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SITE ASSESSMENT SECTION

PRELIMINARY ASSESSMENT
SUPER AUTO SALVAGE YARD
U.S. EPA ID: IND984928440
SOUTH BEND, INDIANA
ST. JOSEPH COUNTY

EPA Region 5 Records Ctr.
332083

MARCH 15, 1994

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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U.S. EPA, 4/26/94

13/4'

SUPER AUTO SALVAGE YARD

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A

SUPER AUTO SALVAGE YARD

SITE NARRATIVE

INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), the Indiana Department of Environmental Management (IDEM), Office of Environmental Response (OER), Site Investigation Section conducted a Preliminary Assessment (PA) at the Super Auto Salvage Yard site in St. Joseph County, Indiana. The purpose of the investigation was to obtain information concerning conditions at the Super Auto Salvage Yard site sufficient to determine the need for additional CERCLA/SARA or other appropriate action. The scope of the PA investigation included a review of file information, a comprehensive target survey and an on-site reconnaissance (October 1993).

SITE DESCRIPTION, OPERATIONAL HISTORY AND WASTE CHARACTERISTICS

Site Description

The site is located in Section 24, Township 37 North, Range 2 East in the city of South Bend, St. Joseph County, Indiana at 3300 South Main Street (Figure 1, Ref. 3). The site's geographic coordinates are 41° 38′ 32.50" North Latitude and 86° 15′ 8.30" West Longitude (Ref. 3, 4). To reach the site, travel south of the City Hall on Main Street approximately 2.30 miles. The facility is located west of Main Street (Ref. 3).

St. Joseph County is characterized by a wide variation in temperature modified by Lake Michigan, which is located approximately 30 miles to the northwest. Increased cloudiness, snow and rain combined with a reduction of temperature extremes in both summer and winter are the primary effects Lake Michigan has on the climate. The prevailing wind direction is south-southwest in summer and fall and north-northwest in March and April. The temperature in St. Joseph County reaches 90°F or higher on an average of ten days per year and 0°F or lower on an average of eight days per year. Levels of precipitation are fairly constant throughout the year; in February, the county averages approximately 2.0 inches of rainfall and 3.5 inches in the spring and summer (Ref. 5). The site, itself, is located in an area of minimal flooding (Ref. 6).

Operational History and Waste Characteristics

The active auto salvage operation occupies fourteen acres of land in an industrial area of South Bend. Super Auto Salvage Yard has been operating at 3300 South Main Street, South Bend, Indiana since

the late 1930's to the early 1940's and is still active today. The site is roughly fourteen acres and has two buildings within the fenced boundaries. The salvage yard sells automobile parts for a variety of vehicles. Approximately ⅔ of the company's business is from distributing new automobile parts. The other ⅓ of the company's business is obtained from dismantling used vehicles and selling the parts. There are about 1,400 used cars at the site. Super Auto Salvage Yard annually processes 400 cars. The automobiles on-site are typically kept for three years. When used cars are obtained, they are set aside until a contractor reclaims the freon from them. Waste oils from the used cars are drummed and then eventually burned in the engine garage. Oily stained soil near the engine garage was reported during the site reconnaissance. Cars are dismantled on the southern edge of the property (Ref. 7).

Mr. Harold Silberman owns the property at 3300 South Main Street, South Bend, Indiana. Mr. Silberman leases the property to Mr. Paul Schultz who currently runs the salvage operation. The City of South Bend leases the southwestern part of the property. The city tows abandoned cars the leased property. Mr. Paul Schultz stated that Super Auto Salvage Yard has only salvaged used motor vehicles throughout its history (Ref. 7).

GROUNDWATER PATHWAY

Hydrogeologic Setting

The parent materials primarily found in St. Joseph County were placed by glacial deposition or by melt water from the glaciers. The properties of the parent material may vary greatly with small areas contingent on the mode of deposition. Within St. Joseph County, the predominant parent materials were deposited as glacial till, outwash, alluvium or organic material. Site specifically, the soils are of the Tyner-Oshtemo association. Soils within this association are deep, nearly level to strongly sloping, well drained, coarse textured and moderately coarse textured soils on outwash plains and terraces. Tyner soils are deep, nearly level to strongly sloping and well drained. Oshtemo soils are typically deep, nearly level to strongly sloping, and well drained. Minor soils within the association include Chelsea, Brems, Maumee, Brady, and Tedrow soils on the outwash plains as well as Tracy and Fox soils on the outwash plains and terraces. Within the Tyner-Oshtemo association, soil types from the Hillsdale Series, Oshtemo Series and the Tyner Series are found on-site (Ref. 5).

The Hillsdale Series of the Tyner-Oshtemo association is comprised of deep, well-drained, nearly level to strongly sloping soils on till plains and moraines. The soils are primarily found between soils that formed in glacial till and those that formed in outwash. Hillsdale soils are characterized by moderate permeability coupled with a moderate available water capacity. The surficial layer has a moderate organic matter content. Runoff is slow to rapid. The

Hillsdale Complex (HeC2) with six to twelve percent eroded slopes is found on the east and south to southeast area of the site. Drought and erosion are of major concern with this soil type (Ref. 5).

The Oshtemo Series of the Tyner-Oshtemo association is comprised of deep, well-drained, nearly level to strongly sloping soils on outwash plains and terraces. Oshtemo soils are characterized by a moderately rapid permeability combined with low available water capacity. The surficial layer has a high organic matter content. Runoff is slow to medium. Oshtemo sandy loam (OsC2) with six to twelve percent eroded slopes is found on the east to northeast area of the site. The soils are located in elongated areas on short side slopes. Drought and erosion are of major concern with this soil type. During arid periods, blowing soil is a hazard if no protective cover is in place (Ref. 5).

The Tyner Series of the Tyner-Oshtemo association is comprised of deep, well-drained, nearly level to strongly sloping soils on outwash plains and terraces. The soils are located on raised flats and ridges. Tyner soils have a rapid permeability rate coupled with a low available water capacity. The surficial layer has a moderate organic material content. Runoff is slow to medium. The Tyner loamy sand (TYA) with zero to six percent slopes of the Tyner Series is found on the west and north portions of the site. Drought is of major concern with this soil type. During arid periods, blowing soil is a hazard if there is no protective cover in place (Ref. 5).

Groundwater Targets

The majority of the population within a 4-mile radius of the site relies on municipal groundwater supplies retrieved from eleven well fields throughout the South Bend area, operated by the St. Joseph County Water Department. The groundwater is recovered from the St. Joseph Aquifer. Of eleven well fields, six are located within the target distance limits. Well locations are depicted on the 4-mile radius map provided in Appendix E. The South Station well field is located on property adjacent to the site within zero to ¼ mile. The well field has four active wells: South #1 is at a depth of 93 feet and has a water capacity of 3,100,000 gallons per day (gpd); South #2 is at a depth of 92 feet and has a water capacity of 2,200,000 gpd; South #3 is at a depth of 100 feet and has a water capacity of 2,300,000 gpd; and South #4 is at a depth of 108 feet and has a water capacity of 3,800,000 gpd. The Erskine well field is located within one mile southeast of the site. The well field has one active well and one inactive well due to PCE contamination. Erskine #1 is at a depth of 175 feet and has a water capacity of 800,000 gpd and the Erskine #2 is at a depth of 116 feet and has a water capacity of 2,800,000 gpd. The Rum Village well field is located within one mile of the site. The well field has one active well and one inactive well due to TCE contamination. Rum Village #1 is at a depth of 137 feet and has a water capacity of 1,500,000 gpd and Rum Village #2 is at a depth of 126 feet and has a water

capacity of 2,200,000 gpd. The Olive Street well field is located within three miles northwest of the site. The well field has six wells, two wells are active, two are closed due to TCE contamination and two are closed due to high hardness. The depth and water capacity for each Olive Street wells is: Oliver #1 is 168 feet and 3,000,000 gpd; Oliver #2 is 164 feet and 3,250,000 gpd; Oliver #3 is 155 feet and 3,500,000 gpd; Oliver #4 is 192 feet and 3,000,000 gpd; Oliver #5 is 158 feet and 3,000,000 gpd and; Oliver #6 is 168 feet and 3,000,000 gpd. The North Station well field is located within four miles north of the site. The well field has three active wells: North #5 is at a depth of 104 feet and has a water capacity of 3,000,000 gpd; North #6 is at a depth of 106 feet and has a water capacity of 3,000,000 gpd and; North #7 is at a depth of 112 feet and has a water capacity of 3,000,000 gpd. The Edison well field is located within four miles northeast of the site. The well field has four active wells: Edison #1 is at a depth 206 feet and has a water capacity of 4,000,000 gpd; Edison #2 is at a depth of 200 feet and has a water capacity of 3,100,000 gpd; Edison #3 is at a depth of 204 feet and has a water capacity of 3,400,000 gpd and; Edison #4 is at a depth of 196 feet and has a water capacity of 3,600,000 gpd. The municipal water supply is a blended system and no well field nor any individual well can or does contribute more than 40 percent of the total output of the system. Approximately 115,000 people are serviced by the 31 active wells within the eleven well fields. Each of these active wells services an estimated 3709.67 persons (Ref. 8). Individuals not serviced by the municipal supply receive water from private residential wells.

Groundwater Conclusions

A release of potentially hazardous substances to the groundwater from the Super Auto Salvage Yard is possible. Due to the moderate to rapid permeability of the site-specific soils, the close proximity of the municipal well field, and the recharge zone of the municipal wells encompassing the site, widespread migration of potential contaminants is feasible.

SURFACE WATER PATHWAY

Hydrologic Setting

Across St. Joseph County lies the drainage divide between the Mississippi Basin and the Great Lakes Basin. Approximately ⅔ of the drainage enters into the Kankakee River System, which flows into the Mississippi River, while the other ⅓ of the drainage enters into the St. Joseph River System which flows into Lake Michigan. Yellow River, Grapevine Ditch, Niespodziany Ditch, Pine Creek and Yellow Bank Creek are the primary tributaries of the Kankakee River. Baugo Creek, Juday Creek, Eutzler Ditch, Woodward Ditch and Mowman Creek are the primary tributaries of the St. Joseph River (Ref. 5).

Site specifically, runoff from the site either percolates through the permeable soils or enters into the combined sewer system that flows to the wastewater treatment plant (Ref. 7).

Surface Water Targets

No surface water targets are affected by potential contaminants at the Super Auto Salvage Yard site. A migration route to Bowman Creek, the nearest surface water body, does not exist (Ref. 7).

Surface Water Conclusions

A release to the surface water from potential hazardous substances at the Super Auto Salvage Yard is not suspected. Site runoff enters into the combined sewer system or the ground, not into a 15-mile surface water pathway.

SOIL EXPOSURE AND AIR PATHWAYS

Physical Conditions

The Super Auto Salvage Yard is an active facility occupying approximately fourteen acres in an industrial area of South Bend. Located on-site are the main building, the old office building and the engine garage. The site is completely fenced around the perimeter of the property. Oily stained soil near the engine garage was detected during a site visit. Around the southwestern area of the site, there appears to be a black sandy material similar to foundry sand on the ground. At the western edge of the property, a pond of standing water and an odor was noted. Throughout the site visit, no readings were detected on the HNu photoionization detection (Ref. 7, 13).

Soil and Air Targets

Super Auto Salvage Yard employs twenty workers on-site (Ref. 7). The nearest residence is roughly 500 feet east of the facility (Ref. 9). No schools or day care facilities are located within 200 feet of the operation (Ref. 7). The total population within a four-mile radius of the site is 101,612 persons as determined from the 1990 Census Population and Housing and supplemented by a house count of the Four-Mile Radius Map (Ref. 10, 11).

Within ½ mile to one mile west of the Super Auto Salvage Yard, the Geranium robertianum (Herb-robert), a state threatened vascular plant species, grows in the Rum Village Park (Ref. 12).

Soil Exposure and Air Pathway Conclusions

The soil exposure pathway appears to pose a potential threat to human health and the environment. The site is fully encompassed by a perimeter fence, but approximately 20 full time workers plus customers of the salvage operation have the ability to come into

contact with potentially contaminated soils. A release to the air pathway has not been documented. During a site reconnaissance an odor was detected but no readings registered on the air monitoring equipment and no blowing dust or soil was indicated.

SUMMARY AND CONCLUSIONS

The Super Auto Salvage Yard has been in operation since the 1930's at 3300 South Main Street, South Bend, St. Joseph County, Indiana. The salvage operation sells new and used automobile parts. During dismantling, in particular the removal of engine parts, a release of waste oils onto the ground occurs. A municipal well field is located on adjacent property to the site and the well fields recapture zone encompasses the site. As a result of this combined with moderate to rapid permeability of on-site soils, a potential exists for the oily wastes to percolate into the groundwater. The runoff from the site enters into the combined sewer system or leaches into the groundwater, therefore there is no 15-mile surface water pathway for the site. There is a potential for soil exposure on-site via workers and customers of the salvage operation coming in contact with the potential wastes during daily business operations. No release to air is suspected due to the nature of potential contaminants and a lack of documentation proving such a release has, in fact, occurred.

B

REFERENCES

1. "Federal Register, Part II, Environmental Protection Agency, 40 CFR Part 300, Hazard Ranking System; Final Rule", Friday, December 14, 1990.

2. United States Environmental Protection Agency, Guidance for Performing Preliminary Assessments Under CERCLA, September 1991.

3. Super Auto Salvage Yard, South Bend, St. Joseph County, Indiana, 4-Mile Radius Map utilizing U.S. Geological Survey, 7.5 minute topographic quadrangle maps of Indiana: Lakeville, Ind. 1970, photorevised 1980; South Bend East, Ind. 1969, photorevised 1986; South Bend West, Ind. 1969, photorevised 1986; Wyatt, Ind. 1961, photorevised 1980.

4. Indiana Department of Environmental Management (IDEM), Office of Environmental Response (OER), Site Investigation Section, "Longitude and Latitude Calculation Worksheet", prepared by Holly Grejda, Re: Super Auto Salvage Yard, South Bend, St. Joseph County, Indiana.

5. United States Department of Agriculture, Soil Conservation Service, Soil Survey of St. Joseph County, Indiana, November 1977.

6. Federal Emergency Management Agency, National Flood Insurance Program, Firm Flood Insurance Rate Map, City of South Bend, Indiana, Panel 6 of 7, February 17, 1988.

7. IDEM, OER, Site Investigation Section, Office Memorandum, prepared by Holly Grejda, November 24, 1993, Re: Super Auto Salvage Yard Site Visit.

8. Bill Dillon, Engineer, St. Joseph County Water Department, telephone conversation with Holly Grejda, IDEM, OER, Site Investigation Section, November 15, 1993, Re: Local Water Supply.

9. Clyde E. Williams & Associates, Inc., Aerial Blue Line Map, St. Joseph County, Indiana, photographed Spring 1986.

10. United States Department of Commerce, Economics and Statistics Administration, Bureau of the Census, 1990 Census of Population and Housing, Summary Population and Housing Characteristics, Indiana.

11. IDEM, OER, Site Investigation Section, "4-Mile Radius Population Worksheet", prepared by Holly Grejda, October 4, 1993, Re: Super Auto Salvage Yard, South Bend, St. Joseph County, Indiana.

12. Cloyce L. Hedge, Coordinator, Indiana Natural Heritage Data Center, Indiana Department of Natural Resources, letter correspondence with Holly Grejda, IDEM, OER, Site Investigation Section, November 12, 1993, Re: Sensitive Environments.

13. IDEM, OER, Site Investigation Section, Photodocumentation Log, prepared by Holly Grejda, November 12, 1993, Re: Super Auto Salvage Yard.

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12-14-90
Vol. 55 No. 241

federal register

Friday
December 14, 1990

Book 2

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(ISSN 0097-6326)

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United States
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Agency

Office of Emergency and
Remedial Response
Washington, DC 20460

EPA/540/G-91/013
September 1991

EPA

Guidance for Performing Preliminary Assessments Under CERCLA

4-MILE RADIUS MAP

The 4-Mile Radius Map for the Super Auto Salvage Yard, South Bend, St. Joseph County, Indiana utilizes U.S. Geological Survey, 7.5 minute topographic quadrangle maps of Indiana: Lakeville, Inc. 1974, photorevised 1980; South Bend East, Ind. 1969, photorevised 1986; South Bend West, Ind. 1969, photorevised 1986 and; Wyatt, Ind. 1961, photorevised 1980.

The 4-Mile Radius Map for the site is located in Appendix E of the Preliminary Assessment Report.

LONGITUDE AND LATITUDE CALCULATION WORKSHEET

SITE: SUPER AUTO SALVAGE YARD

ADDRESS: 3300 SOUTH MAIN STREET
SOUTH BEND, INDIANA
ST. JOSEPH COUNTY

EPAID#: IND984928440

TOPOGRAPHIC MAP USED: SOUTH BEND WEST

LONGITUDE:

$$\frac{2.5\text{ MIN}}{14.45\text{ CM}} = \frac{x\text{ MIN}}{.8\text{ CM}} \qquad 2 = 14.45x \Rightarrow \frac{2}{14.45} = .1384083$$

$$\begin{array}{r} 86^\circ\ 15'\ 00.00'' \\ +\quad 0'\ \ 8.30'' \\ \hline 86^\circ\ 15'\ 8.30'' \end{array}$$

LATITUDE:

$$\frac{2.5\text{ MIN}}{19.2\text{ CM}} = \frac{x\text{ MIN}}{8\text{ CM}} \qquad 20 = 19.2x \Rightarrow \frac{20}{19.2} = 1.0416667$$

$$\begin{array}{r} 41^\circ\ 37'\ 30.00'' \\ +\quad 1\ \ 2.50'' \\ \hline 41^\circ\ 38'\ 32.50'' \end{array}$$

COMPLETED BY: Holly Siejk **DATE:** _____

TOWNSHIP 37 NORTH
RANGE 2 EAST
SECTION 24

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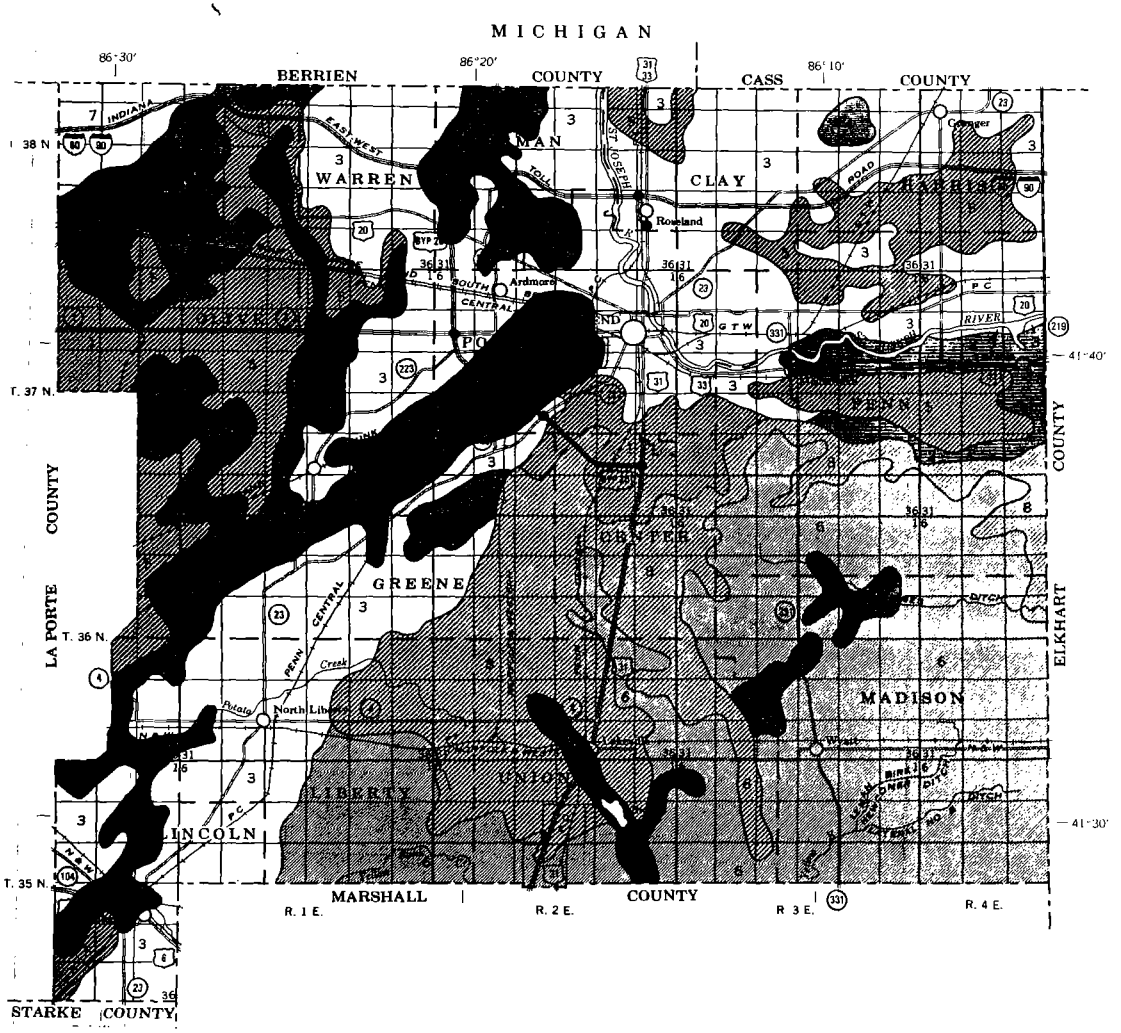
SOIL SURVEY OF

St. Joseph County, Indiana

United States Department of Agriculture
Soil Conservation Service

In cooperation with
Purdue University
Agricultural Experiment Station



SOIL ASSOCIATIONS

DOMINANTLY WELL-DRAINED TO EXCESSIVELY DRAINED, NEARLY LEVEL TO STRONGLY SLOPING SOILS

1 — *Hillsdale-Oshtemo-Chelsea* association: Deep, nearly level to strongly sloping, well-drained and excessively drained, moderately coarse textured and coarse textured soils on till plains, moraines, outwash plains, and terraces

2 — Oshtemo-Fox association: Nearly level to strongly sloping, well-drained, moderately coarse textured soils that are deep and moderately deep over sand and gravelly sand; on outwash plains and terraces

3 — Tyner-Oshtemo association: Deep, nearly level to strongly sloping, well-drained, coarse textured and moderately coarse textured soils on outwash plains and terraces

4 — Coupee-Tracy association: Deep, nearly level to moderately sloping, well-drained, medium-textured and moderately coarse textured soils on outwash plains and terraces

DOMINANTLY SOMEWHAT POORLY DRAINED TO VERY POORLY DRAINED, NEARLY LEVEL, GENTLY SLOPING, AND DEPRESSIONAL SOILS

5 — Rensselaer-Gilford-Maumee association: Deep, depressional and nearly level, very poorly drained, medium-textured, moderately coarse textured, and coarse textured soils on outwash plains

6 — Crosier-Brookston-Milford association: Deep, depressional and nearly level to gently sloping, somewhat poorly drained to very poorly drained, medium-textured to moderately fine textured soils on till plains and lake plains

DOMINANTLY WELL-DRAINED TO SOMEWHAT POORLY DRAINED, NEARLY LEVEL TO STRONGLY SLOPING SOILS

7 — Morley-Blount association: Deep, nearly level to strongly sloping, well-drained to somewhat poorly drained, medium-textured to moderately fine textured soils on till plains and moraines

8 — Riddles-Miami-Crosier association: Deep, nearly level to strongly sloping, well-drained and somewhat poorly drained, medium-textured and moderately fine textured soils on till plains

DOMINANTLY VERY POORLY DRAINED, DEPRESSIONAL AND NEARLY LEVEL, ORGANIC SOILS

9 — Houghton-Adrian-Palms association: Deep, depressional and nearly level, very poorly drained, organic soils on lake plains, outwash plains, and till plains

Compiled 1976

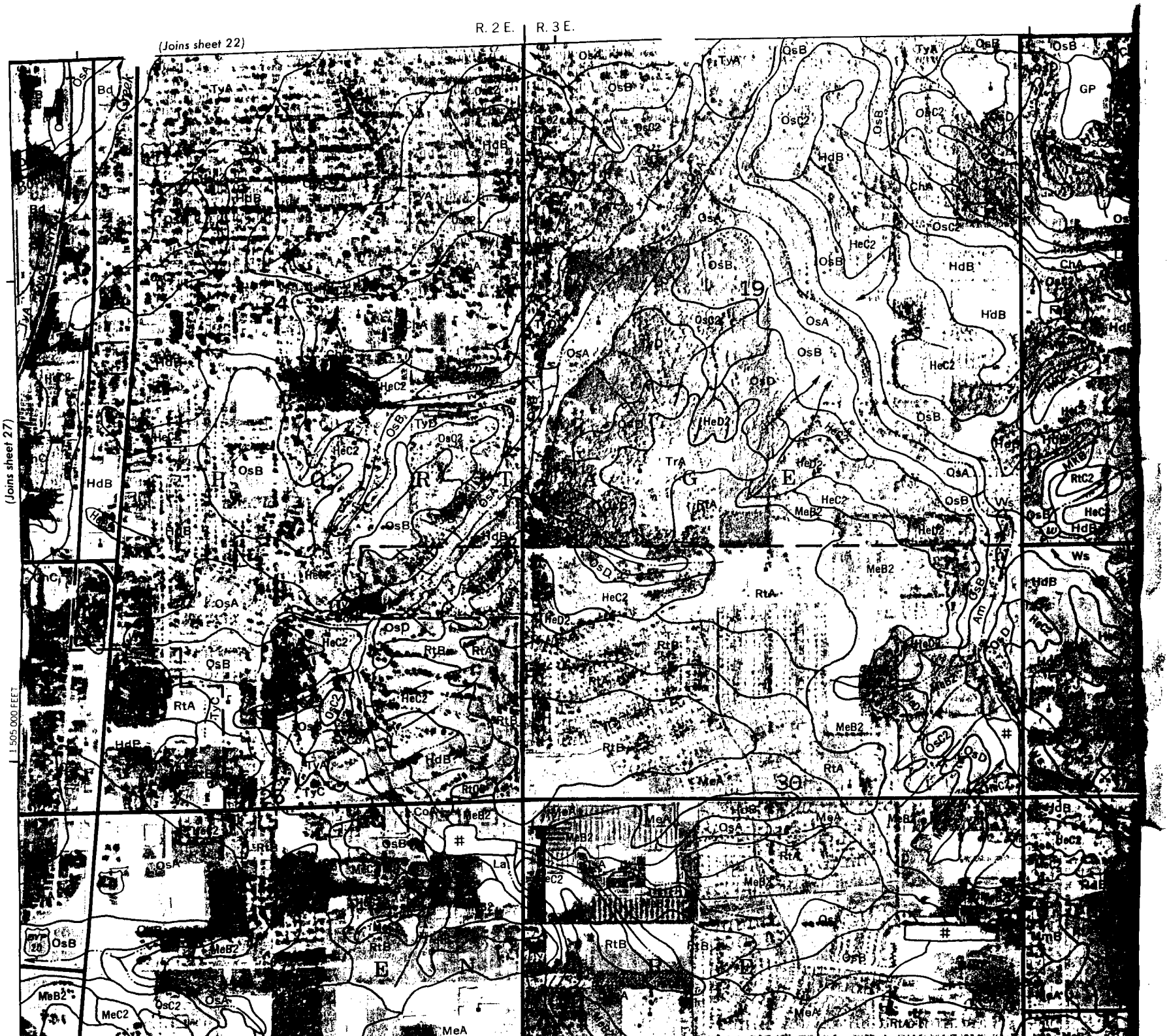
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
PURDUE UNIVERSITY AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP
ST. JOSEPH COUNTY, INDIANA

Scale 1:190,080
1 0 1 2 3 4 Miles

SECTIONALIZED TOWNSHIP
6 5 4 3 2 1

REF. 5, PAGE 2 OF 10



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The soils have slight or moderate limitations for septic tank absorption fields where slopes are less than 12 percent and severe limitations where slopes are more than 12 percent. Pollution of underground water supplies is a hazard on Oshtemo and Chelsea soils, however, especially near shallow wells. The soils have slight limitations for most other nonfarm uses.

2. *Oshtemo-Fox association*

Nearly level to strongly sloping, well-drained, moderately coarse textured soils that are deep and moderately deep over sand and gravelly sand; on outwash plains and terraces

This association makes up about 2 percent of the county. About 60 percent of the association is Oshtemo soils, 20 percent is Fox soils, and the remaining 20 percent is minor soils.

Oshtemo soils are deep, nearly level to strongly sloping, and well drained. They are on outwash plains and terraces. The surface and subsurface layers are very dark grayish-brown and dark-brown sandy loam about 16 inches thick. The subsoil is 38 inches thick. It is dark-brown, firm gravelly sandy clay loam in the upper 12 inches and strong-brown, friable loamy sand in the lower 26 inches. The underlying material is light yellowish-brown, stratified sand and gravelly sand that extends to a depth of 60 inches.

Fox soils are moderately deep over sand and gravelly sand, nearly level to moderately sloping, and well drained. They are on outwash terraces. The surface layer is dark-brown sandy loam about 8 inches thick. The subsurface layer is brown gravelly sandy loam 4 inches thick. The subsoil is 26 inches thick. It is dark-brown, firm gravelly sandy clay loam in the upper 8 inches; strong-brown, friable sandy loam in the next 6 inches; and dark-brown, firm gravelly clay loam in the lower 12 inches. The underlying material is yellowish-brown sand and gravelly sand that extends to a depth of 60 inches.

Minor soils in this association are Elston and Dickinson soils on outwash plains and terraces and Landes soils on bottom land.

The soils in this association are used mainly for woodland and pasture. Some areas are used for crops. These soils tend to be droughty in years when rainfall is below normal.

Limitations for septic tank absorption fields are slight where slopes are 0 to 6 percent, moderate where slopes are 6 to 12 percent, and severe where slopes are more than 12 percent. Pollution of underground water supplies is a hazard, however, especially near shallow wells. The soils have slight limitations for most other nonfarm uses.

3. *Tyner-Oshtemo association*

Deep, nearly level to strongly sloping, well-drained, coarse textured and moderately coarse textured soils on outwash plains and terraces

The association makes up about 31 percent of the county. About 45 percent of the association is Tyner soils, 40 percent is Oshtemo soils, and the remaining 15 percent is minor soils (fig. 2).

Tyner soils are deep, nearly level to strongly sloping, and well drained. They are on outwash plains and terraces. The surface layer is very dark brown loamy sand about 9 inches thick. The subsoil is 35 inches thick. It is dark-brown, very friable loamy sand in the upper 16 inches and dark yellowish-brown, very friable loamy sand in the lower 19 inches. The underlying material is yellowish-brown and dark-brown sand that extends to a depth of 70 inches.

Oshtemo soils are deep, nearly level to strongly sloping, and well drained. They are on outwash plains and terraces. The surface and subsurface layers are very dark grayish-brown and dark-brown sandy loam about 16 inches thick. The subsoil is 38 inches thick. It is dark-brown, firm gravelly sandy clay loam in the upper 12 inches and strong-brown, friable loamy sand in the lower 26 inches. The underlying material is light yellowish-brown, stratified sand and gravelly sand that extends to a depth of 60 inches.

Minor soils in this association are Chelsea, Brems, Maumee, Brady, and Tedrow soils on outwash plains and Fox and Tracy soils on outwash plains and terraces.

About 15 percent of this association is in crops. The rest is in pasture, woodland, housing subdivisions, and industrial developments. The woodland is on the steeper soils and along the St. Joseph River.

Droughtiness and soil blowing are the main limitations of the soils for farming. Using crop residue, winter cover crops, and green-manure crops helps reduce soil blowing and conserve soil moisture.

The soils have slight or moderate limitations for septic tank absorption fields where slopes are less than 12 percent and severe limitations where slopes are more than 12 percent. Pollution of underground water supplies is a hazard, however, especially near shallow wells. The soils have slight limitations for most other nonfarm uses.

4. *Coupee-Tracy association*

Deep, nearly level to moderately sloping, well-drained, medium-textured and moderately coarse textured soils on outwash plains and terraces

The association makes up about 7 percent of the county. About 60 percent of the association is Coupee soils, 35 percent is Tracy soils, and the remaining 5 percent is minor soils.

Coupee soils are deep, nearly level, and well drained. They are on outwash plains. The surface layer is black silt loam about 14 inches thick. The subsoil is 38 inches thick. It is brown, friable heavy silt loam in the upper 7 inches; brown, firm light clay loam in the next 5 inches; dark yellowish-brown, firm light clay loam in the next 7 inches; and dark-brown loamy sand and sand in the lower 19 inches. The underlying material is stratified fine sand, sand, and very shaly coarse sand that extends to a depth of 72 inches.

Tracy soils are deep, nearly level to moderately sloping, and well drained. They are on outwash plains and terraces. The surface layer is dark grayish-brown sandy loam about 9 inches thick. The subsoil is 33 inches thick. It is brown, firm loam in the upper 7 inches; dark-brown, firm loam in the next 6 inches; dark-brown, friable sandy loam in the next 5 inches;

REF. 5, PAGE 5 OF 10

of 2 to 4 feet. Seasonal wetness is the major concern in management.

This soil is suited to corn and soybeans and to grasses and legumes for forage. The soil has limitations for most nonfarm uses. Capability unit IVs-1; woodland group 3s17.

Brookston Series

The Brookston series consists of deep, very poorly drained soils on till plains. These soils are mainly in depressions on broad flats. They formed in glacial till. The native vegetation was water-tolerant hardwoods and grass.

In a representative profile, the surface layer is very dark gray silty clay loam about 15 inches thick. The subsoil is 31 inches thick. It is mottled, dark-gray, firm clay loam in the upper 8 inches; mottled, gray, firm clay loam in the next 13 inches; and mottled, yellowish-brown, firm clay loam in the lower 10 inches. The underlying material is mottled, brown loam that extends to a depth of 72 inches.

Brookston soils have moderate permeability and a high available water capacity. The organic-matter content is high in the surface layer. Runoff is very slow or ponded.

Representative profile of Brookston silty clay loam, in a cultivated field 1,620 feet east and 50 feet north of the SW corner of sec. 6, T. 36 N., R. 4 E.

Ap—0 to 9 inches, very dark gray (10YR 3/1) silty clay loam; weak, medium, granular structure; friable; slightly acid; abrupt, smooth boundary.

A12—9 to 15 inches, very dark gray (10YR 3/1) silty clay loam; few, fine, distinct, dark yellowish-brown (10YR 4/4) mottles and few, fine, faint, dark-gray (10YR 4/1) mottles; moderate, medium, subangular blocky structure; firm; slightly acid; clear, smooth boundary.

B21tg—15 to 23 inches, dark-gray (10YR 4/1) clay loam; common, medium, distinct, yellowish-brown (10YR 5/6) mottles and few, fine, faint, grayish-brown (2.5Y 5/2) mottles; moderate, coarse, subangular blocky structure; firm; common, discontinuous, faint, thin, very dark gray (10YR 3/1) clay films on faces of peds; neutral; gradual, wavy boundary.

B22tg—23 to 36 inches, gray (5Y 5/1) clay loam; common, medium, distinct, light olive-gray (5Y 6/2) mottles and few, medium, distinct, yellowish-brown (10YR 5/6) mottles; moderate, medium, subangular blocky structure; firm; common, discontinuous, distinct, thin, dark-gray (10YR 4/1) clay films on faces of peds; neutral; clear, wavy boundary.

B3—36 to 46 inches, yellowish-brown (10YR 5/4) clay loam; many, medium, prominent, gray (5Y 5/1) mottles; weak, coarse, subangular blocky structure; firm; few pebbles about 25 millimeters in size; mildly alkaline; gradual, wavy boundary.

C—46 to 72 inches, brown (10YR 5/3) loam; many, coarse, prominent, gray (5Y 5/1) mottles; massive; friable; few pebbles smaller than 25 millimeters; strongly effervescent; moderately alkaline.

The solum is 30 to 50 inches thick. The Ap and A12 horizons are black (10YR 2/1), very dark gray (10YR 3/1), or very dark grayish brown (10YR 3/2). The A12 horizon has few to many, faint to prominent mottles that have a hue of 10YR and 5Y.

Brookston soils are associated on the landscape with the somewhat poorly drained Crosier soils, the poorly drained Milford soils, and the very poorly drained Rensselaer soils, and they have wetness characteristics similar to those of the Milford and Rensselaer soils. Brookston soils are grayer than Crosier soils. They have a B2 horizon of clay loam, but Milford soils have a B2 horizon of silty clay loam. Brookston soils lack the stratified B3 and C horizons of Rensselaer soils.

Br—Brookston silty clay loam. This soil is in irregularly shaped areas on broad, depressional flats. The areas range from 2 to 1,680 acres but average 80 acres.

Included in mapping are areas, less than 2 acres in size, of poorly drained Milford soils, very poorly drained Rensselaer soils, and nearly level, somewhat poorly drained Crosier soils. Also included are soils that have a surface layer of loam or silt loam.

This soil has a seasonal high water table within 1 foot of the surface. Wetness is the major concern in management.

Most areas of this soil are used for farming. Some are used for special crops. If it is adequately drained, the soil is well suited to continuous cultivated crops, but it has severe limitations for most nonfarm uses. Capability unit IIw-1; woodland group 2w11.

Chelsea Series

The Chelsea series consists of deep, excessively drained, nearly level, gently sloping and moderately sloping soils on outwash plains. These soils are mainly on convex side slopes between nearly level to moderately sloping soils. The native vegetation was mixed hardwoods.

In a representative profile, the surface layer is dark-brown fine sand about 6 inches thick. The subsurface layer is light yellowish-brown fine sand 27 inches thick. The layer below that extends to a depth of 87 inches. It is light yellowish-brown, loose fine sand with bands of dark-brown friable sandy loam, 1/8 inch to 1 inch wide and 1 to 4 inches apart.

Chelsea soils have rapid permeability and low available water capacity. The organic-matter content is moderate in the surface layer. Runoff is slow to medium.

Representative profile of Chelsea fine sand, 5 to 10 percent slopes, in a sparsely wooded area, 1,140 feet east and 640 feet north of the SW corner of sec. 9, T. 38 N., R. 3 E.

Ap—0 to 6 inches, dark-brown (10YR 4/3) fine sand; weak medium, granular structure; friable; strongly acid; abrupt, smooth boundary.

A2—6 to 33 inches, light yellowish-brown (10YR 6/4) fine sand; single grained; loose; medium acid; clear wavy boundary.

A&B2—33 to 87 inches, light yellowish-brown (10YR 6/4) fine sand (A part); many yellow (10YR 7/6) sand grains; single grained; loose; bands of dark brown (7.5YR 4/4) sandy loam (B part), 1 to 4 inches apart and 1/8 to 1 inch thick, decreasing in thickness with depth; weak, medium, subangular blocky structure; friable; strongly acid.

The solum is 4 to 7 feet thick. The Ap horizon is very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2) or dark brown (10YR 4/3). In some profiles there is an A1 horizon, which is very dark gray (10YR 3/1) or dark grayish brown (10YR 4/2). In most profiles there is an A2 horizon, which is medium acid or strongly acid.

The A part of the A&B2 horizon is light yellowish brown (10YR 6/4) or yellowish brown (10YR 5/4). The B bands are brown (10YR 4/3), dark yellowish-brown (10YR 4/4) or dark-brown (7.5YR 4/4) loamy sand or sandy loam. In

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some profiles the B bands are 1/4 inch to 2 inches thick, but the total thickness is not more than 6 inches within 60 inches.

Chelsea soils are associated on the landscape with the well-drained Tyner and Oshtemo soils. Chelsea soils are coarser textured than Tyner and Oshtemo soils.

ChA—Chelsea fine sand, 0 to 5 percent slopes. This soil is in irregularly shaped areas on broad flats. The areas range from 2 to 20 acres but average 10 acres. This soil has a profile similar to the one described as representative of the series, but its surface layer is thicker.

Included in mapping are small areas of nearly level and gently sloping Tyner loamy sand.

Droughtiness and soil blowing are the major concerns in management. Wind blows the dry sand particles, which damages crops.

This soil is poorly suited to row crops, grasses, and legumes. It has slight limitations for most nonfarm uses. Capability unit IIIs-1; woodland group 3s17.

ChC—Chelsea fine sand, 5 to 10 percent slopes. This soil is on broad side slopes at a higher elevation than surrounding soils. It is in irregularly shaped areas on outwash plains. The areas range from 2 to 240 acres but average 30 acres. This soil has the profile described as representative of the series.

Included in mapping are small areas of moderately sloping and strongly sloping Tyner loamy sand and gently sloping to moderately sloping Oshtemo sandy loam. Also included are soils that are fine sand throughout and small areas where wind has removed soil material and formed circular depressions called blowouts.

Droughtiness and soil blowing are the major concerns in management. Wind blows the dry sand particles, which damages crops.

This soil is poorly suited to row crops, grasses, and legumes. It has moderate limitations, because of slope, for most nonfarm uses. Capability unit IIIe-12; woodland group 3s17.

Coupee Series

The Coupee series consists of deep, well-drained, nearly level soils on outwash plains. These soils are mainly on broad flats. They formed in loamy outwash and the underlying sandy outwash. The native vegetation was tall prairie grasses.

In a representative profile, the surface layer is black silt loam about 14 inches thick. The subsoil is 38 inches thick. It is brown, friable heavy silt loam in the upper 7 inches; brown, firm light clay loam in the next 5 inches; dark yellowish-brown, firm light clay loam in the next 7 inches; and dark-brown loamy sand and sand in the lower 19 inches. The underlying material is pale-brown, stratified fine sand, sand, and very shaly coarse sand that extends to a depth of 72 inches.

Coupee soils have moderate permeability and a moderate available water capacity. The organic-matter content is high in the surface layer. Runoff is slow.

Representative profile of Coupee silt loam, 0 to 2 percent slopes, in a cultivated field, 300 feet west and 120 feet south of the center of NE¼ sec. 30, T. 38 N., R. 1 E.

Ap—0 to 10 inches, black (10YR 2/1) silt loam; moderate, fine, granular structure; friable; neutral; abrupt, smooth boundary.

A12—10 to 14 inches, black (10YR 2/1) silt loam; moderate, medium, granular structure; friable; medium acid; clear, wavy boundary.

B1—14 to 21 inches, brown (10YR 5/3) heavy silt loam; moderate, medium and fine, subangular blocky structure; friable; very dark grayish-brown (10YR 3/2) organic coatings on faces of most peds; many, very fine, random, inped, continuous pores; discontinuous very dark brown (10YR 2/2) linings in pores and old root channels; strongly acid; clear, wavy boundary.

B21t—21 to 26 inches, brown (10YR 4/3) light clay loam; moderate, medium, subangular blocky structure; firm; thin, discontinuous, dark-brown (10YR 3/3) clay films on faces of peds; common, very fine, random, inped, continuous pores; discontinuous very dark grayish-brown (10YR 3/2) linings in pores and old root zones; few fine pebbles 1/2 inch and less in diameter; medium acid; clear, wavy boundary.

B22t—26 to 33 inches, dark yellowish-brown (10YR 4/4) light clay loam; moderate, coarse and medium, subangular blocky structure; firm; few, fine, random, inped, continuous pores; discontinuous dark-brown (10YR 3/3) linings in pores; thin, discontinuous, brown (10YR 4/3) clay films on faces of peds; few fine pebbles about 1/2 inch in diameter; medium acid; clear, wavy boundary.

IIB3—33 to 52 inches, dark-brown (7.5YR) 4/4) stratified loamy sand and medium to coarse sand; weak, coarse, subangular blocky structure and single grained; very friable and loose; thin, discontinuous, very dark grayish-brown (10YR 3/2) clay films as bridging and as coatings on some sand grains; 10 to 15 percent pebbles 1/2 to 1 inch in diameter; common shale fragments; strongly acid; clear, wavy boundary.

IIC—52 to 72 inches, stratified pale-brown (10YR 6/3) fine sand, sand, and very shaly coarse sand; single grained; loose; 5 percent fine gravel in the fine sand and sand; 50 percent fine shale in the shaly coarse sand; strongly acid.

The solum is 40 to 60 inches thick. Depth to the IIB3 horizon ranges from 30 to 40 inches. The A horizon is black (10YR 2/1), very dark gray (10YR 3/1), or very dark grayish brown (10YR 3/2). The B2t horizon is clay loam or heavy sandy clay loam. It is medium acid or strongly acid. The C horizon ranges from strongly acid to neutral.

Coupee soils are associated on the landscape with the well-drained Tracy and Troxel soils. Coupee soils have a thicker, darker A horizon than Tracy soils. They have a thinner A horizon than Troxel soils.

CoA—Coupee silt loam, 0 to 2 percent slopes. This soil is in irregularly shaped areas on broad flats. The areas range from 20 to 2,100 acres but average 640 acres.

Included in mapping are areas, less than 2 acres in size, of nearly level, well-drained Tracy and Troxel soils. The Tracy soils have a lighter colored surface layer, and the Troxel soils are in slight depressions.

Droughtiness is the major concern in management. The soil is suited to most crops commonly grown in the county and has slight limitations for most nonfarm uses. Capability unit IIs-2; woodland group o23.

Crosier Series

The Crosier series consists of deep, somewhat poorly drained, nearly level to gently sloping soils on uplands. These soils are mainly on broad till plains adjacent to low depressions and along drainageways. They formed

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Hillsdale Series

The Hillsdale series consists of deep, well-drained, nearly level to strongly sloping soils on till plains and moraines. These soils are mainly between soils that formed in glacial till and those that formed in outwash. They formed in sandy loam glacial till. The native vegetation was mixed hardwoods.

In a representative profile, the surface layer is dark grayish-brown sandy loam about 8 inches thick. The subsurface layer is brown sandy loam 4 inches thick. The subsoil is 51 inches thick. It is dark-brown, firm sandy clay loam in the upper 12 inches; dark-brown, firm heavy sandy loam in the next 9 inches; yellowish-brown, friable sandy loam in the next 6 inches; yellowish-brown, friable light sandy loam in the next 13 inches; and friable loamy sand in the lower 11 inches. The underlying material is yellowish-brown sandy loam that extends to a depth of 72 inches.

Hillsdale soils have moderate permeability and a moderate available water capacity. The organic-matter content is moderate in the surface layer. Runoff is slow to rapid.

Representative profile of Hillsdale sandy loam, 2 to 6 percent slopes, in a cultivated field, 345 feet south and 1,340 feet west of the NE corner of SW¼ sec. 10, T. 36 N., R. 2 E.

Ap—0 to 8 inches, dark grayish-brown (10YR 4/2) sandy loam; weak, fine, granular structure; friable; medium acid; abrupt, smooth boundary.

A2—8 to 12 inches, brown (10YR 5/3) sandy loam; moderate, fine, subangular blocky structure; friable; medium acid; clear, smooth boundary.

B21t—12 to 24 inches, dark-brown (7.5YR 4/4) sandy clay loam; moderate, medium, subangular blocky structure; firm; thin clay films on all faces of peds; few pebbles ½ to 1 inch in diameter throughout horizon; slightly acid; gradual, smooth boundary.

B22t—24 to 33 inches, dark-brown (7.5YR 4/4) heavy sandy loam; moderate, medium, subangular blocky structure; firm; common thin clay films; slightly acid; gradual, smooth boundary.

B23t—33 to 39 inches, yellowish-brown (10YR 5/4) sandy loam; weak, medium, subangular blocky structure; friable; clay bridgings on sand grains; few pebbles 1 to 3 inches in diameter; slightly acid; gradual, wavy boundary.

B31—39 to 52 inches, yellowish-brown (10YR 5/4) light sandy loam; weak, fine, subangular blocky structure; friable; medium acid; gradual, wavy boundary.

B32—52 to 63 inches, yellowish-brown (10YR 5/4) stratified loamy sand and silt loam; massive; friable; slightly acid; gradual, wavy boundary.

C—63 to 72 inches, yellowish-brown (10YR 5/4) sandy loam; massive; very friable; neutral.

The solum is 42 to 72 inches thick. The Ap horizon is dark grayish brown (10YR 4/2), grayish brown (10YR 5/2), or brown (10YR 5/3). The Bt horizon is sandy clay loam or sandy loam. The C horizon is sandy loam or stratified sandy loam and loamy sand that has some pockets of sand. It is neutral or mildly alkaline.

Hillsdale soils are associated on the landscape with the well-drained Riddles and Oshtemo soils. Hillsdale soils have a coarser textured B horizon than Riddles soils. Unlike Oshtemo soils, they are not underlain by stratified sand and gravelly sand.

HdA—Hillsdale sandy loam, 0 to 2 percent slopes. This soil is in irregularly shaped areas on broad flats. The areas range from 2 to 40 acres but average 10 acres. This soil has a profile similar to the one described as representative of the series, but its surface layer i thicker in some places.

Included in mapping are areas of some soils tha have a surface layer of loam. Also included are sma areas of nearly level, well-drained Oshtemo and Riddle soils.

Droughtiness is the major concern in managemen

Most areas of this soil are used for cash-grain farm ing. The soil is suited to most crops commonly grown i the county and has slight limitations for most non farm uses. Capability unit IIs-5; woodland group 1r2

HdB—Hillsdale sandy loam, 2 to 6 percent slopes This soil is in irregularly shaped areas on knolls an gently rolling side slopes. The areas range from 2 t 100 acres but average 20 acres. This soil has the pro file described as representative of the series.

Included in mapping are small areas of gently slop ing, well-drained Riddles soils and well-draine Oshtemo soils.

Droughtiness and erosion are the major concerns i management.

Most areas of this soil are cultivated. The soil i suited to most crops commonly grown in the count and has slight limitations for most nonfarm uses Capability unit IIe-11; woodland group 1r2.

HeC2—Hillsdale complex, 6 to 12 percent slopes eroded. The complex is in elongated areas on shor side slopes and knolls. The areas range from 2 to 6 acres but average 10 acres.

Hillsdale soil makes up about 60 percent of the com plex. It has a profile similar to the one described a representative of the series, but its surface layer i thinner and some of the dark-brown sandy clay loam subsoil is mixed with it. Other soils in the complex ar Oshtemo sandy loam, Riddles loam, Miami loam, an Miami clay loam.

Included in mapping are moderately steep an moderately sloping soils, severely eroded soils, an soils that are not eroded.

Droughtiness and erosion are the major concerns i management.

Most areas are in permanent pasture, but the com plex is suited to most crops commonly grown in th county where erosion is adequately controlled. Becaus of slope, it has moderate limitations for most nonfarn uses. Capability unit IIIe-15; woodland group 1r2.

HeD2—Hillsdale complex, 12 to 18 percent slopes eroded. This complex is on short knolls and elongate side slopes. The areas range from 2 to 40 acres bu average 10 acres.

Hillsdale soil makes up about 50 percent of th complex. It has a profile similar to the one describe as representative of the series, but its surface layer i thinner and some of the dark-brown sandy clay loan subsoil is mixed with it. Other soils in the complex ar Oshtemo sandy loam, Riddles loam, Miami loam, an Miami clay loam.

Included in mapping are moderately steep an moderately sloping soils, severely eroded soils, an soils that are not eroded.

Erosion is the major concern in management.

Most areas of this complex are in permanent pastur

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ture; friable; few very fine roots; 5 percent shale fragments; medium acid; clear, wavy boundary.

IIB3b—80 to 91 inches, grayish-brown (10YR 5/2) loam; common, medium, distinct, yellowish-brown (10YR 5/6) mottles; massive; firm; many very dark brown (10YR 2/2) stains in old root channels; 5 percent shale fragments; medium acid.

The solum is 48 to more than 90 inches thick. The Ap and A12 horizon are very dark brown (10YR 2/2) or black (10YR 2/1). The IIA1b horizon ranges from black (10YR 2/1) to very dark grayish brown (10YR 3/2). The IIB horizon is loam, clay loam, light clay loam, or sandy loam and is medium acid or strongly acid. The C horizon is loose sand.

Troxel soils formed in the same kind of material and are associated on the landscape with the well-drained Coupee and Tracy soils. Troxel soils have a thicker A horizon than those soils.

Tx—Troxel silt loam. This soil is in slightly depressed, oval-shaped basins along drainageways. The areas range from 2 to 50 acres but average 4 acres. Slopes are 0 to 2 percent.

Included in mapping are areas, less than 2 acres in size, of nearly level and gently sloping, well-drained Coupee and Tracy soils. Also included are soils that have a surface layer of loam.

This soil is used for corn and soybeans. It is well suited to all crops commonly grown in the county and to grasses and legumes for forage. The soil has slight limitations for most nonfarm uses. Capability unit I-1; woodland group o23.

Tyner Series

The Tyner series consists of deep, well-drained, nearly level to strongly sloping soils on outwash plains and terraces. These soils are mainly on raised flats and ridges. They formed in sandy outwash. The native vegetation was mainly mixed hardwoods.

In a representative profile, the surface layer is dark-brown loamy sand about 9 inches thick. The subsoil is 35 inches thick. It is dark yellowish-brown, very friable loamy sand in the upper 16 inches and dark-brown, very friable loamy sand in the lower 19 inches. The underlying material extends to a depth of 70 inches. It is yellowish-brown sand in the upper 16 inches and dark-brown sand in the lower 10 inches.

Tyner soils have rapid permeability and a low available water capacity. The organic-matter content is moderate in the surface layer. Runoff is slow or medium.

Representative profile of Tyner loamy sand, 0 to 6 percent slopes, in a cultivated field, 500 feet east and 120 feet north of SW corner of SE¼ sec. 27, T. 38 N., R. 3 E.

Ap—0 to 9 inches, dark-brown (10YR 3/3) loamy sand, pale brown (10YR 6/3) dry; weak, fine, granular structure; very friable; strongly acid; abrupt, smooth boundary.

B21—9 to 25 inches, dark yellowish-brown (10YR 4/4) loamy sand; weak, fine, subangular blocky structure; very friable; 5 percent rounded pebbles and shale fragments; strongly acid; clear, wavy boundary.

B22—25 to 44 inches, dark-brown (7.5YR 4/4) loamy sand; weak, medium, subangular blocky structure; very friable; 5 percent rounded pebbles and shale fragments; strongly acid; clear, wavy boundary.

C1—44 to 60 inches, yellowish-brown (10YR 5/6) sand; single grained; loose; many sand-sized shale fragments; strongly acid; clear, wavy boundary.

C2—60 to 70 inches, dark-brown (10YR 3/4) sand; single grained; loose; many sand-sized shale fragments; medium acid.

The solum is 36 to 60 inches thick. The Ap or A1 horizon is dark brown (10YR 3/3) or brown (10YR 4/3). It is slightly acid to strongly acid. The B22 horizon is loamy sand or sand. The C1 and C2 horizons are medium acid or strongly acid.

Tyner soils are associated on the landscape with the excessively drained Chelsea soils, the well-drained Oshtemo soils, and the moderately well-drained Brems soils. Tyner soils have a finer textured solum than Chelsea soils, and they lack bands. They have a coarser textured solum than Oshtemo soils. Unlike Brems soils, Tyner soils are not mottled.

TyA—Tyner loamy sand, 0 to 6 percent slopes. This soil is in irregularly shaped areas on broad flats. The areas range from 2 to 3,600 acres but average 120 acres. This soil has the profile described as representative of the series.

Included in mapping are areas, less than 2 acres in size, of nearly level, well-drained Oshtemo soils and nearly level, moderately well drained Brems soils.

Droughtiness is the major concern in management. Soil blowing is a hazard when the soil is dry if it has no protective cover.

Most areas of this soil are used for urban development. Some are used for cash-grain farming, but the soil is not well suited to this use. The soil has slight limitations for most nonfarm uses. Capability unit IIIs-1; woodland group 3s17.

TyC—Tyner loamy sand, 6 to 12 percent slopes. This soil is in elongated areas that range from 2 to 70 acres but average 10 acres. Slopes are short. This soil has a profile similar to the one described as representative of the series, but because of erosion, its surface layer is thinner and is mixed with some dark yellowish-brown material from the subsoil.

Included in mapping are areas, less than 2 acres in size, of moderately sloping, well-drained Oshtemo soils and soils that have slopes of less than 6 percent.

Droughtiness and slope are the major concerns in management. Soil blowing is a hazard when the soil is dry if it has no protective cover.

Most areas of this soil are used for urban development, but a few are used for cash-grain farming. The soil has moderate limitations for most nonfarm uses. Capability unit IVe-12; woodland group 3s17.

TyD—Tyner loamy sand, 12 to 18 percent slopes. This soil is in elongated areas on low ridges on outwash flats. The areas range from 2 to 80 acres but average 8 acres. Slopes are short. This soil has a profile similar to the one described as representative of the series, but its surface layer is thinner, and it is shallower to the underlying material. Some dark yellowish-brown material from the subsoil is mixed with the surface layer.

Included in mapping are areas, less than 2 acres in size, of strongly sloping, well-drained Oshtemo soils and soils that have slopes of more than 18 percent.

Droughtiness and slope are the major concerns in management.

Most areas of this soil are in woodland along the St. Joseph River. Because of slope, the soil has severe

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form acid solutions that dissolved the lime (calcium carbonate) from the profile and removed the dissolved products by leaching. Hydrogen ions also replaced some of the basic cations held by clay particles in the soil, causing the horizons to become more acid. In the Riddles soil, carbonates have been removed to a depth of 62 inches. Above that depth horizons are quite acid, and below that depth free carbonates are present as shown in the laboratory data by the high pH value (7.9).

The acid soil solution also caused weathering of primary soil minerals to form clay minerals, and the downward movement of the solutions removed clay particles from the A horizon and deposited them in the B2 horizon. Clay movement resulted in a higher percentage of clay in the B2 horizon (28 to 32 percent) than in the A horizon (12 percent). Clay films were deposited on the surfaces of peds in the B horizon when the solutions carrying the clay evaporated, moved into the interior of the peds, or were used by plants. In the classification system, this B horizon is called an argillic horizon, and the soil is in the Alfisol order.

Water moves readily through the Riddles soil. This soil is well aerated and well oxidized, as indicated by the solid dark yellowish-brown color in the upper part of the B2 horizon, which is a result of the coatings of oxidized iron compounds on the soil particles. Organic matter, mainly from tree leaves, accumulated on the surface of the Riddles soil but was incorporated in the upper horizons when the soil was plowed.

These same processes have been operating in the other soils of the county, but at different rates. The genesis of the Hillsdale soil was similar, but it formed in a sandier parent material that may have been influenced more by glacial meltwater.

Climate [6]

The climate of St. Joseph County is modified considerably by Lake Michigan, which is about 30 miles to the northwest. The lake increases cloudiness, snow, and rain and reduces temperature extremes in both summer and winter. Table 13 gives temperature and precipitation data from records kept at South Bend, and table 14 gives probabilities of the last freezing temperatures in spring and the first in fall.

The temperatures at the National Weather Service Office at the South Bend Airport range from 22° below zero, recorded on January 20, 1943, to 109° F, recorded on July 24, 1934. The temperature reaches 90° F or higher on an average of 10 days per year. The temperature is zero or less on an average of 8 days per year. These averages are considerably less than for those areas that are at the same latitude but that are farther west and are not influenced by Lake Michigan.

Precipitation is rather uniform throughout the year; it averages a little less than 2 inches in February and about 3.5 inches in spring and summer. During the average year, 141 days have 0.01 inch or more of precipitation. December and January average 15 such days, but the number declines to 9 per month in the late summer and fall.

Thunderstorms occur on about 43 days a year, most commonly in midsummer. Occasionally they cause high winds and brief heavy rains, and the most severe may cause one or two tornadoes. In a 53-year period, 19 tornadoes have been observed in the county. On April 11, 1965, more than four tornadoes tore through the county and killed a number of people.

From observations over a 9-year period, the lowest average relative humidity, 53 percent, occurs in May at 1 p.m. The highest average, 89 percent, occurs in September at 7 a.m. The relative humidity fluctuates inversely with air temperature on most days.

Heavy fog is reported on an average of 24 days a year. Fog is most prevalent in winter when 2 or 3 days a month have heavy fog. The least fog occurs in summer.

St. Joseph County is near the center of maximum snowfall in Indiana. The average annual snowfall is 66 inches. The maximum occurring in 24 hours is 15.6 inches, which was reported January 26, 1967.

Because this county is near Lake Michigan, there is more cloudiness here than farther south. About 188 days of the year are cloudy, 105 days are partly cloudy, and 72 days are clear.

Winds at 21 feet above the ground average 8 miles per hour in August and 12.4 miles per hour in March, the windiest month of the year. The prevailing wind direction is south-southwest in summer and fall and north-northwest in March and April.

As shown in table 14, the average growing season is 166 days long. The length of the growing season increases toward Lake Michigan by 10 to 20 days.

Additional Facts About the County [7]

The Potowatomi Indians and some Miami Indians were the original inhabitants of St. Joseph County. The first European explorers were Marquette in 1673 and LaSalle in 1679. Pierre Navarre was the first European settler; he established a trading post in South Bend in 1820.

The county was established by the Indiana Legislature in 1830. Mishawaka was incorporated as a town in 1834, and South Bend was incorporated in 1835.

The settlers followed Indian trails in establishing their transportation system. The most important trails were the Portage Trail, from the St. Joseph River to the Kankakee River; the Great Sauk Trail, from Chicago to Detroit; and the Dragoon Trail, from Chicago to Fort Wayne. The Michigan Road, which linked South Bend with Madison, Indiana, was built through the county in 1832.

The first industries in the county were established in the 1830's. The Studebaker Wagon Works was established in 1852, and other large manufacturing firms after that.

[6] By LAWRENCE A. SCHAAL, climatologist for Indiana, National Weather Service, U.S. Department of Commerce, and Purdue University, Agronomy Department.

[7] By JAMES R. GETTINGER, district conservationist, Soil Conservation Service.

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In 1830, the population of St. Joseph County was about 300. It had increased to 28,162 by 1870 and to 245,045 by 1970.

Farming in St. Joseph County is following the national trend to larger farms and fewer operators. The number of farms decreased from 1,442 in 1964 to 1,364 in 1969. The total land used for farm purposes decreased from 197,715 acres in 1964 to 194,835 acres in 1969.

Cash-grain farming is the most important type, but high-value specialty crops are also important. Mint, potatoes, and onions are produced in the county, generally on the muck soils.

St. Joseph County is a key center in the Great Lakes industrial belt. The industry is extremely diversified. More than 36,000 people are employed in more than 350 manufacturing firms, and 55,000 people are employed in nonmanufacturing industries. The county is also a center of trade for north-central Indiana and southwestern Michigan. It has more than 3,300 retail and 500 wholesale establishments.

St. Joseph County is within a highly developed transportation network. The area is served by 68 motor carriers and six railroad systems, as well as the Chicago, South Shore, and South Bend Electric Railway, which runs directly to Chicago. Bus service is provided by six buslines. The St. Joseph County Airport provides major airline service to principal cities of the United States. Major roadways include U.S. Highways 6, 20, 31, and 33; Indiana Highways 2, 4, 23, 123, and 331; the Northern Indiana Toll Road; and Interstate Highways 80 and 90.

Drainage

The drainage divide between the Mississippi Basin and the Great Lakes Basin crosses St. Joseph County. About two-thirds of the county drains into the Kankakee River system, which flows to the Mississippi River, and one third drains into the St. Joseph River system, which flows into Lake Michigan. The principal tributaries of the Kankakee River, which begins in the county, are the Yellow River, Grapevine Ditch, Niespodziany Ditch, Pine Creek, and Yellow Bank Creek. The principal tributaries of the St. Joseph River are Baugo Creek, Juday Creek, Eutzler Ditch, Woodward Ditch, and Bowman Creek.

Water Supply

In St. Joseph County, the water supply for farms, homes, and industry generally comes from wells. In 1962, the Indiana Department of Conservation reported that "adequate quantities of ground water are available for domestic, stock, public, and industrial supplies from sand and gravel of Pleistocene Age." The report also pointed out that the rocks of Devonian and Mississippian Age are a potential source of ground water (*3*).

Direct precipitation and surface water storage is a potential source of irrigation water for high-value specialty crops.

Literature Cited

(1) American Association of State Highway [and Transportation] Officials. 1960. Standard specifications for highway materials and methods of sampling and testing. Ed. 8, 2 vol., illus.

(2) American Society for Testing and Materials. 1974. Method for classification of soils for engineering purposes. ASTM Stand. D 2487-69. *In* 1974 Annual Book of ASTM Standards, Part 19, 464 pp., illus.

(3) Indiana Department of Conservation. 1971. Ground-water resources of northwestern Indiana. Bull. 15., p. 7.

(4) Putnam, John A., George M. Furnival, and J. S. McKnight. 1960. Management and inventory of southern hardwoods. U.S. Dep. Agric. Handb. 181, 102 pp., illus.

(5) Schnur, G. Luther. 1937. Yield, stand, and volume tables for even-aged upland oak forest. U.S. Dep. Agric. Tech. Bull. 560, 88 pp., illus. [Reprinted in 1961]

(6) United States Department of Agriculture. 1951. Soil survey manual. U.S. Dep. Agric. Handb. 18, 503 pp., illus. [Supplement replacing pp. 173-188 issued in May 1962]

(7) ——————— 1960. Soil classification, a comprehensive system, 7th approximation. Soil survey staff. Soil Conservation Service, 265 pp., illus. [Supplement issued March 1967 and September 1968]

Glossary

Aeration, soil. The exchange of air in the soil with air from the atmosphere. The air in a well-aerated soil is similar to that in the atmosphere; but that in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as crumbs, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Available water capacity (also termed available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Calcareous soil. A soil containing enough calcium carbonate (often with magnesium carbonate) to effervesce (fizz) visibly when treated with cold, dilute hydrochloric acid.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

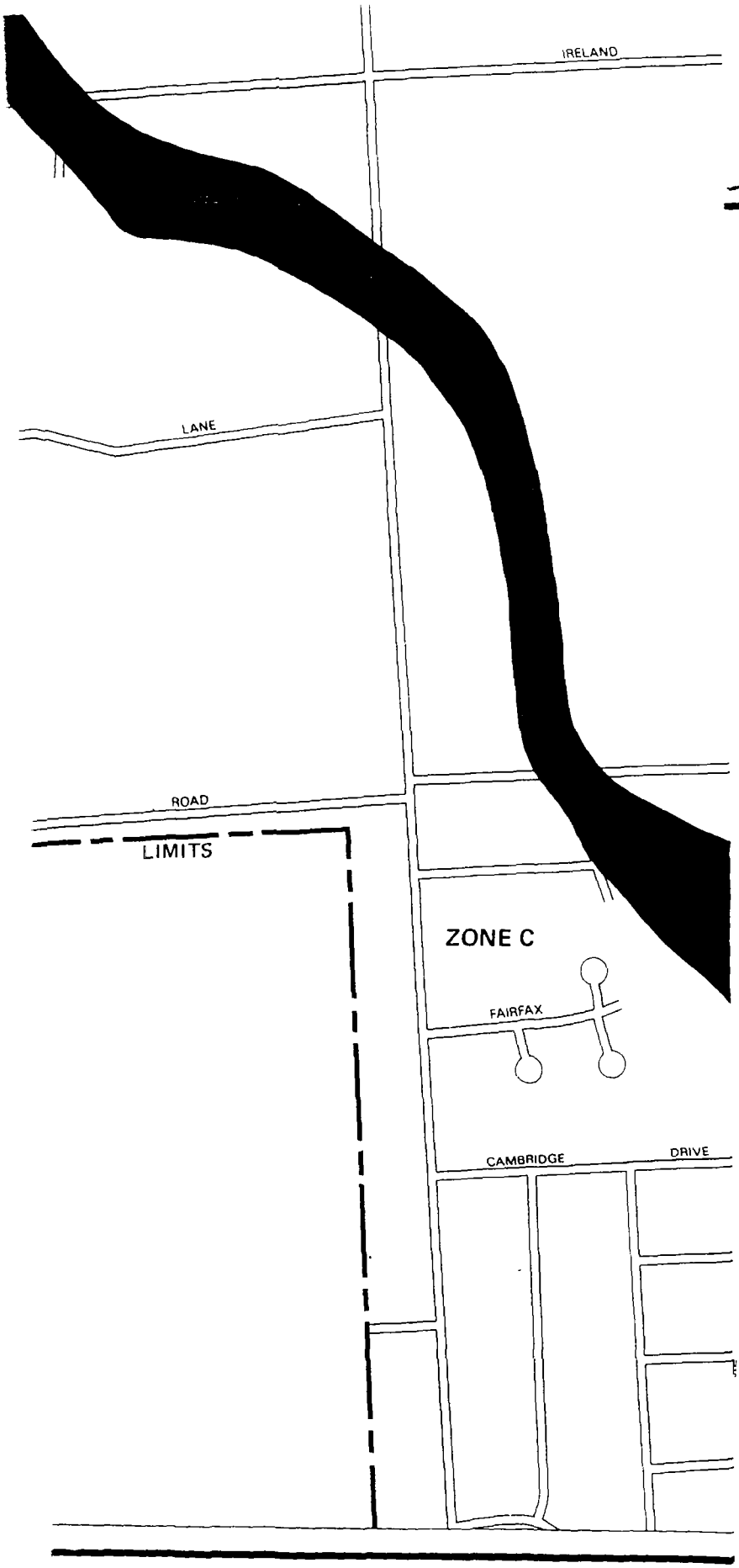
Clay film. A thin coating of clay on the surface of a soil aggregate. Synonyms: clay coat, clay skin.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of compounds, or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are examples of material commonly found in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

REF. 6, PAGE 1 OF 2



N

APPROXIMATE SCALE

600 0 600 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

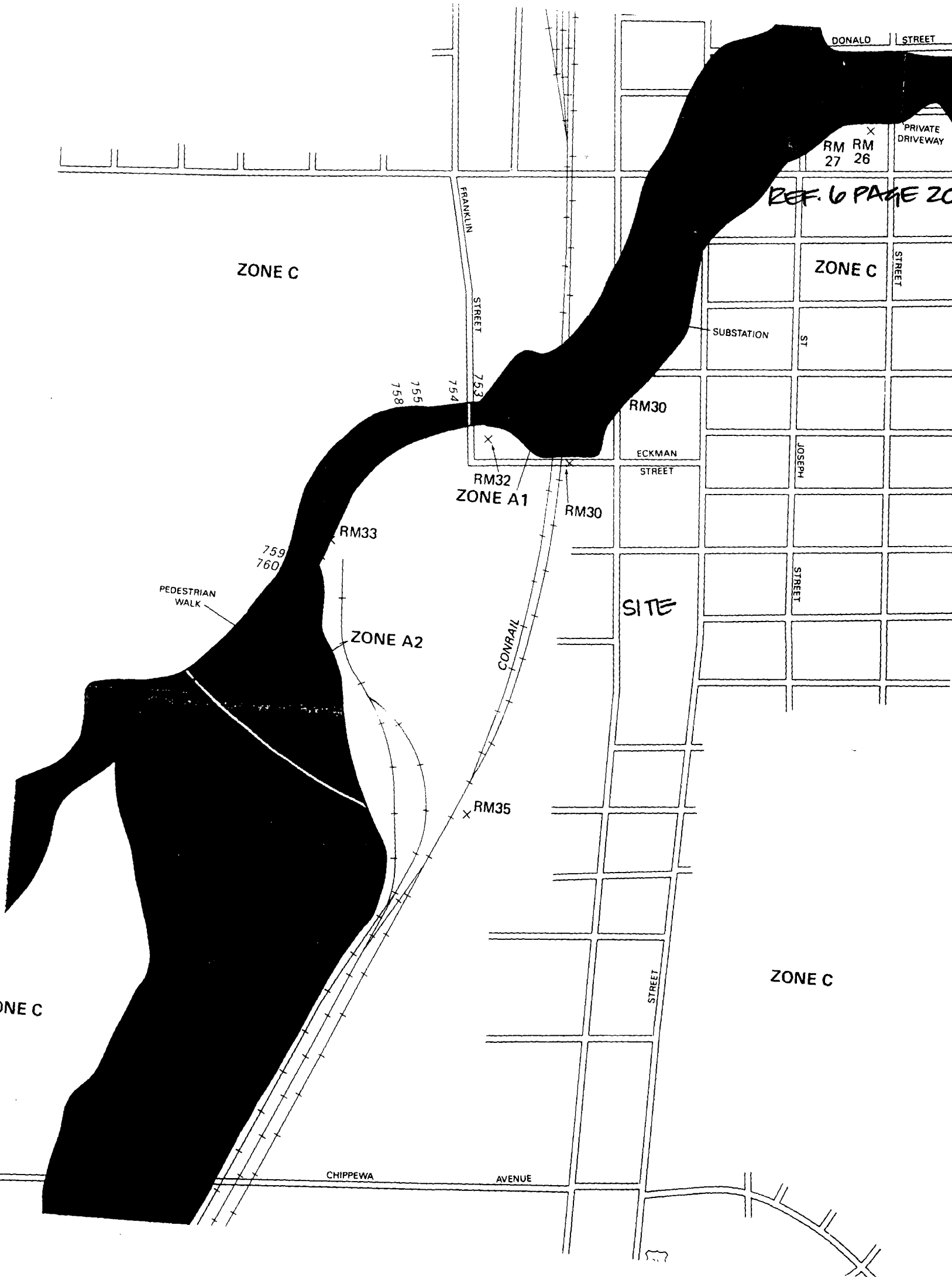
CITY OF
SOUTH BEND,
INDIANA
ST. JOSEPH COUNTY

PANEL 6 OF 7
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
180231 0006 C

MAP REVISED:
FEBRUARY 17, 1988

Federal Emergency Management Agency


DONALD
STREET
PRIVATE DRIVEWAY
RM 27
RM 26
REF. 6 PAGE 20
ZONE C
FRANKLIN
STREET
ZONE C
STREET
SUBSTATION
ST
753
754
755
758
RM30
ECKMAN
STREET
JOSEPH
RM32
ZONE A1
RM30
RM33
759
760
PEDESTRIAN WALK
STREET
SITE
ZONE A2
CONRAIL
RM35
STREET
ZONE C
ONE C
CHIPPEWA
AVENUE

REF. 7, PAGE 1 OF 2

State Form 4336

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

INDIANAPOLIS

OFFICE MEMORANDUM

Date: November 24, 1993

To: 3A File
Super Auto Salvage Yard

Thru:

From: Holly Grejda
Site Investigation Section

Subject: Super Auto Salvage Yard Site Visit

INTRODUCTION

On October 13, 1993, John Naddy of the Site Investigation Section and myself visited the Super Auto Salvage Yard site at 3300 South Main Street in South Bend, St. Joseph County, Indiana. The purpose of the visit was to evaluate CERCLA eligibility and the status of the site with regard to the risk it poses to human health and the environment in the South Bend area. Mr. Paul Schultz represented Super Auto Salvage Yard during the site visit.

The Super Auto Salvage Yard sells automobile parts for a variety of vehicles. Approximately ⅔ of the company's business is from distributing new automobile parts. The other ⅓ of the company's business is obtained from dismantling used vehicles and selling the parts. The facility has been operating since the late 1930's to the early 1940's and is still active today.

INSPECTION FINDINGS

Super Auto Salvage Yard employs 20 people. The site is approximately fourteen acres and there are two buildings on-site - the main building and the old office building. The site is completely fenced around the perimeter. The city storm sewer is located on the southeastern edge of the property. Most of the drainage from the property flows west to the railroad tracks. Some drainage flows onto property owned by the City of South Bend. The site is bordered to the north by Centennial Steel; to the south by Sherwood Street; to the east by Main Street and; to the west by the Conrail railroad tracks.

There is no 15-Mile Surface Water Pathway for the Super Auto Salvage Yard site. Water either drains west to the railroad tracks, filters into the ground or flows into the city's combined sewer system.

There are approximately 1400 cars at the site. Super Auto Salvage Yard annually processes about 400 cars. The automobiles on-site are kept for roughly three years. When "new" cars are obtained, they are set aside until a contractor comes to reclaim the freon from the cars. Dismantling of the cars is done on the southern edge of the property. Waste oils are drummed and then eventually burned in the engine garage. There was oily stained soil near the engine garage.

At the western edge of the property, there was a pond of standing water and an odor was detected. Throughout the site visit, no readings were noted on the HNu photoionization detector. Around the southwestern area of the site, there appears to be a black sandy material similar to foundry sand on the ground.

Mr. Harold Silberman owns the property at 3300 South Main Street, South Bend, Indiana. Mr. Silberman leases the property to Mr. Paul Schultz who currently runs the salvage operation. The City of South Bend leases the southwestern part of the property. The City tows abandoned cars and stores them on the leased property.
Mr. Paul Schultz stated that Salvage Yard has only salvaged used motor vehicles throughout its history.

CONCLUSIONS

As a result of this visit, I recommend that the Site Investigation Section of the IDEM pursue further action on the site under the CERCLA authority.

County: ST. JOSEPH

TELEPHONE CALL REPORT

Date 11 / 15 / 93

Time 8:30 am.

From: BILL DILLON, ENGINEER
ST. JOSEPH CO. WATER DEPT.
219/235-9448

To: HOLLY GREJIDA
SITE INVESTIGATION SECTION, IDEM
317/232-7130

Subject Discussed: SOUTH BEND LOCAL WATER SUPPLY

Summary - SOUTHBEND HAS 11 WELLFIELDS THAT SERVICE APPROXIMATELY 115,000 PEOPLE.

Action Required - HE WILL BE FAXING A COPY OF THEIR SYSTEM DISTRIBUTION MAP.

Details

- CITY OF SOUTH BEND SUPPLIES 115,000 PEOPLE GROUNDWATER FROM THE FOLLOWING:

[1] AIRPORT STATION - 4 WELLS, ALL ACTIVE / LOCATED AT LINCOLN WAY WEST & MICHIANA ROAD (NEAR AIRPORT BOULEVARD)

[2] CARRIAGE HILLS - 4 WELLS, ALL ACTIVE / JUST EAST OF GARDEN & IRONWOOD.

[3] CLEVELAND - 4 WELLS, ALL ACTIVE / 1000 ft. EAST OF CLEVELAND & MAYFLOWER

[4] EDISON - 4 WELLS, ALL ACTIVE / ROCKNEY & CHIMES

[5] ERSKINE - 2 WELLS, ONE OPERATING, ONE CLOSED DUE TO PCE CONTAMINATION LOCATED AT FELLOWS AND IRELAND (1000 ft. NORTH).

[6] OLIVE STREET - 6 WELLS, TWO OPERATING, TWO WELLS CLOSED DUE TO TCE CONTAMINATION, TWO CLOSED DUE TO HIGH HARDNESS, THE TWO OPERATING WELLS ARE 168 ft. & 164 ft. DEEP / OLIVE & SAMPLE (SW CORNER)

[7] RIVER COMMONS - 2 WELLS, NONE OPERATING, WELLS ABANDONED BECAUSE THEY WERE NOT NEEDED / LAUREL & AUTEN.

[8] SOUTH STATION - 4 WELLS, ALL ACTIVE, WELLS ARE 92 ft, 108 ft, 93 ft. & 102 DEEP. / CHIPPEWA & MAIN.

[9] NORTH STATION - 3 WELLS, ALL ACTIVE / 830 N. MICHIGAN (SOUTH OF RIVER

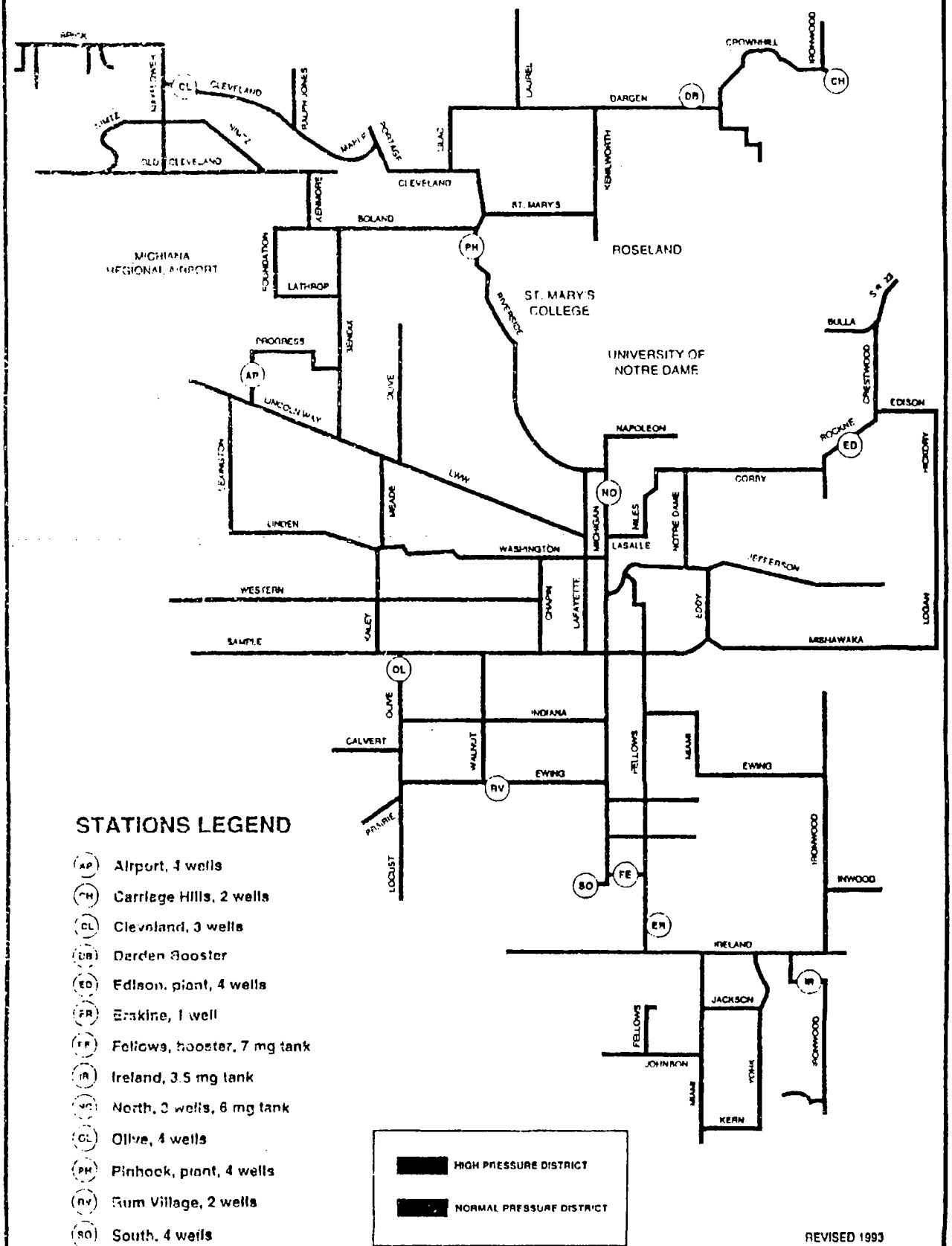
[10] PIN HOOK - 4 WELLS, ALL ACTIVE / RIVERSIDE & BOWLAND.

[11] RUM VILLAGE - 2 WELLS, ONE OPERATING, ONE WELL CLOSED DUE TO TCE CONTAMINATION, WELLS ARE 126 ft. & 137 ft. DEEP / WALNUT & EWING.

- BLENDED SYSTEM - NO WELLFIELD PRODUCES MORE THAN 20% OF TOTAL WATER SUPPLY.
- WATER FROM EDISON & PIN HOOK WELLFIELDS ARE FILTERED FOR IRON & MANGANI
- WATER RETRIEVED FROM THE ST. JOSEPH AQUIFER.

REF. 8, PAGE 2 OF 3

SOUTH BEND WATER SYSTEM
(10" AND LARGER MAINS ONLY)



STATIONS LEGEND

- (AP) Airport, 4 wells
- (CH) Carriage Hills, 2 wells
- (CL) Cleveland, 3 wells
- (DR) Darden Booster
- (ED) Edison, plant, 4 wells
- (ER) Erskine, 1 well
- (FE) Fellows, booster, 7 mg tank
- (IR) Ireland, 3.5 mg tank
- (NO) North, 3 wells, 6 mg tank
- (OL) Olive, 4 wells
- (PH) Pinhook, plant, 4 wells
- (RV) Rum Village, 2 wells
- (SO) South, 4 wells

HIGH PRESSURE DISTRICT

NORMAL PRESSURE DISTRICT

REVISED 1993

1" = 3000' approx.

REF. 8, PAGE 3 OF 3

SOUTH BEND WELLS

Designation	Type	Depth (ft)	Dia. (in)	Capacity (gpd)	Year	Motor HP	Aux. Power	Pump Speed
Airport #1	gravel	102	26	2,500,000	1950	100	none	constant
Airport #2	gravel	93	18	2,200,000	1961	100	none	constant
Airport #3	gravel	107	18	1,500,000	1961	100	none	constant
Airport #4	gravel	95	20	2,900,000	1979	125	none	constant
Car. Hills #1	tubular	112	10	600,000	1960	30	none	constant
Car. Hills #2	tubular	117	10	650,000	1960	30	none	constant
Car. Hills #3	gravel	237	10	1,600,000	1982	100	none	constant
Car. Hills #4	gravel	236	16	2,800,000	1989	200	none	variable
Cleveland #1	gravel	222	16	2,800,000	1984	150	none	constant
Cleveland #2	gravel	167	16	2,660,000	1991	150	none	constant
Cleveland #3	NOT BUILT							
Cleveland #4	gravel	153	16	2,800,000	1984	150	none	constant
Edison #1	gravel	206	26	4,000,000	1931	150	none	constant
Edison #2	gravel	200	26	3,100,000	1946	150	none	constant
Edison #3	gravel	204	26	3,400,000	1954	150	none	constant
Edison #4	gravel	196	26	3,600,000	1954	150	none	constant
Erskine #1	gravel	175	16	800,000	1955	60	none	constant
Erskine #2	gravel	BUILT 116	16	2,800,000	1993	200	none	constant
Erskine #3	NOT BUILT							
North #5	gravel	104	26	3,000,000	1957	60	none	constant
North #6	gravel	106	26	3,000,000	1958	60	none	constant
North #7	gravel	112	26	3,000,000	1960	60	none	constant
North #8	NOT BUILT							
Oliver #1	gravel	168	26	3,000,000	1947	150	none	constant
Oliver #2	gravel	164	26	3,250,000	1949	150	none	constant
Oliver #3	gravel	155	26	3,500,000	1953	150	none	constant
Oliver #4	gravel	192	26	3,000,000	1958	150	none	constant
Oliver #5	gravel	158	26	3,000,000	1966	150	none	constant
Oliver #6	gravel	167	26	3,000,000	1966	150	none	constant
Pinhook #1	gravel	131	26	3,700,000	1961	200	none	constant
Pinhook #2	gravel	122	26	3,500,000	1961	200	none	constant
Pinhook #3	gravel	131	26	3,700,000	1961	200	none	constant
Pinhook #4	gravel	130	26	3,700,000	1961	200	none	constant
Riv. Com. #1	gravel	147	10	720,000	1977	40	gasoline eng	variable
Riv. Com. #2	gravel	130	10	1,400,000	1977	100	none	constant
Rum Vill. #1	gravel	137	16	1,500,000	1955	100	none	constant
Rum Vill. #2	gravel	126	16	2,000,000	1982	100	none	constant
South #1	gravel	93	18	3,100,000	1964	200	none	constant
South #2	gravel	92	18	2,200,000	1964	150	none	constant
South #3	gravel	100	18	2,300,000	1949	150	none	constant
South #4	gravel	108	18	3,800,000	1942	200	none	constant

AERIAL BLUE LINE MAP

The Aerial Blue Line Map for the Super Auto Salvage Yard was photographed in the Spring of 1986 by Clyde E. Williams and Associates, Inc.

The Aerial Blue Line Map is located in Appendix E of the Preliminary Assessment Report.

REF.10, PAGE 1 OF 2

A0000101113462

U.S. Department of Commerce
Economics and Statistics Administration
BUREAU OF THE CENSUS

1990 CPH-1-16

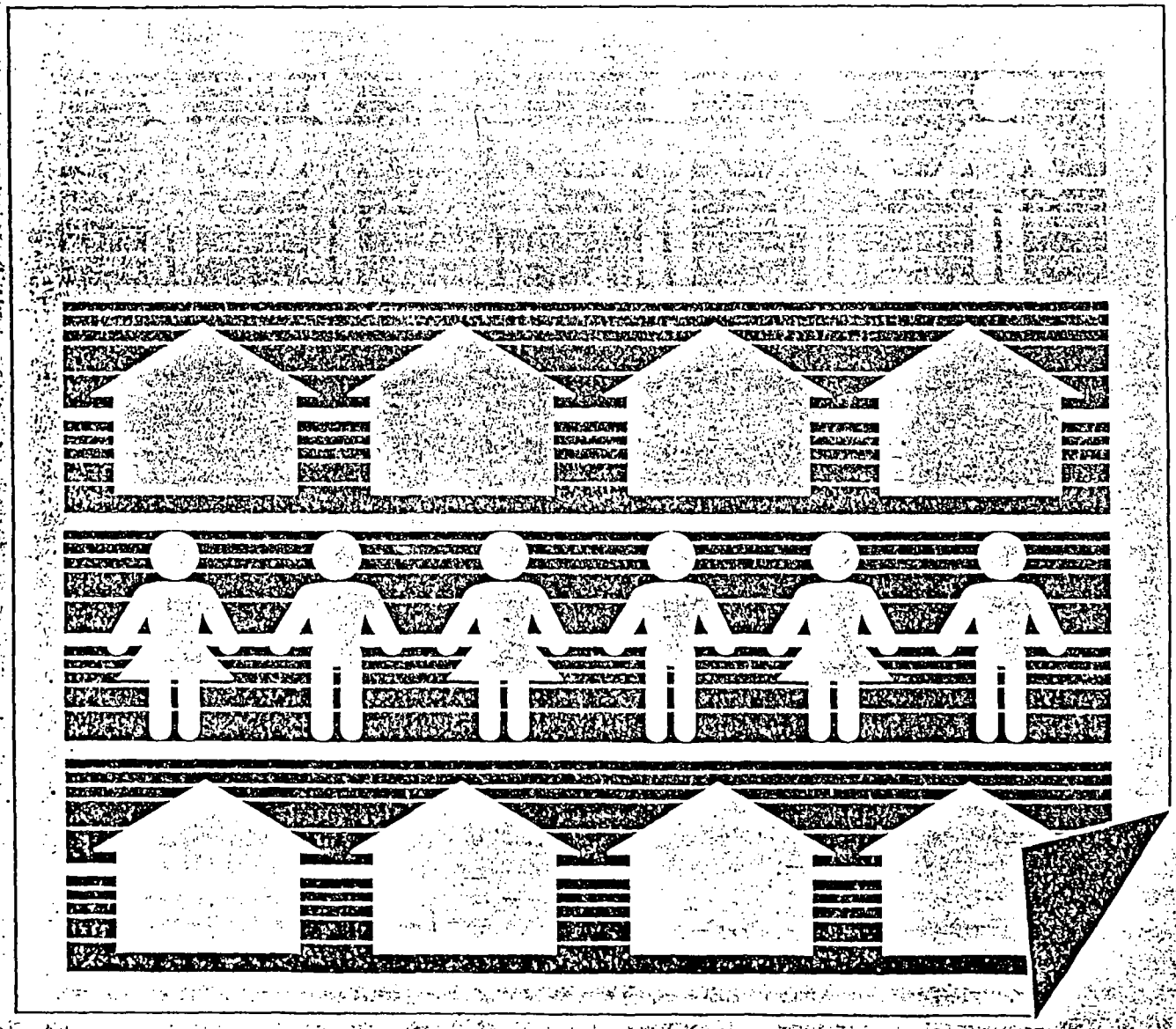
CENSUS '90

1990 Census of Population and Housing

Summary Population and Housing Characteristics

Indiana

Indiana State Data Center
Indiana State Library
140 N. Senate Avenue
Indpls., In 46204



REF. 10, PAGE 2 OF 2

Table 5. Household, Family, and Group Quarters Characteristics: 1990—Con.

[For definitions of terms and meanings of symbols, see text]

State / County / County Subdivision / Place	Persons in households	All households	Family households: Total	Family households: Married-couple family	Family households: Female householder, no husband present	Nonfamily households: Total	Nonfamily households: Householder living alone: Total	Nonfamily households: Householder living alone: 65 years and over: Total	Nonfamily households: Householder living alone: 65 years and over: Female	Persons per— Household	Persons per— Family	Persons in— Total	Persons in— Institutionalized persons
Ripley County—Con.													
Franklin township	2 993	1 051	817	678	95	234	218	137	108	2.85	3.27	60	60
Milan town (pt.)	975	376	255	204	36	121	118	79	70	2.59	3.20	60	60
Jackson township	956	339	263	223	30	76	72	51	35	2.82	3.29	–	–
Napoleon town	238	95	61	46	12	34	31	25	19	2.51	3.28	–	–
Johnson township	3 166	1 232	882	732	118	350	318	172	147	2.57	3.10	24	12
Versailles town	1 779	752	482	377	89	270	254	139	121	2.37	3.04	12	12
Laughery township	4 273	1 624	1 144	986	110	480	442	222	179	2.63	3.25	168	168
Batesville city (pt.)	3 116	1 256	827	691	100	429	396	198	161	2.48	3.17	168	168
Otter Creek township	1 334	454	363	317	22	91	80	42	28	2.94	3.33	–	–
Holton town	451	164	123	100	14	41	36	18	12	2.75	3.20	–	–
Shelby township	836	281	229	195	24	52	48	19	14	2.98	3.35	17	17
Washington township	1 989	673	558	493	39	115	106	59	53	2.96	3.30	–	–
Milan town (pt.)	494	175	138	119	15	37	35	26	24	2.82	3.29	–	–
Rush County	17 638	6 504	4 985	4 265	532	1 519	1 373	791	640	2.71	3.16	491	478
Anderson township	1 342	434	354	319	27	80	71	42	31	3.09	3.50	–	–
Center township	807	282	227	213	10	55	52	34	29	2.86	3.27	218	218
Jackson township	381	139	117	106	8	22	21	9	7	2.74	3.05	–	–
Noble township	658	236	195	178	14	41	35	23	16	2.79	3.10	–	–
Orange township	811	279	219	193	23	60	58	36	25	2.91	3.40	–	–
Posey township	1 194	409	352	309	27	57	48	31	25	2.92	3.15	–	–
Richland township	397	134	107	98	6	27	25	17	15	2.96	3.41	–	–
Ripley township	1 910	697	554	504	34	143	128	72	60	2.74	3.14	–	–
Carthage town	887	335	244	216	23	91	83	49	42	2.65	3.21	–	–
Rushville township	7 723	3 047	2 174	1 730	340	873	795	448	370	2.53	3.05	273	260
Rushville city	5 339	2 114	1 492	1 146	261	622	557	310	255	2.53	3.05	194	194
Union township	918	319	260	234	20	59	48	27	22	2.88	3.20	–	–
Glenwood town (pt.)	175	66	49	45	4	17	15	10	8	2.65	3.18	–	–
Walker township	966	338	268	242	15	70	64	39	31	2.86	3.30	–	–
Washington township	531	190	158	139	8	32	28	13	9	2.79	3.08	–	–
St. Joseph County	234 891	92 365	63 629	50 364	10 570	28 736	24 427	10 571	8 463	2.54	3.10	12 161	3 079
Centre township	13 011	4 958	3 857	3 444	330	1 101	971	549	476	2.62	3.02	20	–
Gulmore Park CDP	2 788	1 071	861	756	81	210	182	92	73	2.60	2.93	–	–
South Bend city (pt.)	6 858	2 663	2 000	1 782	184	663	592	380	341	2.58	3.03	20	–
Clay township	28 866	11 603	7 950	6 870	819	3 653	2 948	781	609	2.49	3.03	2 167	665
Georgetown CDP	3 993	1 845	1 035	879	113	810	675	108	89	2.16	2.90	–	–
Granger CDP (pt.)	8 629	2 821	2 538	2 377	126	283	252	78	56	3.06	3.26	135	135
Indian Village town	142	49	41	35	5	8	7	3	3	2.90	3.17	–	–
Mishawaka city (pt.)	2 522	1 522	539	388	111	983	831	124	97	1.66	2.51	132	132
Roseland town	706	317	203	172	24	114	96	39	28	2.23	2.74	–	–
South Bend city (pt.)	2 189	906	564	449	91	342	227	52	41	2.42	2.99	34	34
German township	7 098	2 970	1 936	1 620	238	1 034	842	240	175	2.39	2.98	124	124
South Bend city (pt.)	3 068	1 467	773	603	138	694	559	128	102	2.09	2.83	124	124
Greene township	3 037	1 059	868	789	55	191	166	76	55	2.87	3.21	–	–
Harris township	11 489	3 420	3 138	2 953	134	282	233	68	50	3.36	3.53	54	54
Granger CDP (pt.)	11 477	3 414	3 135	2 951	133	279	231	68	50	3.36	3.53	–	–
Mishawaka city (pt.)	12	6	3	2	1	3	2	–	–	2.00	2.67	54	54
Liberty township	3 011	1 116	865	708	114	251	227	133	93	2.70	3.12	–	–
North Liberty town	1 366	539	387	287	86	152	139	81	65	2.53	3.06	–	–
Lincoln township	2 660	1 024	751	595	122	273	248	130	101	2.60	3.11	122	122
Walkerton town	1 939	764	543	406	111	221	201	105	84	2.54	3.08	122	122
Madison township	1 798	630	533	488	30	97	87	53	35	2.85	3.15	–	–
Olive township	3 342	1 277	927	795	101	350	314	198	155	2.62	3.14	231	220
New Carlisle town	1 381	530	388	318	61	142	122	58	47	2.61	3.09	65	65
Penn township	59 296	23 859	16 094	12 919	2 490	7 765	6 665	2 799	2 299	2.49	3.07	583	221
Mishawaka city (pt.)	39 319	16 473	10 499	8 005	1 998	5 974	5 154	2 245	1 870	2.39	3.02	569	221
Osceola town	1 999	709	561	468	68	148	120	61	48	2.82	3.19	–	–
South Bend city (pt.)	1 730	1 116	322	244	60	794	673	180	147	1.55	2.47	–	–
Portage township	92 942	37 401	24 247	16 998	5 938	13 154	11 207	5 302	4 232	2.49	3.10	8 849	1 673
South Bend city (pt.)	89 541	36 108	23 262	16 185	5 812	12 846	10 936	5 151	4 117	2.48	3.10	1 947	1 536
Union township	3 344	1 208	963	850	79	245	222	112	91	2.77	3.14	11	–
Lakeville town	655	271	181	132	45	90	85	36	32	2.42	3.06	–	–
Warren township	4 997	1 840	1 500	1 335	120	340	297	130	92	2.72	3.04	–	–
Scott County	20 739	7 593	5 881	4 806	848	1 712	1 527	739	589	2.73	3.14	252	246
Finley township	1 117	411	328	268	26	83	67	30	19	2.72	3.05	6	–
Jennings township	6 713	2 349	1 886	1 490	310	463	418	204	152	2.86	3.22	–	–
Austin town	4 310	1 534	1 193	883	250	341	310	154	114	2.81	3.22	–	–
Johnson township	2 181	759	618	533	57	141	123	46	36	2.87	3.20	–	–
Lexington township	2 761	970	782	662	87	188	161	71	58	2.85	3.20	42	42
Vienna township	7 967	3 104	2 267	1 833	368	837	758	388	324	2.57	3.04	204	204
Scottsburg city	5 130	2 120	1 452	1 114	297	668	610	327	280	2.42	2.96	204	204
Shelby County	39 805	14 761	11 169	9 454	1 215	3 592	3 095	1 476	1 208	2.70	3.13	502	359
Addison township	17 210	6 948	4 735	3 752	714	2 213	1 923	923	778	2.48	3.02	367	224
Shelbyville city (pt.)	14 969	6 133	4 076	3 163	665	2 057	1 795	874	746	2.44	3.01	367	224
Brandywine township	2 115	741	600	519	63	141	128	68	52	2.85	3.21	–	–
Fairland CDP	1 348	462	378	323	42	84	73	33	30	2.92	3.26	–	–
Shelbyville city (pt.)	–	–	–	–	–	–	–	–	–	–	–	–	–
Hanover township	2 178	802	616	542	57	186	171	95	81	2.72	3.17	37	37
Morristown town	943	359	258	219	32	101	95	54	48	2.63	3.19	37	37
Hendricks township	1 219	419	334	298	23	85	72	37	29	2.91	3.34	–	–
Jackson township	1 180	403	340	288	37	63	56	32	24	2.93	3.19	–	–
Liberty township	1 797	632	499	436	45	133	118	72	51	2.84	3.27	81	81
Marion township	1 384	483	404	367	23	79	66	29	23	2.87	3.17	–	–
Shelbyville city (pt.)	–	–	–	–	–	–	–	–	–	–	–	–	–
Moral township	4 567	1 517	1 308	1 169	92	209	170	54	38	3.01	3.24	–	–
Noble township	1 469	520	425	369	35	95	67	28	20	2.83	3.12	–	–
St. Paul town (pt.)	456	155	129	108	16	26	21	8	6	2.94	3.26	–	–
Shelby township	1 974	689	575	526	29	114	89	30	27	2.87	3.13	17	17
Sugar Creek township	958	330	274	241	20	56	50	18	13	2.90	3.22	–	–
Union township	859	285	239	215	16	46	38	21	16	3.01	3.29	–	–
Van Buren township	1 555	525	437	398	27	88	74	31	28	2.96	3.29	–	–
Washington township	1 340	467	383	334	34	84	73	38	28	2.87	3.19	–	–
Spencer County	18 943	6 962	5 388	4 739	463	1 574	1 451	767	590	2.72	3.11	547	199
Carter township	2 892	1 060	792	696	74	268	243	127	105	2.73	3.23	140	96
Dale town	1 457	557	413	351	49	144	133	67	56	2.62	3.10	96	96
Santa Claus town (pt.)	92	39	25	24	1	14	13	9	6	2.36	3.08	–	–
Clay township	1 467	522	433	408	16	89	83	45	26	2.81	3.16	–	–
Santa Claus town (pt.)	828	295	251	242	8	44	41	17	13	2.81	3.10	–	–

4-MILE RADIUS POPULATION WORKSHEET

Total population within a 4-mile radius of the Super Auto Salvage Yard site was determined from data obtained from the 1990 Census Population and Housing and supplemented by a house count of the 4-Mile Radius Map for the site.

HOUSE COUNT WITHIN THE 4-MILE RADIUS

# OF HOUSES	PERSONS/HOUSE	DISTANCE FROM SITE	# OF RESIDENTS
3	2.54*	0-1/4 MILE	7.62
9	2.54*	1/4< X < 1/2 MILE	22.86
116	2.54*	1/2< X < 1 MILE	294.64
871	2.54*	1< X < 2 MILES	2212.34
1557	2.54*	2< X < 3 MILES	3954.78
816	2.54*	3< X < 4 MILES	2072.64

SHADED AREA WITHIN A 4-MILE RADIUS

% OF SHADED AREA	DISTANCE FROM SITE	# OF RESIDENTS
2%**	0-1/4 MILE	2067.72
4%**	1/4< X < 1/2 MILE	4135.44
11%**	1/2< X < 1 MILE	11372.46
23%**	1< X < 2 MILES	23778.78
26%**	2< X < 3 MILES	26880.36
24%**	3< X < 4 MILES	24812.64

TOTAL RESIDENTIAL POPULATION BY DISTANCE RING

DISTANCE FROM SITE	# OF RESIDENTS
0-1/4 MILE	2075.34
1/4< X < 1/2 MILE	4158.3
1/2< X < 1 MILE	11667.1
1< X < 2 MILES	25991.12
2< X < 3 MILES	30835.14
3< X < 4 MILES	26885.28

.....

TOTAL POPULATION WITHIN A 4-MILE RADIUS OF THE SITE: 101612.28

.....

* 2.54 persons per household average for St. Joseph County.
** The shaded area of the map is the city boundary for South Bend/St. Joseph County, Indiana. There are an estimated 103,386 persons that live in South Bend.

POPULATION CALCULATED BY: Holly Lujde DATE: 4 OCTOBER 1993

REF. 12, PAGE 1 OF 2

DNR MEMORANDUM

State of Indiana • Department of Natural Resources • Indianapolis

TO: Holly Grejda
Site Investigation Section, Office of Environmental Response
Indiana Department of Environmental Management
Room N-1255
Indiana Government Center North

FROM: Cloyce L. Hedge, Coordinator CLH
Indiana Natural Heritage Data Center
Division of Nature Preserves
Indiana Department of Natural Resources

DATE: 11-12-93

SUBJECT: Endangered Species, Public Land, Sensitive Environments
SITE: Super Auto Salvage Yard, South Bend, St. Joseph Co.

I am responding to your request for information on the endangered, threatened, or rare (ETR) species, high quality natural communities and natural areas, and public lands in and around the area indicated in the subject. If a Land and Water Conservation Fund (LWCF) Site or a Natural and Scenic River is involved, you should contact the Division of Outdoor Recreation, (317) 232-4070. The Indiana Natural Heritage Data Center has been checked with the following results:

- [x] see attached sheet
- [ ] LWCF Site
- [ ] no ETR species, natural areas or public lands documented
- [ ] Designated or candidate Natural & Scenic River

The information I am providing does not preclude the requirement for further consultation with the U.S. Fish and Wildlife Service as required under Section 7 of the Endangered Species Act of 1973.
Contact: U.S. Fish and Wildlife Service
718 North Walnut Street
Bloomington, Indiana 47401
(812) 334-4261

At some point, you may need to contact the Department of Natural Resources' Environmental Review Coordinator so that other divisions within the department have the opportunity to review your proposal. For more information, please contact:

Patrick R. Ralston, Director
Department of Natural Resources
Attn: Stephen H. Jose
Environmental Coordinator
Division of Fish and Wildlife
402 West Washington Street. Rm. W273
Indianapolis, Indiana 46204-2748
(317) 232-4080

The Indiana Natural Heritage Data Center relies on the observations of many individuals for our data. In most cases, the information is not the result of comprehensive field surveys conducted at particular sites. Therefore, our statement that there are no documented significant natural features at a site should not be interpreted to mean that the site does not support special plants or animals.

Due to the dynamic nature and sensitivity of the data, this information should not be used for any other project. It may be necessary for you to request updated information for any project changes.

Thank you for contacting the Indiana Natural Heritage Data Center. You may reach me at (317) 232-4052 if you have any questions or need additional information.

SENSITIVE SPECIES, ETC.
Super Auto Salvage yard

Species/Feature	*Status	Location
Ambystoma platineum	unlisted salamander	1
Platanthera lacera	SSC plant	"
Geranium robertianum	ST "	"

*Status: SE - State Endangered
ST - State Threatened
SR - State Rare
SSC - State Special Concern
FE - Federal Endangered
FT - Federal Threatened
FC - Federal Candidate

PHOTODOCUMENTATION LOG

The photodocumentation log for the Super Auto Salvage Yard includes photographs from an on-site visit made on October 13, 1993.

The photodocumentation log is located in Appendix D of the Preliminary Assessment Report.

REF. 14, PAGE 1 OF 45

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

State Form 35680

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

South of Ewing Avenue, near Sj 7-15, west of Perfume factory, from USGS Bulletin #3, Sj 7-17

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: Austin Drilling Company

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 205 Date well was completed: October 26, 1926

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: 20 Slot Size:

Type of Well: Drilled ☐ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin #15

Date 5/21/75

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
no well log available		
well similar to Sj 7-15		
37N 2E section 24D1		
Quaternary		
top soil	0	20
coarse gravel	20	25
fine sand	25	45
coarse sand	45	55
coarse sand with some fine sand	55	60
coarse sand	60	65
coarse gravel and stones	65	70
coarse gravel	70	85
blue clay	85	95
fine sand	~~90~~ 95	130
blue clay	130	195(?)
lower Mississippian series	~~1~~ 195(?)	205
blue shale		
bedrock should be ~630		
or at 129' in hole		
maybe at top of blue clay		
bedrock elevation questionable		

COUNTY St. Joseph TWP. 37 N RGE. 2 E ¼ NW ¼ NW SEC. 24

Topo Map South Bend West 7½

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

Ft W of EL. _____ Ft N of SL. _____ Ft E of WL. _____ Ft S of NL. _____

Ground Elevation 759 Depth to bedrock ~130 Bedrock elevation 539' Aquifer elevation _____

Subdivision Name _____ Lot Number _____

FOR ADMINISTRATIVE USE ONLY (Well driller does not fill out)

plotted on bedrock map and Fig 7 of report

D2

REF. 14, PAGE 2 OF 45

609 558
562 658

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

Telephone 317-232-4160

WWRS

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctiv landmarks, etc.

from OSGS Bulletin #3 Sj 7-20
Dommoyer Street, 100 feet east of Michigan Street

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: Gary Drilling Company

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 185 Date well was completed: 12/20/26

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled ☒ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft. (Drawdown is the difference between static level and water level at end of test)

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

Signature from OSGS Bulletin #15

Date 1/12/85

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
top soil	0	20
fine sand	20	80
coarse sand	80	85
coarse sand with some small pebbles	85	100
clay and sand	100	115
very fine sand	115	160
blue clay	160	180
Lower Mississippian semi blue shale	180	185

COUNTY St. Joseph TWP. 37N RGE. 29E ¼ SW ¼ SE ¼ NW SEC. 24

Topo Map South Bend East 7½

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

_____ Ft W of EL. _____ Ft N of SL. _____ Ft E of WL. _____ Ft S of NL.

Ground Elevation 789

Depth to bedrock 180 Bedrock

Bedrock elevation 609

Aquifer elevation _____ Lot Number _____

REF. 14, PAGE 30 OF 45

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

State Form 35680

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

Echman Street, west of Penna Rail Road, from USGS Bulletin #3, Sj 7-28

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: ~~Estes~~ Austin Drilling Company

Address

ne of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 83 Date well was completed: March 24, 1927

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled ☐ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) 11 feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin #15

Date 1 Wile 2/55

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
no well log available		
similar to well Sj 7-15		
Quaternary		
top soil	0	20
coarse gravel	20	25
fine sand	25	45
coarse sand	45	55
coarse sand with some finer sand	55	60
coarse sand	60	65
coarse gravel and stones	65	70
coarse gravel	70	85
blue clay	85	95
fine sand	95	130
blue clay	130	195(?)
lower Mississippian seri	195(?)	205
blue shale		
bedrock at 72		
TD at 83 -		
sounds more like blue clay		
to me - questionable		

COUNTY St. Joseph TWP. 37N RGE. 2E NW ¼ SW ¼ NW SEC 24

Topo Map South Bend West 7½

Field Located By _____ Date _____ Ft W of EL. _____ Ft N of SL. _____ Ground Elevation 749 Depth to bedrock 72

Courthouse Location By _____ Date _____ Ft E of WL. _____ Ft S of NL. _____ Bedrock elevation 677

Location accepted w/o verification by _____ Aquifer elevation _____ Lot Number _____

FOR ADMINISTRATIVE USE ONLY (Well driller does not fill out)

Subdivision Name _____

Platted or Unplatted

bedrock map

ok

E2

610 550
562 225

REF. 14, PAGE 4 OF 45

WWRS
State Form 30880

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

Eckman Street and Lafayette Street, from USGS Bulletin #3, Sj 8-9

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: ?

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 122 x Date well was completed: ? < 1911

Diameter of casing or drive pipe: 10 Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled ☐ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) 4 feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin #15

Date L. Wile 2/85

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
top soil	0	20
clay	20	60
coarse gravel	60	70
quicksand	70	90
clay	90	110
gravel	110	112
bedrock - shale	112	122

COUNTY St. Joseph TWP. 37N RGE. 2E NW ¼ SW ¼ NW SEC. 24

Topo Map South Bend West 7½

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

_____ Ft W of EL. _____ Ft N of SL. _____ Ft E of WL. _____ Ft S of NL.

Ground Elevation ~~[illegible]~~ 755 Depth to bedrock 122

Bedrock elevation 631 Aquifer elevation _____ Lot Number _____

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

Well Log

REF. 14, PAGE 5 OF 45

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

State Form 35680

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

from USGS Bulletin #3 Sj 7-17
South of Ewing Avenue, near Sj 7-15
east of perfume factory

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: Austin Drilling Company

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 205 Date well was completed: 10/6/26

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: 20 Slot Size:

Type of Well: Drilled ☒ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin #15

Date Lafayette 1/85

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
top soil, black dirt	0	2
dirty sand and gray gravel	2	4
medium to coarse gray gravel	4	12
medium to coarse sand	12	18
fine sand	18	36
coarse brown sand	36	42
brown gravel	42	53
clean gravel	53	63
coarse sand and gravel	63	70
blue clay and sandy gravel	70	99
sandy brown gravel	99	104
sandy brown clay	104	110
blue clay with sand and gravel	110	126
Lower Mississippian series shale	126	129

FOR ADMINISTRATIVE USE ONLY (Well driller not fill out)

D 3

COUNTY St. Joseph TWP. 37N RGE. 2E SW ¼ NW ¼ NW ¼ SEC 24

Topo Map South Bend West 7½ Subdivision Name [illegible]

Field Located By _____ Date _____ Ft W of EL. _____ Ft N of SL. _____ Ground Elevation 759 Depth to bedrock 126 [illegible]

Courthouse Location By _____ Date _____ Ft E of WL. _____ Ft S of NL. _____ Bedrock elevation 633 ok

Location accepted w/o verification by _____ Aquifer elevation _____ Lot Number _____

610 950
562 225

REF. 14, PAGE 6 OF 45

WWRS

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

South of Perfume Factory, from USGS Bulletin #3
Sp 7-240

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: Austin Drilling Company

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 129 ft. Date well was completed: March 18, 1927

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled ☐ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) 11 feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin #15

Date 2/85

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
top soil, black dirt	0	2
dirty sand and gray gravel	2	4
medium to coarse sand and gravel	4	12
medium to coarse sand	12	18
fine sand	18	36
coarse brown sand	36	42
brown gravel	42	53
clean gravel	53	63
coarse sand and gravel	63	70
blue clay and sandy gravel	70	99
sandy brown gravel	99	104
sandy brown clay	104	110
blue clay with sand and gravel	110	126
Lower Mississippian shale	126	129

COUNTY Sit Tangh TWP. 37N RGE. 2E NW ¼ NW ¼ NW SEC. 24

Topo Map South Bend West 7½

Field Located By _____ Date _____ Ft W of EL. _____ Ground Elevation 786

Courthouse Location By _____ Date _____ Ft N of SL. _____ Depth to bedrock 126

Location accepted w/o verification by _____ Ft E of WL. _____ Bedrock elevation 620

Ft S of NL. _____ Aquifer elevation _____ Lot Number _____

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

WELL RECORD

REF. 14, PAGE 7 OF 45

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

State Form 35680

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

from USGS Bulletin #3 Sj 7-15
Ewing Avenue, west of perfume factory

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: Austin Drilling Company

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 205' Date well was completed: 8/24/26

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled ☒ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) 27 feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin #15

Date L. Wolfe 1/85

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
top soil	0	20
coarse gravel	20	25
fine sand	25	45
coarse sand	45	55
fine to coarse sand	55	60
coarse sand	60	65
coarse gravel and stones	65	70
coarse gravel	70	80
blue clay	80	95
fine sand	95	130
blue clay	130	195
lower Mississippian blue shale	195	205
used top of blue clay for bedrock elevation		

COUNTY St. Joseph TWP. 37N RGE. 28E ¼ NW ¼ NW SEC. 24

Topo Map South Bend West 7½

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

Ft W of EL. _____ Ft N of SL. _____ Ft E of WL. _____ Ft S of NL. _____

FOR ADMINISTRATIVE USE ONLY (Well driller does not fill out)

Ground Elevation 759

Depth to bedrock ~~[illegible]~~ 130 bedrock map

Bedrock elevation ~~[illegible]~~ 629 by OR

Aquifer elevation _____

Log Number _____

Submission Number _____

502875

REF. 14 PAGE 8 OF 45

WWRS

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

from USGS Bulletin #3 Sj 7-21
Dommoyer Street, 100 feet east of
Michigan Street

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: Gary Drilling Company

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 200 Date well was completed: 1/17/27

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled ☒ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin #15

Date Linville 1/85

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
top soil	0	20
fine sand	20	40
fine sand with clay	40	95
fine sand	95	130
clay	130	140
clay with sand	140	150
clay with gravel	150	155
~~Gr~~ clay	155	180
blue clay	180	195
Mississippian (lower) blue shale	195	200

FOR ADMINISTRAT USE ONLY
(Well driller does not fill out)

COUNTY St. Joseph TWP. 37N RGE. 2E ¼ NE ¼ NE ¼ SW ¼ SEC. 24

Topo Map South Bend East 7½

Field Located By _____ Date _____ Ft W of EL. _____ Ft N of SL. _____ Ft E of WL. _____ Ft S of NL. _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

Ground Elevation _____ Depth to bedrock 195 Bedrock elevation 608 Aquifer elevation _____ Lot Number _____

WWPS

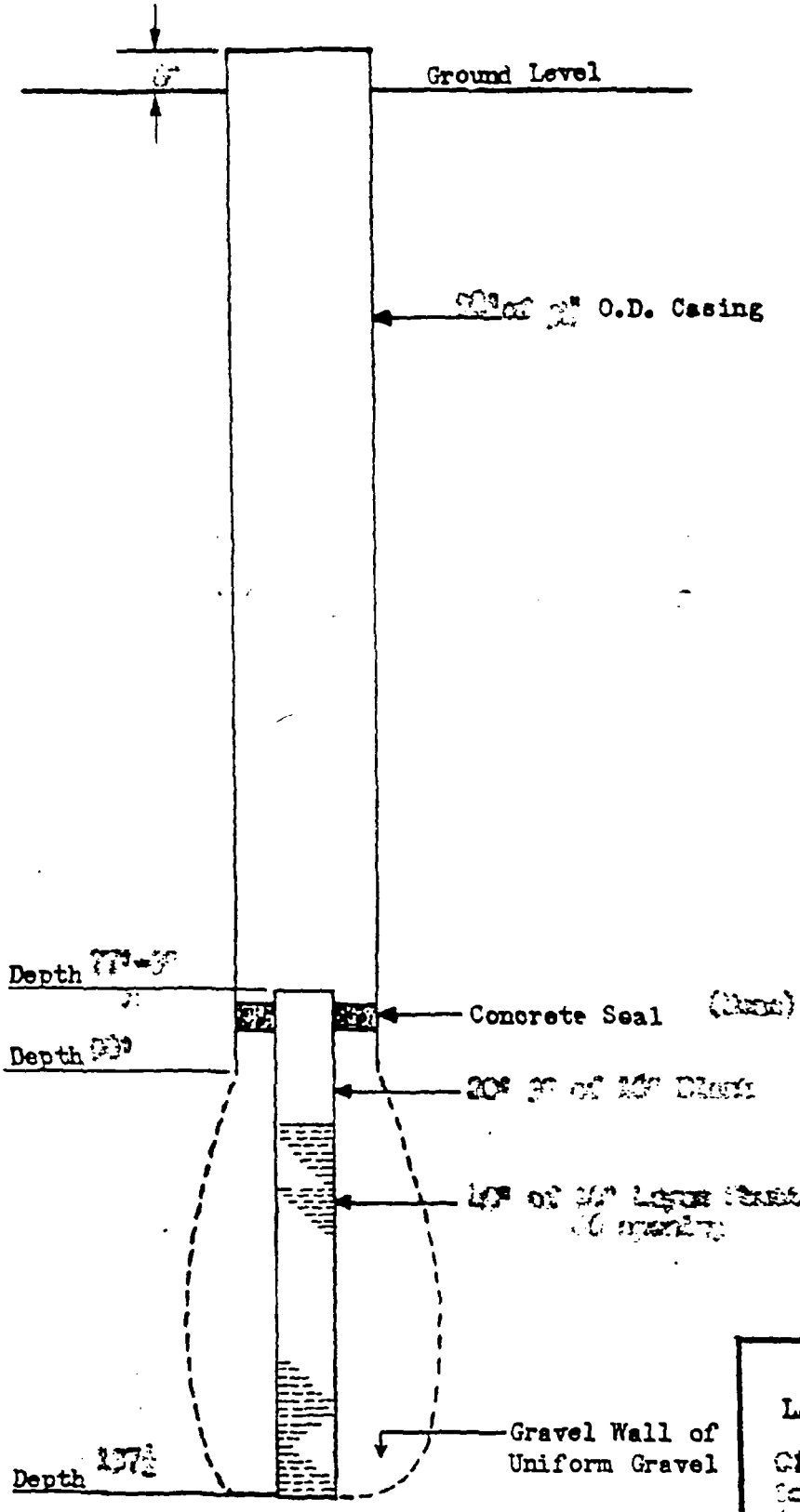
Wellhead Protection

Casing extends [illegible] feet above ground level.

Job No. [illegible]

Location:

T 37N R 2E Sec 23 NW



St. Joseph Co.
Portage Twp. Sec 23

Single Cased
LAYNE GRAVEL WALL WELL No. 1
For
City [illegible]
South Bend, Indiana
([illegible])

Driller [illegible]

Date Finished 7-5-55

Not drawn to Scale
All depths measured from ground level

Static Level [illegible]

Pumped [illegible] GPM
at [illegible] Pumping Level

LAYNE NORTHERN CO. INC
MISHAWAKA, INDIANA

DRAWN BY	DRAWING NO.
APPROVED BY	M-6376
DATE	

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

COUNTY SL Joseph TWP. 27N RGE. 2E ¼ ¼ NW SEC. 23 Subdivision Name

Topo Map _____ Ft W of EL. _____ Ground Elevation _____

Field Located By _____ Date _____ Ft N of SL. _____ Depth to bedrock _____

Courthouse Location By _____ Date _____ Ft E of WL. _____ Bedrock elevation _____

Location accepted w/o verification by _____ Ft S of NL. _____ Aquifer elevation _____ Lot Number _____

Rum Villa

BGF 14, PAGE 10

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204
Telephone 317-232-4160

WWRS

TMN 609775
TME 562825
No log

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled _____ Civil Township _____

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

South Station Well Field - South Bend Waterworks
Well # 3

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner South Bend Waterworks Address P.O. Box 1714 224 No. Main St.

Building Contractor _____ Address _____

Name of Well Drilling Contractor: _____

Address _____

e of Drilling Equipment Operator: _____

Hilltop
Deep
225

WELL INFORMATION

Depth of well: 100 ft Date well was completed: _____

Diameter of casing or drive pipe: 18 in Total Length: _____

Diameter of liner (if used): _____ Total Length: _____

Diameter of Screen: _____ Length: _____ Slot Size: _____

Type of Well: Drilled ☐ Gravel Pack ☐ Driven ☐ Other _____

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) _____ feet

Bailer Test: Hours Tested _____ Rate _____ g.p.m. Drawdown _____ ft.

Pumping Test: Hours Tested _____ Rate _____ g.p.m. Drawdown _____ ft.

(Drawdown is the difference between static level and water level at end of test)

Signature: Kathy Thalman

Date 7-3-85

[illegible] OR OF THIS SHEET

Site #14 South Bend

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

W.W.R.S.

COUNTY St. Joseph TWP. 37N RGE. 2E NE ¼ SE ¼ SE SEC 23

Topo Map South Bend West

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

_____ Ft W of EL.

_____ Ft N of SL.

_____ Ft E of WL.

_____ Ft S of NL.

Ground Elevation 775

Depth to bedrock _____

Bedrock elevation 100

Aquifer elevation 675 Lot Number _____

WATER WELL LOG

To	From	FORMATIONS (Color, type of material, hardness, etc.)

REF. 14, PAGE 11 UTME 562075 G

LAYNE-NORTHERN COMPANY
Incorporated
MISHAWAKA, INDIANA

☒ TEST
☐ PERMANENT

WELL LOG No. 63 CITY South Bend County St. Joseph
Owner City Water Department - South Station Township
TEST SOUTH #1A Section
Location State Ind
From Land Description ft. East and ft. North of SW Corner of Section.
From Street or Road 20' N. of Pump House No. 1 - 40' W. of property line

FORMATION FOUND — DESCRIBE FULLY	FROM NATURAL GROUND LEVEL Depth to Top of Stratum	Depth to Bottom of Stratum	Thickness of Stratum	Static Water Level
Brown Sand and Gravel	0	45	45	
Brown Sand	45	83	38	32
Brown Sand & Gravel	83	93	10	32
Brown Clay with sand & Gravel	93	97	4	
Grey Clay	97	105	8	
NOTE: No encrustation was noted on the water bearing				
formation.				

6 inch diameter hole drilled by ☐ Cable Tool ☐ Rotary ☐ Jetting

Pipe left in hole None

Date Started 11-11-63 Finished 11-13-63 Schoen DRILLER

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To

FOR ADMINISTRA...VE USE ONLY
(Well driller does not fill out)

COUNTY _____ TWP. _____ RGE. _____ ¼ _____ ¼ _____ SEC. _____

Topo Map _____ _____ Ft W of EL. Ground Elevation _____

Field Located By _____ Date _____ _____ Ft N of SL. Depth to bedrock _____

Courthouse Location By _____ Date _____ _____ Ft E of WL. Bedrock elevation _____

Location accepted w/o verification by _____ _____ Ft S of NL. Aquifer elevation 678 Lot Number _____

South 57 7 102

WWRS

63-A

REF. 14, PAGE 12 OF 45

RECORD OF WATER WELL

State Form 35680 (R3 / 11-87)

Mail complete record within 30 days to:
INDIANA DEPARTMENT OF NATURAL RESOURCES
Division of Water
2475 Directors Row
Indianapolis, Indiana 46241
Telephone number (317) 232-4160

(Fill in completely)

WELL LOCATION

County where drilled	Civil township	Township	Range	Section
St. Joseph	Portage	37N	2E	SE¼SE¼NE¼ 25

Driving directions to the well location (include county road names, number, subdivisions lot number with consideration to intersecting, road and trip origination there is space for a map on reverse side.

± 130' East of Walnut Street & ± 40' South of Ewing Avenue in Rum Village Park

OW-92C

OWNER - CONTRACTOR

Name of well owner: City of South Bend	Telephone Number: ( )
Address (Street and number, city, state): 224 North Main Street - South Bend, IN	ZIP code: 46601
Name of building contractor:	Telephone number: ( )
Address (Street and number, city, state):	ZIP code:
Name of drilling contractor: Peerless-Midwest, Inc.	Telephone number: (219) 272-9050
Address (Street and number, city, state): 51255 Bittersweet Road, Granger, IN	ZIP code: 46530

Name of equipment operator	License number	Date of completion
Beehler Keiser (Tatay Drilling) SUB	281	1/23/92

CONSTRUCTION DETAILS

Use of well: OBSERVATION
☐ Home ☐ Industry ☐ Test ☐ Irrigation
☐ Public supply ☐ Stock ☐ Other (specify): _____

Method of drilling: ☒ Rotary ☐ Rev. rotary
☐ Cable tool ☐ Jet ☐ Bucket rig ☐ Other

Casing length	Material	Diameter
feet		inches
Screen length	**Material**	**Diameter**
feet		inches

Screen slot size: | Total depth of well:

Depth of pump setting: | Water quality (Clear, cloudy, odor, etc.)

Type of pump: ☐ Shallow-well jet
☐ Submersible ☐ Deep-well jet ☐ Other (specify): _____

WELL CAPACITY TEST

Check one: ☐ Air
☐ Bailing ☐ Pumping

Test rate: _____ gpm _____ hrs.

Drawdown: _____ feet | Static level (depth to water): _____ feet

GROUTING INFORMATION

Grout material	Depth of grout From	To
Method of installation	Number of bags used	

WELL ABANDONMENT

Sealing material	Depth filled From	To
Method of installation	Number of bags used	

WELL LOG

Formations: type of material	From (Feet)	To (Feet)
Yellow-Brown Clay with Some Sand & Gravel	0'	29'
Hard Boulders	29'	32'
Fine Gravel with Some Medium Gravel & Coarse Sand	32'	49'
Gray Clay with Some Fine Gravel	49'	67'
Coarse Sand & Fine Gravel	67'	69'
Clay with Some Fine Gravel	69'	93'
Med.-Coarse Sand w/Fine Gravel	93'	110'
Clay with Fine Gravel	110'	117'
Medium Sand & Gravel	117'	134'
Clay	134'	140'

(Additional space for well log on reverse side)

I hereby swear or affirm, under the penalties for perjury that the information submitted herewith is to the best of my knowledge and belief, true, accurate and complete.

Signature of owner of authorized representative: Michael J Garrage

Date: 2/13/92

[redacted] DRILLING REPORT IS ATTACHED.

South Bend - Rum Village Park

FL ONLY

FOR ADMINISTRATIVE USE ONLY
(well driller does not fill out)

County	Township	Range		Section
St Joseph	37 N	2E	NE ¼ NW ¼ NW	23

Topo map: South Bend W	Ft. W of EL	Ground elevation: 794	Subdivision name
Field located — By: AM Date: 05/92	Ft. N of SL	Depth to bedrock	Lot number
Courthouse location — By: Date:	Ft. E of WL: 550	Bedrock elevation	U.T.M.
Location accepted w / o verification by	Ft. S of NL: 40	Aquifer elevation: 654	

(continued from front side)

WELL LOG — Formations: type of material	FROM — Feet	TO — Feet

SKETCH SHOWING LOCATION
(Locate with reference to highways, intersecting county roads and distinctive landmarks.)

N

W E

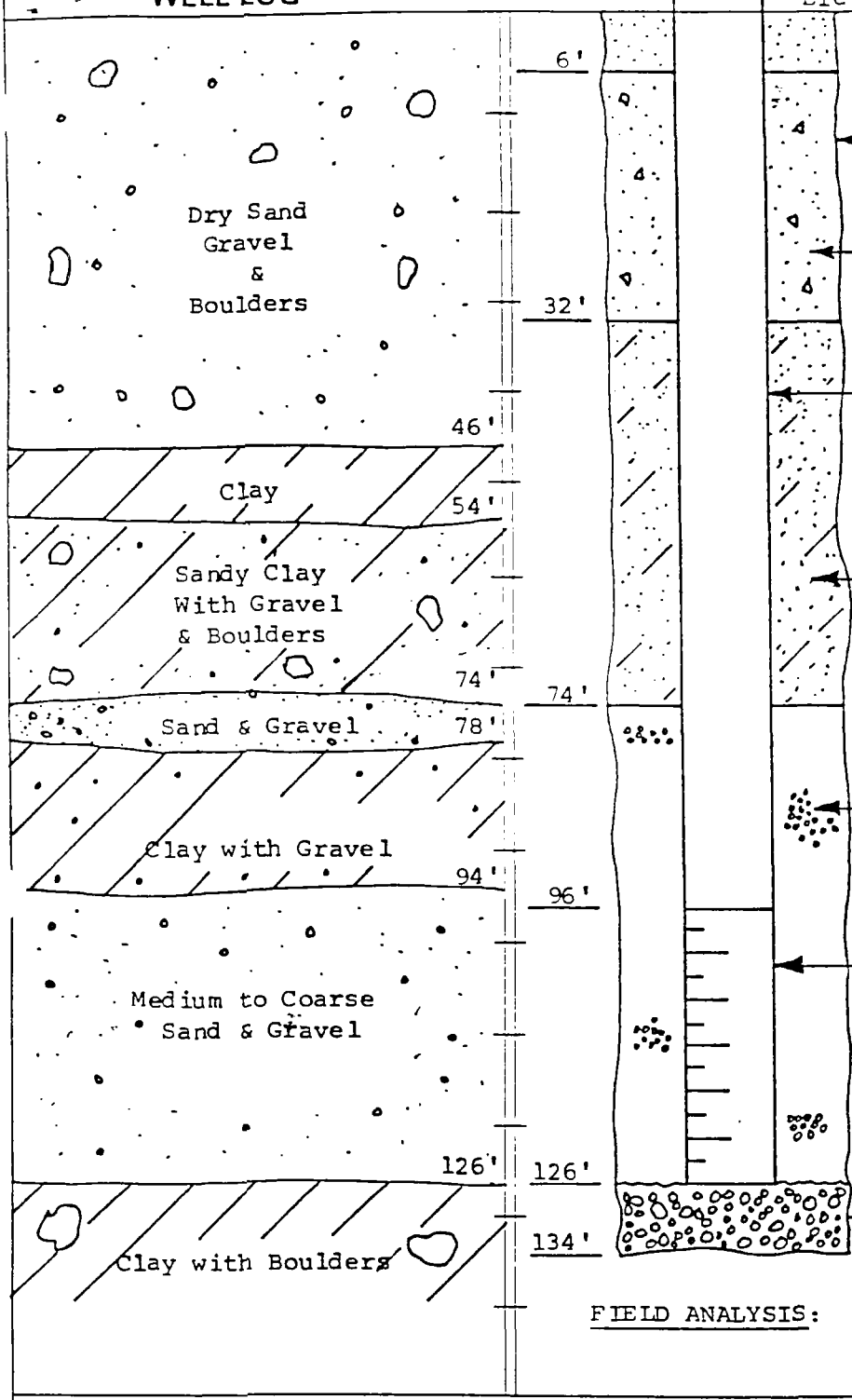
S

794
− 140
654 aq elev

WELL LOG

Ele. 801 ± GROUND LEVEL

WWRC



42" open hole drilled by reverse circulation method

Neat cement seal 6' to 32'

16" welded steel casing - 3/8" wall - 62#/ft.

28 yards of sand & Bentonite seal 29' to 74'

12 yards Northern No. 2 silica gravel 74' to 126'

30' of 16" pipe size Johnson stainless steel wire wound screen with .060 slot

Bottom of open hole from 126' to 134' backfilled with gravel

FIELD ANALYSIS:

Iron	-	0.1 PPM
Hardness	-	18 GPG
PH	-	7.4

City South Bend State Indiana

Location 210' South of Ewing & 190' East of Morris Street (Extended)

County St. Joseph Twp. Portage Section 14

Approximately 650' West of Existing Rum Village Well No. 1

Test Capacity 1450 GPM. Static Water Level 63 ft. Pumping Level 94 * ft.

Specific Capacity 46.8 GPM/Ft. D.D.

Date Drilled 10-27-82

Driller Mike Garrage

Job No. 3778

Operation of #1 well results in approximately 2' of drawdown in well #2.

Well No. 2

RUM VILLAGE PARK
SOUTH BEND, INDIANA

PEERLESS-MIDWEST, INC.
Granger, Indiana

CITY OF SOUTH BEND

RUM VILLAGE WELL 2

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

WWRS

County	Twp.	Rge.		Sec.
ST. JOSEPH	37N	2E	NW ¼ NW ¼ NW ¼	3

Topo map: SOUTH BEND WEST 7½	Ft. W of EL	Ground elevation: 810	Subdivision name: PEERLESS-MIDWEST
Field located By / Date	Ft. N of SL	Depth to bedrock	Lot no. 10-27-82
Courthouse location By / Date	2 500 Ft. E of WL	Bedrock elevation	
Location accepted w/o verification by: BRUNS 1-18-82	2 210 Ft. S of NL	Aquifer elevation: 684 -	

WELL LOG
(Continued from front side)

Formations: type of material	From	To
	ft	ft

SKETCH SHOWING LOCATION
Locate with reference to highways, intersecting county roads, and distinctive landmarks.

810
124
676

810
126
684

N

W

E

S

Bar Map

FC

Location Tenous
UTMN 609465
UTME 561850

REF. 14, PAGE 14 OF 45

WWRS

LAYNE-NORTHERN COMPANY
Incorporated
MISHAWAKA, INDIANA

☐ TEST
☒ PERMANENT

Job No. 41169

WELL LOG No. 1E CITY South Bend County St. Joseph
Owner City Water Department Township Portage 37N
Section 23
Location State Indiana
From Land Description Sprinkled ft. East and ft. North of SW Corner of Section.
From Street or Road 60' E. of R.R. 100' E. of Chippewa Ave
Near Rum Village Park South Station

FORMATION FOUND — DESCRIBE FULLY	FROM NATURAL GROUND LEVEL			
	Depth to Top of Stratum	Depth to Bottom of Stratum	Thickness of Stratum	Static Water Level
Top Soil	0	1	1	32
Coarse Sand and Gravel	1	20	19	
Medium Sand and Gravel	20	35	15	
Fine Sand	35	65	30	
Medium Sand And Gravel	65	93	28	
Stopped in Clay	93			

36 inch diameter hole drilled by ☐ Cable Tool ☒ Rotary ☐ Jetting

Pipe left in hole

Date Started 2-18-64 Finished 2-27-64 Paul Spatt
DRILLER

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
REMARKS:		

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

COUNTY: St. Joseph

TWP. 37N RGE. 2E SW ¼ SE (NE) ¼ SE ¼ SEC. 23

Topo Map: South Bend

Ft W of EL.	Ground elevation 775
Ft N of SL.	Depth to bedrock
Ft E of WL.	Bedrock elevation
Ft S of NL.	Aquifer elevation 682 693

Well log classified By ______ Date ______

Courthouse located By ______ Date ______

Field located By ______ Date ______

Acc. w/o verification By ______ Date ______

INSTRUCTIONS

This Water Well Record form is designed to record the most essential data concerning water well. We request that you be as accurate as possible in recording this information as it may be of great assistance in the planning and development of new water supplies.

An accurate location of the well is equally as important as an accurate well log. Please include all information possible in the space provided for well location.

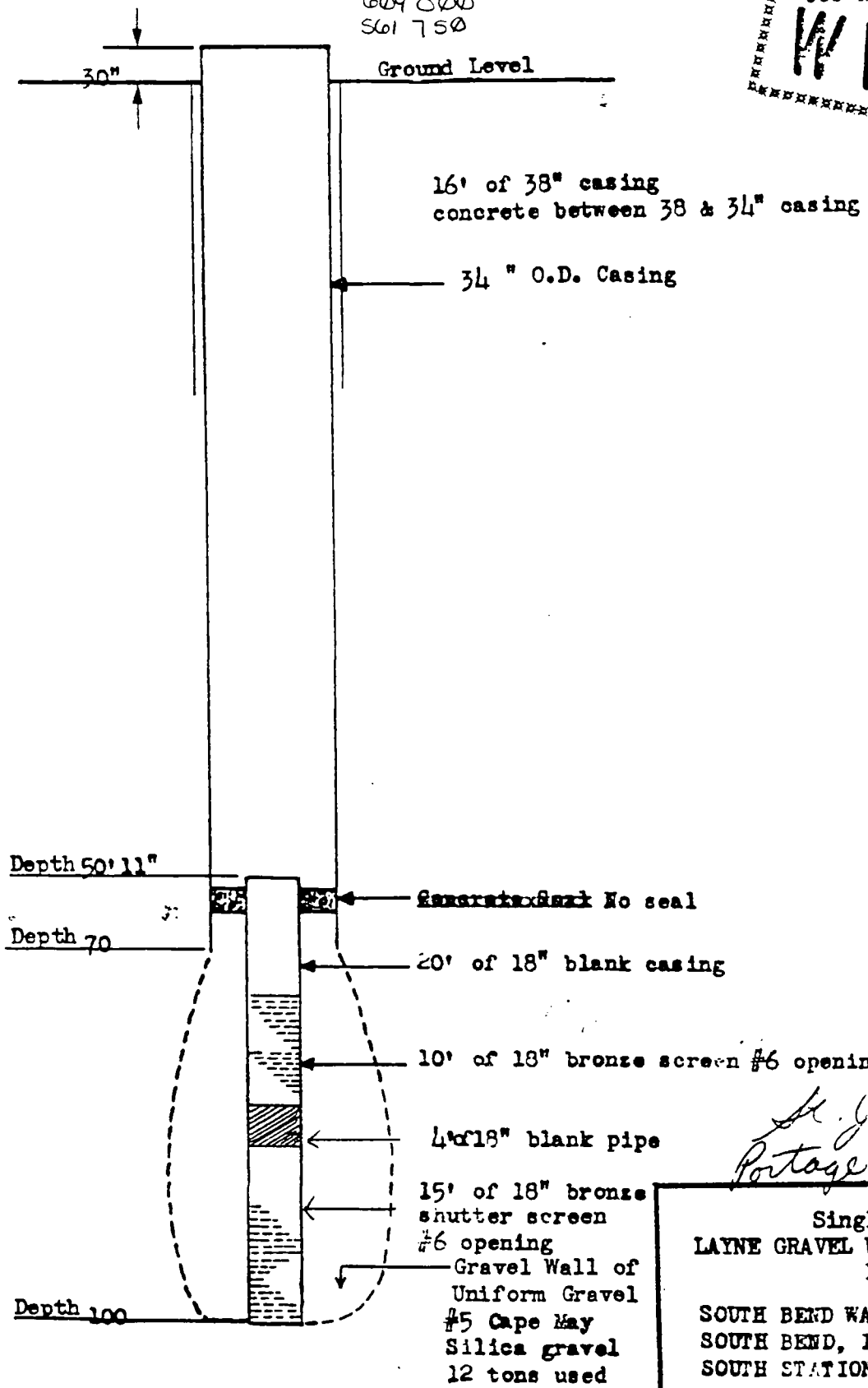
As specified in Chapter 6 of the Acts of 1959, a copy of this report must be submitted within thirty days after the completion of a well to the Division of Water Resources, Department of Conservation.

WR

REF. 14, PAGE 15 OF 45

UTM NOT EXACT
609 800
561 750

Job No. WWRS



St. Joseph Co.
Portage Twp. Sec. 23

Single Cased
LAYNE GRAVEL WALL WELL No. 2
For

SOUTH BEND WATER WORKS
SOUTH BEND, INDIANA
SOUTH STATION

Driller Ed Woodward

Date Finished 6-30-49

Not drawn to Scale
All depths measured from ground level

Static Level 40
Pumped 1051 GPM
at _____ Pumping Level

LAYNE NORTHERN CO. INC.
MISHAWAKA, INDIANA

DRAWN BY	DRAWING NO.
APPROVED BY	1204
DATE	

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To

COUNTY St Joseph TWP. 37N RGE. 2E ¼ ¼ SE SEC. 23

Topo Map Elkhart Bend Kent 7.5'

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

_____ Ft W of EL. _____ Ft N of SL.

_____ Ft E of WL. _____ Ft S of NL.

Ground Elevation _____ Depth to bedrock _____

Bedrock elevation _____ Aquifer elevation _____

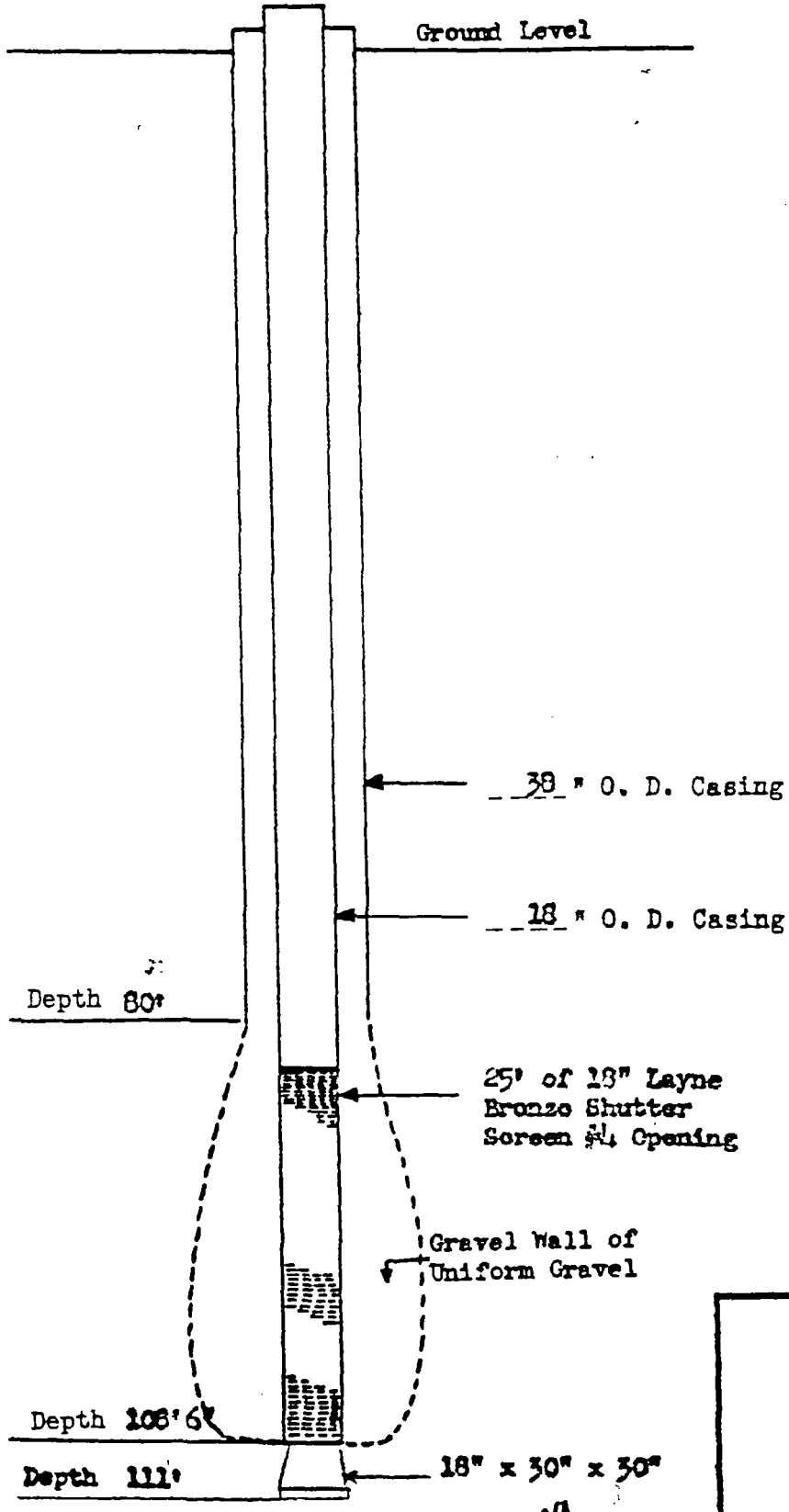
Lot Number _____

Subdivision Southside

WELL RECORD

CHIEF ORDER NO. [illegible]

Top of Casing above ground level
Inner 18" Outer Ground Level



St. Joseph Co.
Portage Twp

Driller CHARLES HINES

Date Finished 4/16 194 2

Spec 79

Not drawn to Scale
All depths measured
from ground level

Static Level 46'
Pumped 1110 GPM
at 60' Pumping Level

#4 Double Cased
LAYNE GRAVEL WALL WELL
For
CITY OF SOUTH BEND
SOUTH BEND, INDIANA
LOCATED AT SOUTH STATION

LAYNE NORTHERN CO. INC.
MISHAWAKA, INDIANA

DRAWN BY	DRAWING No.
APPROVED BY	
DATE 4-27-42	

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

COUNTY Lewis TWP. 37N RGE. 2E ¼ ¼SE SEC. 23

Topo Map South Bend Kiat ni

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

_____ Ft W of EL. Ground Elevation 4-16-92

_____ Ft N of SL. Depth to bedrock _____

_____ Ft E of WL. Bedrock elevation _____

_____ Ft S of NL. Aquifer elevation _____

Subdivision Name _____

Lot Number _____

No

REF. 14, PAGE 17 OF 45

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

State Form 35880

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

from USGS Bulletin #3 Sj 7-26
Chippewa Avenue and Penna Rail Road

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: Austin Drilling Company

Address

ne of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 160' Date well was completed: 4/21/27

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled ☒ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) 22' feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin #5

Date 1/ 1/ 1/85

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
sandy loam	0	2
red sand and gravel with shale	2	6
coarse sand	6	8
coarse sand and gravel with boulders	8	11
medium to coarse sand with gravel	11	16
sand and fine gravel	16	22
coarse sand with some gravel	22	25
sand and fine gravel	25	29
sand	29	40
coarse sand and gravel with clay	40	67
fine sand	67	85
medium to coarse sand and gravel	85	93
fine gravel	93	104
sand and small amounts of gravel	104	109
pea size gravel with some sand	109	116
blue clay	116	147
clay and sand	147	158
Lower Mississippian series - shale	158	160
745		

COUNTY St. Joseph TWP. 37N RGE. 2~~3~~E SEC 23 ¼ SW ¼ SE

Topo Map South Bend West 7½

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

FOR ADMINISTRATIVE USE ONLY (Well driller does not fill out)

Ft W of EL. _____ Ft N of SL. _____ Ft E of WL. _____ Ft S of NL. _____

Ground Elevation 761 Depth to bedrock 158 Bedrock elevation 603 Aquifer elevation _____

Subdivision Name Platted Lot Number _____ Block _____ Lot _____

UTM NOT EXACT
610 800
5680 750

REF. 14, PAGE 18 OF 45

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

WWRS

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township _____

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address _____

Building Contractor _____ Address _____

Name of Well Drilling Contractor: Layne Northern Company Inc

Address _____

Name of Drilling Equipment Operator: _____

WELL INFORMATION

Depth of well: 192 Date well was completed: 2/25/55

Diameter of casing or drive pipe: 6 Total Length: _____

Diameter of liner (if used): _____ Total Length: _____

Diameter of Screen: _____ Length: _____ Slot Size: _____

Type of Well: Drilled ☐ Gravel Pack ☐ Driven ☐ Other _____

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) ? feet

Bailer Test: Hours Tested _____ Rate _____ g.p.m. Drawdown _____ ft.

Pumping Test: Hours Tested _____ Rate _____ g.p.m. Drawdown _____ ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin 15

Date L. Wille 1/85

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
sandy clay	0	17
sand and fine gravel	17	25
brown clay	25	26
sand and gravel	26	32
thin strips of gravelly clay	32	
and sand and gravel		40
boulder clay	40	46
boulders	46	52
boulder clay	52	58
soft clay	58	65
boulder hard clay	65	102
sand and gravel	102	104
gray gravel with clay balls	104	106
gravel and sand with little clay	106	107
gray sand and gravel with little clay	107	110
sand and gravel with clay balls	110	122
sand and gravel	122	123
sand and gravel with a little clay	123	127
fine gravel and sand	129	129
sand, gravel and boulders with	129	
clay balls		130
sand and gravel with a trace of clay	130	135
sand and medium gravel	135	140
hard brown gravel and sand	140	142
brown gravel and sand with trace of clay	142	146
smooth hard brown clay	146	175
smooth soft brown clay	175	168
smooth hard brown clay	180	180

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

COUNTY St Joseph TWP. 37N RGE. 2 E ¼ NW ¼ NW SEC 23

Topo Map South Bend West 7½ Ground Elevation 805

Field Located By _____ Date _____ Ft W of EL. _____ Ft N of SL. _____ Depth to bedrock 180

Courthouse Location By _____ Date _____ Ft E of WL. _____ Bedrock elevation 625

Location accepted w/o verification by _____ Ft S of NL. _____ Aquifer elevation _____ Lot Number _____

Ludlow Maps

Well Hampton [illegible] 180-192

UTMN 609625
UTME 561950

REF. 14, PAGE 10 OF 45

LAYNE-NORTHERN COMPANY
Incorporated
MISHAWAKA, INDIANA

APR 1964
RECEIVED
Dept. of Conservation
Division of
Water Resources

☐ TEST
☒ PERMANENT

Job No. 41169

WELL LOG No. 2B CITY South Bend, Ind. County St. Joseph

Owner City Water Department Township Portage 37N

South Station Well #2 Section 23 Rge 2E

Location State Indiana

From Land Description _____ ft. East and _____ ft. North of SW Corner of Section.

From Street or Road 52' E. of R.R. - 600' N. of Chippewa Ave.

NE of Kennedy Park

FORMATION FOUND — DESCRIBE FULLY	FROM NATURAL GROUND LEVEL			
	Depth to Top of Stratum	Depth to Bottom of Stratum	Thickness of Stratum	Static Water Level
Top Soil	0	1	1	30
Coarse Sand with some gravel	1	65	64	
Coarse ~~sand~~ Gravel, some sand	65	69	4	
Medium sand	69	75	6	
Coarse Gravel	75	92	17	
Stopped in Clay	92			

34 inch diameter hole drilled by ☐ Cable Tool ☒ Rotary ☐ Jetting

Pipe left in hole

Date Started 3-27-64 Finished 3-11-64 Paul Hyatt
DRILLER

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
REMARKS:		

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

COUNTY: St. Joseph

TWP. 37N RGE. 2E SW ¼ SE ¼ SE ¼ SEC. 23

Topo Map: [illegible]

Well log classified By [illegible] Date [illegible]

Courthouse located By ____ Date ____

Field located By ____ Date ____

Acc. w/o verification By [illegible] Date [illegible]

____ Ft W of EL. Ground elevation 770

____ Ft N of SL. Depth to bedrock ____

____ Ft E of WL. Bedrock elevation ____

____ Ft S of NL. Aquifer elevation 678

Field located by Jim Hebenstreit [illegible]

INSTRUCTIONS

This Water Well Record form is designed to record the most essential data concerning a water well. We request that you be as accurate as possible in recording this information as it may be of great assistance in the planning and development of new water supplies.

An accurate location of the well is equally as important as an accurate well log. Please include all information possible in the space provided for well location.

As specified in Chapter 6 of the Acts of 1959, a copy of this report must be submitted within thirty days after the completion of a well to the Division of Water Resources, Indiana Department of Conservation.

WATER WELL RECORD

State Form 35680

DIVISION OF WATER
2475 DIRECTORS ROW
INDIANAPOLIS, IN 46241

Mail completed record within 30 days to:
DIVISION OF WATER
INDIANA DEPARTMENT OF NATURAL RESOURCES
~~605 STATE OFFICE BUILDING~~
~~INDIANAPOLIS, INDIANA 46204~~
PHONE (317) 232-4160

REF. 14, PAGE 20 OF 45

WELL LOCATION
(Fill in completely)

y where drilled: St. Joseph

Township: South Bend

ng directions to the well location (include county road names, numbers, subdivisions, lot number with consideration to intersecting roads and trip origina- There is space for a map on reverse side.

Property location:

701 West Chippewa Ave.
South Bend, Indiana
S/A for map

Boring Log #1

OWNER — CONTRACTOR

Well owner: A.M. General

Address: 701 West Chippewa Ave.

Building contractor:

Address:

Drilling contractor: Bowser-Morner Inc.

Address: 4518 Taylorsville Rd

~~Equipment operator~~: Dayton, Ohio 45424

Completion date: 4/5/90

CONSTRUCTION DETAILS

S/A

ot well: monitor

illed ☐ Gravel pack ☐ Driven ☐ Other

l well.

ome ☐ Industry ☐ Test ☐ Irrigation

ublic supply ☐ Stock ☐ Other (specify) _____

od of drilling. Hollow Stem Auger

able ☐ Rotary ☐ Jet ☐ Rev. rotary ☐ Bucket rig

g length _____ feet | Diameter _____ inches

n length _____ feet | Diameter _____ inches

n slot size

of pump setting

of pump

ubmersible ☐ Shallow-well jet ☐ Deep-well jet ☐ Other (specify) _____

WELL CAPACITY TEST

S/A

k one)

ailing ☐ Pumping

ate _____ gpm _____ hrs | Drawdown _____ feet

level

to water) 17 feet

r quality (clear, cloudy, odor, etc.)

WELL LOG

Formations, type of material	From	To
	ft.	ft.
(See attached)		

(Additional space for Well Log on reverse side)

Robert L Whitney / JMW

Date 1/18/91

FOR ADMINISTRATIVE USE ONLY
(well driller do not fill out)

County	Township	Range	¼	¼ SE	Section
St. Joseph	37 N	2E			23

Topo map: South Bend (W)	Ft. W of EL	Ground elevation	Subdivision name
Field located — By ____ Date	Ft. N of SL	Depth to bedrock	Lot number
Courthouse location — By ____ Date	Ft. E of WL	Bedrock elevation	U.T.M.
Location accepted w / o verification by	Ft. S of NL	Aquifer elevation	

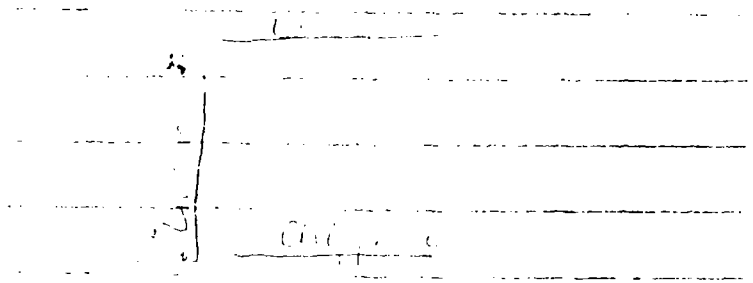
(continued from front side)

WELL LOG	FROM	TO
Formations: type of material	Feet	Feet

W E

LOCATION:

A.M. General also known as LTY Facility bound on the north side by Irving St., on the west side by Linden Road, and on the south by Chippenawa



:tive landmarks.)

LOG OF BORING No. 1

BORING LOCATION: A. DIR

DATE STARTED: 4-5-90

SURFACE ELEVATION:

DATE COMPLETED: 4-5-90

STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM:	SAMPLE NO. & TYPE	SAMPLE DEPTH	BLOWS PER 6" ON SAMPLER	"N" BLOWS/FT	SAMPLE RECOVERY IN
0.0	1.0' SOIL MOIST		0.0	1-1		
5	BR SAND & GRAV TR SILT	1F	2.0	36-42	37	24
5.0	BR SAND MOIST	2A	5.0 7.0	5-7 7-10	15	24
		3A	10.0 12.0	5-7 6-7	4	24
	WET	4F	15.0 17.0	5-5 8-10	13	24
	WET	5F	20.0 22.0	4-7 12-17	19	24
	B. OF B. 30.0'					

DRILLING METHOD: 4¼" H.SA.

DRILLER: ARS SU

JOB NO.: 46813

WATER OBSERVATIONS

INITIAL DEPTH: 17.0'

COMPLETION DEPTH: 17.0

DEPTH AFTER 11 HRS. T

TYPE SAMPLER:

☒ A. SPLIT SPOON

☐ B.

☐ C. SHELBY TUBE

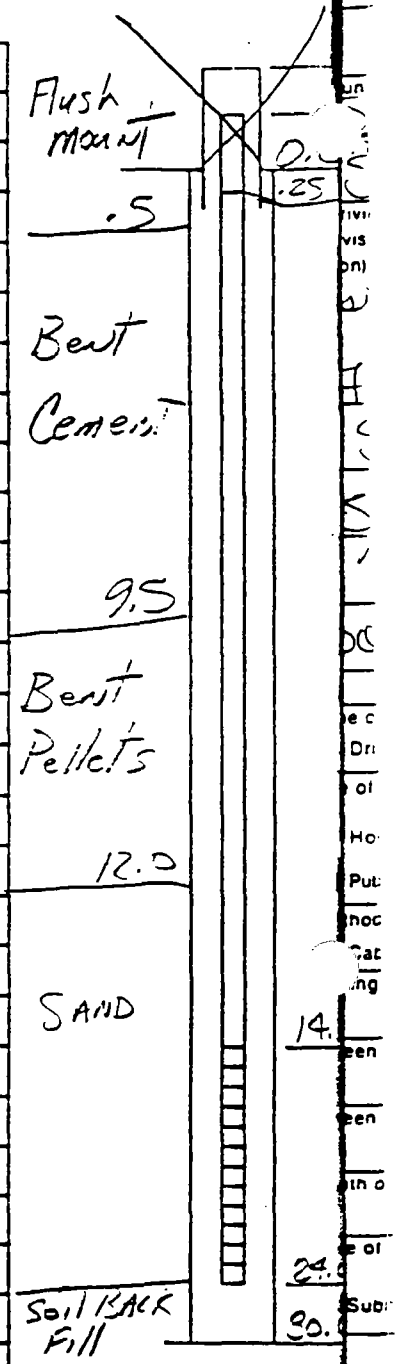
BOWSER-MORNER

2B12R

NAME:

JOB NO.: 46813 DATE: 4-5-90 SHEET 1 OF 1

BORING NO.	1	DATE INSTALLED	4-5
SOIL BORING FEET	30.0	SURFACE ELEV.	—
CASER SIZE I.D.	4 1/4	BOTTOM OF BORING	30.0
STD. PEN. TESTS	5	BOTTOM OF SCREEN	24.0
SHELBY TUBES	—	TOP OF SCREEN	14.0
ROCK CORING FEET	—	TOP OF SAND	12.0
HOLE GROUTING FEET	—	TOP OF BENT. PELLETS	9.5
SECONS. TIME	1.0	TOP OF BENT. SLURRY	—
DOT DRUMS	—	TOP OF BENT./CEMENT	.5
PROCESS TIME	.25	TOP OF SOIL BACKFILL	24.0
MONITORING WELL INFORMATION		TOP OF RISER PIPE	.25
		TOP OF GUARD PIPE	—
SIZE OF PIPE	2"	TOP OF MANHOLE COVER	+.25
TYPE OF PIPE	PVC	INITIAL WATER DEPTH	17.0
LT. OF SCREEN	10.0	COMPLETION DEPTH	17.0
LT. OF RISER	5.0	24 HR. WATER DEPTH	—
CAPS	1	48 HR. WATER DEPTH	—
PLUGS	1	HR. WATER DEPTH	—
POUNDS OF SAND	450		
50# BAGS/GOLD SEAL	.5		
50# BAGS/GRANULAR BENTONITE	—		
POCKETS OF PELLETS	1		
50# BAGS/VOLCLAY	—		
50# BAGS/CEMENT	2		
BAGS OF SAK-CRETE	2		
BAGS OF ASPHALT MIX	—		
GUARD PIPE	—		
MANHOLE COVER	1		
INSTALLATION TIME	—		
DEVELOPMENT TIME	2.25		
STAND-BY TIME	—		



COMMENTS:

LOG OF BORING No. 0

BORING LOCATION: AS DIR.

DATE STARTED: 4-6-90

SURFACE ELEVATION:

DATE COMPLETED: 4-6-90

STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM.	SAMPLE NO. & TYPE	SAMPLE DEPTH	BLOWS PER 6" ON SAMPLER	"N" BLOWS/FT	SAMPLE RECOVERY %
0.0	TOPSOIL		0.0	1-2		
1.0	BR SAND (MOIST)	1A	2.0	6-10	8	17
		2A	5.0 7.0	4-13 16-17	30	24
		3A	10.0 12.0	6-12 16-30	28	24
	(WET)	4A	15.0 17.0	9-9 30-30	39	24
	3 OF 3 25.0'					

DRILLING METHOD: 4 1/4" H.S.A.

DRILLER: AR & SN.

JOB NO.: 46813

WATER OBSERVATIONS

INITIAL DEPTH: 15.0'

COMPLETION DEPTH: 15.0

DEPTH AFTER N HRS. T

TYPE SAMPLER:

☒ A. SPLIT SPOON

☐ B.

☐ C. SHELBY TUBE

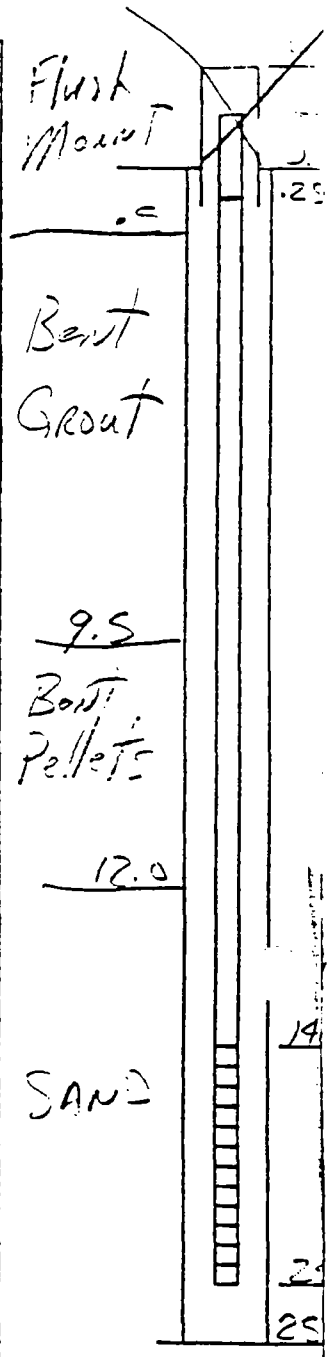
BOWSER-MORNER

2B12R

NAME: _____

JOB NO.: 46813 DATE: 4-6-90 SHEET 1 OF 1

BORING NO.	2	DATE INSTALLED	4-6
SOIL BORING FEET	25.0	SURFACE ELEV.	—
AUGER SIZE I.D.	4¼	BOTTOM OF BORING	25.0
STD. PEN. TESTS	4	BOTTOM OF SCREEN	24.0
SHELBY TUBES	—	TOP OF SCREEN	14.0
ROCK CORING FEET	—	TOP OF SAND	12.0
HOLE GROUTING FEET	—	TOP OF BENT. PELLETS	9.5
DECON. TIME	.75	TOP OF BENT. SLURRY	—
DOT DRUMS	—	TOP OF BENT./CEMENT	.5
ACCESS TIME	.25	TOP OF SOIL BACKFILL	—
MONITORING WELL INFORMATION		TOP OF RISER PIPE	.25
		TOP OF GUARD PIPE	—
SIZE OF PIPE	2"	TOP OF MANHOLE COVER	0.0
TYPE OF PIPE	PVC	INITIAL WATER DEPTH	15.0
FT. OF SCREEN	10.0	COMPLETION DEPTH	15.0
FT. OF RISER	15.0	24 HR. WATER DEPTH	—
CAPS	1	48 HR. WATER DEPTH	—
PLUGS	1	HR. WATER DEPTH	—
POUNDS OF SAND	450		
50# BAGS/GOLD SEAL	¼		
100# BAGS/GRANULAR BENTONITE	—		
BUCKETS OF PELLETS	1		
50# BAGS/VOLCLAY	—		
96# BAGS/CEMENT	2		
BAGS OF SAK-CRETE	1		
BAGS OF ASPHALT MIX	—		
GUARD PIPE	—		
MANHOLE COVER	1		
INSTALLATION TIME	—		
DEVELOPMENT TIME	2.25		
STAND-BY TIME	—		



COMMENTS:

LOG OF BORING No. 3

BORING LOCATION: AS DIR

DATE STARTED: 4-6-90

SURFACE ELEVATION:

DATE COMPLETED: 4-6-90

STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM:	SAMPLE NO & TYPE	SAMPLE DEPTH	BLOWS PER 6" ON SAMPLER	"N" BLOWS/FT	SAMPLE RECOVERY %
0.0 .25	ASPHALT (MOIST) SM COBBLES BR. SAND & GRAV. SM. SILT	1A	.25 2.25	7-6 5-3	11	10
		2A	5.0 7.0	8-14 18-23	32	10
8.0	BR SAND (MOIST)	3A	10.0 12.0	15-12 12-13	24	18
		4A	15.0 17.0	7-10 15-16	25	20
	(WET)	5L	20.0 22.0	10-13 19-21	32	24
	3 OF 3 30.0'					

DRILLING METHOD: 4¼" H.S.A.

DRILLER: AZ & SW

JOB NO.: 46813

WATER OBSERVATIONS

INITIAL DEPTH: 22.0'

COMPLETION DEPTH: 21.5

DEPTH AFTER N HRS. T

TYPE SAMPLER:

☒ A. SPLIT SPOON

☐ B.

☐ C. SHELBY TUBE

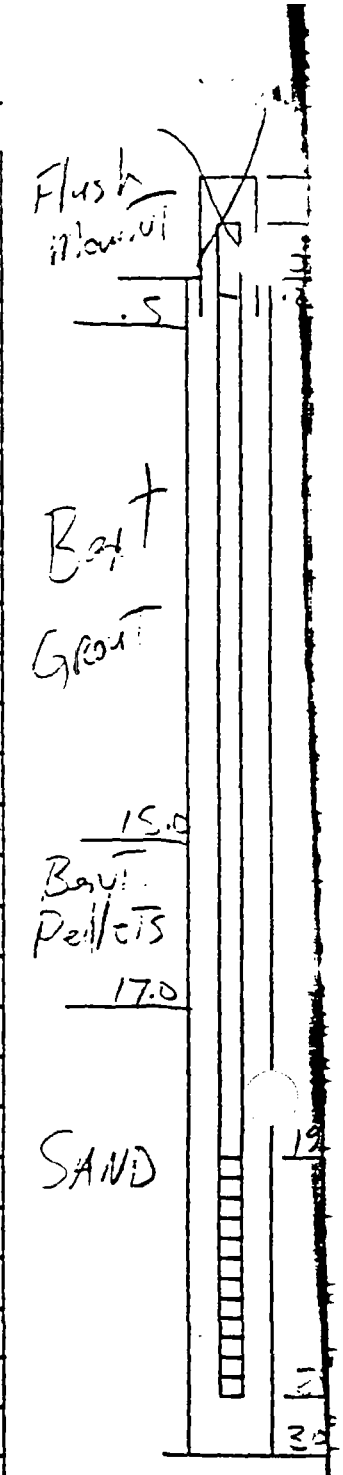
BOWSER-MORNER

2B12R

NAME:

JOB NO.: 46813 DATE: 4-6-90 SHEET 1 OF 1

BORING NO.	3	DATE INSTALLED	4-6
SOIL BORING FEET	30.0	SURFACE ELEV.	—
AUGER SIZE I.D.	4¼	BOTTOM OF BORING	30.0
STD. PEN. TESTS	5	BOTTOM OF SCREEN	29.0
SHELBY TUBES	—	TOP OF SCREEN	19.0
ROCK CORING FEET	—	TOP OF SAND	17.0
HOLE GROUTING FEET	—	TOP OF BENT. PELLETS	15.0
DECON. TIME	.75	TOP OF BENT. SLURRY	—
DOT DRUMS	—	TOP OF BENT./CEMENT	.5
ACCESS TIME	—	TOP OF SOIL BACKFILL	—
MONITORING WELL INFORMATION		TOP OF RISER PIPE	.25
		TOP OF GUARD PIPE	—
SIZE OF PIPE	2"	TOP OF MANHOLE COVER	0.0
TYPE OF PIPE	PVC	INITIAL WATER DEPTH	22.0
FT. OF SCREEN	10.0	COMPLETION DEPTH	21.5
FT. OF RISER	20.0	24 HR. WATER DEPTH	—
CAPS	1	48 HR. WATER DEPTH	—
PLUGS	1	HR. WATER DEPTH	—
POUNDS OF SAND	500		
50# BAGS/GOLD SEAL	¼		
100# BAGS/GRANULAR BENTONITE	—		
BUCKETS OF PELLETS	1		
50# BAGS/VOLCLAY	—		
96# BAGS/CEMENT	2		
BAGS OF SAK-CRETE	1		
BAGS OF ASPHALT MIX	—		
GUARD PIPE	—		
MANHOLE COVER	1		
INSTALLATION TIME	—		
DEVELOPMENT TIME	2.25		
STAND-BY TIME	—		



COMMENTS:

LOG OF BORING No. 2

BORING LOCATION: AS. DES.

DATE STARTED: 4-6-90

SURFACE ELEVATION:

DATE COMPLETED: 4-6-90

STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM:	SAMPLE NO & TYPE	SAMPLE DEPTH	BLOWS PER 6" ON SAMPLER	"N" BLOWS/FT	SAMPLE RECOVERY %
3.0	(MOIST) W/COBBLES BR & BLACK SAND & GRAV					
		1L	5.0 7.0	9-5 6-7	11	21
	NO RECOVERY	2A	10.0 12.0	7-7 6-7	13	0
16 13.0	BR SAND (MOIST)	3A	15.0 17.0	9-7 6-6	3	5
	(WET)	4A	20.0 22.0	12-30 45-54	75	16
	B OF B. 30.0'					

DRILLING METHOD: 4 1/4" HSA.

DRILLER: AR & SN.

JOB NO.: 46813

WATER OBSERVATIONS

INITIAL DEPTH: 20.0

COMPLETION DEPTH: 20.0

DEPTH AFTER N HRS. T

TYPE SAMPLER:

☒ A. SPLIT SPOON

☐ B.

☐ C. SHELBY TUBE

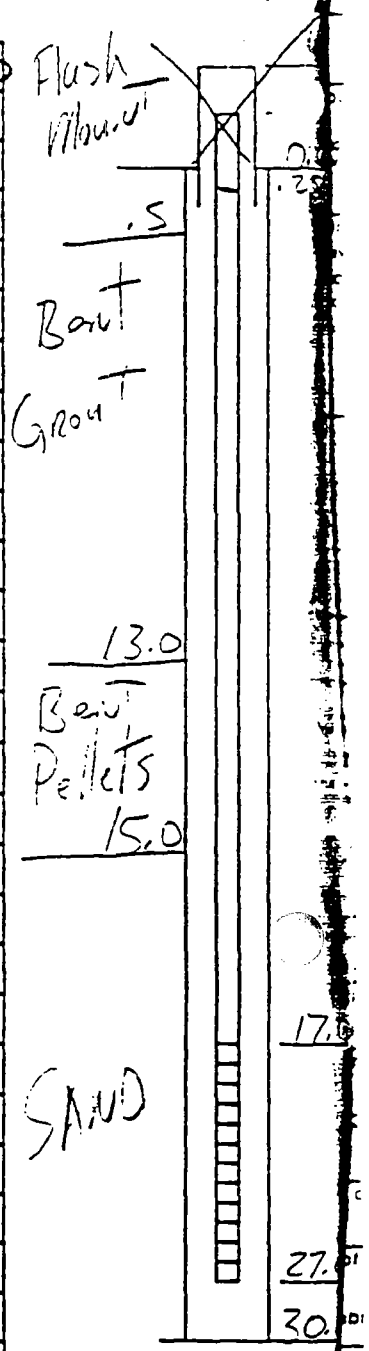
BOWSER-MORNER

2B12R

NAME:

JOB NO.: 46813 DATE: 4-6-90 SHEET 1 OF 1

BORING NO.	4C	DATE INSTALLED	4-6-90
SOIL BORING FEET	30.0	SURFACE ELEV.	—
AUGER SIZE I.D.	4 1/4	BOTTOM OF BORING	30.0
STD. PEN. TESTS	4	BOTTOM OF SCREEN	27.0
SHELBY TUBES	—	TOP OF SCREEN	17.0
ROCK CORING FEET	—	TOP OF SAND	15.0
HOLE GROUTING FEET	—	TOP OF BENT. PELLETS	13.0
DECON. TIME	—	TOP OF BENT. SLURRY	—
DOT DRUMS	—	TOP OF BENT./CEMENT	.5
ACCESS TIME	—	TOP OF SOIL BACKFILL	—
MONITORING WELL INFORMATION		TOP OF RISER PIPE	.25
		TOP OF GUARD PIPE	—
SIZE OF PIPE	2"	TOP OF MANHOLE COVER	0.0
TYPE OF PIPE	P/C	INITIAL WATER DEPTH	20.0
FT. OF SCREEN	10.0	COMPLETION DEPTH	20.0
FT. OF RISER	20.0	24 HR. WATER DEPTH	—
CAPS	1	48 HR. WATER DEPTH	—
PLUGS	1	HR. WATER DEPTH	—
POUNDS OF SAND	500		
50# BAGS/GOLD SEAL	1/2		
100# BAGS/GRANULAR BENTONITE	—		
BUCKETS OF PELLETS	1		
50# BAGS/VOLCLAY	—		
96# BAGS/CEMENT	3		
BAGS OF SAK-CRETE	1		
BAGS OF ASPHALT MIX	—		
GUARD PIPE	—		
MANHOLE COVER	1		
INSTALLATION TIME	—		
DEVELOPMENT TIME	2.25		
STAND-BY TIME	—		



COMMENTS:

LOG OF BORING No. #5

BORING LOCATION: AS DIR

DATE STARTED: 4-7-90

SURFACE ELEVATION:

DATE COMPLETED: 4-7-90

STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM:	SAMPLE NO & TYPE	SAMPLE DEPTH	BLOWS PER 6" ON SAMPLER	"N" BLOWS FT	SAMPLE RECOVERY IN
0.0 .5	COAL (MOIST 3R SAND W/COBBLES	1A	0.0 2.0	6-10 12-10	22	18
	NO RECOVERY	2A	5.0 7.0	7-4 5-4	9	0
		3A	10.0 12.0	30-5/2	8 1/2	4
13.0'	3R SAND (MOIST)	4A	15.0 17.0	14-16 19-30	35	18
	(WET)	5A	20.0 22.0	8-19 50/6	60/12"	24
	B OF B. 28.0'					

DRILLING METHOD: 4 1/4' H.S.A

DRILLER: AR & SW.

JOB NO.: 46813

WATER OBSERVATIONS

INITIAL DEPTH: 18.0'

COMPLETION DEPTH: 18.0

DEPTH AFTER N HRS. T

TYPE SAMPLER:

☒ A. SPLIT SPOON

☐ B.

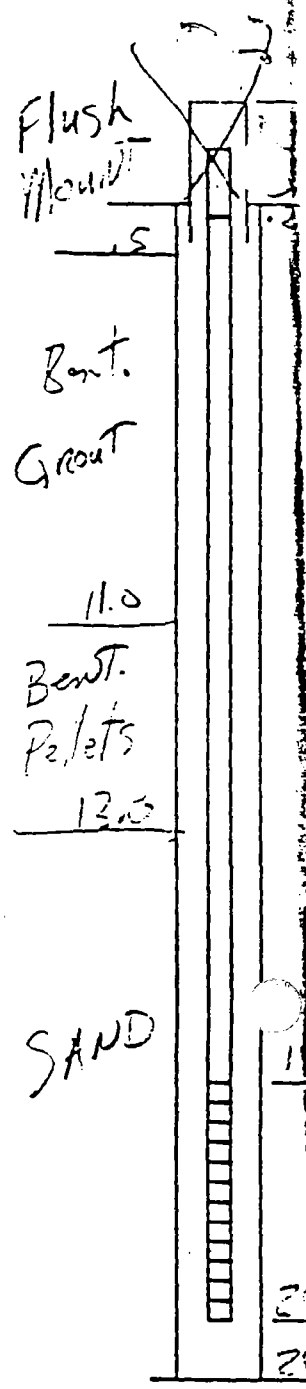
☐ C. SHELBY TUBE

BOWSER-MORNER

2B12R

JOB NO.: 46813 DATE: 4-7-90 SHEET 1 OF 1

BORING NO.	5	DATE INSTALLED	4-7-90
SOIL BORING FEET	28.0	SURFACE ELEV.	—
AUGER SIZE I.D.	4 1/4	BOTTOM OF BORING	28.0
STD. PEN. TESTS	5	BOTTOM OF SCREEN	25.0
SHELBY TUBES	—	TOP OF SCREEN	15.0
ROCK CORING FEET	—	TOP OF SAND	13.0
HOLE GROUTING FEET	—	TOP OF BENT. PELLETS	11.0
DECON. TIME	.5	TOP OF BENT. SLURRY	—
DOT DRUMS	—	TOP OF BENT./CEMENT	.5
ACCESS TIME	.25	TOP OF SOIL BACKFILL	—
MONITORING WELL INFORMATION		TOP OF RISER PIPE	.25
		TOP OF GUARD PIPE	—
SIZE OF PIPE	2"	TOP OF MANHOLE COVER	0.0
TYPE OF PIPE	PVC	INITIAL WATER DEPTH	18.0
FT. OF SCREEN	10.0	COMPLETION DEPTH	18.0
FT. OF RISER	20.0	24 HR. WATER DEPTH	—
CAPS	1	48 HR. WATER DEPTH	—
PLUGS	1	HR. WATER DEPTH	—
POUNDS OF SAND	450		
50# BAGS/GOLD SEAL	1/4		
100# BAGS/GRANULAR BENTONITE	—		
BUCKETS OF PELLETS	1		
50# BAGS/VOLCLAY	—		
96# BAGS/CEMENT	2		
BAGS OF SAK-CRETE	1		
BAGS OF ASPHALT MIX	—		
GUARD PIPE	—		
MANHOLE COVER	1		
INSTALLATION TIME	—		
DEVELOPMENT TIME	2.25		
STAND-BY TIME	—		



COMMENTS:

LOG OF BORING No. 6

BORING LOCATION: A Dir

DATE STARTED: 4/16/90

SURFACE ELEVATION:

DATE COMPLETED: 4-16-90

STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM:	SAMPLE NO & TYPE	SAMPLE DEPTH	BLOWS PER 6" ON SAMPLER	"N" BLOWS FT	SAMPLE RECOVERY IN
0.0	ASPHALT	~~S~~		4-7-11-5	21	12"
12.5	Br Sand Sm Gravel. Sm Silt (Moist)	1A	.5-2.5			
		2A	5-7	6-8-12-14	20	2
		3A	10-12	4-3-4-5	7	18"
		4A	15-17	8-9-8-11	17	18"
17.0	BROWN SAND (WET)	5A	19.5-21.5	4-5-15-16	20	18"
	BofB 30.0					

DRILLING METHOD: HSA

DRILLER: A.R. R.L.

JOB NO.: 46815

WATER OBSERVATIONS

INITIAL DEPTH: 20.0

COMPLETION DEPTH: 20

DEPTH AFTER N HRS. T

TYPE SAMPLER:

☒ A. SPLIT SPOON

☐ B.

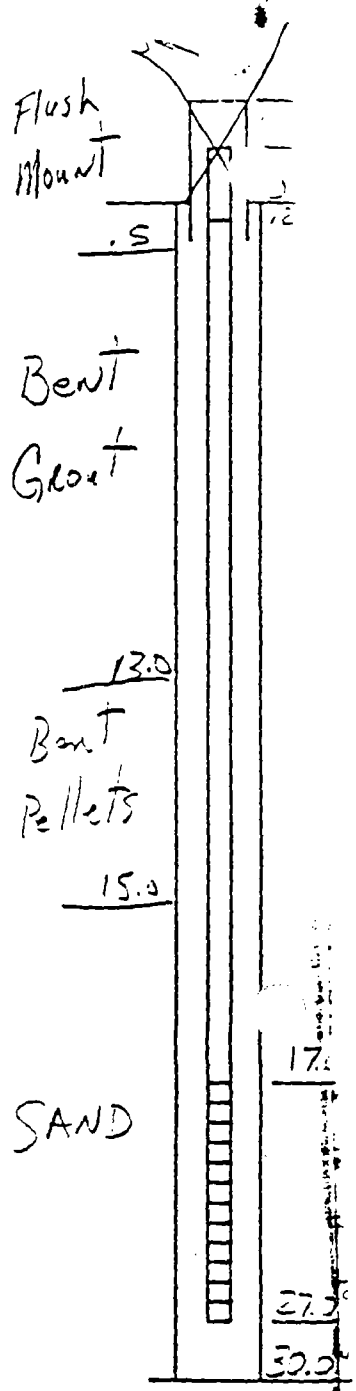
☐ C. SHELBY TUBE

BOWSER-MORNER

2B12R

JOB NO.: 46813 DATE: 4-16-90 SHEET 1 OF 1

BORING NO.	6	DATE INSTALLED	4-16
SOIL BORING FEET	30.0	SURFACE ELEV.	—
AUGER SIZE I.D.	4¼	BOTTOM OF BORING	30.0
STD. PEN. TESTS	5	BOTTOM OF SCREEN	27.0
SHELBY TUBES	—	TOP OF SCREEN	17.0
ROCK CORING FEET	—	TOP OF SAND	15.0
HOLE GROUTING FEET	—	TOP OF BENT. PELLETS	13.0
DECON. TIME	1.0	TOP OF BENT. SLURRY	—
DOT DRUMS	—	TOP OF BENT./CEMENT	.5
ACCESS TIME	.25	TOP OF SOIL BACKFILL	—
MONITORING WELL INFORMATION		TOP OF RISER PIPE	.25
		TOP OF GUARD PIPE	—
SIZE OF PIPE	2"	TOP OF MANHOLE COVER	0.0
TYPE OF PIPE	PVC	INITIAL WATER DEPTH	20.0
FT. OF SCREEN	10.0	COMPLETION DEPTH	20.0
FT. OF RISER	20.0	24 HR. WATER DEPTH	—
CAPS	1	48 HR. WATER DEPTH	—
PLUGS	1	HR. WATER DEPTH	—
POUNDS OF SAND	450		
50# BAGS/GOLD SEAL	¼		
100# BAGS/GRANULAR BENTONITE	—		
BUCKETS OF PELLETS	1		
50# BAGS/VOLCLAY	—		
96# BAGS/CEMENT	2		
BAGS OF SAK-CRETE	1		
BAGS OF ASPHALT MIX	—		
GUARD PIPE	—		
MANHOLE COVER	1		
INSTALLATION TIME	—		
DEVELOPMENT TIME	2.25		
STAND-BY TIME	—		



COMMENTS:

REF. 14, PAGE 27 OF 45

LOG OF BORING No. 7

BORING LOCATION: AS DIR.

DATE STARTED: 4/17/90

SURFACE ELEVATION:

DATE COMPLETED: [illegible]

STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM	SAMPLE NO. & TYPE	SAMPLE DEPTH	BLOWS PER 6" ON SAMPLER	"N" BLOWS/FT	SAMPLE RECOVERY IN
0.0	ASPHALT					
.25	Z SAND Sm. Silt Sm. Gravel (moist)	1A	5-25	8-22-20-25	42	10"
1.0	Black Sand Sm Silt Sm Gravel moist	2A	5-7	15-7-5-5	12	18"
10.0	Brown Sand (moist)	3A	10-12	7-8-11-12	19	18"
	Wet at 15.5	4A	15-17	3-7-10-11	17	18"
	B of B 25.0					

DRILLING METHOD: HSA

DRILLER: A.R. Z.L

JOB NO.: 46813

WATER OBSERVATIONS

INITIAL DEPTH: 15.5

COMPLETION DEPTH: 15.5

DEPTH AFTER N HRS. T

TYPE SAMPLER:

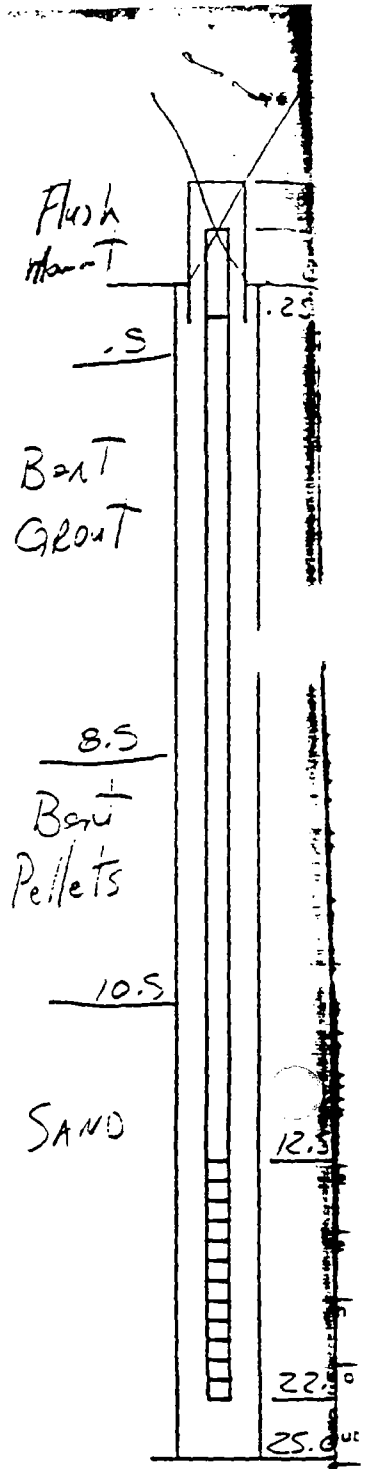
- [X] A. SPLIT SPOON
- [ ] B.
- [ ] C. SHELBY TUBE

BOWSER-MORNER

2B12R

JOB NO.: 46813 DATE: 4/17/90 SHEET 1 OF 1

BORING NO.	7	DATE INSTALLED	4-17
SOIL BORING FEET	25	SURFACE ELEV.	—
AUGER SIZE I.D.	4 1/4	BOTTOM OF BORING	25.0
STD. PEN. TESTS	4	BOTTOM OF SCREEN	22.5
SHELBY TUBES	—	TOP OF SCREEN	12.5
ROCK CORING FEET	—	TOP OF SAND	10.5
HOLE GROUTING FEET	—	TOP OF BENT. PELLETS	8.5
DECON. TIME	.5	TOP OF BENT. SLURRY	—
DOT DRUMS	—	TOP OF BENT/CEMENT	.5
ACCESS TIME	.25	TOP OF SOIL BACKFILL	—
MONITORING WELL INFORMATION		TOP OF RISER PIPE	.25
		TOP OF GUARD PIPE	—
SIZE OF PIPE	2"	TOP OF MANHOLE COVER	0.0
TYPE OF PIPE	PVC	INITIAL WATER DEPTH	15.5
FT. OF SCREEN	10.0	COMPLETION DEPTH	15.5
FT. OF RISER	15.0	24 HR. WATER DEPTH	—
CAPS	1	48 HR. WATER DEPTH	—
PLUGS	1	HR. WATER DEPTH	—
POUNDS OF SAND	900		
50# BAGS/GOLD SEAL	1/4		
100# BAGS/GRANULAR BENTONITE	—		
BUCKETS OF PELLETS	1		
50# BAGS/VOLCLAY	—		
96# BAGS/CEMENT	2		
BAGS OF SAK-CRETE	1		
BAGS OF ASPHALT MIX	—		
GUARD PIPE	—		
MANHOLE COVER	1		
INSTALLATION TIME	—		
DEVELOPMENT TIME	2.25		
STAND-BY TIME	—		



COMMENTS:

LOG OF BORING No. 8

BORING LOCATION: AS DTL. DATE STARTED: 4/17/90

SURFACE ELEVATION: DATE COMPLETED: 4/17/90

STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM:	SAMPLE NO & TYPE	SAMPLE DEPTH	BLOWS PER 6" ON SAMPLER	"N" BLOWS/FT	SAMPLE RECOVERY "
0.0	ASPHALT					
.25	BLACK SAND, Sm SILT, Tr Clay (MOIST) Sm GRAVEL	1A	.5-2.5	4-12-7-4	19	18"
		2A	5-7	3-4-4-4	8	18"
		3A	10-12	4-5-3-4	8	18"
16.0	BR. SAND (MOIST)	4A	15-17	3-6-50/3	56/6"	12"
	Wet @ 20.5	5A	20-22	4-9-21-30	30	18"
	B of B 30.0					

DRILLING METHOD: HSA

DRILLER: A.R. R.C.

JOB NO.: 1,813

WATER OBSERVATIONS

INITIAL DEPTH: 20.5

COMPLETION DEPTH: 20.5

DEPTH AFTER N HRS. 1

TYPE SAMPLER:

☒ A. SPLIT SPOON

☐ B.

☐ C. SHELBY TUBE

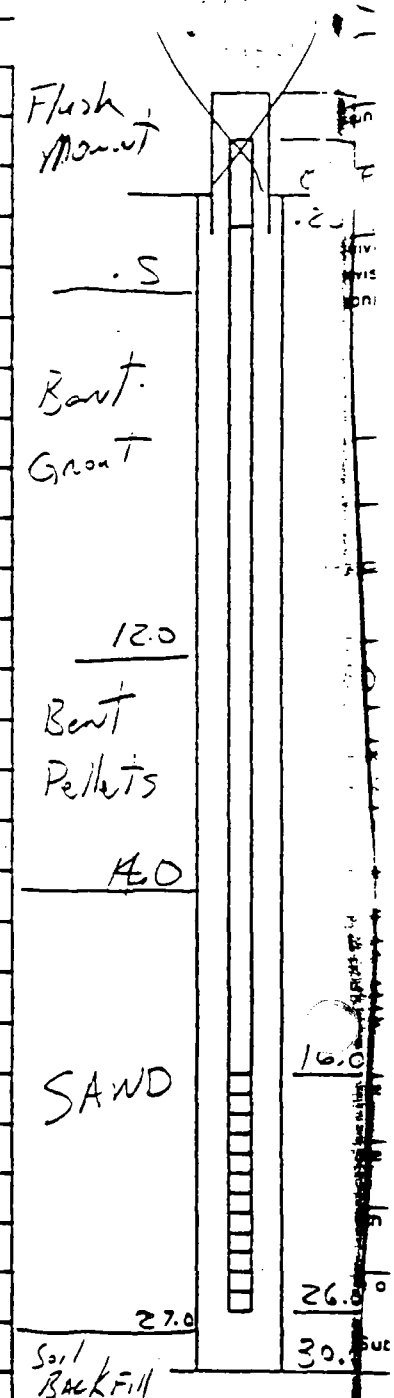
BOWSER-MORNER

2B12R

NAME:

JOB NO.: 46813 - DATE: 4-17-90 SHEET 1 OF 1

BORING NO.	8	DATE INSTALLED	4-17
SOIL BORING FEET	30.0	SURFACE ELEV.	—
AUGER SIZE I.D.	4 1/4	BOTTOM OF BORING	30.0
STD. PEN. TESTS	5	BOTTOM OF SCREEN	26.0
SHELBY TUBES	—	TOP OF SCREEN	16.0
ROCK CORING FEET	—	TOP OF SAND	14.0
HOLE GROUTING FEET	—	TOP OF BENT. PELLETS	12.0
SECON. TIME	.5	TOP OF BENT. SLURRY	—
DOT DRUMS	—	TOP OF BENT./CEMENT	.5
PROCESS TIME	—	TOP OF SOIL BACKFILL	27.0
MONITORING WELL INFORMATION		TOP OF RISER PIPE	.25
		TOP OF GUARD PIPE	—
SIZE OF PIPE	2"	TOP OF MANHOLE COVER	0.0
TYPE OF PIPE	PVC	INITIAL WATER DEPTH	20.5
LT. OF SCREEN	10.0	COMPLETION DEPTH	20.5
LT. OF RISER	20.0	24 HR. WATER DEPTH	—
CAPS	1	48 HR. WATER DEPTH	—
PLUGS	1	HR. WATER DEPTH	—
POUNDS OF SAND	400		
50# BAGS/GOLD SEAL	1/4		
50# BAGS/GRANULAR BENTONITE	—		
BUCKETS OF PELLETS	1		
50# BAGS/VOLCLAY	—		
94# BAGS/CEMENT	2		
BAGS OF SAK-CRETE	1		
BAGS OF ASPHALT MIX	—		
GUARD PIPE	—		
MANHOLE COVER	1		
INSTALLATION TIME	—		
DEVELOPMENT TIME	2.25		
STAND-BY TIME	—		



COMMENTS:

LOG OF BORING No. 9

BORING LOCATION: AS DIR.

DATE STARTED: 4/12/00

SURFACE ELEVATION:

DATE COMPLETED: 4/12/00

STRATUM	DESCRIPTION OF MATERIAL SOIL CLASSIFICATION SYSTEM:	SAMPLE NO & TYPE	SAMPLE DEPTH	BLOWS PER 6" ON SAMPLER	"N" BLOWS/FT	SAMPLE RECOVERY IN
0.0	Br Sand & Gral. Sm Silt (Moist)	1A	0.0-2.0	5-14-46	22	18"
		2A	5.0-7.0	8-21-36-22	57	18"
		3A	10.-12	9-9-9-10	18	18"
16.0	Br Sand (wet)	4A	15-17	9-7-5-7	12	0
		5A	20-22	18-5-8-20	13	18"
	B of B 30.0					

DRILLING METHOD: HSA

DRILLER: A.E. 2L.

JOB NO.: 16713

WATER OBSERVATIONS

INITIAL DEPTH: 20.0

COMPLETION DEPTH: 20.0

DEPTH AFTER N HRS. T

TYPE SAMPLER:

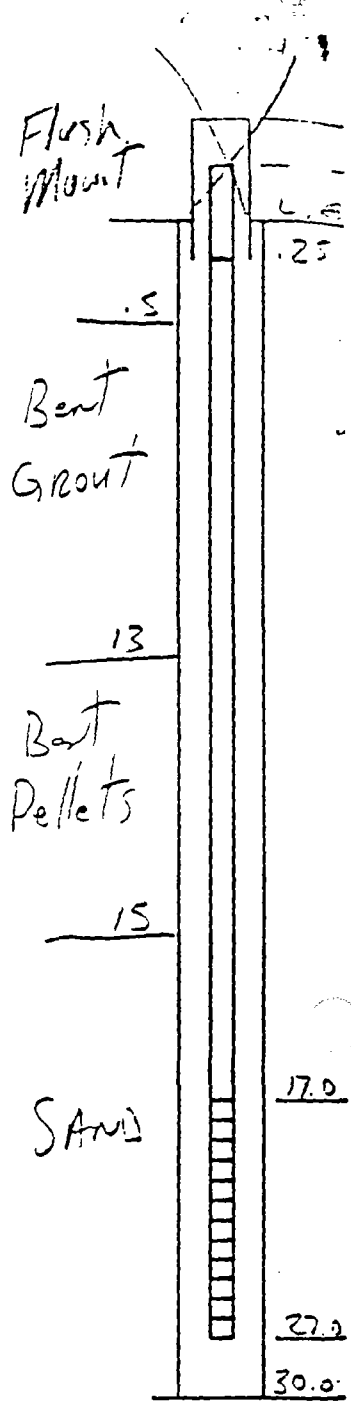
- [x] A. SPLIT SPOON
- [ ] B.
- [ ] C. SHELBY TUBE

BOWSER-MORNER

2B12R

OB NO. 46813 DATE: 4-18-90 SHEET 1 OF 1

RING NO.	9	DATE INSTALLED	4-18
TL BORING FEET	30.0	SURFACE ELEV.	—
ER SIZE I.D.	8 1/4	BOTTOM OF BORING	30.0
D. PEN. TESTS	5	BOTTOM OF SCREEN	27.0
ELBY TUBES	—	TOP OF SCREEN	17.0
CK CORING FEET	—	TOP OF SAND	15.0
LE GROUTING FEET	—	TOP OF BENT. PELLETS	13.0
CON. TIME	.75	TOP OF BENT. SLURRY	—
T DRUMS	—	TOP OF BENT./CEMENT	.5
CESS TIME	—	TOP OF SOIL BACKFILL	—
MONITORING WELL INFORMATION		TOP OF RISER PIPE	.25
		TOP OF GUARD PIPE	—
E OF PIPE	2"	TOP OF MANHOLE COVER	0.0
PE OF PIPE	PVC	INITIAL WATER DEPTH	20.0
OF SCREEN	10.0	COMPLETION DEPTH	20.0
OF RISER	20.0	24 HR. WATER DEPTH	—
S	1	48 HR. WATER DEPTH	—
GS	1	HR. WATER DEPTH	—
DS OF SAND	450		—
BAGS/GOLD SEAL	1/4		
BAGS/GRANULAR BENTONITE	—		
ETS OF PELLETS	1		
BAGS/VOLCLAY	—		
BAGS/CEMENT	2		
OF SAK-CRETE	1		
OF ASPHALT MIX	—		
D PIPE	—		
OLE COVER	1		
LLATION TIME	—		
LOPMENT TIME	2.25		
D-BY TIME	See Daily Log		



MENTS:

REF. 14, PAGE 30 OF 45

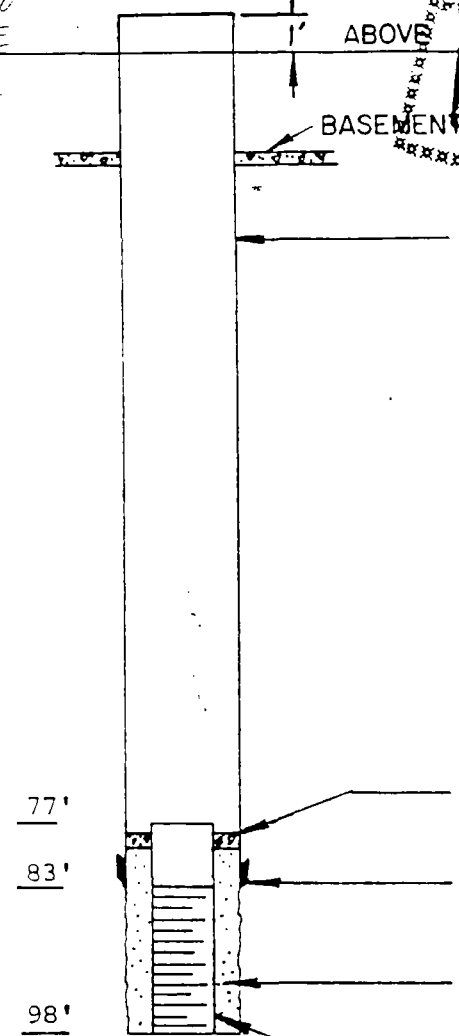
WELL LOG

612015 LAMM
563499 LAME

1' ABOVE MAIN FLOOR LEVEL

WWRS

BASEMENT	10'
SAND AND GRAVEL	21'
GRAVELLY CLAY	55'
SAND & GRAVEL WITH CLAY	61'
SAND WITH CLAY	75'
SAND & GRAVEL WITH CLAY	85'
FINE SAND	93'
FINE SAND & GRAVEL	98'
HARD SANDY CLAY AND GRAVEL	116'
SAND AND GRAVEL	119'
HARD SANDY CLAY	130'



84' of 12" welded steel casing, 51# per ft., installed by cable tool method. Pipe extends 1' above main floor level to 83' below main floor level.

Luminite cement seal at 79' that is 1' thick.

Heavy steel drive shoe at 83'.

Filled in with #4030 white silica sand to 79'.

15' of Johnson 6" IPS stainless steel, WW screen with .012 slot attached to 6' of 6" blank.

City South Bend State Indiana

Location 175' East of High Street, 175' North of Broadway

County St. Joseph Twp. Portage Section 13

Test Capacity 150 GPM. Static Water Level 32 ft. Pumping Level 80 ft.
Specific Capacity 3.1 GPM/Ft. D.D.
Date Drilled March 9, 1977
Driller Mike Garrage
Job No. 1304

Well No. 2
CARDINAL BOTTLING COMPANY, INC.
SOUTH BEND, INDIANA

PEERLESS-MIDWEST, INC.
Granger, Indiana

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Basement	0'	10'
Sand + Gravel	10'	21'
Gravelly Clay	21'	55'
Sand + Gravel with Clay	55'	61'
Sand with Clay	61'	75'
Sand + Gravel with Clay	75'	85'
Fine Sand	85'	93'
Fine Sand + Gravel	93'	98'
Hard Sandy Clay + gravel	98'	116
Sand + gravel	116'	119'
Hard Sandy Clay	119'	130

COUNTY [illegible] TWP. 37N RGE. 2E SW ¼ SE ¼ NE SEC 13

Topo Map [illegible]

Field Located By [illegible] Date 8-2-79

Courthouse Location By _____ Date _____

Location accepted w/o verification by Well south side of Building

1200 Ft W of EL. _____ Ft N of SL.

_____ Ft E of WL. 2200 Ft S of NL.

Ground Elevation 1232 Depth to bedrock 130 3-9-77

Bedrock elevation _____

Aquifer elevation 602

Subdivision Name [illegible]

Lot Number _____

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

Base Map

REF. 14, PAGE 31 OF 45

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204
Telephone 633-5267 Area Code 317

(3)

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township Portage

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

Section 13 - Location 175' E. of High Street, 175' N. of Broadway

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner Cardinal Bottling Company, Inc. Address South Bend, Indiana

Building Contractor _____ Address _____

Name of Well Drilling Contractor: PEERLESS - MIDWEST, INC.

Address P. O. BOX 26
51255 BITTERSWEET ROAD
GRANGER, INDIANA 46530

Name of Drilling Equipment Operator: Mike Garrage

WELL INFORMATION

Depth of well: 130' Date well was completed: March 9, 1977

Diameter of casing or drive pipe: 12" Total Length: 84'

Diameter of liner (if used): _____ Total Length: _____

Diameter of Screen: 6" IPS Length: 15' Slot Size: .012

Type of Well: Drilled [X] Gravel Pack [ ] Driven [ ] Other _____

Use of Well: For Home [ ] For Industry [X] For Public Supply [ ] Stock [ ]

Method of Drilling: Cable Tools [X] Rotary [ ] Rev. Rotary [ ] Jet [ ] Bucket Rig [ ]

Static water level in completed well (Distance from ground to water level) 32 feet

Bailer Test: Hours Tested _____ Rate _____ g.p.m. Drawdown _____ ft.

Pumping Test: Hours Tested 1 Rate 150 g.p.m. Drawdown 48 ft.

(Drawdown is the difference between static level and water level at end of test)

Signature R. J. Williams

Date 1-13-78

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Basement	0'	10'
Sand + Gravel	10'	21'
Gravelly Clay	21'	55'
Sand + Gravel with Clay	55'	61'
Sand with Clay	61'	75'
Sand + Gravel with Clay	75'	85'
Fine Sand	85'	93'
Fine Sand + Gravel	93'	98'
Hard Sandy Clay + gravel	98'	116
Sand + gravel	116'	119'
Hard Sandy Clay	119'	130

Well south side of Building

COUNTY _____ TWP. 37N RGE. 2E SW ¼ SE ¼ NE SEC 13

Topo Map _____ 1000 Ft W of EL. _____ Ft N of SL. Ground Elevation 232 Depth to bedrock 130

Field Located By MS Date 8-2-99 _____ Ft E of WL. Bedrock elevation _____

Courthouse Location By _____ Date _____ 2200 Ft S of NL. Aquifer elevation 602- Lot Number _____

Location accepted w/o verification by _____

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

Subdivision Name _____

Received 3-9-99

WWRS

Base Map

REF. 14, PAGE 32 OF 45

DIVISION OF WATER RESOURCES
INDIANA DEPARTMENT OF CONSERVATION
609 STATE OFFICE BUILDING
INDIANAPOLIS 9, INDIANA

RECEIVED JUL 1963

WATER WELL RECORD

INFORMATION ON WELL LOCATION

County in which well was drilled: St Joseph Civil Township: Warren

Congressional township: 3 Range: T37N-R2E / R1E-134 Number of section: 13

(Fill in as completely as possible)

Describe in your own words the well location with respect to nearby towns, roads, streets or distinctive landmarks: Located on Crumstown Hwy St Rd 223 ½ mile NE of Peach Rd ½ mi SW of Pine Rd. on East Side

Name of owner: Mr Madilon Kubaric Address: 57860 RR2 So. Bend Ind.

Name of Well Drilling Contractor: Morris Well Drilling

Address: RR1 # 119 North Liberty, Ind.

Name of Drilling Equipment Operator: Jack R Morris

INFORMATION ON THE WELL

Completed depth of well: 64 ft. Date well was completed: June 7, 1963

Diameter of outside casing or drive pipe: 2" Length: 60'

Diameter of inside casing or liner: 1¼" Length: 48'

Diameter of Screen: 1¼" Length: 42" Slot size: #10

Type of Well: Drilled ☐ Gravel Pack ☐ Driven ☑ Other Jet

Use of Well: For home ☑ For industry ☐ For public supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☑ Driven ☑

Static water level in completed well (Distance from ground to water level) 38 ft.

Bailer Test: Hours tested ____ Rate ____ g.p.m. Drawdown ____ ft. (Difference between static level and water level at end of test)

Pumping Test: Hours tested 3 Rate 10 g.p.m. Drawdown — ft.

Signature Jack R Morris

Date June 8, 1963

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Fine to Sand with some	0'	
Stones		18'
Varicolored Sand & gravel	18'	36'
Varicolored Sand & gravel	36'	
with Trace of yellow clay		54'
Varicolored Sand & gravel	54'	
with Some fine white Sand		64'

REMARKS:

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

COUNTY: St Joseph TWP 37 N RGE 2 E ___ ¼ ___ ¼ SE ¼ SEC. 13

Topo Map: Mishawaka East

Well log classified By Zed Date 7/6/5
Courthouse located By ___ Date ___
Field located By ___ Date ___
Acc. w/o verification By ___ Date ___

___ Ft W of EL. Ground elevation ___
___ Ft N of SL. Depth to bedrock ___
___ Ft E of WL. Bedrock elevation ___
___ Ft S of NL. Aquifer elevation ___

INSTRUCTIONS

This Water Well Record form is designed to record the most essential data concerning a water well. We request that you be as accurate as possible in recording this information as it may be of great assistance in the planning and development of new water supplies.

An accurate location of the well is equally as important as an accurate well log. Please include all information possible in the space provided for well location.

As specified in Chapter 6 of the Acts of 1959, a copy of this report must be submitted within thirty days after the completion of a well to the Division of Water Resources, Indiana Department of Conservation.

-612525
563556

REF. 14, PAGE 33 OF 43

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

Telephone 317-232-4160

WWRS

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

from USGS Bulletin #3 Sj 7-31
South of Sample Street and West of
Lincoln Way

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: Austin Drilling Company

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 91 Date well was completed: 6/16/27

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled ☐ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) 20 feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin 15

Date L. Wile 1/85

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary system		
cinder fill	0	3
gray, medium to coarse sand	3	10
coarse sand with little gravel	10	12
coarse sand and gravel	12	14
black loamy sand	14	16
heavy gravel	16	18
coarse sand	18	23
medium to coarse sand	23	35
coarse sand with some gravel	35	48
fine to medium sand	48	51
fine to medium sand and gravel	51	59
sandy yellow clay	59	72
muddy sand and gravel	72	74
sandy clay	74	81
muddy sand and gravel	81	83
gravel	83	87
Lower Mississippian series blue shale	83	91
plotted on bedrock map		
but data is questionable		
bedrock is ≈ 50-75' too high		
(blue clay not shale?)		

COUNTY St. Joseph TWP. 37N RGE. 2E NE ¼ NE ¼ NE ¼ SEC. 13

Topo Map South Bend East 7½

Field Located By _____ Date _____ Ft W of EL. _____ Ground Elevation 704

Courthouse Location By _____ Date _____ Ft N of SL. _____ Depth to bedrock 83

Location accepted w/o verification by _____ Ft E of WL. _____ Bedrock elevation 621

Ft S of NL. _____ Aquifer elevation _____ Lot Number _____

FOR ADMINISTRATIVE USE ONLY (Well driller not fill out)

bedrock map

ok

WWRS

REF. 14, PAGE 3 OF 45

612 600
562 050

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

Telephone 317-232-4160

WWRS

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

from USGS Bulletin #3 Sj 6-1B
Sample Street and Lafayette Street

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: Austin Drilling Company

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 102 Date well was completed: 1925

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled ☒ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) 30 feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin #15

Date 1955

FOR WELL LOG SPACE USE REVERSE SIDE OF

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
sand and gravel	0	74
clay	74	86
sand and gravel	86	97
Lower Mississippian - ?	97	102

COUNTY St. Joseph TWP. 37N RGE. 28E ¼ NW ¼ NW ¼ SEC 3

Topo Map South Bend West 7½

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

_____ Ft W of EL. _____ Ft N of SL.

_____ Ft E of WL. _____ Ft S of NL.

Ground Elevation _____ Depth to bedrock 97

Bedrock elevation 629 Aquifer elevation _____

Lot Number ab

Well Log

512898 WMN
562915 WME -

REF. 14, PAGE 35 OF 45

Layne-Northern Company

Division of Layne-Western Company, Inc.

INDIANAPOLIS • MISHAWAKA • LANSING

WWRS

☐ TEST

☒ PERMANENT

Job No. MS 1708

WELL LOG No. 1 CITY South Bend County St. Joseph

Owner Habor Metal Treating Township Portage

* Water Supply Well Section 12 T37N, R3E

Location State Indiana

From Land Description SE¼, SE¼, NW¼

From Street or Road 200' E. of Fellows Street, 600' N. of Sample Street

FORMATION FOUND – DESCRIBE FULLY	FROM NATURAL GROUND LEVEL			
	Depth to Top of Stratum	Depth to Bottom of Stratum	Thickness of Stratum	Static Water Level
Fill	0	3	3	
Brown sandy clay	3	13	10	
Coarse sand and gravel	13	68	55	
Brown clay	68	71	3	
Coarse sand and gravel	71	93	22	31'
Brown clay	93	95	2	

Hole 12 "Dia Drilled by: Cable Tool ____ Rotary x Jetting ____ Reverse Circ. ____ Bucket ____ Auger ____

Rotary Hole Grouted: Neat Cement x Drilling Mud ____ Other ____

Casing 8-5/8 "OD From 24 "above ground to 77 feet below ground. Weight 5.5 Pounds per foot

Screen 6 " Set from 77 to 92 feet Make Johnson Type PVC Slot .035

Pumping test 250 GPM drawdown to Air feet after 1 hours pumping

LNo-11 Date Completed 9-22-82 Driller Don Snyder

HARBOR MAINE

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

WELL # 1 SUPPLY WELL
LANDE-NORTHERN

COUNTY [illegible] TWP. [illegible] RGE. [illegible] NW ¼ SW ¼ SE SEC 13 Subdivision Name

Topo Map [illegible]

Field Located By RPD Date 7/19/83

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

2450 Ft W of EL. Ground Elevation 735

800 Ft N of SL. Depth to bedrock _____ 9-22-82

_____ Ft E of WL. Bedrock elevation _____

_____ Ft S of NL. Aquifer elevation 640 Lot Number _____

WATER WELL LOG

To	From	FORMATIONS (Color, type of material, hardness, etc.)
		Note well 1 located as shown & noted by [illegible]

612790 WMN
562960 WME

REF. 14, PAGE 36 OF 45

Layne-Northern Company

Division of Layne-Western Company, Inc.

INDIANAPOLIS • MISHAWAKA • LANSING

☐ TEST

☒ PERMANENT

Job No. MS 1708

WELL LOG No. 2 CITY South Bend County St. Joseph

Owner Harbor Metal Treating Township Portage

* Water Return Well Section 12, T37N, R3E

Location State Indiana

From Land Description SE¼, SE¼, NW¼

From Street or Road 75' W. of Rush Street, 600' N. of Sample Street

FORMATION FOUND – DESCRIBE FULLY	FROM NATURAL GROUND LEVEL			
	Depth to Top of Stratum	Depth to Bottom of Stratum	Thickness of Stratum	Static Water Level
Top soil	0	1	1	
Fine to medium sand	1	10	9	
Coarse sand and gravel	10	50	40	
Brown clay	50	52	2	
Grey clay	52	82	30	
Medium sand to coarse gravel	82	88	6	
Soft grey clay	88	97	9	
Fine to medium sand	97	108	11	21'
Coarse sand and gravel	108	125	17	
Grey clay	125	127	2	

Hole 12 "Dia Drilled by: Cable Tool _____ Rotary x Jetting _____ Reverse Circ. _____ Bucket _____ Auger _____

Rotary Hole Grouted: Neat Cement x Drilling Mud _____ Other _____

Casing 6 "OD From 24 "above ground to 100 feet below ground. Weight 4.0 Pounds per foot

Screen 6 " Set from 100 to 125 feet Make Johnson Type PVC Slot .035

Pumping test 250 GPM drawdown to Air feet after 1 hours pumping

LNo-11 Date Completed 9-16-82 Driller Don Snyder

WELL # 2

RETURN WELL

LAYNE-NORTHERN

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

COUNTY Yolo TWP. 9 N RGE. 1 E SW ¼ SW ¼ SE SEC 12 Subdivision Name

Topo Map South Bend 7½

Field Located By RPL Date 7/14/82

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

2300 Ft W of EL.

200 Ft N of SL.

_____ Ft E of WL.

_____ Ft S of NL.

Ground Elevation 73

Depth to bedrock _____ 9-16-82

Bedrock elevation _____

Aquifer elevation 608 Lot Number _____

WATER WELL LOG

To	From	FORMATIONS (Color, type of material, hardness, etc.)
		Initial well log not by driller

FC

MC

Base Map

DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

State Form 38680

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

117 South Lafayette Street, From USGS Bulletin #43
Sj 32

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner Davies Laundry and Cleaning Company Address

Building Contractor Address

Name of Well Drilling Contractor: Smith-Monroe Company

Address Michigan-Indiana Water Development Company

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 140 Date well was completed: September 25, 1937

Diameter of casing or drive pipe: 10 Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: 9 1/2 Length: 21 Slot Size: .025

Type of Well: Drilled ☒ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) 36 feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft. (Drawdown is the difference between static level and water level at end of test)

Pumping Test: Hours Tested Rate 150 g.p.m. Drawdown 14 ft.

Signature From USGS Bulletin #45

Date Date 7/15/85

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS FORM

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
sand	0	14
clean sand	14	44
hardpan	44	45
blue-gray clay	45	83
fine yellow sand	83	124
sand and gravel	124	140
bedrock - unknown type	140	?

FOR ADMINISTRATIVE USE ONLY
(Well drillers do not fill out)

COUNTY St. Joseph TWP. 37N RGE. 2E NW ¼ SW ¼ NW ¼ SEC. 12 Subdivision Name

Topo Map South Bend West 7½ Ft W of EL. Ground Elevation 708 Plotted on bedrock map

Field Located By _____ Date _____ Ft N of SL. Depth to bedrock 140

Courthouse Location By _____ Date _____ Ft E of WL. Bedrock elevation 568 ok

Location accepted w/o verification by _____ Ft S of NL. Aquifer elevation _____ Lot Number _____

REF. 14, PAGE 38 OF 45

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DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
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INDIANAPOLIS, INDIANA 46204

State Form 35680

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

La Salle Park, Eddy Street at River, from USGS Bulletin #3 Sj 8-8

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: ?

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 150 Date well was completed: January 1911

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled ☐ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft. (Drawdown is the difference between static level and water level at end of test)

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

Signature

Date

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
top soil	0	10
blue clay	10	50
gravel with round coarse	50	60
stones and fine sand	60	
clay		110
quick sand, coarse sand and	110	
fine ~~sand~~ gravel		130
clay	130	150
shale	150	?

COUNTY St. Joseph TWP. 37N RGE. 2E ¼ SE ¼ SE ¼ SEC. 12 Subdivision Name

Topo Map South Bend East 7½

Field Located By _____ Date _____ Ft W of EL. _____ Ft N of SL. _____ Ground Elevation 689 Depth to bedrock 150

Courthouse Location By _____ Date _____ Ft E of WL. _____ Ft S of NL. _____ Bedrock elevation 539 Aquifer elevation _____ Lot Number _____

Location accepted w/o verification by _____

FOR ADMINISTRATIVE USE ONLY
(Well drillers does not fill out)

REF. 14, PAGE 39 OF 45

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DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
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INDIANAPOLIS, INDIANA 46204

State Form 35680

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

from USGS Bulletin #3, Sj 48, 220 South Michigan Stree

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner J. C. Penny Company Address

Building Contractor Address

Name of Well Drilling Contractor: Howard Cowles

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 160 Date well was completed: June 29, 1937

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled ☒ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

mping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin #15

Date

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
no log, shale overlain		
by 110 feet clay		
no water reported		

COUNTY St. Joseph TWP. 37N RGE. 2E NE ¼ SW ¼ NW SEC 12

Topo Map South Bend West 7½

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

Ft W of EL. _____ Ft N of SL. _____ Ft E of WL. _____ Ft S of NL. _____

Ground Elevation 710 Depth to bedrock 110 Bedrock elevation 600 Aquifer elevation _____

Subdivision Name _____ Lot Number _____

FOR ADMINISTRATIVE USE ONLY
(Well dr[illegible] does not fill out)

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REF. 14, PAGE 40 OF 45

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DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

Telephone 317-232-4160

WWRS

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

from USGS Bulletin #3 Sj 7-12
La Salle Park

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: Austin Drilling Company

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 333 Date well was completed:

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled [X] Gravel Pack [ ] Driven [ ] Other

Use of Well: For Home [ ] For Industry [ ] For Public Supply [ ] Stock [ ]

Method of Drilling: Cable Tools [ ] Rotary [ ] Rev. Rotary [ ] Jet [ ] Bucket Rig [ ]

Static water level in completed well (Distance from ground to water level) 15 feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin #3 75

Date 10/12/75

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
top soil	0	20
fine sand mixed with blueclay	20	25
blue clay with some sand	25	40
fine sand with some clay	40	45
fine sand	45	55
coarse sand	55	60
fine sand with some stones	60	65
fine sand	65	80
very fine sand mixed with blue clay	80	135
blue clay	135	285
Lower Mississippian blue shale	285	333

COUNTY St. Joseph TWP. 37N RGE. 28W ¼ NE ¼ SE ¼ SE SEC. 18

Topo Map South Bend East 7½

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

Ft W of EL. _____ Ft N of SL. _____ Ft E of WL. _____ Ft S of NL. _____

Ground Elevation 687 Depth to bedrock 135 Bedrock elevation 556 Aquifer elevation _____

Lot Number _____

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

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WRB

H 12

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WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

Northwest corner of Main and Washington Streets, from USGS Bulletin #3 Sj 32

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner Oliver Hotel Address

Building Contractor Address

Name of Well Drilling Contractor: A. L. Cox and Company

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 135 Date well was completed: Jan 20, 1940

Diameter of casing or drive pipe: 12 Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: 20 Slot Size:

Type of Well: Drilled ☐ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) 35 feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin #15

Date [redacted]

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
no log		
bedrock encountered @ 144		
TD 135 (?)		

COUNTY St. Joseph TWP. 37N RGE. 2E SW ¼ NW ¼ NW SEC. 12

Topo Map South Bend West 7½

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

FOR ADMINISTRATIVE USE ONLY
(Well ☐ or does not fill out)

_____ Ft W of EL. Ground Elevation 708

_____ Ft N of SL. Depth to bedrock 144

_____ Ft E of WL. Bedrock elevation 564

_____ Ft S of NL. Aquifer elevation _____

Subdivision Name plotted on bedrock map

Lot Number ah

92

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DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
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INDIANAPOLIS, INDIANA 46204

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WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

213 N. Sycamore Street - [previous owner Superior Laundry Company] from USGS Bulletin #3 Sj 50

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner Taube Printing Company Address

Building Contractor Address

Name of Well Drilling Contractor: Smith-Monroe Company

Address Indiana-Michigan Water Development Company

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 110 Date well was completed: May, 1931

Diameter of casing or drive pipe: 12 Total Length:

Diameter of liner (if used): Total Length: [illegible]

Diameter of Screen: 11½ Length: 15' Slot Size: upper 7 - 20 sl / lower 8 - 30 sl

Type of Well: Drilled ☒ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) 14 feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin #5

Date [illegible] 2/85

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
no log	0	10
gravel and sand	10	20
sand	20	35
clay	35	85
pack sand	85	100
gravel	100	110
bedrock - unknown type	110	?

FOR ADMINISTRATIVE USE ONLY
(Well number does not fill out)

COUNTY St. Joseph TWP. 37N RGE. 2E SW ¼ NE ¼ NW SEC 12 C

Topo Map South Bend East 7½ Subdivision Name

Field Located By _____ Date _____ Ft W of EL. _____ Ft N of SL. _____ Ground Elevation 685 Depth to bedrock 110 Bedrock elevation 575 (576) Aquifer elevation _____ Lot Number _____

Courthouse Location By _____ Date _____ Ft E of WL. _____ Ft S of NL. _____

Location accepted w/o verification by _____

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DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
STATE OFFICE BUILDING
INDIANAPOLIS, INDIANA 46204

State Form 35680

Telephone 317-232-4160

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

from USGS Bulletin #3, Sj 6-24B
Bronson Street, between Main Street
and Lafayette Street

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: Austin Drilling Company

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 100 Date well was completed: 3/27

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled ☒ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☒ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) 46 feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft. (Drawdown is the difference between static level and water level at end of test)

ping Test: Hours Tested Rate g.p.m. Drawdown ft.

Signature from USGS Bulletin #15

Date Bulletin #15

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
sand and gravel	0	59
blue clay	59	89
sand and gravel	89	98
Lower Mississippian series shale	98	100

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

COUNTY St. Joseph TWP. 37N RGE. 2 ~~E~~ E NW ¼ SW ¼ SW SEC. 12

Topo Map South Bend West 7½

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

_____ Ft W of EL. _____ Ft N of SL.

_____ Ft E of WL. _____ Ft S of NL.

Ground Elevation 722 Depth to bedrock 98

Bedrock elevation 624 Aquifer elevation _____

Subdivision Name Oldfield Lot Number _____

Bedrock

ok

N4

613950
568700

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DIVISION OF WATER
DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
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INDIANAPOLIS, INDIANA 46204

Telephone 317-232-4160

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State Form 35680

WATER WELL RECORD

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctive landmarks, etc.

from USGS Bulletin #3 Sj 2-T1
32 feet north of Swimming pool and 68 feet
west of Storage tank Leeper Park

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner City of South Bend Address

Building Contractor Address

Name of Well Drilling Contractor: Harry Ness

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 110 Date well was completed: 12/20/41

Diameter of casing or drive pipe: Total Length:

Diameter of liner (if used): Total Length:

Diameter of Screen: Length: Slot Size:

Type of Well: Drilled ☐ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) 4 feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested Rate g.p.m. Drawdown ft.

(Drawdown is the difference between static level and water level at end of test)

from Good file data Signature from USGS Bulletin #25

Date

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary system		
fill	0	11
sand and gravel	11	14
soft clay	14	24
sandy clay	24	26
medium clay	26	52
sandy clay	52	82
sand and gravel	82	105
gravel and sand	105	109
Lower Mississippian shale	109	110

COUNTY St. Joseph TWP. 37N RGE. 2E SW ¼ NE ¼ NW SEC. 8

Topo Map South Bend East 7½

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

_____ Ft W of EL. _____ Ft N of SL.

_____ Ft E of WL. _____ Ft S of NL.

Ground Elevation _____ Depth to bedrock 109

Bedrock elevation 576

Aquifer elevation _____ Lot Number _____

FOR ADMINISTRATIVE USE ONLY
(Well drillers do not fill out)

RWRS

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DEPARTMENT OF NATURAL RESOURCES, STATE OF INDIANA
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INDIANAPOLIS, INDIANA 46204
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State Form 38680

WATER WELL RECORD

REF 14, PAGE 45 OF 45

WELL LOCATION

(Fill in completely - Refer to instruction sheet)

County in which well was drilled St. Joseph Civil Township

Driving directions to the well location: Include County Road Names, Numbers, Subdivision Name, lot number, distinctiv landmarks, etc.

NAME OF WELL OWNER and/or BUILDING CONTRACTOR

Well Owner Indiana Bell Telephone Address

Building Contractor Address

Name of Well Drilling Contractor: Indiana-Michigan Water Development Comp

Address

Name of Drilling Equipment Operator:

WELL INFORMATION

Depth of well: 64 Date well was completed: 12/30/53

Diameter of casing or drive pipe: 8 Total Length: 51

Diameter of liner (if used): Total Length:

Diameter of Screen: 7½ Length: 13 Slot Size: 12

Type of Well: Drilled ☐ Gravel Pack ☐ Driven ☐ Other

Use of Well: For Home ☐ For Industry ☐ For Public Supply ☐ Stock ☐

Method of Drilling: Cable Tools ☐ Rotary ☐ Rev. Rotary ☐ Jet ☐ Bucket Rig ☐

Static water level in completed well (Distance from ground to water level) 33 feet

Bailer Test: Hours Tested Rate g.p.m. Drawdown ft.

Pumping Test: Hours Tested 7 Rate 120 g.p.m. Drawdown 17 ft.

(Drawdown is the difference between static level and water level at end of test)

Signature from USGS Bulletin 15

Date L. Willey 1/85

FOR WELL LOG SPACE USE REVERSE SIDE OF THIS SHEET

WATER WELL LOG

FORMATIONS (Color, type of material, hardness, etc.)	From	To
Quaternary		
no record	0	12
yellow sand and gravel	12	38
sand and gravel	38	64
hardpan and shale	64	96
Lower Mississippian - blue shale	96	110

COUNTY St. Joseph TWP. 37N RGE. 28E ¼ SW ¼ NW SEC. 12

Topo Map South Bend West 7½

Field Located By _____ Date _____

Courthouse Location By _____ Date _____

Location accepted w/o verification by _____

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

_____ Ft W of EL. Ground Elevation 712

_____ Ft N of SL. Depth to bedrock 96

_____ Ft E of WL. Bedrock elevation 616

_____ Ft S of NL. Aquifer elevation _____

Subdivision Name plotted on bedrock map

Lot Number _____

E4

C

OMB Approval Number: 2050-0095
Approved for Use Through: 4/95

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: IN	CERCLIS Number: IND984928440
	CERCLIS Discovery Date:	

1. General Site Information

Name: SUPER AUTO SALVAGE YARD		Street Address: 3300 SOUTH MAIN STREET			
City: SOUTH BEND	State: IN	Zip Code:	County: ST. JOSEPH	Co. Code: 141	Cong. Dist: 03
Latitude: 41° 38' 32.5" Longitude: 86° 15' 8.3"	Approx. Area of Site: 14 acres		Status of Site: Active		

2. Owner/Operator Information

Owner: HAROLD SILBERMAN			Operator: PAUL SCHULTZ		
Street Address:			Street Address: 3300 SOUTH MAIN STREET		
City:			City: SOUTH BEND		
State:	Zip Code:	Telephone:	State: IN	Zip Code:	Telephone:
Type of Ownership: Private			How Initially Identified: Not Specified		

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: IN	CERCLIS Number: IND984928440
	CERCLIS Discovery Date:	

3. Site Evaluator Information

Name of Evaluator:	Agency/Organization:	Date Prepared:
HOLLY GREJDA	IDEM/ SITE INVESITGATION	3/15/94

Street Address:	City:	State:
100 NORTH SENATE IGCN 1255	INDIANAPOLIS	IN

Name of EPA or State Agency Contact:	Telephone:
HARRY ATKINSON, CHIEF	317/232-8928

Street Address:	City:	State:
100 NORTH SENATE IGCN 1255	INDIANAPOLIS	IN

4. Site Disposition (for EPA use only)

Emergency Response/Removal Assessment Recommendation: No	CERCLIS Recommendation: Other	Signature: Holly Grejda
Date:	Date:	Name: HOLLY GREJDA Position: ENV. SCIENTIST

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: IN	CERCLIS Number: IND984928440
	CERCLIS Discovery Date:	

5. General Site Characteristics

Predominant Land Uses Within 1 Mile of Site:	Site Setting:	Years of Operation:
Industrial Commercial Residential	Urban	Beginning Year: 1930 Ending Year: 1994

Type of Site Operations:	
Junk/Salvage Yard	Waste Generated: Onsite
	Waste Deposition Authorized By: Present Owner
	Waste Accessible to the Public No
	Distance to Nearest Dwelling, School, or Workplace: 100 Feet

6. Waste Characteristics Information

Source Type	Quantity	Tier	General Types of Waste:
Contaminated soil	5.00e+02 sq ft	A	Metals Oily Waste
			Physical State of Waste as Deposited Solid Liquid

Tier Legend
C = Constituent W = Wastestream
V = Volume A = Area

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: IN	CERCLIS Number: IND984928440
	CERCLIS Discovery Date:	

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
No

Type of Ground Water Wells Within 4 Miles:
Municipal
Private

Depth to Shallowest Aquifer:
102 Feet

Karst Terrain/Aquifer resent:
No

Is There a Suspected Release to Ground Water:
No

Have Primary Target Drinking Water Wells Been Identified: No

Nearest Designated Wellhead Protection Area:
None within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - 1/4 Mile	14839
>1/4 - 1/2 Mile	0
>1/2 - 1 Mile	7437
>1 - 2 Miles	404
>2 - 3 Miles	8385
>3 - 4 Miles	26842
Total	57907

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: IN	CERCLIS Number: IND984928440
	CERCLIS Discovery Date:	

8. Surface Water Pathway — Part 1 of 4

Type of Surface Water Draining Site and 15 Miles Downstream:	Shortest Overland Distance From Any Source to Surface Water:
Other: NO 15 MILE SW PATHWAY	79200 Feet 15.0 Miles
Is there a Suspected Release to Surface Water: No	Site is Located in: > 500 yr floodplain

8. Surface Water Pathway — Part 2 of 4

rinking Water Intakes Along the Surface Water Migration Path: No

Have Primary Target Drinking Water Intakes Been Identified: No

Secondary Target Drinking Water Intakes:
None

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: IN	CERCLIS Number: IND984928440
	CERCLIS Discovery Date:	

8. Surface Water Pathway — Part 3 of 4

Fisheries Located Along the Surface Water Migration Path: No

Have Primary Target Fisheries Been Identified: No

Secondary Target Fisheries:
None

. Surface Water Pathway — Part 4 of 4

Wetlands Located Along the Surface Water Migration Path? (y/n) No

Have Primary Target Wetlands Been Identified? (y/n) No

Secondary Target Wetlands:
None

Other Sensitive Environments Along the Surface Water Migration Path: No

Have Primary Target Sensitive Environments Been Identified: No

Secondary Target Sensitive Environments:
None

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: IN	CERCLIS Number: IND984928440
	CERCLIS Discovery Date:	

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination: No	Number of Workers Onsite: 1 - 100

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination: No

10. Air Pathway

Total Population on or Within:	
Onsite	20
0 - 1/4 Mile	2075
>1/4 - 1/2 Mile	4158
>1/2 - 1 Mile	11667
>1 - 2 Miles	25991
>2 - 3 Miles	30835
>3 - 4 Miles	26885
Total	101631

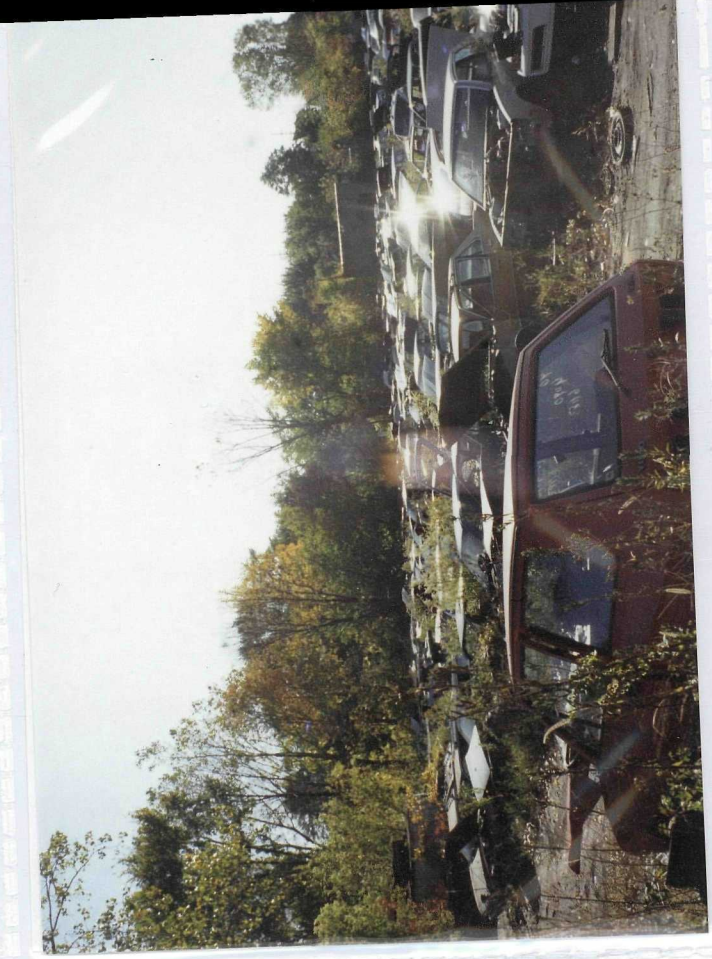
Is There a Suspected Release to Air: No

Wetlands Located Within 4 Miles of the Site: No

Other Sensitive Environments Located Within 4 Miles of the Site: No

Sensitive Environments Within 1/2 Mile of the Site:
None

D



PHOTOGRAPHY LOG SHEET

SITE SUPER AUTO SALVAGE YARD

DATE OCTOBER 13, 1993

DIRECTION

WEATHER SUNNY, HIGH 30'S TO LOW 40'S

PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)
NOT APPLICABLE

DESCRIPTION USED AUTOMOBILES

PHOTOGRAPHY LOG SHEET

SITE SUPER AUTO SALVAGE YARD

DATE OCTOBER 13, 1993

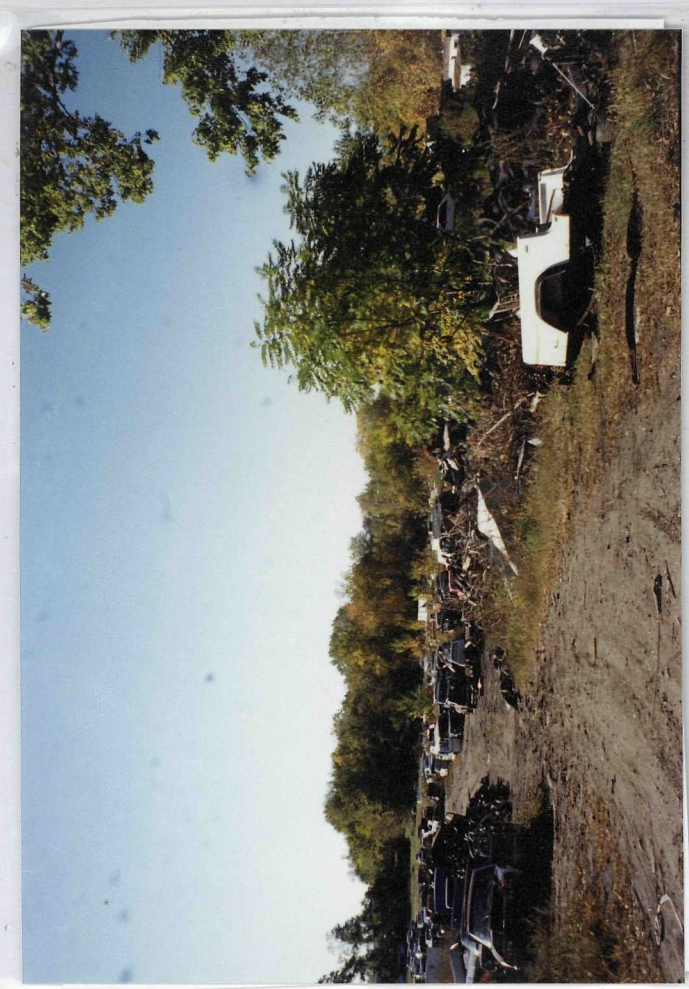
DIRECTION NORTH

WEATHER SUNNY, HIGH 30'S TO LOW 40'S

PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)
NOT APPLICABLE

DESCRIPTION USED AUTOMOBILES TOWARD NORTHERN BOUNDARY OF SITE.



PHOTOGRAPHY LOG SHEET

SITE SUPER AUTO SALVAGE YARD

DATE OCTOBER 13, 1993

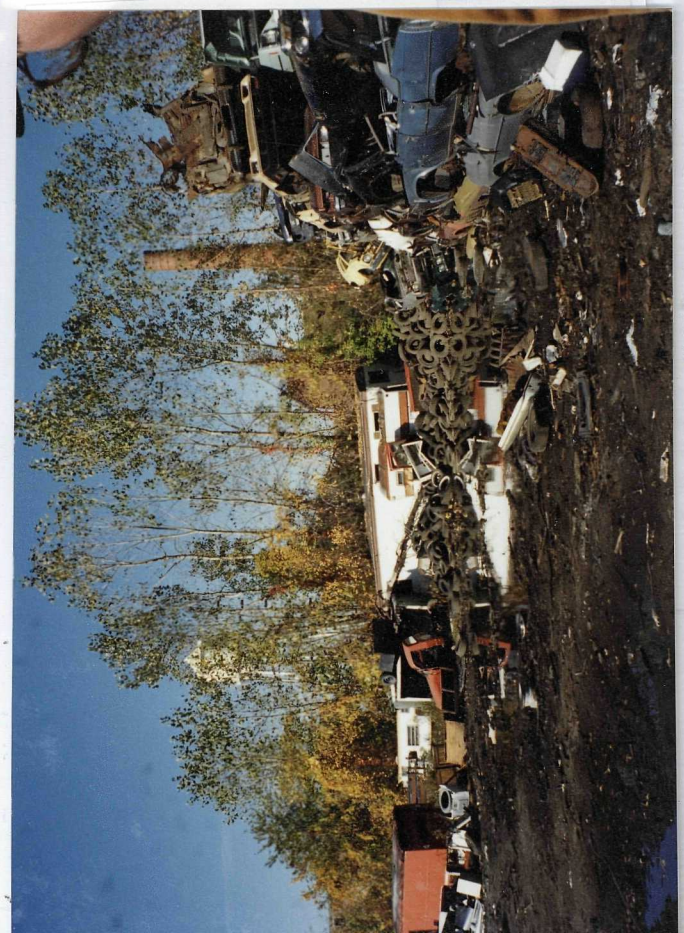
DIRECTION SOUTHWEST

WEATHER SUNNY, HIGH 30'S TO LOW 40'S

PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)
NOT APPLICABLE

DESCRIPTION USED AUTOMOBILES AND TIRES.



PHOTOGRAPHY LOG SHEET

SITE SUPER AUTO SALVAGE YARD

DATE OCTOBER 13, 1993

DIRECTION WEST

WEATHER SUNNY, HIGH 30'S TO LOW 40'S

PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)
NOT APPLICABLE

DESCRIPTION USED TIRE AREA WITH PONDED WATER.

PHOTOGRAPHY LOG SHEET

SITE SUPER AUTO SALVAGE YARD

DATE OCTOBER 13, 1993

DIRECTION EAST

WEATHER SUNNY, HIGH 30'S TO LOW 40'S

PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)
NOT APPLICABLE

DESCRIPTION OILY RESIDUE ON FLOOR OF BUILDING.

PHOTOGRAPHY LOG SHEET

SITE SUPER AUTO SALVAGE YARD

DATE OCTOBER 13, 1993

DIRECTION SOUTH

WEATHER SUNNY, HIGH 30'S TO LOW 40'S

PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)
NOT APPLICABLE

DESCRIPTION ENGINE GARAGE WHERE WASTE OIL IS DRUMMED AND BURNED WHEN NEEDED

PHOTOGRAPHY LOG SHEET

SITE SUPER AUTO SALVAGE YARD

DATE OCTOBER 13, 1993

DIRECTION WEST

WEATHER SUNNY, HIGH 30'S TO LOW 40'S

PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)
NOT APPLICABLE

DESCRIPTION USED AUTO PARTS ON SITE WITH SOME OILY RESIDUE ON GROUND.

PHOTOGRAPHY LOG SHEET

SITE SUPER AUTO SALVAGE YARD

DATE OCTOBER 13, 1993

DIRECTION SOUTHWEST

WEATHER SUNNY, HIGH 30'S TO LOW 40'S

PHOTOGRAPHER: JOHN NADDY

SAMPLE ID# (IF APPLICABLE)
NOT APPLICABLE

DESCRIPTION USED AUTOMOBILES AND AM GENERAL IN THE DISTANCE.

E

SDMS US EPA Region V

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SDMS US EPA Region V

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