximum thickness of 137 feet.

The hydrogeologic unit underlying the site consists of the glacial sands and gravels of Unit 2. This unit generally constitutes an unconfined aquifer since the majority of Unit 3 is discontinuous. However, north of the site, Unit 3 becomes more continuous and separates Unit 2 into what appears as distinct units. Even where this separation occurs, the upper and lower portions of Unit 2 are hydraulically connected and are considered the same hydrogeologic unit.

According to the nearby water well records, the water table occurs at approximately 5 feet bgs. In general, the regional direction of groundwater flow near the site is northwest; however, the existence of municipal well fields around the South Bend area have the potential to significantly impact actual groundwater flow patterns. Specifically, the Olive Street Municipal well field, located approximately 1.50 miles southeast of the site, consists of six high capacity wells which can each pump approximately 700 to 800 gallons per minute. Municipal well fields extracting water from the aquifer at this rate can potentially have a radius of influence extending a great distance outward from the well field; thus, creating groundwater flow patterns which may be different from the regional groundwater flow directions.

PREVIOUS INVESTIGATION

A Screening Site Inspection (SSI) of the site was conducted by Ecology & Environment, Inc. (E&E) on 8 May 1989 (Reference 2). During the SSI, E&E collected four surficial soil

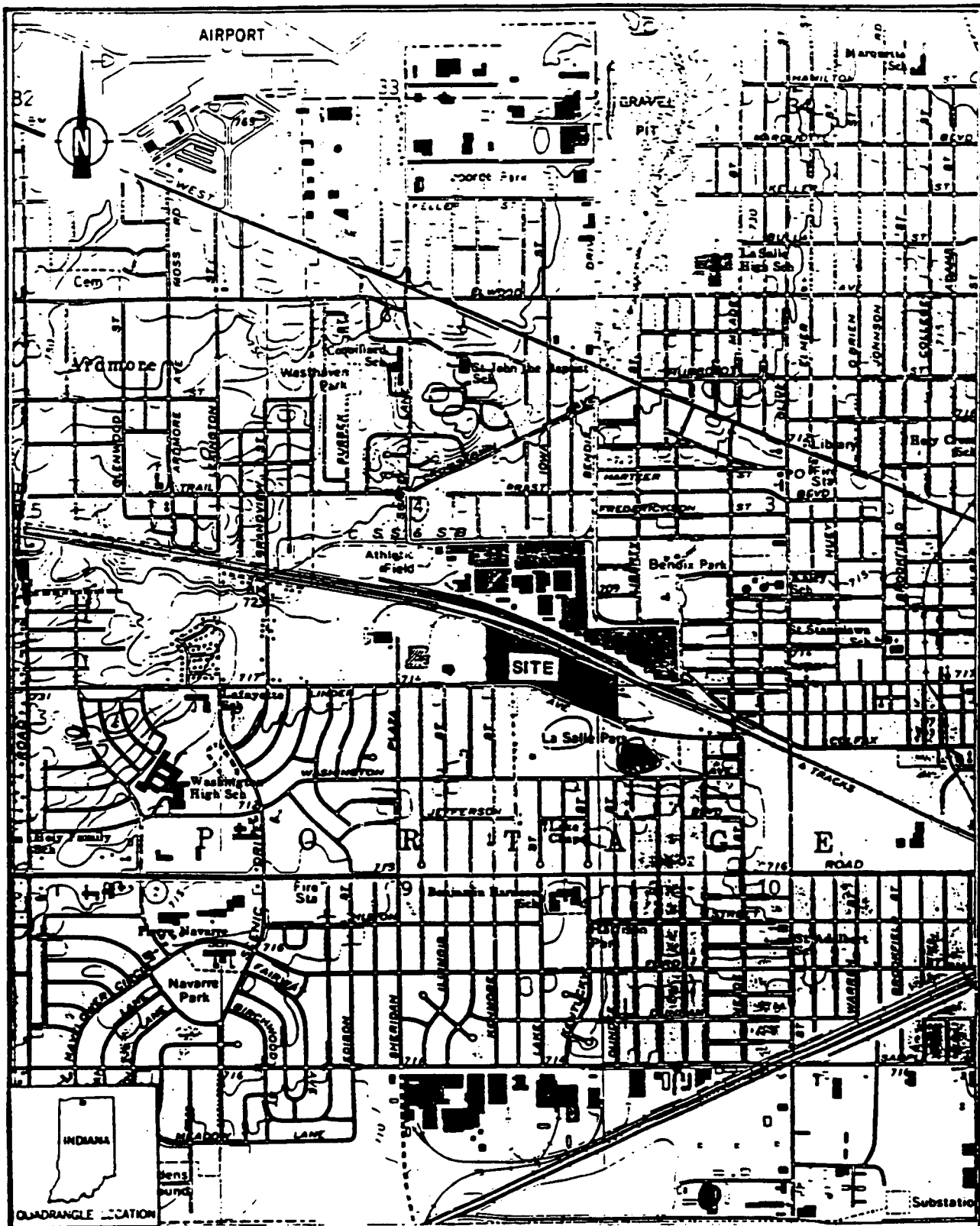
samples and two sediment samples (Figures 2 and 3). The background soil sample was collected from Bendix Park located approximately 1,500 feet northeast of the site boundary. One surficial soil sample was collected, within a pile of old telephone poles, to characterize the pile. Three soil samples were collected to characterize the remaining site soils. Two sediment samples were collected to determine characteristics of the wetland. Analytical results from soil and sediment samples presented in the E&E SSI Report (24 May 1990) indicated the presence of trace concentrations of volatile organic compounds (VOCs) and polyaromatic hydrocarbons (PAHs), heavy metals, and cyanide. The levels of VOCs and PAHs detected; however, were below the contract required detection limits. The majority of metals detected were present at concentrations within the normal range of typical natural soils. The key analytical findings of the SSI sampling is presented in Table 1.

SUMMARY

The sampling conducted at the site during SSI indicated that contaminants detected were principally inorganics and were present at levels typical of natural soils. Based on the analytical results of SSI sampling and site characteristics, no sampling was done at this site.

REFERENCES

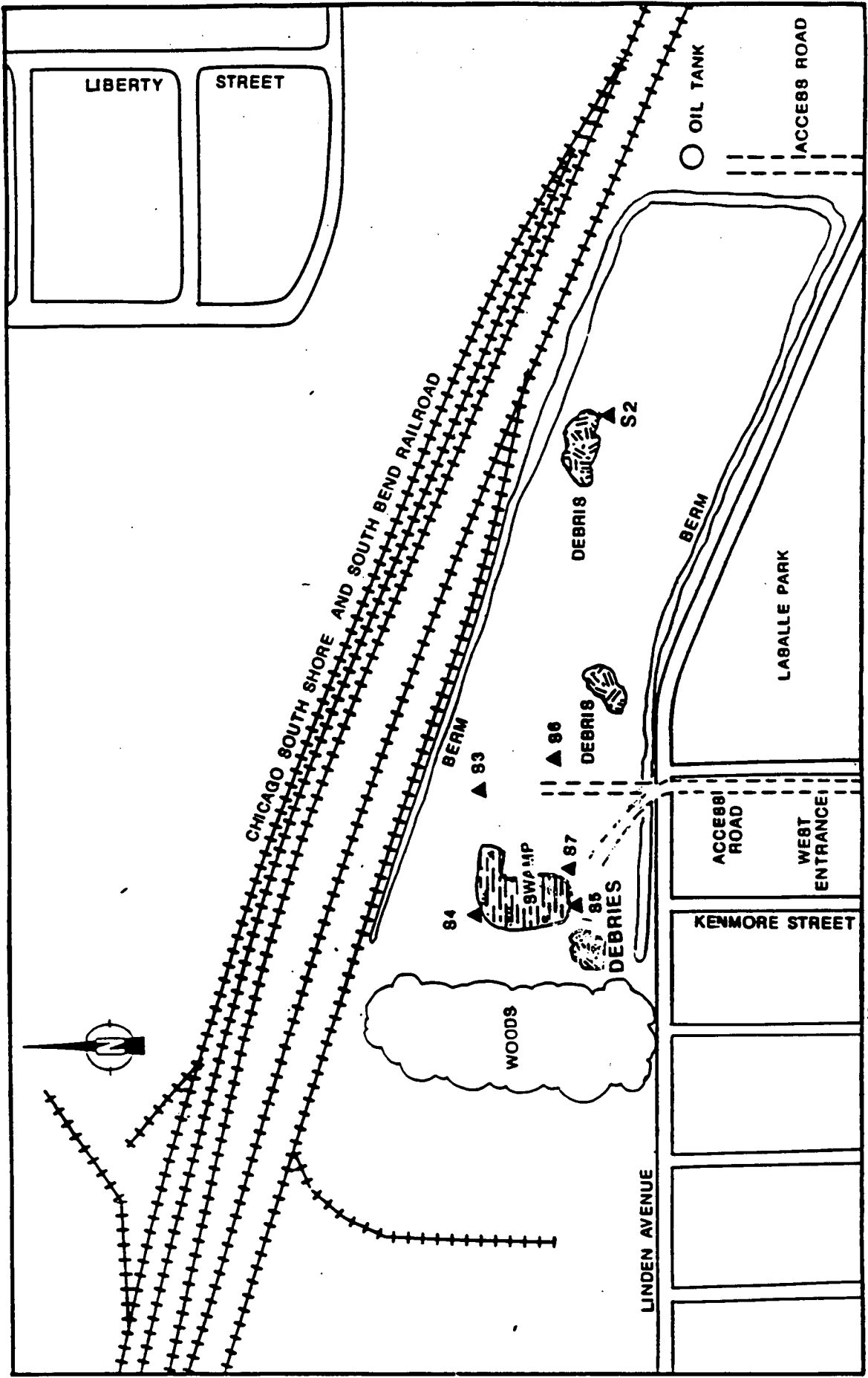
1. Susanne Buthman, "Preliminary Assessment of Area West of Bendix Oil Tank" Indiana State Board of Health, 19 June 1985.
2. "Site Inspection Report for Area West of Bendix Oil Tank" Ecology & Environment, Inc., 8 May 1989.
3. "Trace Chemical Element Content of Natural Soils", U.S. EPA Office of Solid Waste & Emergency Response, Hazardous Waste Land Treatment, SW 874, April 1993 (Page 274, Table 6-46).



SOURCE: Ecology and Environment, Inc. 1990; BASE MAP: USGS, South Bend West, IN Quadrangle, 7.5 Minute Series, 1969, photorevised 1986.

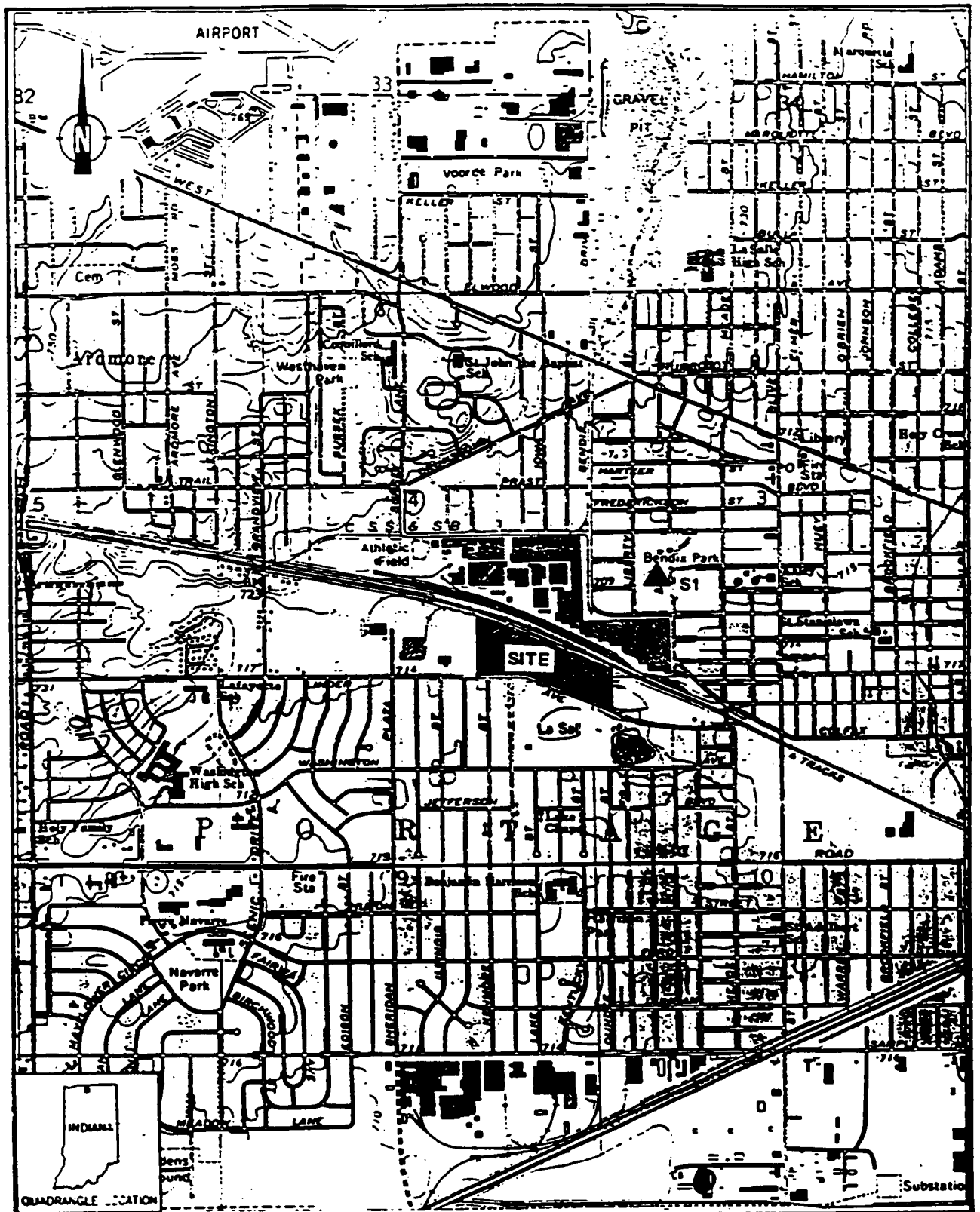


FIGURE 1 SITE LOCATION



SOURCE: Ecology and Environment, Inc. 1990.

FIGURE 2 ON-SITE SOIL/SEDIMENT SAMPLING LOCATIONS



SOURCE: Ecology and Environment, Inc. 1990; BASE MAP: USGS, South Bend West, IN Quadrangle, 7.5 Minute Series, 1969, photorevised 1986.

FIGURE 3 OFFSITE SOIL SAMPLING LOCATION

Table 1

Key Analytical Findings of SSI Soil Sampling¹
 Area West of Bendix Oil Tank
 South Bend, Indiana
 (Concentrations in mg/kg)

Sample No. Location	S1 (BKGD)	S2 (WP)	S3 (S)	S4 (WL)	S5 (WL)	S6 (S)	S7 (S)	Typical Levels in Natural Soils (2)	
								Range	Avg
Arsenic	2.5	36.2	---	---	---	---	12.4	1-50	5
Barium	---	---	---	---	---	---	104	100-3,000	430
Cadmium	---	---	---	---	---	---	4.6	0.01-0.7	0.06
Chromium	5.8	---	---	---	---	---	211	1-1,000	100
Iron	4,280	14,600	---	---	---	---	14,400	NA	NA
Magnesium	---	5,160	6,670	15,800	7,150	17,400	2,400	600-6,000	5,000
Manganese	44.4	---	272	206	---	---	---	20-3,000	600
Nickel	---	---	---	---	---	8.8	15.4	5-500	4.0
Selenium	---	---	---	---	---	---	2.1	0.1-2	0.3
Zinc	19.7	115	---	---	---	---	---	10-300	50
Cyanide	---	---	---	---	---	---	3.0	NA	NA

¹Based on SSI sampling conducted at the site by E&E, Inc.

²Reference 3.

--- - Indicates that the compound or analyte was below the sample quantitation limit, less than three times background, or not detected.
 BKDG - Background WP - Waste Pile
 S - Soil WL - Wet Land Sediments
 NA - Not Available

ATTACHMENT 1
PRELIMINARY ASSESSMENT

ATTACHMENT 2
CERCLA NOTIFICATION



THREE HAWTHORN PARKWAY, SUITE 400
VERNON HILLS, IL 60061-1450
708-918-4000 • FAX: 708-918-4055

P. Fishman
5 October 1993

Ms. Jan Pels, HSM-5J
Work Assignment Manager
U.S. Environmental Protection Agency
77 West Jackson Blvd.
Chicago, IL 60604

U.S. EPA Contract No.: 68-W8-0089

Work Assignment No.: 49-5JZZ/ESI

Document Control No.: 4500-49-AHWZ

Re: Site Findings and Recommendations
Area West of Bendix Oil Tank
South Bend, Indiana
CERCLA ID No.: IND980904262

Dear Ms. Pels:

This letter summarizes the background and analytical information available for the Area West of Bendix Oil Tank site. A Site Screening Inspection (SSI) for the site was completed in 1990 (Reference 1). A preliminary Hazard Ranking System (HRS) score was developed using the PRESCORE program (Version 2.0). The current available site information and scoring were utilized as the basis for our recommendation.

SITE LOCATION

The Area West of Bendix Oil Tank site is located in South Bend, Joseph County, Indiana (Township 37 North, Range 2 East, Section 4) (Reference 2). The Area West of Bendix Oil Tank is bounded by the Chicago South Bend and South Shore Railroad spur to the north, the access road to the Bendix Corporation oil tank to the east, and Linden Avenue to the south. The western boundary of the site corresponds approximately to an imaginary line formed by continuing Kenmore Street north across the site. A site location map is included (Figure 1).

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Ms. Jan Pels, HSM-5J
U.S. Environmental Protection Agency

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5 October 1993

SITE DESCRIPTION

The Area West of Bendix Oil Tank is approximately 18 acres in area. The surface topography in the area consists of flat, wooded terrain. A low-lying swampy area of approximately 1 acre is located in the center of the site. Berms are located on the north, south, and east boundaries of the site. Several trenches are located near the eastern berm and the western area of the site near the southern boundary. A small pit is located at the northern boundary of the site and a scrap iron area is located near the eastern berm. A pile of telephone poles are located at the northeast corner of the site and debris piles with a few scattered burned areas are located adjacent to the swamp area to the east. The site is covered with grass and trees and 15-foot high berms are located on both sides of a locked gate at the entrance of the site (Reference 1).

Land use surrounding the site includes an industrial facility of the Aircraft Brake and Strut Division of Bendix Corporation to the north, residential areas and LaSalle Park to the south, a Bendix Corporation oil tank to the east, and a wooded area to the west. The closest residence is approximately 100 feet southwest of the site (Reference 1).

SITE HISTORY

The Area West of Bendix Oil Tank site was an open dump that was formerly used by local industries and citizens for waste disposal. In the 1960s, the approximately 18 acre site was an open field. Woodruff and Sons, Inc. purchased the property in 1966 and until 1968 disposed of demolition debris on-site from the construction of LaSalle Park. LaSalle Park is adjacent to the site on the south. During the period of construction of LaSalle Park, household waste was dumped illegally on-site by area residents. At some time between 1966 and 1968, berms were constructed along the access road to the site for security reasons (Reference 1).

In accordance with Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Bendix Corporation submitted a CERCLA Section 103(c) notification to the U.S. EPA (Attachment 1). According to the 103 (c) notification, types of waste that may have been disposed include solvents, heavy metals, acids, bases, and asbestos.

The Preliminary Assessment (PA) for the site was prepared by the Indiana State Board of Health (ISBH) on 19 June 1985 (Attachment 2).

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Ms. Jan Pels, HSM-5J
U.S. Environmental Protection Agency

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5 October 1993

GEOLOGICAL DESCRIPTION

Based on 16 water well records, located within a 2-mile radius of the site, the site is underlain by unconsolidated glacial till deposits of the Atherton Formation which are approximately 200 feet thick. These glacial deposits occur within an extensive bedrock valley which trends in a northeast to southwest direction. The bedrock which underlies this material consists of Mississippian and Devonian aged Ellsworth shale.

The unconsolidated deposits can be divided into three basic units. Unit 1 consists of top soil and sandy loam and extends from the ground surface to approximately 10 to 15 feet below ground surface (bgs). Unit 2 consists of sand and gravel which ranges in texture from a very fine sand to a coarse gravel. This is a valley train glacial outwash of the Atherton Formation. This unit generally extends from the base of Unit 1 to the top of the shale bedrock which occurs at approximately 200 feet bgs. A third stratigraphic unit (Unit 3) underlies much of the area; however, this unit varies greatly in depth and thickness. This unit consists of what appears to be a glacial till described as a gravelly clay. From the site and southward, this unit occurs as discontinuous, relatively thin (3 to 25 feet) layers within the sands and gravels of Unit 2. However, approximately 1/4 to 1/2 mile north of the site, this unit becomes much more continuous with a thickness up to 140 feet. In one water well record, this unit becomes the lowermost unit, lying directly on top of the bedrock with a maximum thickness of 137 feet.

The hydrogeologic unit underlying the site consists of the glacial sands and gravels of Unit 2. This unit generally constitutes an unconfined aquifer since the majority of Unit 3 is discontinuous. However, north of the site, Unit 3 becomes more continuous and separates Unit 2 into what appears as distinct units. Even where this separation occurs, the upper and lower portions of Unit 2 are hydraulically connected and are considered the same hydrogeologic unit.

According to the nearby water well records, the water table occurs at approximately 5 feet bgs. In general, the regional direction of groundwater flow near the site is northwest; however, the existence of municipal well fields around the South Bend area have the potential to significantly impact actual groundwater flow patterns. Specifically, the Olive Street Municipal well field, located approximately 1.50 miles southeast of the site, consists of six high capacity wells which can each pump approximately 700 to 800 gallons per minute. Municipal well fields extracting water from the aquifer at this rate can potentially have a radius of influence extending a great distance outward from the well field; thus, creating

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U.S. Environmental Protection Agency

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groundwater flow patterns which may be different from the regional groundwater flow directions.

SSI INVESTIGATION

A Screening Site Inspection (SSI) of the site was conducted by Ecology & Environment, Inc. (E&E) on 8 May 1989. During the SSI, E&E collected four surficial soil samples (S2, S3, S6, and S7), two sediment samples (S4 and S5), as shown in Figure 2. The background sample (S1) was collected from Bendix Park located approximately 1,500 feet northeast of the site boundary (Figure 3). Surficial soil sample S2 was collected within a pile of old telephone piles to characterize the pile at a depth of approximately 2 feet. Soil samples S3, S6, and S7 were collected to characterize the site soil. Sediment samples S4 and S5 were collected to determine characteristics of the wetland. Analytical results from soil and sediment samples presented in the SSI Report (24 May 1990) indicated the presence of trace concentrations of volatile organic compounds (VOCs) and polyaromatic hydrocarbons (PAHs), heavy metals, and cyanide. The trace concentrations of VOCs and PAHs; however, were below contract required detection limits. Heavy metals and cyanide were present at concentrations greater than three times the background concentration. The principal analytical findings of the SSI sampling is presented in Table 1.

PRESCORING THE SITE

Based on the SSI report, there are two sources identified at the site, an area of contaminated soil and a telephone pole waste pile.

Contaminated Soils: Analytical results from soil samples S3, S6, and S7 indicated similar contaminants. Therefore, the area between these sampling locations was used to determine the surface area for the contaminated soil area. The surface area for contaminated soil was determined using the scale provided on the soil/sediment sampling locations map in the E&E SSI report.

Waste Pile: Analytical results from soil sample S2 collected within the waste pile shows the presence of arsenic at concentrations greater than three times the background concentration. The arsenic detected in the sample collected within the waste pile is attributable to the waste pile because:

- The highest concentrations of arsenic was detected in the sample collected from the waste pile.



Ms. Jan Pels, HSM-5J
U.S. Environmental Protection Agency

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5 October 1993

- The waste pile contains telephone poles which are normally treated using arsenic as one of the preserving compound.

The surface area for waste pile was determined using the soil/sediment sampling locations map in the E&E SSI report. Based on the scale map, the waste pile is approximately 14,400 square feet (180 feet X 80 feet) in area. However, conservatively only 10 percent (1,440 square feet) of the calculated surface area was used for scoring. If the waste pile containing telephone poles was removed after the SSI, the source could still be considered as a waste pile in accordance with Section 2.3, page 12 of the HRS Guidance Manual. The worse case cutoff date for this site would be 8 may 1989 when the SSI was conducted and the soil sampling occurred.

Based on all available information, groundwater is a significant migration pathway. The groundwater pathway will give a score of 87.06, using the following information:

- Presence of nine municipal wells fields, 3 community water supply wells, and people using private wells within a 4-mile Target Distance Limit (TDL).
- Potential release of contamination to the groundwater exists at this site due to the nature of the aquifer material.

The population using groundwater and those living within 4 miles of the site are presented in Tables 2 and 3.

The only surface water body that can be impacted by an overland flow from the site is the wetland located on-site. The wetland is approximately 2.5 acres in size (Reference 2). The analytical results of sediments cannot be used for scoring purpose since no background sediment sample was collected during the SSI.

Based on all available information, WESTON was able to score only for groundwater, soil exposure, and air pathways. The scores for the soil and air exposure pathways are insignificant. The score for the groundwater pathway was 87.06, soil exposure pathway 0.02, and for the air pathway 0.83. The resulting overall site score based on the information from the SSI is 43.53. Table 4 is a HRS prescore summary sheet. The HRS diskette is also provided.



Ms. Jan Pels, HSM-5J
U.S. Environmental Protection Agency

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5 October 1993

RECOMMENDATIONS

Based on the available information from the SSI, and the groundwater pathway score of 87.06, the overall site score significantly exceeds 28.50 necessary for placement of a site on NPL. However, if the surface area of the waste pile shown on the soil/sediment location map was much smaller (i.e. less than 1,300 square feet), the overall site score will be 24.19 (Table 5). For this case, monitoring wells need to be installed to document observed release to groundwater. With the installation of monitoring well and observed release to groundwater with a Level I contamination (e.g. Arsenic 5 ug/L), the site score will be 50.00 (Table 6).

WESTON requests U.S. EPA to evaluate this information presented in this memorandum as to the need for further investigation at the site. If the waste area is much smaller or the likelihood that these piles do not exist now, then it is necessary to conduct an ESI involving installation and sampling of monitoring wells.

Should you have any questions or require additional information, please call.

Very truly yours,

ROY F. WESTON, INC.

Steven R. Bosko

Steven R. Bosko
Senior Project Scientist

P. Krishnan

P. Krishnan, Ph.D., P.E.
Site Manager

SRB/PK/ieh

REFERENCES

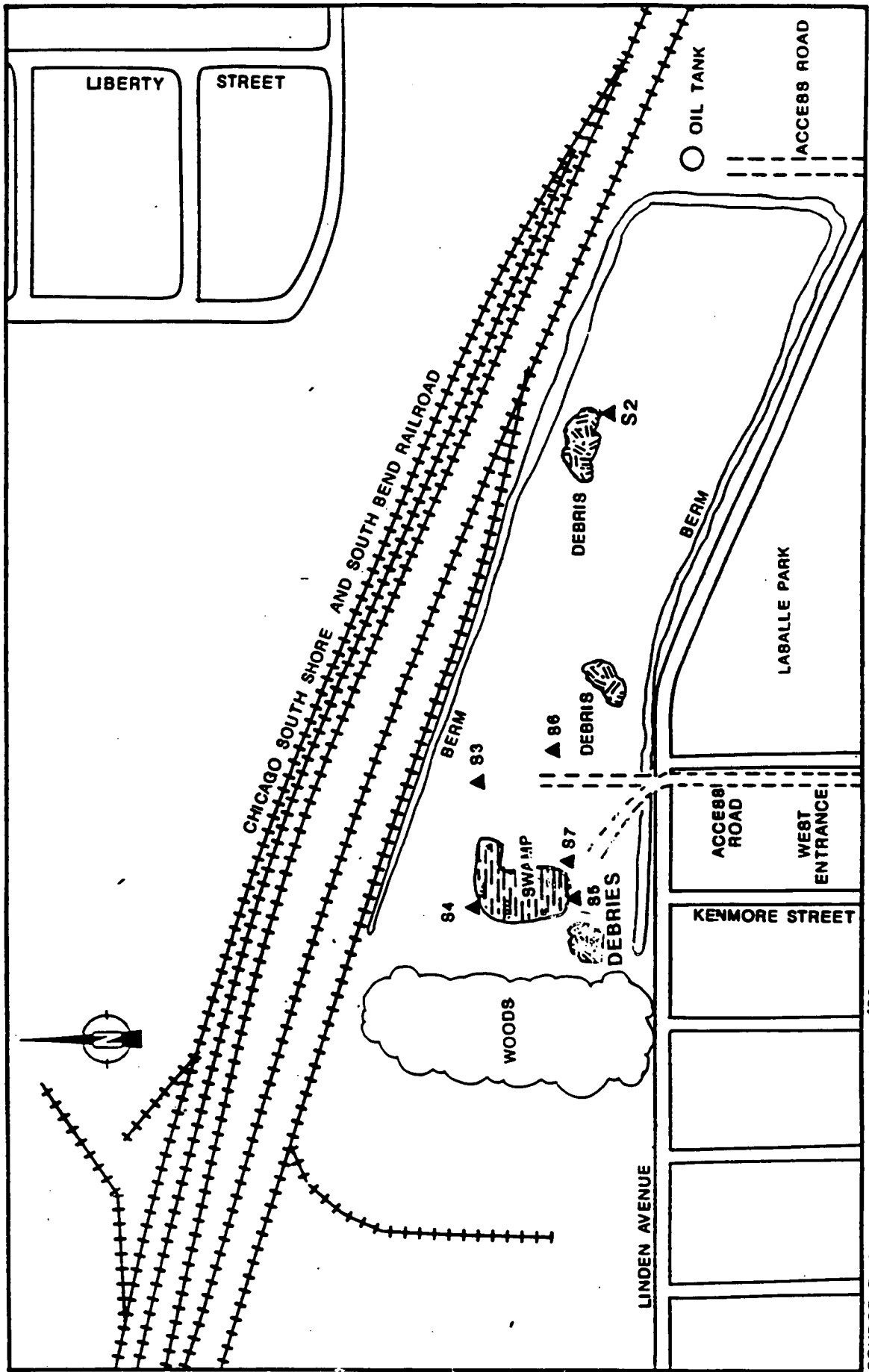
1. "Site Inspection Report for Area West of Bendix Oil Tank, South Bend, Indiana", Ecology & Environment, Inc., 24 May 1990
2. "National Wetlands Inventory" U.S. Department of Interior, Fish and Wildlife Service, Prepared by National Wetlands Inventory 1987 (South Bend West, Indiana)
3. "Screening Site Inspection Preliminary and Projected Hazard Ranking System Revised Score Worksheets", Population Calculation, Ecology & Environment, Inc., February 1989.
4. 1990 U.S. Census, "Land Area and Population Density: 1990"
5. Telephone Conversation, Bill Dillon, South Bend Water Works with C.W. Krumm of Roy F. Weston, Inc., 9 December 1991
6. Telephone Conversation, Bob Mitchell and Richard Kenney, Sisters of Holy Cross Shared Services with S.R. Bosko of Roy F. Weston, Inc., 4 October 1993
7. Telephone Conversation, Tom Kucharski, Hollywood Mobile Park with S.R. Bosko of Roy F. Weston, Inc., 4 October 1993
8. Letter from Ed Keve, Assistant Director of Utilities, University of Notre Dame, to S.R. Bosko, Roy F. Weston, Inc., 4 October 1993



SOURCE: Ecology and Environment, Inc. 1990; BASE MAP: USGS, South Bend West, IN Quadrangle, 7.5 Minute Series, 1969, photorevised 1986.



FIGURE 1 SITE LOCATION



SOURCE: Ecology and Environment, Inc. 1990.

FIGURE 2 ON-SITE SOIL/SEDIMENT SAMPLING LOCATIONS



SOURCE: Ecology and Environment, Inc. 1990; BASE MAP: USGS, South Bend West, IN Quadrangle, 7.5 Minute Series, 1969, photorevised 1986.



FIGURE 3 OFFSITE SOIL SAMPLING LOCATION

TABLE 1

**KEY ANALYTICAL FINDINGS OF SSI SOIL SAMPLING¹
 AREA WEST OF BENDIX OIL TANK
 SOUTH BEND, INDIANA
 (Concentrations in mg/kg)**

Sample No. Location	S1 BKGD	S2 WP	S3 S	S4 WL	S5 WL	S6 S	S7 S
Arsenic	2.5	36.2	---	---	---	---	12.4
Barium	---	---	---	---	---	---	104
Cadmium	---	---	---	---	---	---	4.6
Chromium	5.8	---	---	---	---	---	211
Iron	4,280	14,600	---	---	---	---	14,400
Magnesium	---	5,160	6,670	15,800	7,150	17,400	2,400
Manganese	44.4	---	272	206	---	---	---
Nickel	---	---	---	---	---	8.8	15.4
Selenium	---	---	---	---	---	---	2.1
Zinc	19.7	115	---	---	---	---	---
Cyanide	---	---	---	---	---	---	3.0

¹Based on SSI sampling conducted at the site by E&E, Inc.

- - Indicates that the compound or analyte was below the sample quantitation limit, less than three times background, or not detected.
- BKGD - Background
- WP - Waste Pile
- S - Soil
- WL - Wet Land

TABLE 2

**POPULATION USING GROUNDWATER WITHIN 4-MILES
AREA WEST OF BENDIX OIL TANK
SOUTH BEND, INDIANA**

Distance (Miles)	Private Wells	South Bend Municipal System	Community Well Holy Cross/Notre Dame	Total
0 - 1/4	0		0	0
1/4 - 1/2	0		0	0
1/2 - 1	0		0	0
1 - 2	254	29,480	0	29,734
2 - 3	762	26,532	2,273	29,567
3 - 4	2,159	29,480	14,000	43,480

Source 3, 4, 5, 6, 7, 8

TABLE 3

**POPULATION WITHIN 4 MILES
AREA WEST OF BENDIX OIL TANK
SOUTH BEND, INDIANA**

Distance (Miles)	Population
0 - 1/4	1,266
1/4 - 1/2	3,165
1/2 - 1	10,657
1 - 2	31,169
2 - 3	26,929
3 - 4	23,261

Table 4
PRE score
Summary Screen

Area West of Bendix's Oil Tank
IND980904262

File: BENDIXES.HRS

Site Score 43.53

PREscore Version 2.0

Pathway	Likelihood of Release	Waste Characteristics	Targets	Pathway Score
Groundwater	430	18	9.28E+02	87.06
Drinking Water Food Chain Environment Surface Water	250 250 250	32 180 100 Overland flow	0.00E+00 0.00E+00 0.00E+00	0.00 0.00 0.00 0.00
Resident Nearby Soil Exposure	550 5	18 18	0.00E+00 2.20E+01	0.00 0.02 0.02
Air	220	2	1.56E+02	0.83

Note: The prescore is based on available information.

Table 5
PRE score
Summary Screen

Area West of Bendix's Oil Tank
IND980904262
File: BENDIXE1.HRS
Site Score 24.19

PREscore Version 2.0				
Pathway	Likelihood of Release	Waste Characteristics	Targets	Pathway Score
Groundwater	430	10	9.28E+02	48.37
Drinking Water Food Chain Environment Surface Water	250 250 250	18 100 56 Overland flow	0.00E+00 0.00E+00 0.00E+00	0.00 0.00 0.00 0.00
Resident Nearby Soil Exposure	550 5	18 18	0.00E+00 2.20E+01	0.00 0.02 0.02
Air	220	1	1.56E+02	0.42

Note: The prescore is based on waste pile surface area of 1275 sq. ft. and contaminated soil source.

Table 6
PRE score
Summary Screen

Area West of Bendix's Oil Tank
IND980904262

File: BENDXE2.HRS

Site Score 50.00

PREscore Version 2.0				
Pathway	Likelihood of Release	Waste Characteristics	Targets	Pathway Score
Groundwater	550	18	9.28E+02	100.00
Drinking Water Food Chain Environment Surface Water	250 250 250	18 100 56 Overland flow	0.00E+00 0.00E+00 0.00E+00	0.00 0.00 0.00 0.00
Resident Nearby Soil Exposure	550 5	18 18	0.00E+00 2.20E+01	0.00 0.02 0.02
Air	220	1	1.56E+02	0.42

Note: The prescore is based on the contaminated soil source and observed release to groundwater.

ATTACHMENT 1

CERCLA SECTION 103(c) NOTIFICATION

EPA Notification of Hazardous Waste Site

United States
Environmental Protection
Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

Site 5

A Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name THE BENDIX CORPORATION
Street 401 Bendix Drive (P.O. Box 4001)
City South Bend State IN Zip Code 46620

B Site Location:

Enter the common name (if known) and actual location of the site.

Name of Site "Area West of Bendix Oil Tank"
Street Linden Avenue
City South Bend County St. Joseph State IN Zip Code 46619

C Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title) Budzin, Gerald J. - Manager of Environmental Control
Phone (219) 237-5993

D Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year) Intermittently 1940 to 1970 To (Year) _____

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item 1—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

May have included:

- 1. Organics
- 2. Inorganics
- 3. Solvents
- 4. Pesticides
- 5. Heavy metals
- 6. Acids
- 7. Bases
- 8. PCBs
- 9. Mixed Municipal Waste
- 10. Unknown
- 11. Other (Specify)
Asbestos

Source of Waste:
Place an X in the appropriate boxes.

- 1. Mining
- 2. Construction
- 3. Textiles
- 4. Fertilizer
- 5. Paper/Printing
- 6. Leather Tanning
- 7. Iron/Steel Foundry
- 8. Chemical, General
- 9. Plating/Polishing
- 10. Military/Ammunition
- 11. Electrical Conductors
- 12. Transformers
- 13. Utility Companies
- 14. Sanitary/Refuse
- 15. Photofinish
- 16. Lab/Hospital
- 17. Unknown
- 18. Other (Specify)
Automotive/Aerospace
Manufacturing Facility
SIC Code 3714, 3722 &

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 300 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

ST. JOSEPH COUNTY HEALTH DEPARTMENT

COUNTY-CITY BUILDING - 8TH FLOOR

PHONE (219) 284-9750

SOUTH BEND, INDIANA 46601

JAMES E. BOWES, M.D., M.P.H.
HEALTH OFFICER

March 28, 1984

Michiana Industrial Park, Inc.
Post Office Box 450
Michigan City, Indiana 46360

Dear Property Owner:

Subject: Property Described as 4.544 Acres in
Section 10-37-2E (Linden Road), St. Joseph County, Indiana

In 1980 Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (the Act), Section 103(c) of which requires owners or operators of hazardous waste facilities, as defined in the Act, or transporters of hazardous substances to such facilities, to notify the Environmental Protection Agency (EPA) of the existence of facilities and the types of hazardous substances that may have been treated, stored or disposed of at the facilities.

The Bendix Corporation in South Bend, Indiana ("Bendix") has advised this Office that on the basis of information recently discovered by Bendix, at some time during the forty (40) years ending in approximately 1970, you or the former owners of the property you now own authorized Bendix, as well as other companies or individuals, to dispose of certain waste materials on or near your property.

Bendix is required under the Act to notify the EPA of the fact that your property was possibly utilized as a disposal site for hazardous substances as defined by the Act even though the disposals were not unlawful when made and were made with the specific permission of the property owner at the time. Since Bendix is notifying the EPA, Bendix and this Office feel that you should be advised that the notification is being made.

This Office will be the responsible County Office regarding site identification and the need for assessment of the present conditions at each site. Bendix has employed a nationally known Environmental Consultant, ERM-North Central, Inc. of Palatine, Illinois to assist this Office. Please be aware that both this Office and the Consultant believe at this time that there is no concern for public safety, especially in view of the fact that the area in which your property is located is on city-supplied water.

We ask you to notify this Office if you know of any private water wells that exist on or near your property and the names of any company or person other than Bendix who may have disposed of wastes on or near your property.

If you have any questions regarding this notice, please call this Office at your convenience. Our telephone number is 284-9721.

Very truly yours,

Paul E. Trost

Paul E. Trost

Public Health Officer

Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site. In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons. In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

- 1. Piles
- 2. Land Treatment
- 3. Landfill
- 4. Tanks
- 5. Impoundment
- 6. Underground Injection
- 7. Drums, Above Ground
- 8. Drums, Below Ground
- 9. Other (Specify) _____

Total Facility Waste Amount

cubic feet unknown
 gallons unknown
 Total Facility Area
 square feet unknown
 acres See Item I

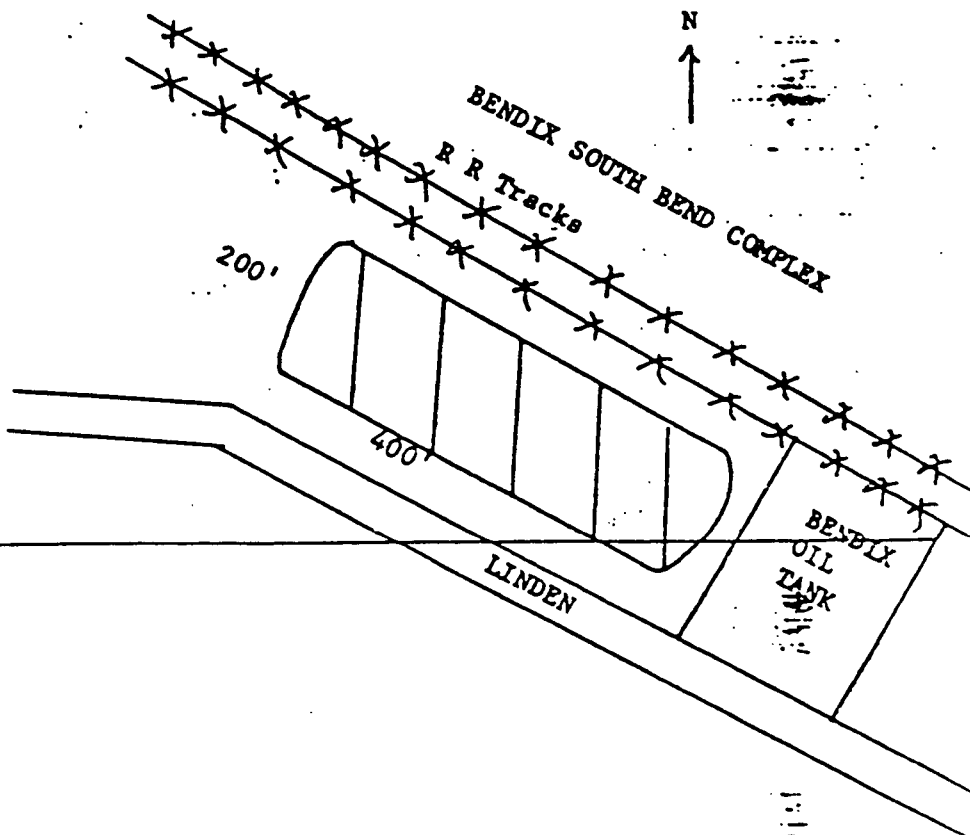
Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, Unknown Known Suspected Likely None or likely releases of wastes to the environment.

Note: Items Hand I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.



I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

- Site at some point within an area of approximately 18 acres.
- 1 private (corporate) owner.
- Site area served by City water system.

Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name THE BENDIX CORPORATION
 Street 401 Bendix Drive (P.O. Box 4001)
 City South Bend State IN Zip Code 46620
 Signature *Gerald J. Budzin*
 Gerald J. Budzin, Date March 28, 1984
 Manager of Environmental Control

- Owner, Present
- Owner, Past
- Transporter
- Operator, Present
- Operator, Past
- Other

ATTACHMENT 2

PRELIMINARY ASSESSMENT

ERRIS EXECUTIVE SUMMARY

Wang Sequence # _____ WINDSHIELD SURVEY YES X NO
EPA ID# IND980904262
Original Company Name: Area West of Bendix Oil Tank
Revised Company Name: _____

Alias Names: _____

Original X Address: Linden Ave.
Corrected South Bend, IN 46619
St. Joseph County

 Landfill Generator Treatment, Storage, Disposal (TSD)
 Transporter X Other: Open dump.

PRIORITY ASSESSMENT: X HIGH MEDIUM LOW NO FURTHER ACTION (NONE)

CLASS:
 I-STATE LEAD X II-REM/FIT LEAD III-REM/FIT LEAD IV OTHER:
State Accompanies Limited On-site
FIT State Involvement

=====
Priority Justification and State Comments Regarding:
 X PA SI Follow-up SI RPS HRS
Site was an old dump, unfenced and used by local industries and citizens. Site
is near a city park (LaSalle Park) in the city limits of South Bend. Bendix
Corporation notified on the site for their wastestreams which were primarily
asbestos, solvents and heavy metals. Site has 3 city wellfields within a
3-mile radius, and very permeable soil conditions. Water table is very shallow
and local well logs indicate some private shallow wells near site.

STATE INVOLVEMENT

 C Preliminary Assessments R Site Inspection R Follow-up Site Inspection
 R Responsible Party Search R Hazard Ranking System (HRS)

* COMPLETE DOCUMENTS (C) REVIEW DOCUMENTS (R)

Prepared by: Susanne Buthman Phone: (317) 243-5034 Date: 6/19/85
Activity Time: 27 Hours



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE IND 02 SITE NUMBER 980904262

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

<p>01 PHYSICAL STATES (Check all that apply)</p> <p><input checked="" type="checkbox"/> A SOLID <input checked="" type="checkbox"/> B POWDER FINES <input checked="" type="checkbox"/> C SLUDGE</p> <p><input checked="" type="checkbox"/> E SLURRY <input checked="" type="checkbox"/> F LIQUID G GAS</p> <p>D OTHER _____ (Specify)</p>	<p>02 WASTE QUANTITY AT SITE (Measure in 01 waste quantity) (Unit of measurement)</p> <p>TONS <u>unknown</u></p> <p>CUBIC YARDS _____</p> <p>NO OF DRUMS _____</p>	<p>03 WASTE CHARACTERISTICS (Check all that apply)</p> <p><input checked="" type="checkbox"/> A TOXIC <input checked="" type="checkbox"/> B CORROSIVE C RADIOACTIVE <input checked="" type="checkbox"/> D PERSISTENT</p> <p><input checked="" type="checkbox"/> E SOLUBLE F INFECTIOUS <input checked="" type="checkbox"/> G FLAMMABLE <input checked="" type="checkbox"/> H IGNITABLE</p> <p><input checked="" type="checkbox"/> I HIGHLY VOLATILE J EXPLOSIVE <input checked="" type="checkbox"/> K REACTIVE L INCOMPATIBLE M NOT APPLICABLE</p>
---	--	--

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	unknown	unknown	Waste streams from Bendix show
OLW	OILY WASTE	unknown	unknown	many chemicals, especially
SOL	SOLVENTS	unknown	unknown	heavy metals, in the wastes
PSC	PESTICIDES			disposed of (see attached sheet)
OCC	OTHER ORGANIC CHEMICALS	unknown	unknown	Amounts are unknown as is the
IOC	INORGANIC CHEMICALS	unknown	unknown	physical state of wastes
ACD	ACIDS	unknown	unknown	at the time of disposal.
BAS	BASES	unknown	unknown	Major components are listed
MES	HEAVY METALS	unknown	unknown	below.

IV. HAZARDOUS SUBSTANCES See Appendix to Part 2 for listing of CAS numbers

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
MES	Chromium (+6)	7440-47-3			
MES	Cadmium	7440-43-9			
IOC	Asbestos	1332-21-4			
ACD	Sulfuric acid	7664-93-9			
OCC	Napthalene	91-20-3			
SOL	Methyl Isobutyl Ketone	108-10-1			
SOL	Ethanol	999			
SOL	4,4-Methylene bis (2-Chloroazirine)	101-14-4			
MES	Lead	7439-92-1			
MES	Selenium	7782-49-2			
MES	Zinc	7440-66-6			
IOC	Barium Chloride	10361-37-2			
MES	Nickel	7440-02-0			
OCC	Phenols	999			
MES	Barium	999			
MES	Arsenic	7440-38-2			

V. FEEDSTOCKS See Appendix to Part 2 for listing of CAS numbers

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION See Appendix to Part 2 for listing of sources of information

Indiana State Board of Health files--Bendix Corp.: RCRA, ERRIS
Paul Trost--St. Joseph County Health Officer
Mr. Budzin--Bendix Corp.
IDNR--groundwater group



**POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS**

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IND	980904262

E. HAZARDOUS CONDITIONS AND INCIDENTS

01 A. GROUNDWATER CONTAMINATION 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION

Area geology is glaciofluvial. Very permeable soils throughout the county. Shallow wells and a high water table make for a high potential for groundwater contamination. 3 wellfields within 3 mile radius.

01 B. SURFACE WATER CONTAMINATION 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION

Site is 200 feet from LaSalle Park lake (city park) and 1 3/4 mile from the St. Joseph River. Unlikely that surface run-off would reach the river but may be affecting LaSalle Park lake.

01 C. CONTAMINATION OF AIR 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION

Asbestos buried could surface and cause airborne contamination.

01 D. FIRE EXPLOSIVE CONDITIONS 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

unknown

01 E. DIRECT CONTACT 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION

Site is unfenced and was while it was used as an open dump. Site was not closed properly and liquids and asbestos from Bendix was probably put there along with waste streams from other industries & private citizens. Site 100 feet from city park.

01 F. CONTAMINATION OF SOIL 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
03 AREA POTENTIALLY AFFECTED 18 04 NARRATIVE DESCRIPTION

Probable contamination of soil on site due to nature of the site. Bendix notified on their waste streams for the site. Asbestos heavy metals and solvents are very likely according to Bendix Corp. Mgr. of Envir. Controls.

01 G. DRINKING WATER CONTAMINATION 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION

Site area served by city water system but Olive Street wellfield is within 1 1/4 mile of site. Possible contamination due to geology in area. Water table is very shallow.

01 H. WORKER EXPOSURE INJURY 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
03 WORKERS POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

unknown

01 I. POPULATION EXPOSURE INJURY 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION

Site is within city limits, just south of the Bendix main plant. A city park is almost adjacent to the site. Potential for population exposure due to migrating contaminants.



**POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT**
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE IND	02 SITE NUMBER 980904262

II. HAZARDOUS CONDITIONS AND INCIDENTS (continued)

01 J. DAMAGE TO FLORA 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
 04 NARRATIVE DESCRIPTION
 High potential for damage to flora due to probable heavy metals, solvents and other waste streams placed in site.

01 K. DAMAGE TO FAUNA 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
 04 NARRATIVE DESCRIPTION (INCLUDE NAME S OF SPECIES)
 Potential for contamination of local wildlife and aquatic fauna in LaSalle Park lake. Site is unfenced and never properly closed.

01 L. CONTAMINATION OF FOOD CHAIN 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
 04 NARRATIVE DESCRIPTION
 Bioaccumulation of heavy metals can occur through flora and fauna to humans.

01 M. UNSTABLE CONTAINMENT OF WASTES 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
(Soils, water, standing water, leaking drums)
 03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION
 Site was an open dump area for South Bend industries and local citizens.

01 N. DAMAGE TO OFFSITE PROPERTY 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
 04 NARRATIVE DESCRIPTION
 Possible migration of chemicals and blowing asbestos from site.

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
 04 NARRATIVE DESCRIPTION
 unknown

01 P. ILLEGAL, UNAUTHORIZED DUMPING 02 OBSERVED (DATE _____) POTENTIAL ALLEGED
 04 NARRATIVE DESCRIPTION
 Very probable due to the nature of the site. See Item E.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: >10,000

IV. COMMENTS

It is probable that other industries used this site for disposal of wastes.

V. SOURCES OF INFORMATION (List specific references to all data used, including dates)

Indiana State Board of Health files--CERCLA, ERRIS; Bendix, RCRA.
 Paul Trost--St. Joseph County Health Officer
 Mr. Budzin--Bendix Corp., South Bend