

**STATE OF SOUTH DAKOTA**  
**George S. Mickelson, Governor**

**DEPARTMENT OF WATER AND NATURAL RESOURCES**  
**Floyd Matthew, Secretary**

**GEOLOGICAL SURVEY**  
**Merlin J. Tipton, State Geologist**

**Open-File Report No. 39-UR**

**PLATTE PETROLEUM SPILL**

**by**

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**Revised - 1989**

## CONTENTS

	Page
<b>INTRODUCTION</b> .....	1
<b>GEOLOGY</b> .....	1
<b>OBSERVATION-WELL CONSTRUCTION</b> .....	1
<b>WATER LEVELS</b> .....	1
<b>DRILLING AND OBSERVED CONTAMINATION</b> .....	4
<b>IDENTIFICATION OF GASOLINE IN THE GROUND</b> .....	8
<b>GASOLINE MIGRATION</b> .....	8
<b>CONCLUSIONS</b> .....	9
<b>REFERENCE</b> .....	9

## FIGURES

1. Location of test holes and observation wells .....	2
2. Water levels - July 27, 1983 .....	5
3. Location of holes with contaminated sediment .....	7

## TABLES

1. Observation-well surveying and water-table measurements .....	3
2. Sanitary-sewer surveying and water-level measurements .....	4

## APPENDIX

A. Logs of test holes and observation wells .....	10
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## INTRODUCTION

At the request of the City of Platte and the South Dakota State Fire Marshall's Office, the South Dakota Geological Survey investigated a gasoline fume problem in Platte, South Dakota in 1983. Gasoline fumes had been reported in several buildings scattered throughout the downtown area. Thus, initial drilling efforts were concentrated in the area of reported fumes to check for gasoline in the ground and to try to define the ground-water gradient. Subsequent drilling efforts, however, were concentrated near a part of the sanitary-sewer system in which liquid gasoline was found. A total of 43 auger test holes were drilled; 23 of which were completed as observation wells.

## GEOLOGY

The City of Platte is underlain by late Wisconsin age glacial till (Hedges, 1975). As stated in the report by Hedges, "Late Wisconsin till consists of clay, silt, sand, and gravel with minor amounts of pebbles, cobbles, and boulders. Its general texture is a silty or sandy clay. Joints in the till are closely spaced and poorly developed . . . ." The till observed in the holes drilled for this report was found to conform to the description given by Hedges as far as the texture is concerned. It was not possible, however, to evaluate the presence or development of joints by examining the drill cuttings.

## OBSERVATION-WELL CONSTRUCTION

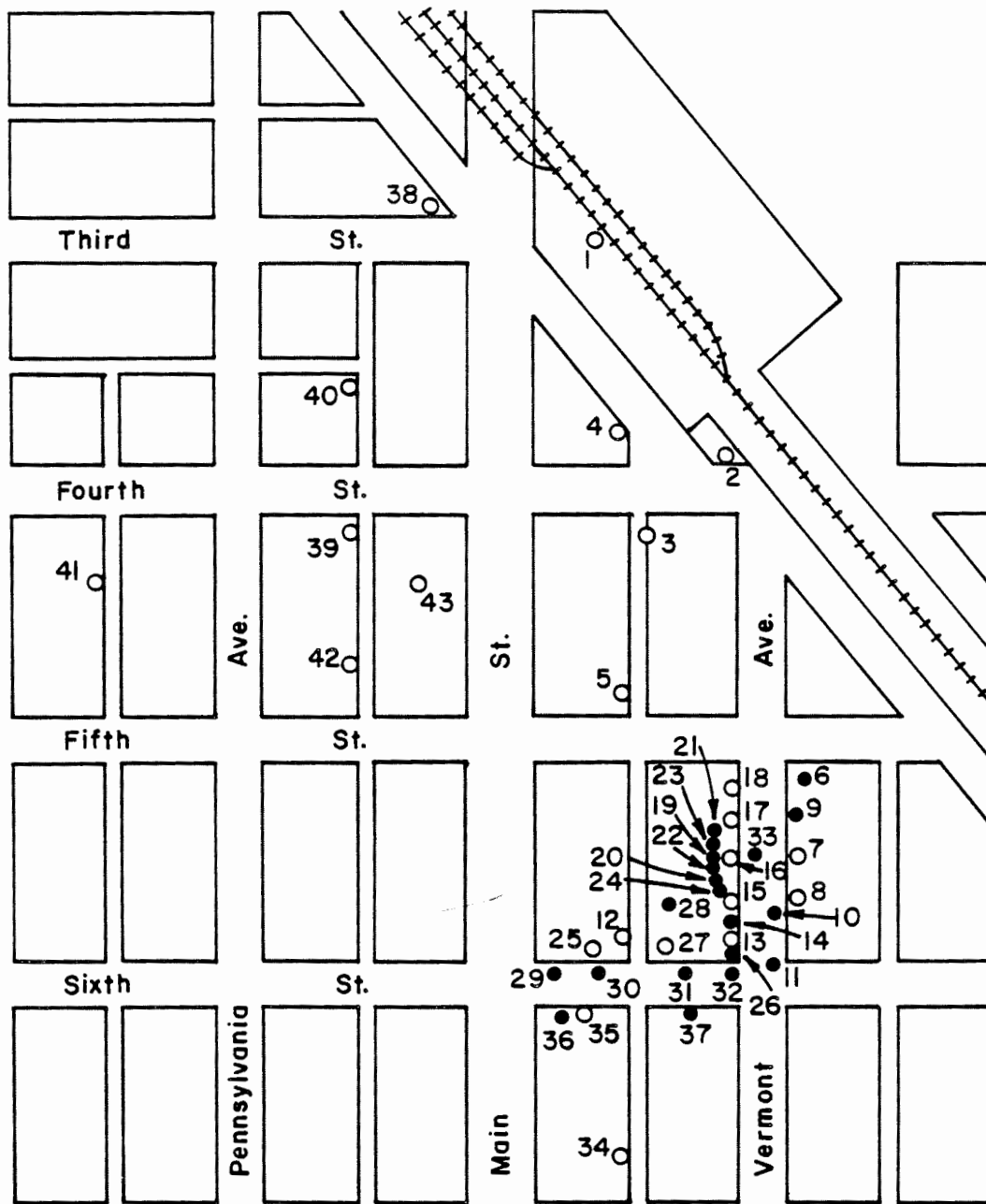
Observation-well construction techniques were not designed to provide a network of wells for long-term monitoring. The wells did, however, allow a reasonably quick check on the general ground-water levels and the presence or absence of liquid gasoline.

The observation wells were installed in 4-inch diameter holes which were drilled using the flight auger method. Casing for each well consisted of 2-inch diameter, schedule 40 PVC which was slotted. Thirteen of the wells had horizontal slots cut in the casing and the other 10 wells had vertical overlapping slots (app. A). The observation wells were not gravel packed and no bentonite seal was emplaced at ground level. Observation wells which had casing extending above ground level did, however, have drill cuttings packed and mounded to cover the annulus of the hole. The locations of the observation wells and test holes are shown in figure 1.

## WATER LEVELS

The overall ground-water gradient throughout the downtown area of Platte proved not to be an important factor in this investigation. Rather, the gradient over a small area along Sixth Street between Main Street and Vermont Avenue and the ground-water levels relative to water levels in the sanitary sewer were the important factors. All measured water levels and relative elevations of the measuring points are listed in tables 1 and 2. Water levels from July 27, 1983, are shown in figure 2.

The ground-water levels decline from west to east along Sixth Street between Main Street and Vermont Avenue (fig. 2). The wells along the west side of Vermont Avenue between Sixth and Fifth Streets show



**Figure 1. Locations of Test Holes and Observation Wells**

- 29 ● Test Hole
  - 43 ○ Observation Well
- Number is map location (ML) number.

For logs of test holes and observation wells, see Appendix A.

Map location number is explained in Appendix A.

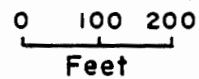


TABLE 1

Observation-well surveying and water-level measurements

Well map location num- ber <sup>1</sup>	Relative elevation of casing top (ft) <sup>2</sup>	Date Drilled	Depth to water from casing top (ft)			
			6-21-83	6-30-83	7-7-83	7-27-83
1	88.69	6-16-83	6.21	5.15	5.97	8.38
2	87.15	6-15-83	10.22	10.01	well destroyed	
3	87.58	6-16-83	13.79	11.73	11.04	10.81
4	87.00	6-16-83	8.20	7.31	7.43	7.65
5	87.99	6-16-83	14.27	8.69	8.72	8.71
7	90.94	7-06-83	-----	-----	7.99	7.85
8	91.04	7-06-83	-----	-----	5.54	6.42
12	91.13	6-15-83	6.18	6.01	6.19	6.18
13	92.40	7-05-83	-----	-----	8.04	8.53
15	91.33	7-05-83	-----	-----	7.70	8.32
16	90.39	7-05-83	-----	-----	7.42	8.15
17	89.96	7-05-83	-----	-----	6.94	7.97
18	89.79	7-05-83	-----	-----	6.95	7.89
25	93.71	7-06-83	-----	-----	7.36	7.22
27	93.57	7-06-83	-----	-----	8.19	8.49
34	98.40	6-16-83	8.97	9.18	9.33	10.32
35	93.73	7-06-83	-----	-----	5.05	5.47
38	85.38	6-16-83	4.82	4.47	4.82	5.32
39	83.40	6-15-83	6.53	6.29	6.81	5.26
40	83.19	6-15-83	6.82	6.62	7.37	6.38
41	81.88	6-16-83	4.46	4.45	4.67	5.82
42	87.35	6-15-83	9.49	9.18	9.47	9.56
43	86.35	6-16-83	3.60	3.62	4.96	4.99

<sup>1</sup> For location, see figure 1. For explanation of map location (ML) number, see appendix A.

<sup>2</sup> All elevations are relative to an assumed datum of 100.00 feet.

**TABLE 2**  
**Sanitary-sewer surveying and fluid-level measurements**

Location of manhole <sup>1</sup>	Relative elevation of measuring point (ft) <sup>2</sup>	Depth to fluid from measuring point (ft)	
		7-7-83	7-27-83
Intersection of Sixth St. and Vermont Ave.	90.76	7.89	7.88
Intersection of Fifth St. and Vermont Ave.	90.31	7.91	7.93
One-half block west of inter- section of Fifth St. and Vermont Ave.	91.54	----	10.53
One-half block west and 1 block north of intersection of Fifth St. and Vermont Ave.	89.60	----	11.23

<sup>1</sup> For location, see figure 2.

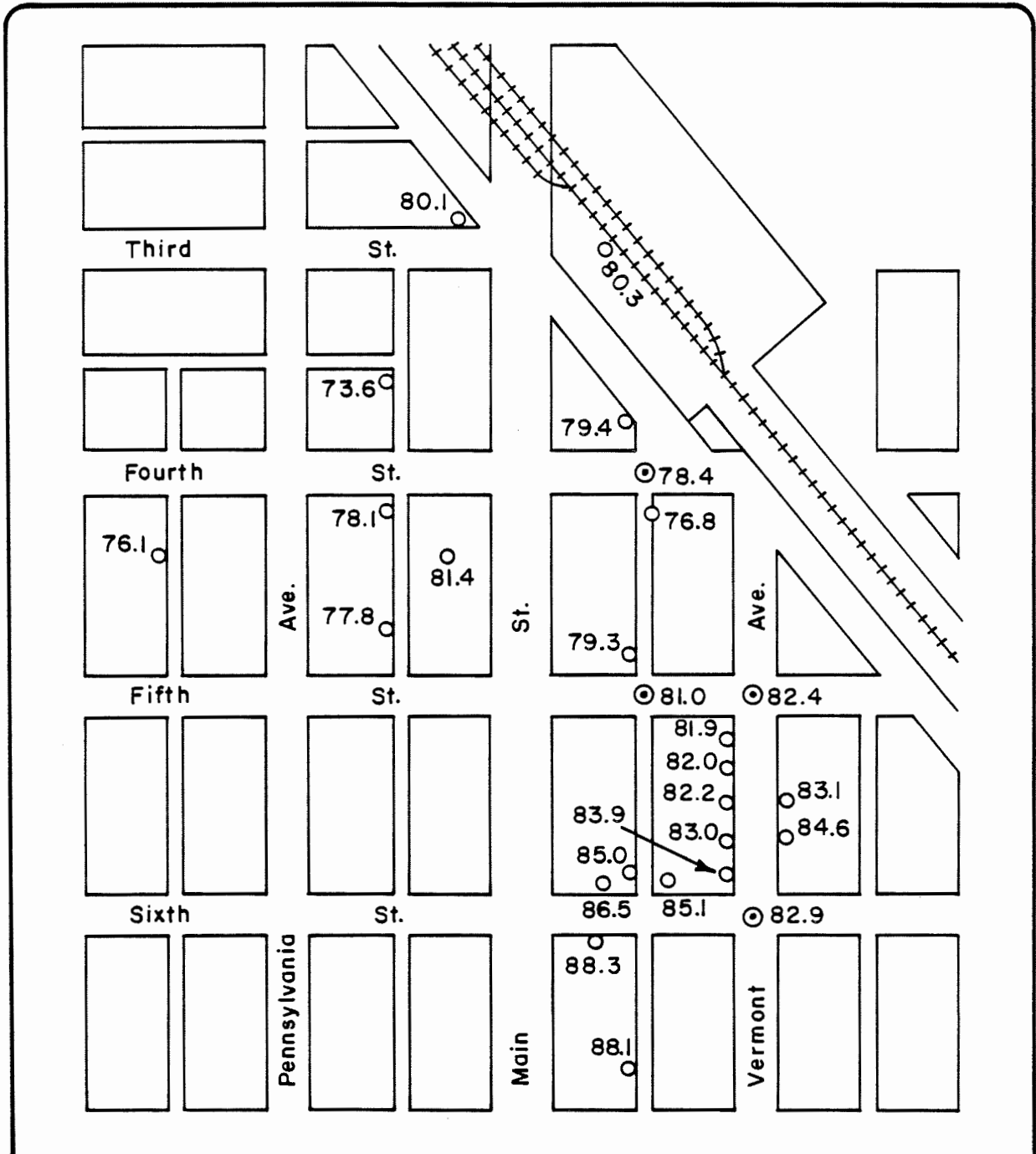
<sup>2</sup> All elevations are relative to an assumed datum of 100.00 feet.

declining ground-water levels from south to north (fig. 2). This indicates that the general potential for lateral ground-water movement, from a point at the intersection of Sixth and Main Streets, is toward the northeast.

Another relationship worth noting is that the water level in the sanitary sewer under Vermont Avenue between Sixth and Fifth Streets is lower than the ground-water level to the west along approximately the southern half of that city block. Data also indicate that the water level in the sewer is lower than ground-water levels to the east for at least the southern half of the block (fig. 2). These interpretations were made using the water levels measured on July 27, 1983 (table 1).

#### DRILLING AND OBSERVED CONTAMINATION

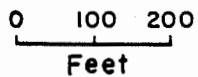
Initial indications of a gasoline spill or loss consisted of reports of gasoline fumes in some buildings in



**Figure 2. Water Levels - July 27, 1983**

73.6 ○ Observation Well  
 82.4 ⊙ Manhole

Number is relative elevation, in feet, of water. All numbers are relative to an assumed datum of 100.00.



the downtown area. Information gathered indicated that there may be as many as 10 locations, within approximately a two-city-block radius of the intersection of Main and Fourth Streets, where buried petroleum tanks are either presently located or were previously located. Two active gasoline stations are also present in this area. Because of the reported fumes and the proximity to many apparent potential sources of gasoline, initial drilling efforts were concentrated in this area.

All but 2 of the initial 13 holes drilled were drilled north of Fifth Street (fig. 1, app. A). The two that were not drilled north of Fifth Street are at Map Locations (ML) 12 and 34 (fig. 1). All subsequent holes were drilled south of Fifth Street.

Of the initial 13 holes, only 1 (ML 12, fig. 1, app. A) showed any contamination by a petroleum product, using visual appearance and odor as criteria. Some of the drill cuttings in this hole had a faint odor of gasoline and were a gray-brown color. A discoloration from the normal brownish color of oxidized till to a gray or greenish color was commonly found to accompany a gasoline odor from sediments augered up from the test holes. All holes from which some of the drill cuttings had an odor of gasoline and were discolored to some extent are shown in figure 3.

On June 30, 1983, 15 days after the initial 13 holes were drilled, gasoline was discovered in the sanitary-sewer system. Gasoline was observed flowing north in the manhole at the intersection of Fifth Street and Vermont Avenue. No gasoline was visible in the manhole 1 block to the south at the intersection of Sixth Street and Vermont Avenue. Gasoline was apparently entering the sewer under Vermont Avenue somewhere between Sixth and Fifth Streets.

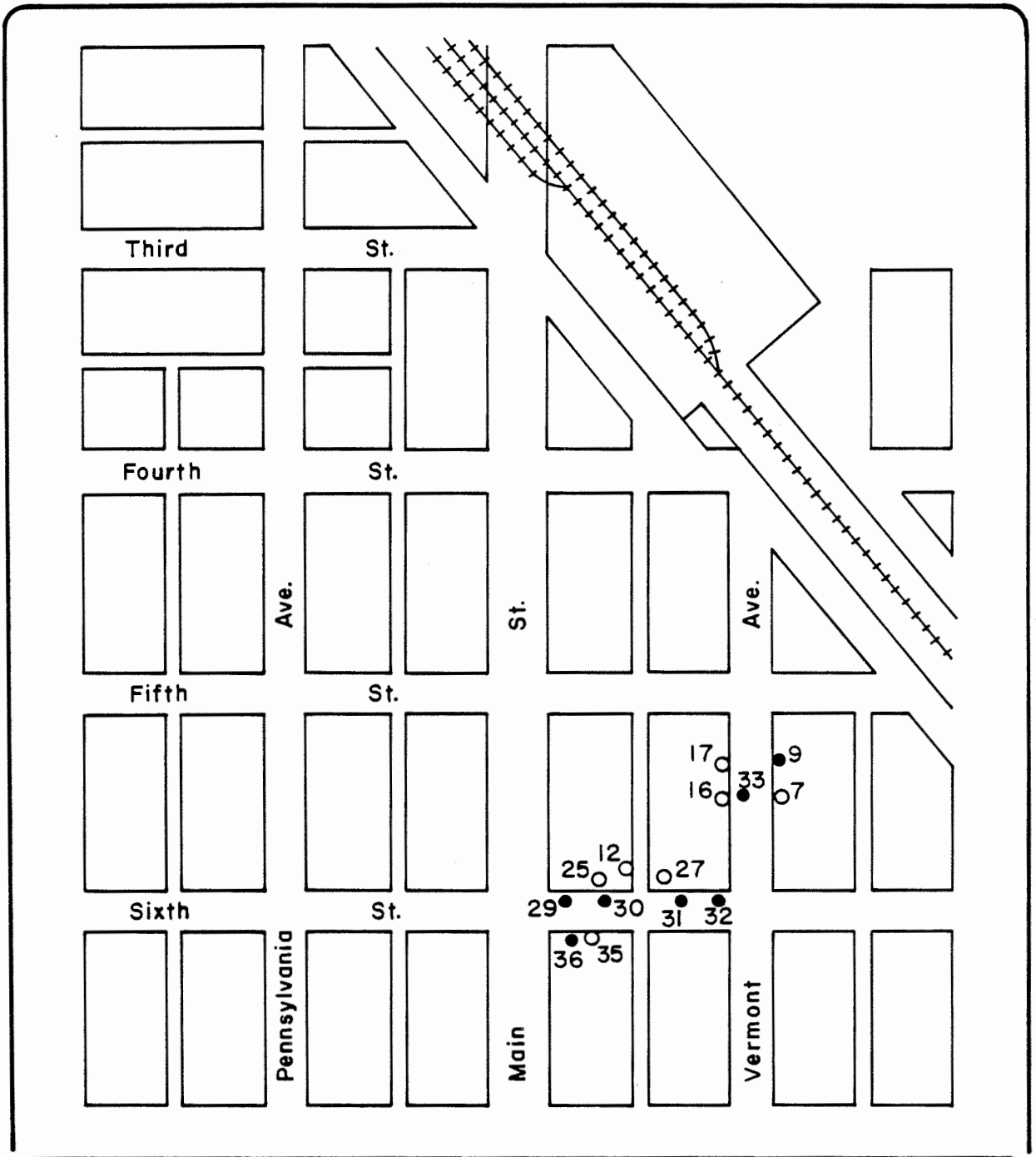
The sanitary-sewer system basically consists of north-south trending lines that all empty into an east-west trending main line under Fourth Street. The sewer under Fourth Street has a westerly flow direction. This type of flow pattern would allow the observed gasoline to move into the sewer main under Fourth Street which would in turn allow gasoline fumes in the sewer to be distributed over a large portion of the downtown area. Subsequent checking revealed that reported gasoline fumes in buildings were associated with the sanitary sewer.

Drilling activities were concentrated along Vermont Avenue and Sixth Street after gasoline was discovered in the sanitary sewer (fig. 1). The purpose of drilling was to find where gasoline was entering the sewer and to try and locate the source of the problem.

A group of five holes along Vermont Avenue (holes at ML 7, 9, 16, 17, and 33, figs. 1 and 3) had deposits which were contaminated to some degree. Some of the cuttings from the hole at ML 16 had a very strong odor of gasoline when they first came out of the hole. The observation well installed in the hole, however, had no odor of gasoline after 2 days. This is probably because there was no free liquid gasoline in the ground and the residual amount that was in contact with the annulus of the hole quickly volatilized.

Nine holes along Sixth Street (holes at ML 12, 25, 27, 29, 30, 31, 32, 35, and 36, figs. 1 and 3) showed some contamination. The strongest odors of gasoline came from holes at ML 25, 27, 30, 35, and 36. Gasoline was brought out of the ground by the auger from the hole at ML 30 which was drilled through the city street. Gasoline also accumulated in the observation well installed in the hole at ML 35. The cuttings from the holes at ML 30 and 35 appeared to be wet with gasoline as they came out of the hole although no free gasoline was brought out of the ground by the auger at ML 35. Cuttings from the hole

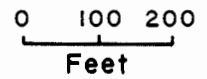




**Figure 3. Locations of Holes With Contaminated Sediment**

29 ● Test Hole ————— Number is map location number  
 43 ○ Observation Well ————— on Figure 1.

For logs of test holes and observation wells, see Appendix A.  
 Map location number is explained in Appendix A.



at ML 36, which was drilled immediately adjacent to the buried tanks of the Mobil Station, had a strong odor of gasoline but did not appear to be wet with gasoline.

### IDENTIFICATION OF GASOLINE IN THE GROUND

Samples of gasoline were taken from the pumps of three gasoline stations near the contaminated area:

1. The Mobil Station at the southeast corner of the intersection of Sixth and Main Streets,
2. The Standard Station at the southeast corner of the intersection of Main and Seventh Streets, and
3. The Champlin Station at the northeast corner of the intersection of Fifth and Main Streets.

These samples were compared to samples taken from the well at ML 35 and from the sanitary sewer. The sample from the sewer was taken from the manhole at the intersection of Fifth Street and Vermont Avenue.

Previous losses of gasoline were acknowledged by the operators of the Mobil and Standard Stations. There has been no reported loss of gasoline at the Champlin Station. The Mobil Station lost some regular, leaded gasoline in 1968 and the Standard Station lost some regular, leaded gasoline in 1976 and 1977. The magnitude of these losses was not made known to the Geological Survey. There has been no further loss of gasoline reported by either the Mobil or Standard Stations.

All gasoline samples were analyzed by the State Chemist using the gas chromatography method and by observing and comparing the dyes in the various samples. The gas chromatography method indicated that the gasoline found in the ground at ML 35 and in the sewer could be Mobil regular, Standard regular or Champlin unleaded. The dye method was indeterminate for the sample from the sewer but indicated that the gasoline from the well at ML 35 was Mobil regular. These analyses in addition to the hydrogeologic conditions and the location of the contamination indicated that the Mobil Station is likely the source of the gasoline.

It should be mentioned that as gasoline moves through the ground, its physical character can be altered as it reacts with the surrounding sediment. This can make it difficult to positively match a sample of gasoline taken from the ground with that taken from a pump at a gasoline station.

### GASOLINE MIGRATION

Gasoline is thought to be moving from the vicinity of the Mobil Station to the section of the sanitary sewer line which underlies Vermont Avenue between Fifth and Sixth Streets. This interpretation is based on:

1. The observance of free liquid gasoline in the ground near the Mobil Station,
2. The observance of free liquid gasoline in the sanitary sewer at the intersection of Fifth Street and Vermont Avenue,

3. The presence of gasoline contamination in some of the sediment between the two points mentioned above, and
4. The ground-water gradient in that area which would promote such movement.

The exact migratory path(s) of the gasoline and the exact point at which it enters the sewer are not known.

Gasoline contamination observed in some of the sediments along Vermont Street between Fifth and Sixth Streets (fig. 3) may be from gasoline which is migrating in a northeasterly direction through the ground or it may be from discharge of gasoline from the sewer line where the ground-water level occurs below the fluid level in the sewer. Available data do not allow definition of the source of contamination in this immediate area.

### CONCLUSIONS

The gasoline fume problem experienced in some buildings in Platte was the result of gasoline entering the sanitary-sewer system. Gasoline contamination discovered in the drill holes along Sixth Street and Vermont Avenue and in the sanitary sewer is most likely the result of a loss of gasoline at the Mobil Station located at the southeast corner of the intersection of Sixth and Main Streets.

Natural dispersion of gasoline in the sediments in this area is a very slow process. Without removing gasoline and some contaminated sediment from the ground, future periods of high precipitation and resultant high ground-water levels could possibly move part of any remaining gasoline into the sewer system. The frequency or probability of this happening cannot be predicted. If the gasoline and some contaminated sediment is not removed from the ground, it is recommended that monitoring of the sewer system and the basements in the affected area be continued periodically, especially during periods of high precipitation, and that people be alerted to the potential problems. Additional safeguards that would insure against future gasoline contamination problems are to require that all unused buried tanks be abandoned properly and to check all present operating systems for leaks.

### REFERENCE

Hedges, Lynn S., 1975, Geology and water resources of Charles Mix and Douglas Counties, South Dakota, Part I; Geology: South Dakota Geological Survey Bulletin 22.

## APPENDIX A

### Logs of test holes and observation wells

#### MAP LOCATION (ML)

A number which is arbitrarily assigned to the log according to the order in which it is listed (see LEGAL LOCATION and LOCATION). This number corresponds to the numbers shown on figure 1.

#### LEGAL LOCATION and LOCATION

The logs are listed by smallest township number, then the smallest range number, the smallest section number, and then by quarter section: NE = A; NW = B; SW = C; SE = D. A comparison of LEGAL LOCATION and LOCATION is as follows. A LEGAL LOCATION of NW SE NE SW sec. 30, T. 99 N., R. 64 W. is the same as a LOCATION of 099N-64W-30CADB.

#### LATITUDE and LONGITUDE

The format is DD.MMSS where D is degrees, M is minutes, and S is seconds.

#### DRILLING COMPANY

SDGS is an abbreviation for South Dakota Geological Survey.

#### TOTAL DRILL HOLE DEPTH and SCREEN LENGTH

The numbers are presented in feet.

#### SCREEN TYPE and CASING TYPE

PVC - polyvinyl chloride; HM. - homemade.

#### CASING TOP ELEVATION and GROUND SURFACE ELEVATION

The numbers are presented in feet above mean sea level. T - the elevation was estimated from a 7½ minute series topographic map.

#### CASING DIAMETER

The numbers are presented in inches.

County: CHARLES MIX  
Map Location: 1  
Legal Location: SW SW NW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2318  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. ENTERMAN  
Geologist: D. ILES  
Date Drilled: 06-16-1983  
Ground Surface Elevation: 1601.00 T  
Total Drill Hole Depth: 20.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Location: 099N-68W-13CBCC 1

Longitude: 98.5038

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A1-83-24  
SDGS Well Name: A1-83-24

Aquifer: TILL

Screen Length: 15.0  
Casing Diameter: 2.0

Total Casing and Screen: 20.0

Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF HORIZONTAL SLOTS,  
SPACED 4 TO 6 INCHES APART, WHICH WERE CUT  
IN THE CASING USING A HACK SAW. THE BOTTOM  
OF THE CASING HAS A SLIP CAP GLUED ON. THE  
WELL WAS NOT GRAVEL PACKED OR SEALED AT THE  
TOP.

0 - 3.0 CLAY, BLACK, SILTY, SANDY, PEBBLY; MOIST  
3.0 - 8.0 CLAY, BLACK AND BROWN MOTTLED, SILTY,  
SANDY, PEBBLY; MOIST  
8.0 - 20.0 CLAY, BROWN, SILTY, SANDY, PEBBLY;  
MOIST (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 2  
Legal Location: NW NW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2315  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: A. MACDONALD  
Geologist: D. ILES  
Date Drilled: 06-15-1983  
Ground Surface Elevation: 1599.00 T  
Total Drill Hole Depth: 20.0  
Water Rights Well:

Location: 099N-68W-13CCBB 1

Longitude: 98.5036

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A1-83-17  
SDGS Well Name: A1-83-17

Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Aquifer: TILL  
Screen Length: 19.0  
Casing Diameter: 2.0  
Total Casing and Screen: 20.0  
Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF HORIZONTAL SLOTS,  
SPACED 4 TO 6 INCHES APART, WHICH WERE CUT  
IN THE CASING USING A HACK SAW. THE BOTTOM  
OF THE CASING HAS A SLIP CAP GLUED ON. THE  
WELL WAS NOT GRAVEL PACKED OR SEALED AT THE  
TOP.

0 - 3.0 CLAY, BLACK, SILTY, SANDY, PEBBLY;  
MOIST  
3.0 - 11.0 CLAY, BROWN, SILTY, SANDY, PEBBLY;  
MOIST (TILL)  
11.0 - 20.0 CLAY, GRAY-BROWN, SILTY, SANDY, PEBBLY;  
MOIST

\* \* \* \*

County: CHARLES MIX  
Map Location: 3  
Legal Location: NW NW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2313  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. ENTERMAN  
Geologist: D. ILES  
Date Drilled: 06-16-1983  
Ground Surface Elevation: 1598.00 T  
Total Drill Hole Depth: 20.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:

Location: 099N-68W-13CCBB 2  
Longitude: 98.5037  
Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
Test Hole Number: A1-83-22  
SDGS Well Name: A1-83-22  
Aquifer: TILL  
Screen Length: 15.0  
Casing Diameter: 2.0  
Total Casing and Screen: 20.0  
Single Point Resistivity:  
Extra:

Samples:

THE WELL SCREEN CONSISTS OF HORIZONTAL SLOTS, SPACED 4 TO 6 INCHES APART, WHICH WERE CUT IN THE CASING USING A HACK SAW. THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED AT THE TOP.

0 - 4.0 CLAY, BLACK, SILTY, SANDY, PEBBLY; MOIST  
4.0 - 20.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST,  
WET BELOW 12 FEET (TILL)

\* \* \* \*

County: CHARLES MIX	Location: 099N-68W-13CCBB 3
Map Location: 4	
Legal Location: NW NW SW SW SEC. 13, T. 099 N., R. 68 W.	
Latitude: 43.2315	Longitude: 98.5038
Land Owner:	
Project: PLATTE PETROLEUM SPILL	
Drilling Company: SDGS	
Driller: A. MACDONALD	Driller's Log: X
Geologist: D. ILES	Geologist's Log:
Date Drilled: 06-16-1983	Drilling Method: AUGER
Ground Surface Elevation: 1599.00 T	
Total Drill Hole Depth: 40.0	Test Hole Number: A1-83-23
Water Rights Well:	SDGS Well Name: A1-83-23
Other Well Name:	
Basin: MISSOURI	Aquifer: TILL
Management Unit:	
Screen Type: PVC, HM.	Screen Length: 35.0
Casing Type: PVC, SCH. 40	Casing Diameter: 2.0
Casing Top Elevation:	
Casing Stick-up:	Total Casing and Screen: 40.0
Well Maintenance Date:	
USGS Hydrological Unit Code: 10140101	
Electric Log Information:	
Spontaneous Potential:	Single Point Resistivity:
Natural Gamma:	Extra:
Samples:	

THE WELL SCREEN CONSISTS OF HORIZONTAL SLOTS, SPACED 4 TO 6 INCHES APART, WHICH WERE CUT IN THE CASING USING A HACK SAW. THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED AT THE TOP.

0 - 1.0 CLAY, BLACK, SILTY, SANDY, PEBBLY; MOIST  
1.0 - 4.0 CLAY, DARK-BROWN, SILTY, SANDY, PEBBLY;  
MOIST (TILL)  
4.0 - 11.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST  
(TILL)  
11.0 - 22.0 CLAY, REDDISH-BROWN, SILTY, SANDY,

22.0 - 27.0 PEBBLY; MOIST (TILL)  
 CLAY, DARK-BROWN, SILTY, SANDY, PEBBLY;  
 MOIST (TILL)  
 27.0 - 32.0 CLAY, GRAY-BROWN, SILTY, SANDY, PEBBLY;  
 MOIST (TILL)  
 32.0 - 40.0 CLAY, GRAY, SILTY, SANDY, PEBBLY; MOIST  
 (TILL)

\* \* \* \* \*

County: CHARLES MIX	Location: 099N-68W-13CCBC 1
Map Location: 5	
Legal Location: SW NW SW SW SEC. 13, T. 099 N., R. 68 W.	
Latitude: 43.2310	Longitude: 98.5037
Land Owner:	
Project: PLATTE PETROLEUM SPILL	
Drilling Company: SDGS	
Driller: A. MACDONALD	Driller's Log: X
Geologist: D. ILES	Geologist's Log:
Date Drilled: 06-16-1983	Drilling Method: AUGER
Ground Surface Elevation: 1600.00 T	
Total Drill Hole Depth: 20.0	Test Hole Number: A1-83-21
Water Rights Well:	SDGS Well Name: A1-83-21
Other Well Name:	
Basin: MISSOURI	Aquifer: TILL
Management Unit:	
Screen Type: PVC, HM.	Screen Length: 15.0
Casing Type: PVC, SCH. 40	Casing Diameter: 2.0
Casing Top Elevation:	
Casing Stick-up:	Total Casing and Screen: 20.0
Well Maintenance Date:	
USGS Hydrological Unit Code: 10140101	
Electric Log Information:	
Spontaneous Potential:	Single Point Resistivity:
Natural Gamma:	Extra:
Samples:	

THE WELL SCREEN CONSISTS OF HORIZONTAL SLOTS,  
 SPACED 4 TO 6 INCHES APART, WHICH WERE CUT  
 IN THE CASING USING A HACK SAW. THE BOTTOM  
 OF THE CASING HAS A SLIP CAP GLUED ON. THE  
 WELL WAS NOT GRAVEL PACKED OR SEALED AT THE  
 TOP.

0 - 2.0 CLAY, BLACK, SILTY, SANDY, PEBBLY; MOIST  
 2.0 - 4.0 CLAY, DARK-BROWN, SILTY, SANDY, PEBBLY;  
 MOIST (TILL)  
 4.0 - 13.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST,  
 WET BELOW 10 FEET (TILL)  
 13.0 - 20.0 CLAY, REDDISH-BROWN, SILTY, SANDY,  
 PEBBLY; WET (TILL)

\* \* \* \* \*

County: CHARLES MIX	Location: 099N-68W-13CCCA 1
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Map Location: 6  
Legal Location: NE SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2309  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: L. THOMAS  
Geologist: D. ILES  
Date Drilled: 07-05-1983  
Ground Surface Elevation: 1600.00 T  
Total Drill Hole Depth: 13.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Longitude: 98.5034

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A2-83-31

Single Point Resistivity:  
Extra:

0 - 1.0 CLAY, BLACK  
1.0 - 5.0 CLAY, BLACK, SILTY, SANDY; MOIST  
5.0 - 13.0 CLAY, BROWN, SILTY, SANDY; MOIST (TILL)

\* \* \* \* \*

County: CHARLES MIX  
Map Location: 7  
Legal Location: NE SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2308  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. YESKE  
Geologist: D. ILES  
Date Drilled: 07-06-1983  
Ground Surface Elevation: 1603.00 T  
Total Drill Hole Depth: 18.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Location: 099N-68W-13CCCA 2

Longitude: 98.5034

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A2-83-41  
SDGS Well Name: A2-83-41

Aquifer:

Screen Length: 17.0  
Casing Diameter: 2.0

Total Casing and Screen: 20.0

Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF VERTICAL OVERLAPPING  
SLOTS CUT IN THE CASING USING A CIRCULAR SAW.  
THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED  
ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED  
AT THE TOP.

0 - 2.0 CLAY, DARK-BROWN, SILTY  
 2.0 - 9.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;  
 MOIST (TILL)  
 9.0 - 13.0 CLAY, GREENISH-BROWN, SILTY, PEBBLY;  
 MOIST, SLIGHT GASOLINE ODOR (TILL)  
 13.0 - 18.0 CLAY, BROWN, SILTY, PEBBLY; MOIST (TILL)

\* \* \* \*

County: CHARLES MIX	Location: 099N-68W-13CCCA 3
Map Location: 8	
Legal Location: NE SW SW SW SEC. 13, T. 099 N., R. 68 W.	
Latitude: 43.2307	Longitude: 98.5034
Land Owner:	
Project: PLATTE PETROLEUM SPILL	
Drilling Company: SDGS	
Driller: L. THOMAS	Driller's Log: X
Geologist: D. ILES	Geologist's Log:
Date Drilled: 07-06-1983	Drilling Method: AUGER
Ground Surface Elevation: 1603.00 T	
Total Drill Hole Depth: 18.0	Test Hole Number: A2-83-42
Water Rights Well:	SDGS Well Name: A2-83-42
Other Well Name:	
Basin: MISSOURI	Aquifer: TILL
Management Unit:	
Screen Type: PVC, HM.	Screen Length: 17.0
Casing Type: PVC, SCH. 40	Casing Diameter: 2.0
Casing Top Elevation:	
Casing Stick-up:	Total Casing and Screen: 20.0
Well Maintenance Date:	
USGS Hydrological Unit Code: 10140101	
Electric Log Information:	
Spontaneous Potential:	Single Point Resistivity:
Natural Gamma:	Extra:
Samples:	

THE WELL SCREEN CONSISTS OF VERTICAL OVERLAPPING  
 SLOTS CUT IN THE CASING USING A CIRCULAR SAW.  
 THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED  
 ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED  
 AT THE TOP.

0 - 5.0 SILT, BLACK, CLAYEY; MOIST  
 5.0 - 10.0 CLAY, BROWN, SILTY; MOIST (TILL)  
 10.0 - 18.0 CLAY, GRAY, MOTTLED WITH BROWN, SILTY,  
 SANDY; WET

\* \* \* \*

County: CHARLES MIX	Location: 099N-68W-13CCCA 4
Map Location: 9	
Legal Location: NE SW SW SW SEC. 13, T. 099 N., R. 68 W.	
Latitude: 43.2308	Longitude: 98.5034
Land Owner:	

Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. YESKE  
Geologist: D. ILES  
Date Drilled: 07-06-1983  
Ground Surface Elevation: 1602.00 T  
Total Drill Hole Depth: 18.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
Test Hole Number: A2-83-43

Single Point Resistivity:  
Extra:

- 0 - 4.0 CLAY, DARK-BROWN, SILTY
- 4.0 - 7.0 CLAY, LIGHT-BROWN, SILTY, PEBBLY; MOIST (TILL)
- 7.0 - 12.0 CLAY, GRAY-GREEN, SILTY, PEBBLY; MOIST, GASOLINE ODOR (TILL)
- 12.0 - 18.0 CLAY, BROWN, SILTY, PEBBLY; MOIST, LESS GASOLINE ODOR THAN INTERVAL FROM 7 TO 12 FEET (TILL)

\* \* \* \* \*

County: CHARLES MIX  
Map Location: 10  
Legal Location: NE SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2307  
Land Owner:

Location: 099N-68W-13CCCA 5

Longitude: 98.5034

Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. YESKE  
Geologist: D. ILES  
Date Drilled: 07-06-1983  
Ground Surface Elevation: 1603.00 T  
Total Drill Hole Depth: 18.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A2-83-50

Single Point Resistivity:  
Extra:

- 0 - 1.0 GRAVEL
- 1.0 - 8.0 SILT, DARK-BROWN, PEBBLY, VERY CLAYEY; MOIST (TILL)
- 8.0 - 18.0 SILT, GRAY-BROWN, PEBBLY, VERY CLAYEY; MOIST (TILL)

\* \* \* \* \*

County: CHARLES MIX  
Map Location: 11  
Legal Location: NE SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2307  
Land Owner:

Location: 099N-68W-13CCCA 6

Longitude: 98.5034

Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. YESKE  
Geologist: D. ILES  
Date Drilled: 08-31-1983  
Ground Surface Elevation: 1605.00 T  
Total Drill Hole Depth: 13.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
  
Test Hole Number: A2-83-272

Single Point Resistivity:  
Extra:

0 - 2.0 GRAVEL  
2.0 - 13.0 CLAY, DARK-BROWN, LIGHTENING TO BROWN  
WITH DEPTH, SILTY, SANDY, PEBBLY;  
MOIST (TILL)

\* \* \* \* \*

County: CHARLES MIX  
Map Location: 12  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2307  
Land Owner:

Location: 099N-68W-13CCCB 1

Longitude: 98.5037

Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. ENTERMAN  
Geologist: D. ILES  
Date Drilled: 06-15-1983  
Ground Surface Elevation: 1607.00 T  
Total Drill Hole Depth: 20.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A1-83-18  
SDGS Well Name: A1-83-18

Aquifer: TILL

Screen Length: 15.0  
Casing Diameter: 2.0

Total Casing and Screen: 20.0

Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF HORIZONTAL SLOTS,  
SPACED 4 TO 6 INCHES APART, WHICH WERE CUT  
IN THE CASING USING A HACK SAW. THE BOTTOM  
OF THE CASING HAS A SLIP CAP GLUED ON. THE  
WELL WAS NOT GRAVEL PACKED OR SEALED AT THE  
TOP.

0 - 1.0 CLAY, BLACK, SILTY, SANDY, PEBBLY; DRY

1.0 - 6.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; DRY  
(TILL)  
6.0 - 11.0 CLAY, GRAY-BROWN, SILTY, SANDY, PEBBLY;  
MOIST, VERY SLIGHT GASOLINE ODOR (TILL)  
11.0 - 20.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST,  
WET BELOW 13 FEET (TILL)

\* \* \* \*

County: CHARLES MIX	Location: 099N-68W-13CCCB 2
Map Location: 13	
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.	
Latitude: 43.2307	Longitude: 98.5035
Land Owner:	
Project: PLATTE PETROLEUM SPILL	
Drilling Company: SDGS	
Driller: M. YESKE	Driller's Log: X
Geologist: D. ILES	Geologist's Log:
Date Drilled: 07-05-1983	Drilling Method: AUGER
Ground Surface Elevation: 1605.00 T	
Total Drill Hole Depth: 18.0	Test Hole Number: A2-83-32
Water Rights Well:	SDGS Well Name: A2-83-32
Other Well Name:	
Basin: MISSOURI	Aquifer: TILL
Management Unit:	
Screen Type: PVC, HM.	Screen Length: 17.0
Casing Type: PVC, SCH. 40	Casing Diameter: 2.0
Casing Top Elevation:	
Casing Stick-up:	Total Casing and Screen: 20.0
Well Maintenance Date:	
USGS Hydrological Unit Code: 10140101	
Electric Log Information:	
Spontaneous Potential:	Single Point Resistivity:
Natural Gamma:	Extra:
Samples:	

THE WELL SCREEN CONSISTS OF VERTICAL OVERLAPPING  
SLOTS CUT IN THE CASING USING A CIRCULAR SAW.  
THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED  
ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED  
AT THE TOP.

0 - 2.0 SILT, BROWN, SANDY, CLAYEY  
2.0 - 5.0 CLAY, DARK-BROWN, SILTY (TILL)  
5.0 - 18.0 CLAY, YELLOW-BROWN, SILTY, PEBBLY; MOIST  
(TILL)

\* \* \* \*

County: CHARLES MIX	Location: 099N-68W-13CCCB 3
Map Location: 14	
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.	
Latitude: 43.2307	Longitude: 98.5035
Land Owner:	
Project: PLATTE PETROLEUM SPILL	

Drilling Company: SDGS  
Driller: L. THOMAS  
Geologist: D. ILES  
Date Drilled: 07-05-1983  
Ground Surface Elevation: 1605.00 T  
Total Drill Hole Depth: 18.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
Test Hole Number: A2-83-33  
Single Point Resistivity:  
Extra:

0 - 6.0 SILT, DARK-BROWN; MOIST  
6.0 - 18.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST,  
WET BELOW 7 FEET (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 15  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2307

Location: 099N-68W-13CCCB 4  
Longitude: 98.5035

Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. YESKE  
Geologist: D. ILES  
Date Drilled: 07-05-1983  
Ground Surface Elevation: 1604.00 T  
Total Drill Hole Depth: 18.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
Test Hole Number: A2-83-34  
SDGS Well Name: A2-83-34  
Aquifer: TILL  
Screen Length: 17.0  
Casing Diameter: 2.0  
Total Casing and Screen: 20.0  
Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF VERTICAL OVERLAPPING  
SLOTS CUT IN THE CASING USING A CIRCULAR SAW.  
THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED  
ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED  
AT THE TOP.

0 - 2.0 SILT, DARK-BROWN; MOIST  
2.0 - 4.0 CLAY, GREEN-BROWN, SILTY; MOIST  
4.0 - 18.0 CLAY, YELLOW-BROWN, SILTY, PEBBLY; MOIST  
(TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 16  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2308  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: L. THOMAS  
Geologist: D. ILES  
Date Drilled: 07-05-1983  
Ground Surface Elevation: 1602.00 T  
Total Drill Hole Depth: 18.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Location: 099N-68W-13CCCB 5  
  
Longitude: 98.5035  
  
Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
  
Test Hole Number: A2-83-35  
SDGS Well Name: A2-83-35  
  
Aquifer: TILL  
  
Screen Length: 17.0  
Casing Diameter: 2.0  
  
Total Casing and Screen: 20.0  
  
Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF VERTICAL OVERLAPPING  
SLOTS CUT IN THE CASING USING A CIRCULAR SAW.  
THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED  
ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED  
AT THE TOP.

0 - 4.0 SILT, DARK-BROWN; MOIST  
4.0 - 9.0 CLAY, BROWN, SILTY; MOIST (TILL)  
9.0 - 18.0 CLAY, SILTY, SANDY; MOIST, STRONG  
GASOLINE ODOR, THE COLOR CHANGED FROM  
BLACK TO OLIVE-GREEN TO GRAY TO BROWN  
WITH DEPTH (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 17  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2308  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. YESKE  
Geologist: D. ILES  
Date Drilled: 07-05-1983

Location: 099N-68W-13CCCB 6  
  
Longitude: 98.5035  
  
Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Ground Surface Elevation: 1602.00 T  
Total Drill Hole Depth: 18.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Test Hole Number: A2-83-36  
SDGS Well Name: A2-83-36  
  
Aquifer: TILL  
  
Screen Length: 17.0  
Casing Diameter: 2.0  
  
Total Casing and Screen: 20.0  
  
Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF VERTICAL OVERLAPPING SLOTS CUT IN THE CASING USING A CIRCULAR SAW. THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED AT THE TOP.

0 - 4.0 CLAY, DARK-BROWN, SILTY; MOIST  
4.0 - 10.0 CLAY, LIGHT-BROWN, SILTY, PEBBLY; MOIST (TILL)  
10.0 - 14.0 CLAY, OLIVE-GRAY, SILTY, PEBBLY; MOIST, GASOLINE ODOR (TILL)  
14.0 - 18.0 CLAY, BROWN, SILTY, PEBBLY; MOIST, GASOLINE ODOR (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 18  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2309  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: L. THOMAS  
Geologist: D. ILES  
Date Drilled: 07-05-1983  
Ground Surface Elevation: 1600.00 T  
Total Drill Hole Depth: 18.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101

Location: 099N-68W-13CCCB 7  
  
Longitude: 98.5035  
  
Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
  
Test Hole Number: A2-83-37  
SDGS Well Name: A2-83-37  
  
Aquifer: TILL  
  
Screen Length: 17.0  
Casing Diameter: 2.0  
  
Total Casing and Screen: 20.0



Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF VERTICAL OVERLAPPING SLOTS CUTS IN THE CASING USING A CIRCULAR SAW. THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED AT THE TOP.

0 - 2.0 GRAVEL, BROWN, SANDY; DRY  
2.0 - 5.0 CLAY, DARK-BROWN, SILTY, SANDY; MOIST (TILL)  
5.0 - 15.0 CLAY, BROWN, SILTY, SANDY; MOIST (TILL)  
15.0 - 18.0 CLAY, DARK-BROWN, SILTY, SANDY, PEBBLY; MOIST (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 19  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2308  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: L. THOMAS  
Geologist: D. ILES  
Date Drilled: 07-06-1983  
Ground Surface Elevation: 1603.00 T  
Total Drill Hole Depth: 18.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Location: 099N-68W-13CCCB 8

Longitude: 98.5035

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A2-83-38

Single Point Resistivity:  
Extra:

0 - 3.0 GRAVEL, CLAYEY; DRY  
3.0 - 18.0 CLAY, DARK-BROWN, SILTY; MOIST, WET BELOW 11 FEET (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 20  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2308  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. YESKE  
Geologist: D. ILES  
Date Drilled: 07-06-1983  
Ground Surface Elevation: 1603.00 T

Location: 099N-68W-13CCCB 9

Longitude: 98.5035

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Total Drill Hole Depth: 18.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Test Hole Number: A2-83-39

Single Point Resistivity:  
Extra:

0 - 4.0 CLAY, DARK-BROWN, SILTY; MOIST  
4.0 - 18.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;  
MOIST (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 21  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2308

Location: 099N-68W-13CCCB10

Longitude: 98.5035

Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: L. THOMAS  
Geologist: D. ILES  
Date Drilled: 07-06-1983  
Ground Surface Elevation: 1602.00 T  
Total Drill Hole Depth: 18.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A2-83-40

Single Point Resistivity:  
Extra:

0 - 2.0 GRAVEL, BROWN, CLAYEY; DRY  
2.0 - 8.0 CLAY, DARK-BROWN, SILTY; MOIST (TILL)  
8.0 - 18.0 SILT, LIGHT-BROWN, PEBBLY; MOIST, WET  
BELOW 9 FEET (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 22  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2308

Location: 099N-68W-13CCCB11

Longitude: 98.5035

Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: L. THOMAS  
Geologist: D. ILES  
Date Drilled: 07-06-1983  
Ground Surface Elevation: 1603.00 T  
Total Drill Hole Depth: 18.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A2-83-44

Single Point Resistivity:  
Extra:

0 - 1.0 GRAVEL, BROWN, CLAYEY; DRY  
1.0 - 6.0 CLAY, BLACK, SILTY; MOIST (TILL)  
6.0 - 18.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST  
(TILL)

\* \* \* \* \*

County: CHARLES MIX  
Map Location: 23  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2308  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. YESKE  
Geologist: D. ILES  
Date Drilled: 07-06-1983  
Ground Surface Elevation: 1602.00 T  
Total Drill Hole Depth: 18.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Location: 099N-68W-13CCCB12

Longitude: 98.5035

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A2-83-45

Single Point Resistivity:  
Extra:

0 - 1.0 SAND AND GRAVEL  
1.0 - 4.0 CLAY, DARK-BROWN, SILTY; MOIST (TILL)  
4.0 - 9.0 SILT, LIGHT-BROWN, VERY CLAYEY; MOIST  
(TILL)  
9.0 - 18.0 CLAY, BROWN, SILTY, PEBBLY; MOIST, WET  
BELOW 14 FEET (TILL)

\* \* \* \* \*

County: CHARLES MIX  
Map Location: 24  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2307  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: L. THOMAS  
Geologist: D. ILES  
Date Drilled: 07-06-1983  
Ground Surface Elevation: 1604.00 T  
Total Drill Hole Depth: 18.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Location: 099N-68W-13CCCB13

Longitude: 98.5035

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A2-83-46

Single Point Resistivity:  
Extra:

0 - 1.0 GRAVEL, BROWN, CLAYEY; DRY  
1.0 - 2.0 CLAY, BLACK, SILTY; MOIST

2.0 - 18.0 SILT, BROWN, CLAYEY, SANDY; MOIST (TILL)

\* \* \* \*

County: CHARLES MIX	Location: 099N-68W-13CCCB14
Map Location: 25	
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.	
Latitude: 43.2307	Longitude: 98.5038
Land Owner:	
Project: PLATTE PETROLEUM SPILL	
Drilling Company: SDGS	
Driller: L. THOMAS	Driller's Log: X
Geologist: D. ILES	Geologist's Log:
Date Drilled: 07-06-1983	Drilling Method: AUGER
Ground Surface Elevation: 1607.00 T	
Total Drill Hole Depth: 18.0	Test Hole Number: A2-83-49
Water Rights Well:	SDGS Well Name: A2-83-49
Other Well Name:	
Basin: MISSOURI	Aquifer: TILL
Management Unit:	
Screen Type: PVC, HM.	Screen Length: 17.0
Casing Type: PVC, SCH. 40	Casing Diameter: 2.0
Casing Top Elevation:	
Casing Stick-up:	Total Casing and Screen: 20.0
Well Maintenance Date:	
USGS Hydrological Unit Code: 10140101	
Electric Log Information:	
Spontaneous Potential:	Single Point Resistivity:
Natural Gamma:	Extra:
Samples:	

THE WELL SCREEN CONSISTS OF VERTICAL OVERLAPPING SLOTS CUT IN THE CASING USING A CIRCULAR SAW. THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED AT THE TOP.

0 - 3.0 SILT, DARK-BROWN; MOIST  
3.0 - 5.0 SILT, BLACK, SANDY, PEBBLY; MOIST (TILL)  
5.0 - 18.0 SILT, DARK-BROWN TO GRAY, SANDY; MOIST,  
GASOLINE ODOR, WET BELOW 14 FEET (TILL)

\* \* \* \*

County: CHARLES MIX	Location: 099N-68W-13CCCB15
Map Location: 26	
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.	
Latitude: 43.2307	Longitude: 98.5035
Land Owner:	
Project: PLATTE PETROLEUM SPILL	
Drilling Company: SDGS	
Driller: L. THOMAS	Driller's Log: X
Geologist: D. ILES	Geologist's Log:
Date Drilled: 07-06-1983	Drilling Method: AUGER
Ground Surface Elevation: 1605.00 T	

Total Drill Hole Depth: 18.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Test Hole Number: A2-83-51

Single Point Resistivity:  
Extra:

0 - 5.0 SILT, BROWN, SANDY, PEBBLY; SLIGHTLY  
MOIST  
5.0 - 6.0 SILT, BLACK, SANDY; MOIST  
6.0 - 18.0 SILT, BROWN, CLAYEY, PEBBLY; MOIST (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 27  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2307  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. YESKE  
Geologist: D. ILES  
Date Drilled: 07-06-1983  
Ground Surface Elevation: 1606.00 T  
Total Drill Hole Depth: 18.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Location: 099N-68W-13CCCB16

Longitude: 98.5037

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A2-83-52  
SDGS Well Name: A2-83-52

Aquifer: TILL

Screen Length: 17.0  
Casing Diameter: 2.0

Total Casing and Screen: 20.0

Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF VERTICAL OVERLAPPING  
SLOTS CUT IN THE CASING USING A CIRCULAR SAW.  
THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED  
ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED  
AT THE TOP.

0 - 5.0 CLAY, BROWN, SILTY; MOIST  
5.0 - 10.0 CLAY, GRAY, SILTY, PEBBLY; MOIST  
GASOLINE ODOR (TILL)  
10.0 - 14.0 CLAY, GRAY-BROWN, SILTY, PEBBLY; MOIST,  
GASOLINE ODOR (TILL)  
14.0 - 18.0 SILT, BROWN, PEBBLY, VERY CLAYEY; MOIST,  
GASOLINE ODOR (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 28  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2307  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: L. THOMAS  
Geologist: D. ILES  
Date Drilled: 07-07-1983  
Ground Surface Elevation: 1605.00 T  
Total Drill Hole Depth: 18.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Location: 099N-68W-13CCCB17

Longitude: 98.5037

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A2-83-53

Single Point Resistivity:  
Extra:

0 - 10.0 CLAY, DARK-BROWN, SILTY, SANDY, PEBBLY;  
MOIST (TILL)  
10.0 - 18.0 SILT, LIGHT-BROWN, SANDY, PEBBLY; WET,  
COLOR DARKENS WITH DEPTH (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 29  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2307  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: L. THOMAS  
Geologist: D. ILES  
Date Drilled: 08-31-1983  
Ground Surface Elevation: 1607.00 T  
Total Drill Hole Depth: 13.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Location: 099N-68W-13CCCB18

Longitude: 98.5039

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A2-83-268

Single Point Resistivity:  
Extra:

0 - 8.0 CLAY, BLUE-GRAY, SILTY, SANDY; MOIST,  
GASOLINE ODOR, THE UPPER 0.5 FEET OF  
THIS INTERVAL CONSISTED OF BLACKTOP OF  
THE CITY STREET (TILL)  
8.0 - 11.0 CLAY, DARK-BROWN, SILTY, SANDY; MOIST,  
GASOLINE ODOR (TILL)  
11.0 - 13.0 CLAY, BROWN, SILTY, SANDY; MOIST, LESS  
GASOLINE ODOR THAN INTERVAL FROM 8 TO  
11 FEET (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 30  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2307  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. YESKE  
Geologist: D. ILES  
Date Drilled: 08-31-1983  
Ground Surface Elevation: 1607.00 T  
Total Drill Hole Depth: 13.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Location: 099N-68W-13CCCB19  
  
Longitude: 98.5038  
  
Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
  
Test Hole Number: A2-83-269  
  
Single Point Resistivity:  
Extra:

- 0 - 7.0 CLAY, BLUE-GRAY, SILTY, SANDY, PEBBLY;  
MOIST, GASOLINE ODOR, THE UPPER 0.5  
FEET OF THIS INTERVAL CONSISTED OF  
BLACKTOP OF THE CITY STREET (TILL)
- 7.0 - 11.0 CLAY, BLUE-GRAY, SILTY, SANDY, PEBBLY;  
WET WITH GASOLINE (TILL)
- 11.0 - 13.0 CLAY, GREENISH-BROWN, SILTY;  
PLASTIC-LIKE, WET WITH GASOLINE (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 31  
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2307  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. YESKE  
Geologist: D. ILES  
Date Drilled: 08-31-1983  
Ground Surface Elevation: 1606.00 T  
Total Drill Hole Depth: 13.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Location: 099N-68W-13CCCB20  
  
Longitude: 98.5036  
  
Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
  
Test Hole Number: A2-83-270  
  
Single Point Resistivity:  
Extra:

- 0 - 3.0 CLAY, BLACK, SILTY, SANDY; MOIST,  
GASOLINE ODOR, THE UPPER 0.5 FEET OF  
THIS INTERVAL CONSISTS OF BLACKTOP OF  
THE CITY STREET
- 3.0 - 8.0 CLAY, DARK-GRAY, SILTY, SANDY, PEBBLY;  
MOIST, GASOLINE ODOR (TILL)

8.0 - 13.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST,  
LESS GASOLINE ODOR THAN INTERVAL FROM  
3 TO 8 FEET (TILL)

\* \* \* \* \*

County: CHARLES MIX	Location: 099N-68W-13CCCB21
Map Location: 32	
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.	
Latitude: 43.2307	Longitude: 98.5035
Land Owner:	
Project: PLATTE PETROLEUM SPILL	
Drilling Company: SDGS	
Driller: M. YESKE	Driller's Log: X
Geologist: D. ILES	Geologist's Log:
Date Drilled: 08-31-1983	Drilling Method: AUGER
Ground Surface Elevation: 1605.00 T	
Total Drill Hole Depth: 13.0	Test Hole Number: A2-83-271
USGS Hydrological Unit Code: 10140101	
Electric Log Information:	
Spontaneous Potential:	Single Point Resistivity:
Natural Gamma:	Extra:
Samples:	

0 - 8.0 CLAY, GRAYISH-BLACK, SILTY, SANDY; MOIST,  
GASOLINE ODOR, THE UPPER 0.5 FEET OF  
THIS INTERVAL CONSISTS OF BLACKTOP OF  
THE CITY STREET (TILL)

8.0 - 13.0 CLAY, BROWN, SILTY, PEBBLY; MOIST, VERY  
SLIGHT GASOLINE ODOR (TILL)

\* \* \* \* \*

County: CHARLES MIX	Location: 099N-68W-13CCCB22
Map Location: 33	
Legal Location: NW SW SW SW SEC. 13, T. 099 N., R. 68 W.	
Latitude: 43.2308	Longitude: 98.5035
Land Owner:	
Project: PLATTE PETROLEUM SPILL	
Drilling Company: SDGS	
Driller: M. YESKE	Driller's Log: X
Geologist: D. ILES	Geologist's Log:
Date Drilled: 08-31-1983	Drilling Method: AUGER
Ground Surface Elevation: 1602.00 T	
Total Drill Hole Depth: 18.0	Test Hole Number: A2-83-273
USGS Hydrological Unit Code: 10140101	
Electric Log Information:	
Spontaneous Potential:	Single Point Resistivity:
Natural Gamma:	Extra:
Samples:	

0 - 6.0 CLAY, BLACK, SILTY, SANDY, PEBBLY; MOIST,  
THE UPPER 0.5 FEET OF THIS INTERVAL  
CONSISTS OF BLACKTOP OF THE CITY STREET

6.0 - 11.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST,



11.0 - 13.0 SLIGHT GASOLINE ODOR (TILL)  
 CLAY, GRAY, SILTY, SANDY, PEBBLY; MOIST,  
 GASOLINE ODOR (TILL)  
 13.0 - 15.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST  
 (TILL)  
 15.0 - 18.0 CLAY, GREENISH-BROWN, SILTY, SANDY; MOIST  
 (TILL)

\* \* \* \*

County: CHARLES MIX	Location: 099N-68W-13CCCC 1
Map Location: 34	
Legal Location: SW SW SW SW SEC. 13, T. 099 N., R. 68 W.	
Latitude: 43.2304	Longitude: 98.5037
Land Owner:	
Project: PLATTE PETROLEUM SPILL	
Drilling Company: SDGS	
Driller: M. ENTERMAN	Driller's Log: X
Geologist: D. ILES	Geologist's Log:
Date Drilled: 06-16-1983	Drilling Method: AUGER
Ground Surface Elevation: 1612.00 T	
Total Drill Hole Depth: 20.0	Test Hole Number: A1-83-28
Water Rights Well:	SDGS Well Name: A1-83-28
Other Well Name:	
Basin: MISSOURI	Aquifer: TILL
Management Unit:	
Screen Type: PVC, HM.	Screen Length: 15.0
Casing Type: PVC, SCH. 40	Casing Diameter: 2.0
Casing Top Elevation:	
Casing Stick-up:	Total Casing and Screen: 20.0
Well Maintenance Date:	
USGS Hydrological Unit Code: 10140101	
Electric Log Information:	
Spontaneous Potential:	Single Point Resistivity:
Natural Gamma:	Extra:
Samples:	

THE WELL SCREEN CONSISTS OF HORIZONTAL SLOTS,  
 SPACED 4 TO 6 INCHES APART, WHICH WERE CUT  
 IN THE CASING USING A HACK SAW. THE BOTTOM  
 OF THE CASING HAS A SLIP CAP GLUED ON. THE  
 WELL WAS NOT GRAVEL PACKED OR SEALED AT THE  
 TOP.

0 - 1.0 CLAY, BLACK, SILTY, SANDY, PEBBLY; MOIST  
 1.0 - 3.0 CLAY, DARK-BROWN, SILTY, SANDY, PEBBLY;  
 MOIST (TILL)  
 3.0 - 20.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST  
 (TILL)

\* \* \* \*

County: CHARLES MIX	Location: 099N-68W-13CCCC 2
Map Location: 35	
Legal Location: SW SW SW SW SEC. 13, T. 099 N., R. 68 W.	

Latitude: 43.2306  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. YESKE  
Geologist: D. ILES  
Date Drilled: 07-06-1983  
Ground Surface Elevation: 1608.00 T  
Total Drill Hole Depth: 18.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Longitude: 98.5038  
  
Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
  
Test Hole Number: A2-83-47  
SDGS Well Name: A2-83-47  
  
Aquifer: TILL  
  
Screen Length: 17.0  
Casing Diameter: 2.0  
  
Total Casing and Screen: 20.0  
  
Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF VERTICAL OVERLAPPING SLOTS CUT IN THE CASING USING A CIRCULAR SAW. THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED AT THE TOP.

0 - 2.0 SILT, LIGHT-BROWN, CLAYEY; MOIST  
2.0 - 10.0 SILT, GRAY, CLAYEY; MOIST, GASOLINE ODOR (TILL)  
10.0 - 15.0 SILT, GREENISH-GRAY, CLAYEY; MOIST, GASOLINE ODOR, WET BELOW 14 FEET, OILY FILM ON THE CUTTINGS (TILL)  
15.0 - 18.0 CLAY, BROWN, SILTY, PEBBLY; WET (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 36  
Legal Location: SW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2306  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: L. THOMAS  
Geologist: D. ILES  
Date Drilled: 07-06-1983  
Ground Surface Elevation: 1610.00 T  
Total Drill Hole Depth: 18.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:

Location: 099N-68W-13CCCC 3  
  
Longitude: 98.5038  
  
Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
  
Test Hole Number: A2-83-48  
  
Single Point Resistivity:

Natural Gamma:  
Samples:

Extra:

0 - 4.0 SILT, LIGHT-BROWN, SILTY, SANDY; MOIST  
4.0 - 11.0 SILT, GRAY MOTTLED WITH BLUE, SANDY,  
PEBBLY; MOIST, GASOLINE ODOR (TILL)  
11.0 - 18.0 SILT, LIGHT-BROWN, SANDY, PEBBLY, VERY  
CLAYEY; MOIST, LESS GASOLINE ODOR THAN  
IN INTERVAL FROM 4 TO 11 FEET

\* \* \* \* \*

County: CHARLES MIX  
Map Location: 37  
Legal Location: SW SW SW SW SEC. 13, T. 099 N., R. 68 W.  
Latitude: 43.2306  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. YESKE  
Geologist: D. ILES  
Date Drilled: 07-07-1983  
Ground Surface Elevation: 1606.00 T  
Total Drill Hole Depth: 18.0  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Location: 099N-68W-13CCCC 4

Longitude: 98.5035

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A2-83-54

Single Point Resistivity:  
Extra:

0 - 7.0 CLAY, BROWN, SANDY, VERY SILTY; BECOMES  
MOIST AT 5 FEET (TILL)  
7.0 - 12.0 CLAY, YELLOW-BROWN, PEBBLY, VERY SILTY;  
MOIST (TILL)  
12.0 - 18.0 CLAY, BROWN, SILTY, PEBBLY; MOIST (TILL)

\* \* \* \* \*

County: CHARLES MIX  
Map Location: 38  
Legal Location: SE SE NE SE SEC. 14, T. 099 N., R. 68 W.  
Latitude: 43.2318  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. ENTERMAN  
Geologist: D. ILES  
Date Drilled: 06-16-1983  
Ground Surface Elevation: 1598.00 T  
Total Drill Hole Depth: 20.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.

Location: 099N-68W-14DADD 1

Longitude: 98.5042

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER

Test Hole Number: A1-83-26  
SDGS Well Name: A1-83-26

Aquifer: TILL

Screen Length: 15.0

Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Casing Diameter: 2.0  
Total Casing and Screen: 20.0  
Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF HORIZONTAL SLOTS, SPACED 4 TO 6 INCHES APART, WHICH WERE CUT IN THE CASING USING A HACK SAW. THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED AT THE TOP.

0 - 1.0 GRAVEL, BROWN, SANDY  
1.0 - 2.0 CLAY, BLACK, SANDY, SILTY, PEBBLY; MOIST  
2.0 - 4.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST (TILL)  
4.0 - 12.0 CLAY, GRAY-BROWN, SILTY, SANDY, PEBBLY; MOIST, WET BELOW 10 FEET (TILL)  
12.0 - 20.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; WET (TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 39  
Legal Location: NE NE SE SE SEC. 14, T. 099 N., R. 68 W.  
Latitude: 43.2313  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: M. ENTERMAN  
Geologist: D. ILES  
Date Drilled: 06-15-1983  
Ground Surface Elevation: 1597.00 T  
Total Drill Hole Depth: 40.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Location: 099N-68W-14DDAA 1  
Longitude: 98.5043  
Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
Test Hole Number: A1-83-16  
SDGS Well Name: A1-83-16  
Aquifer: TILL  
Screen Length: 35.0  
Casing Diameter: 2.0  
Total Casing and Screen: 40.0  
Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF HORIZONTAL SLOTS, SPACED 4 TO 6 INCHES APART, WHICH WERE CUT IN THE CASING USING A HACK SAW. THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED AT THE TOP.

0 - 4.0 CLAY, BLACK, SILTY, SANDY, PEBBLY; MOIST  
4.0 - 6.0 CLAY, BLACK, SILTY, SANDY, PEBBLY; DRY  
6.0 - 14.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST (TILL)  
14.0 - 19.0 CLAY, DARK-BROWN, SILTY, SANDY, PEBBLY; MOIST (TILL)  
19.0 - 40.0 CLAY, GRAY, SILTY, SANDY, PEBBLY; MOIST (TILL)

\* \* \* \*

County: CHARLES MIX	Location: 099N-68W-14DDAA 2
Map Location: 40	
Legal Location: NE NE SE SE SEC. 14, T. 099 N., R. 68 W.	
Latitude: 43.2315	Longitude: 98.5043
Land Owner:	
Project: PLATTE PETROLEUM SPILL	
Drilling Company: SDGS	
Driller: M. ENTERMAN	Driller's Log: X
Geologist: D. ILES	Geologist's Log:
Date Drilled: 06-15-1983	Drilling Method: AUGER
Ground Surface Elevation: 1597.00 T	
Total Drill Hole Depth: 20.0	Test Hole Number: A1-83-20
Water Rights Well:	SDGS Well Name: A1-83-20
Other Well Name:	
Basin: MISSOURI	Aquifer: TILL
Management Unit:	
Screen Type: PVC, HM.	Screen Length: 15.0
Casing Type: PVC, SCH. 40	Casing Diameter: 2.0
Casing Top Elevation:	
Casing Stick-up:	Total Casing and Screen: 20.0
Well Maintenance Date:	
USGS Hydrological Unit Code: 10140101	
Electric Log Information:	
Spontaneous Potential:	Single Point Resistivity:
Natural Gamma:	Extra:
Samples:	

THE WELL SCREEN CONSISTS OF HORIZONTAL SLOTS, SPACED 4 TO 6 INCHES APART, WHICH WERE CUT IN THE CASING USING A HACK SAW. THE BOTTOM OF THE CASING HAS A SLIP CAP GLUED ON. THE WELL WAS NOT GRAVEL PACKED OR SEALED AT THE TOP.

0 - 1.0 CLAY, BLACK, SILTY, SANDY, PEBBLY; MOIST  
1.0 - 2.0 SAND, BROWN, PEBBLY; MOIST  
2.0 - 4.0 CLAY, GRAY-BROWN, SILTY, SANDY, PEBBLY;

MOIST (TILL)  
4.0 - 20.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST,  
WET BELOW 12 FEET (TILL)

\* \* \* \*

County: CHARLES MIX	Location: 099N-68W-14DDAC 1
Map Location: 41	
Legal Location: SW NE SE SE SEC. 14, T. 099 N., R. 68 W.	
Latitude: 43.2312	Longitude: 98.5048
Land Owner:	
Project: PLATTE PETROLEUM SPILL	
Drilling Company: SDGS	
Driller: A. MACDONALD	Driller's Log: X
Geologist: D. ILES	Geologist's Log:
Date Drilled: 06-16-1983	Drilling Method: AUGER
Ground Surface Elevation: 1598.00 T	
Total Drill Hole Depth: 20.0	Test Hole Number: A1-83-27
Water Rights Well:	SDGS Well Name: A1-83-27
Other Well Name:	
Basin: MISSOURI	Aquifer: TILL
Management Unit:	
Screen Type: PVC, HM.	Screen Length: 15.0
Casing Type: PVC, SCH. 40	Casing Diameter: 2.0
Casing Top Elevation:	
Casing Stick-up:	Total Casing and Screen: 20.0
Well Maintenance Date:	
USGS Hydrological Unit Code: 10140101	
Electric Log Information:	
Spontaneous Potential:	Single Point Resistivity:
Natural Gamma:	Extra:
Samples:	

THE WELL SCREEN CONSISTS OF HORIZONTAL SLOTS,  
SPACED 4 TO 6 INCHES APART, WHICH WERE CUT  
IN THE CASING USING A HACK SAW. THE BOTTOM  
OF THE CASING HAS A SLIP CAP GLUED ON. THE  
WELL WAS NOT GRAVEL PACKED OR SEALED AT THE  
TOP.

0 - 1.0 CLAY, BLACK, SILTY, SANDY, PEBBLY; MOIST  
1.0 - 8.0 CLAY, DARK-BROWN, SILTY, SANDY, PEBBLY;  
MOIST (TILL)  
8.0 - 20.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST,  
WET BELOW 11 FEET (TILL)

\* \* \* \*

County: CHARLES MIX	Location: 099N-68W-14DDAD 1
Map Location: 42	
Legal Location: SE NE SE SE SEC. 14, T. 099 N., R. 68 W.	
Latitude: 43.2311	Longitude: 98.5043
Land Owner:	
Project: PLATTE PETROLEUM SPILL	
Drilling Company: SDGS	

Driller: A. MACDONALD  
Geologist: D. ILES  
Date Drilled: 06-15-1983  
Ground Surface Elevation: 1599.00 T  
Total Drill Hole Depth: 20.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:  
Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
  
Test Hole Number: A1-83-19  
SDGS Well Name: A1-83-19  
  
Aquifer: TILL  
  
Screen Length: 15.0  
Casing Diameter: 2.0  
  
Total Casing and Screen: 20.0  
  
Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF HORIZONTAL SLOTS,  
SPACED 4 TO 6 INCHES APART, WHICH WERE CUT  
IN THE CASING USING A HACK SAW. THE BOTTOM  
OF THE CASING HAS A SLIP CAP GLUED ON. THE  
WELL WAS NOT GRAVEL PACKED OR SEALED AT THE  
TOP.

0 - 3.0 CLAY, BLACK, SILTY, SANDY, PEBBLY; MOIST  
3.0 - 5.0 CLAY, GRAY-BROWN, SILTY, SANDY, PEBBLY;  
MOIST (TILL)  
5.0 - 20.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST  
(TILL)

\* \* \* \*

County: CHARLES MIX  
Map Location: 43  
Legal Location: SE NE SE SE SEC. 14, T. 099 N., R. 68 W.  
Latitude: 43.2312  
Land Owner:  
Project: PLATTE PETROLEUM SPILL  
Drilling Company: SDGS  
Driller: A. MACDONALD  
Geologist: D. ILES  
Date Drilled: 06-16-1983  
Ground Surface Elevation: 1598.00 T  
Total Drill Hole Depth: 20.0  
Water Rights Well:  
Other Well Name:  
Basin: MISSOURI  
Management Unit:  
Screen Type: PVC, HM.  
Casing Type: PVC, SCH. 40  
Casing Top Elevation:  
Casing Stick-up:

Location: 099N-68W-14DDAD 2  
  
Longitude: 98.5042  
  
Driller's Log: X  
Geologist's Log:  
Drilling Method: AUGER  
  
Test Hole Number: A1-83-25  
SDGS Well Name: A1-83-25  
  
Aquifer: TILL  
  
Screen Length: 17.0  
Casing Diameter: 2.0  
  
Total Casing and Screen: 20.0

Well Maintenance Date:  
USGS Hydrological Unit Code: 10140101  
Electric Log Information:  
Spontaneous Potential:  
Natural Gamma:  
Samples:

Single Point Resistivity:  
Extra:

THE WELL SCREEN CONSISTS OF HORIZONTAL SLOTS,  
SPACED 4 TO 6 INCHES APART, WHICH WERE CUT  
IN THE CASING USING A HACK SAW. THE BOTTOM  
OF THE CASING HAS A SLIP CAP GLUED ON. THE  
WELL WAS NOT GRAVEL PACKED OR SEALED AT THE  
TOP.

- 0 - 2.0 GRAVEL, SILTY, SANDY
- 2.0 - 3.0 CLAY, BLACK, VERY SILTY, VERY SANDY,  
PEBBLY; MOIST
- 3.0 - 9.0 CLAY, DARK-BROWN, SILTY, SANDY, PEBBLY;  
MOIST (TILL)
- 9.0 - 12.0 CLAY, GRAY-BROWN, SILTY, SANDY, PEBBLY;  
MOIST (TILL)
- 12.0 - 20.0 CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST  
(TILL)

\* \* \* \*