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**PRE-CERCLIS ASSESSMENT REPORT  
HIGHWAY 3 PCE SITE, LE MARS, IOWA**

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**TO:** Daniel Garvey, U.S. EPA Region 7 Task Order Project Officer  
**FROM:** Stephen Holmes, HGL Task Order Manager  
**THROUGH:** Bob Overfelt, P.G., CHMM, HGL AES Program Manager  
**DATE:** May 14, 2010  
**SUBJECT:** Pre-CERCLIS Assessment  
**CONTRACT NO.:** EP-S7-05-05  
**TASK ORDER NO:** 0037

## **INTRODUCTION**

Hydrogeologic Inc. (HGL) was tasked by the U.S. Environmental Protection Agency (EPA) Region 7 to complete a Comprehensive Environmental Response, Compensation and Liability Act Information System (pre-CERCLIS) Screening Assessment at the Highway 3 PCE Site in Le Mars, Iowa. The activities associated with this assessment were executed under Architect and Engineering Services (AES) Contract EP-S7-05-05 Task Order (TO) 0037. EPA requested that HGL perform the assessment in response to the detection of tetrachloroethene (PCE) in two groundwater samples collected in April 2008 as part of an investigation at the adjacent Le Mars Coal Gas Plant site. This assessment was conducted in general accordance with the EPA guidance document *Improving Site Assessment: Pre-CERCLIS Screening Assessment* (EPA, 1999). All work associated with TO 037 was conducted in accordance with the *Final Sampling and Analysis Plan, Highway 3 PCE Site, Le Mars, Iowa* (HGL, 2009a).

The objective of the assessment was to identify the source of PCE in groundwater samples collected during the April 2008 Le Mars Coal Gas Plant site investigation and determine the general plume configuration. Additional scope of work items included:

- conducting a site visit;
- researching historical records and maps to determine the operational use of properties in the suspected PCE source area;
- preparing a pre-CERCLIS Screening Assessment Check List/Decision Form (Attachment 1), and;
- determining whether additional action is warranted at this site under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

## SITE LOCATION AND DESCRIPTION

The City of Le Mars is located in Plymouth County in northwestern Iowa, about 25 miles northeast of Sioux City, Iowa, on U.S Highway 75. The suspected PCE source area is bound by Plymouth Street to the north, Central Avenue to the west and Lincoln Street SE to the southeast. The legal description of the site is the NE ¼, NW ¼ of Section 16, Township 92 North, Range 45 West (USGS, 1985). The geographic coordinates for a point near the center of the suspected PCE source area are latitude 42.792870° North and longitude -96.165867° West (Google Maps, 2010). The area is somewhat triangular in shape and contains possible sources listed below. The suspected PCE source area and possible sources are highlighted on Figure 1 in Attachment 2.

- Northern Dry Cleaner – approximately 175 feet east of the intersection of Plymouth and Central Avenue.
- Southern Dry Cleaner – as identified on the 1923 Sanborn map is approximately 200 feet southeast of the intersection of Plymouth and Central Avenue.
- Western Mechanic Shop – as identified on the 1923 Sanborn map approximately 300 feet south of the intersection of Plymouth and Central Avenue.
- Eastern Mechanic Shop – approximately 450 feet east southeast of the intersection of Plymouth and Central Avenue.
- Railroad - tracks running parallel to Lincoln Street SE.

Dry cleaning operations typically utilize PCE as a solvent for fabric stains. Mechanic shops and railroad operators frequently use PCE as a degreaser during repair activities.

## HYDROGEOLOGIC SETTING

According to the Expanded Site Inspection Report (E&E, 2001), groundwater occurs in three main aquifers in the vicinity of the City of Le Mars: the alluvial aquifer, the buried channel aquifer and the Dakota formation sandstone aquifer. The alluvial aquifer consists of 30 to 50 feet of sands and gravels. Underlying the alluvial aquifer is a glacial till aquitard. The glacial till consists of a hard, silty clay matrix containing gravel, pebbles, and cobbles and ranges in thickness from 15 to 70 feet. The buried channel aquifer beneath the till consists of fairly clean, moderately sorted sand and gravel. Its thickness ranges from 50 to 70 feet. The Dakota formation is divided into the Woodbury and Nishnabotna members. The Woodbury member is composed of interbedded shale, sandstone and lignite. The Nishnabotna member is composed of sandstones with some interbedded shales and is considered the Dakota aquifer. Groundwater flow in the alluvial aquifer appears to be to the northwest toward Willow Creek and the Floyd River. The groundwater flow direction within the buried channel aquifer is toward the southeast. Groundwater flow in the Dakota aquifer is toward the southwest (Munter et al., 1983).

## RELEVANT HISTORICAL INVESTIGATIONS

The Le Mars Coal Gas Plant site (TO 025) is located parallel and cross gradient to the Highway 3 PCE site. Field activities at this site have recently included 12 long term monitoring (LTM) investigations and 2 direct-push technology (DPT) groundwater investigations. During these investigations, PCE has been detected in a limited number of samples in both the alluvial and the buried channel aquifers. A brief summary of the detections is provided below.

### Alluvial Aquifer

Two separate DPT investigations were conducted to better define the existing coal gas groundwater plume in April 2008 and October 2009. During these investigations 40 groundwater samples were collected and tested for volatile organic compounds (VOCs). PCE was detected in five of the samples at concentrations ranging from 1.6 micrograms per liter ( $\mu\text{g/L}$ ) in sample GW-10 (38 to 42 feet bgs) to 28.0  $\mu\text{g/L}$  in GW-10 (28 to 32 feet bgs). These five reported detections were reported in DPT sampling locations located downgradient of the suspected PCE source area and are over 1,000 feet apart at the corners of 1<sup>st</sup> Street NW and 1<sup>st</sup> Avenue NW, 1<sup>st</sup> Street NW and 2<sup>nd</sup> Avenue NW and 1<sup>st</sup> Street NW and 4<sup>th</sup> Avenue NW (see Figure 2 in Attachment 2).

The alluvial aquifer monitoring well network for the coal gas site consists of eight monitoring wells: one positioned generally downgradient from the suspected PCE source area (MW-5 south of 4<sup>th</sup> Street NW and west of 2<sup>nd</sup> Avenue NW) and seven positioned generally cross gradient to the north east and parallel to the suspected PCE source area. The network has been sampled 12 times between September 2000 and January 2009 and PCE has not been reported for the samples collected from any of the wells during these events. The long term monitoring well network locations are not included on Figure 2 for clarity purposes.

### Buried Channel

One sample was collected from the buried channel aquifer using DPT during the April 2008 investigation at the adjacent coal gas plant. This sample was collected near the intersection of 5<sup>th</sup> street NW and 4<sup>th</sup> Avenue NW which is upgradient of the suspected PCE source area. PCE was not detected in this sample.

The buried channel monitoring well network for the LTM monitoring of the coal gas site plume consists of four wells: one positioned upgradient, two cross-gradient, and one cross/downgradient of the suspected PCE source area. During the last 12 samplings of this network, PCE was detected three times in MW-1D at concentrations ranging from 0.52 to 1.3  $\mu\text{g/L}$ . MW-1D is located north of Plymouth Street between 5<sup>th</sup> Avenue SE and 6<sup>th</sup> Avenue SE, which is cross to downgradient of the suspected PCE source area. As above the long term monitoring well locations are not included on Figure 2.

## SUMMARY OF FIELD ACTIVITIES

In October 2009, HGL conducted field activities at the Highway 3 PCE Site that included continuous coring, groundwater sampling, HAPSITE® screening, and investigation-derived waste (IDW) management.

### Continuous Coring

HGL conducted continuous coring activities at two locations in the alluvial aquifer: PCE-GW-1 and PCE-GW2. The coring activities were completed to define site lithology and to aid with selecting temporary DPT well screen intervals. The boring locations are depicted on Figure 2 (Attachment 2) and lithologic logs of the soil borings are included in Attachment 5.

Soil boring PCE-GW-1 was positioned along Plymouth Street near a possible PCE source area and soil boring PCE-GW-2 was positioned in an anticipated downgradient direction from PCE-GW-1 in the alley between 1<sup>st</sup> Avenue NW and Central Avenue, north of Plymouth Street. The depth to water at both locations was approximately 29 feet below ground surface (bgs). Lithology in both locations was generally the same with silts encountered from ground surface to approximately 17 feet bgs, underlain by well to poorly graded sands with occasional gravel from approximately 17 feet bgs to 43 feet bgs. Finally, a glacial till was encountered at approximately 43 feet bgs in both borings.

### DPT Groundwater Sampling

In October 2009, HGL collected 14 samples (including 2 duplicates) from 6 locations in the alluvial aquifer. At each location, samples were collected using DPT techniques from the upper and lower portions of the alluvial aquifer. The screened intervals for sampling of the upper portion of the alluvial aquifer ranged from 29 to 35 feet bgs and the screened intervals for sampling of the lower portion of the aquifer ranged from 39 to 48.5 feet bgs. In general water samples collected from the upper portion of the alluvial aquifer were collected from immediately below the vados zone groundwater contact and samples collected in the lower portion of the aquifer were from immediately above the glacial till. Samples were submitted to the EPA Region 7 Laboratory in Kansas City, Kansas for analysis of VOCs. Sample collection information is summarized in Table 1 (Attachment 3) and sample locations are illustrated on Figure 2 (Attachment 2).

### HAPSITE® Analytical

EPA personnel generated on-site VOC data for 12 groundwater samples using a HAPSITE®. The screening samples were collected at each DPT location for on-site analysis. The on-site data was generated to aid in determining subsequent DPT locations. The data package for the on-site HAPSITE® analysis is included in Attachment 6

### Management of Investigation-Derived Waste

Partial drums of soil and liquid IDW were generated during the field activities. The drums

were stored on the western half of the city maintenance building property at 4<sup>th</sup> Avenue SE and 1<sup>st</sup> Street NE while awaiting analysis of the IDW samples. The IDW was classified as “Non-RCRA/Non-Regulated Material” and Hydro-Klean Inc. of Des Moines, Iowa, removed the waste on January 22, 2010.

## SUMMARY OF ANALYTICAL RESULTS

The analytical data received from the EPA Region 7 Laboratory for the groundwater samples collected from the temporary wells is described below. Results are summarized in Table 1 (Attachment 3) and illustrated on Figure 2 (Attachment 2). For the purposes of the data evaluation, results were compared to the maximum contaminant levels (MCL) for PCE of 5  $\mu\text{g/L}$ .

### Upper Portion of the Alluvial Aquifer

Seven samples were collected from the upper portion of the alluvial aquifer. One of the samples was a duplicate sample. PCE was reported at concentrations above the MCL for four of the seven samples at concentrations that ranged from 83  $\mu\text{g/L}$  to 370  $\mu\text{g/L}$ . The highest PCE concentration was collected from PCE-GW-6 at 30 to 33 feet bgs. This location is northwest and downgradient of the possible PCE source area. The sample collected from PCE-GW-1 at 29 to 33 feet bgs contained PCE at 150  $\mu\text{g/L}$ . This location is in the northern portion of the suspected PCE source area. PCE also was detected in PCE-GW-4, which is downgradient of PCE-GW-1 and PCE-GW-6. PCE was detected in a sample and a duplicate sample collected from PCE-GW-4 at 87  $\mu\text{g/L}$  and at 83  $\mu\text{g/L}$  respectively in the 31 to 35 feet bgs depth interval.

### Lower Portion of the Alluvial Aquifer

PCE was detected above the MCL in only one sample collected from the lower portion of the alluvial aquifer. It was reported at 9.1  $\mu\text{g/L}$  in the sample collected from PCE-GW-4 (41 to 45 feet bgs).

## CONCLUSIONS AND RECOMMENDATIONS

Limited analytical data indicates that the source of PCE groundwater contamination is south of Plymouth Street, east of Central Street and northwest of the railroad tracks. A discussion of the analytical results pertaining to the identified possible sources is presented below.

- *Northern Dry Cleaner* – Analytical results suggest this is a possible source based on the reported detections of PCE in PCE-GW-1, PCE-GW-6 and PCE-GW-4 and lack of detections in PCE-GW-5.
- *Southern Dry Cleaner* – Analytical results suggest this is a possible source based on the reported detections in PCE-GW-1, PCE-GW-6 and PCE-GW-4.
- *Western Mechanic Shop* – PCE was not detected in PCE-GW-5, which is the downgradient sampling point nearest this potential source. Therefore, the western mechanic shop is not a likely source. Though PCE was detected in PCE-GW-1, PCE

GW-6, and PCE GW-4 these locations are all downgradient of potential dry cleaner sources. However, data is insufficient to eliminate this as a source at this time.

- Eastern Mechanic Shop – PCE was not detected in PCE-GW-2, which is a downgradient sampling point near this potential source. Therefore, the eastern mechanic shop is not a likely source. Though PCE was detected in PCE-GW-1, PCE GW-6, and PCE-GW-4 these locations are all downgradient of potential dry cleaner sources. However, as is the case for the western mechanic shop, data is insufficient to eliminate this as a source at this time.
- Railroad – Due to their length of the tracks, the railroad must be considered a possible source.

It should be noted that more than one of the possible sources listed above may contribute to the PCE groundwater plume, and that other sources may exist along Plymouth Street to the west of Central Street.

The axis of the plume extends an undetermined distance from the PCE source area in a northwesterly direction through DPT locations PCE-GW-6 and PCE-GW-4. The plume is bound upgradient by PCE-GW-5 and cross gradient by PCE-GW-2 and GW-16. Also, the PCE plume thickens as it extends downgradient as evidenced by PCE detections in the lower portions of the aquifer at locations PCE-GW-4, GW-2 and GW-10. Trace PCE detections collected from MW-1D in the buried channel aquifer through routine LTM have reoccurred over time. Therefore, it is surmised that additional PCE concentrations may be present in the buried channel aquifer. Additional investigative work would be required to characterize the extent of PCE contamination in the buried channel aquifer.

The documented presence of PCE in groundwater at levels above the MCL may pose an unacceptable risk to human health or ecological receptors. Additional investigative efforts would be required to characterize the complete nature and extent of groundwater contamination, definitively identify the source(s), evaluate potential receptors, and evaluate the relative risk posed by site conditions, including the potential for vapor intrusion.

## REFERENCES

Ecology and Environment Inc. (E&E). 2001. Expanded Site Inspection Report for the Le Mars Coal Gas Site. Le Mars Coal Gas Plant Site, Le Mars, Iowa. March.

Google Maps, 2010. URL: <http://maps.google.com/maps> Accessed on April 22.

Hydrogeologic Inc. (HGL), 2009a. *Final Sampling and Analysis Plan, Highway 3 PCE Site, Le Mars, Iowa.* October.

Hydrogeologic Inc. (HGL), 2009b. *Annual Report for Technical Assistance Activities, Le Mars Coal Gas Plant Site, Iowa.* March.

Munter, J.A., Ludvigson G.A., and Bunker B.J., 1983. *Hydrogeology and Stratigraphy of the*

*Dakota Formation in Northwest Iowa*, Water-Supply Bulletin No. 13, Iowa Geological Survey, Iowa City, Iowa.

U.S. Environmental Protection Agency (EPA), 1999. *Improving Site Assessment: Pre-CERCLIS Screening Assessments* Office of Solid Waste and Emergency Response. Washington DC. EPA/540-F-98-039, October

U.S. Geological Survey (USGS), 1985. Le Mars Quadrangle Iowa – Plymouth County, 7.5-Minute Topographic Map Series. Scale 1:24,000.

## **ATTACHMENTS**

Attachment 1: Pre-CERCLIS Checklist

Attachment 2: Figures

Attachment 3: Table

Attachment 4: Sanborn Maps

Attachment 5: Soil Boring Lithologic Logs, Chain of Custody Record, Field Sheets, and Field Instrument Calibration Sheets

Attachment 6: EPA Region 7 Laboratory Data Package, HAPSITE® Results Table

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**ATTACHMENT 1**

**PRE-CERCLIS CHECKLIST**

# PRE-CERCLIS SCREENING ASSESSMENT CHECKLIST/DECISION FORM

This checklist can assist the site investigator during the Pre-CERCLIS screening. It will be used to determine whether further steps in the site investigation process are required under CERCLA. Use additional sheets, if necessary.

**Checklist Preparer:** Stephen Holmes / Geologist 05/07/2010  
(Name/Title) 6340 Glenwood Suite 200, Overland Park, KS 66202 (Date) (913) 317-8860  
(Address) Sholmes@hgl.com (Phone)  
(E-Mail Address)

**Site Name:** Highway 3 PCE

**Previous Names (if any):** None

**Site Location:** Highway 3 and Central Avenue  
(Street)  
Le Mars, IA 51031  
(City) (ST) (Zip)

**Latitude:** 42.792870° N **Longitude:** -96.165867° W

	YES	NO
1. Does the site already appear in CERCLIS?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Is the release from products that are part of the structure of, and result in exposure within, residential buildings or businesses or community structures?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Does the site consist of a release of a naturally occurring substance in its unaltered form, or altered solely through naturally occurring processes or phenomena, from a location where it is naturally found?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Is the release into a public or private drinking water supply due to deterioration of the system through ordinary use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Is some other program actively involved with the site (i.e., another Federal, State, or Tribal program)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Are the hazardous substances potentially released at the site regulated under a statutory exclusion (i.e., petroleum, natural gas, natural gas liquids, synthetic gas usable for fuel, normal application of fertilizer, release located in a workplace, naturally occurring, or regulated by the NRC, UMTRCA, or OSHA)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Are the hazardous substances potentially released at the site excluded by policy considerations (e.g., deferral to RCRA Corrective Action)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is there sufficient documentation that clearly demonstrates that there is no potential for a release that could cause adverse environmental or human health impacts (e.g., comprehensive remedial investigation equivalent data showing no release above ARARs, completed removal action, documentation showing that no hazardous substance releases have occurred, EPA approved risk assessment completed)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Please explain all "yes" answer(s), attach additional sheets if necessary:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Site Determination:**

Enter the site into CERCLIS. Further assessment is recommended (explain below).

The site is not recommended for placement into CERCLIS (explain below).

**DECISION/DISCUSSION/RATIONALE:**

Limited analytical data indicates that the source of PCE groundwater contamination exists south of Plymouth Street, east of Central Street. The axis of the plume extends an undetermined distance from the source area in north north-westerly direction.

The documented presence of PCE in groundwater at levels above the MCL may pose an unacceptable risk to human health or ecological receptors. Additional investigative efforts would be required to characterize the complete nature and extent of groundwater contamination, definitively identify the source(s), evaluate potential receptors, and evaluate the relative risk posed by site conditions, including the potential for vapor intrusion .

**Regional EPA Reviewer:**

\_\_\_\_\_  
Print Name/Signature

\_\_\_\_\_  
Date

**State Agency/Tribe:**

\_\_\_\_\_  
Print Name/Signature

\_\_\_\_\_  
Date

**ATTACHMENT 2**

**FIGURES**

**Figure 1**  
**Site Location Map**  
**Highway 3 PCE Site**

U.S. EPA Region 7



**Legend**

-  Site Boundary  
(Ideal Cleaners Building)
-  Possible Railroad Source
-  Possible Dry Cleaner Source
-  Possible Machine Shop Source



Filename: X:/EPA009/HWY 3/DSR/  
Highway3\_PCE\_Site.mxd  
Project: EP9037.39.12.02  
Revised: 05/13/10 CV  
Source: ESRI StreetMap USA; Iowa DNR



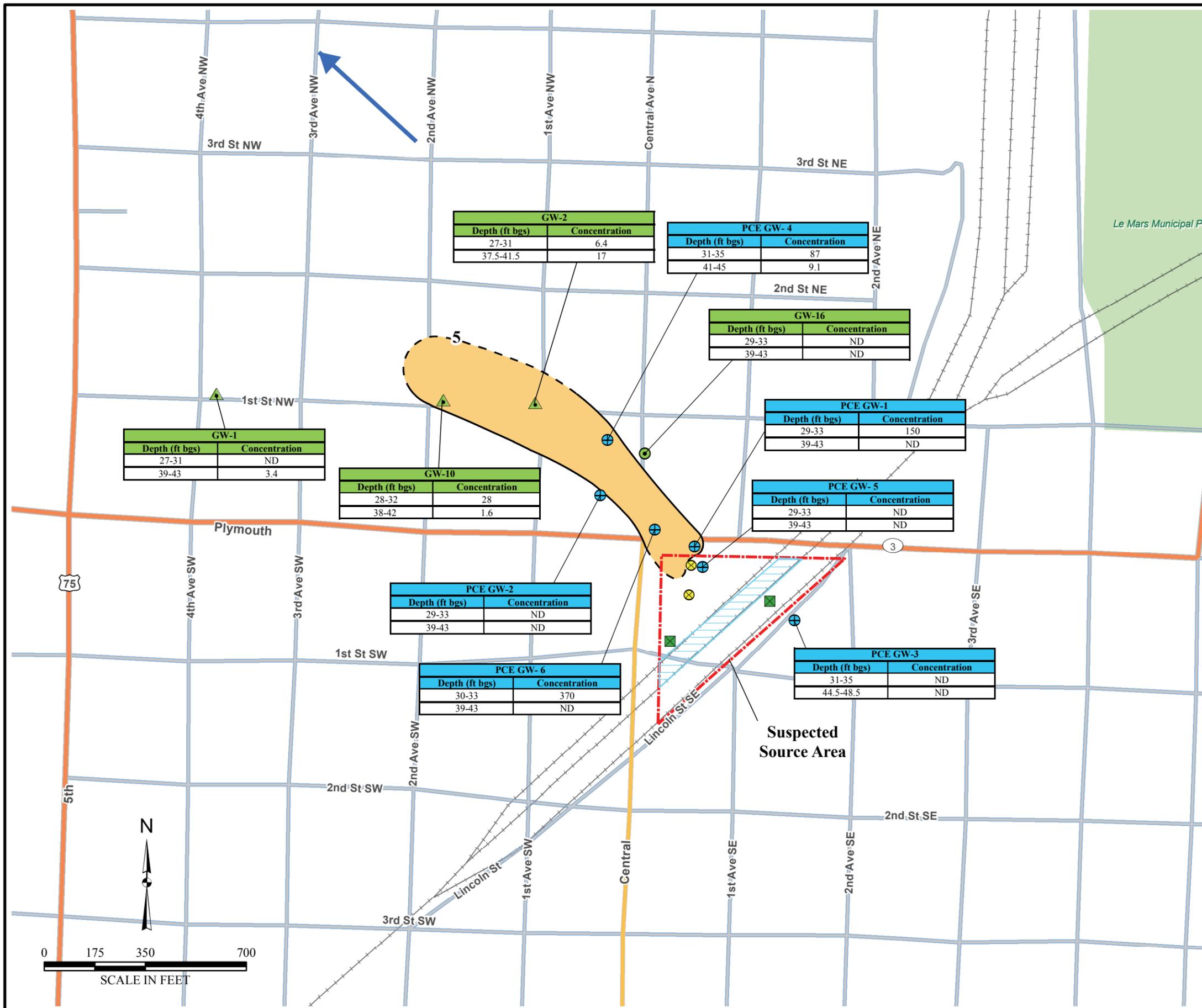
**Figure 2**  
**Alluvial Aquifer PCE Detection Map**

U.S. EPA Region 7



**Legend**

- October 2009 Highway 3 PCE Investigation Locations
  - October 2009 Coal Gas Plant Site Investigation Locations
  - April 2008 Coal Gas Plant Site Investigation Locations
  - Estimated Groundwater Flow Direction
  - PCE Plume (dashed where inferred)
  - PCE Contour for Upper Sample Interval (µg/L)
  - ND Not Detected
  - ft bgs Feet Below Ground Surface
  - µg/L micrograms per liter
- Possible Sources**
- Possible Railroad Source
  - Possible Dry Cleaner Source
  - Possible Machine Shop Source



**ATTACHMENT 3**

**TABLE**

**Table 1**  
**Groundwater Analytical VOC Detections**  
**Highway 3 PCE Site, October 28-29, 2009**  
**Le Mars, IA**

Location	Region 7 Laboratory Sample ID	Date Collected	Time Collected	Screened Interval Depth (ft bgs)	Sample collected from the upper or lower portion of the Aquifer	Region 7 Laboratory PCE Result $\mu\text{g/L}$
PCE-GW-1	4624-1	10/28/09	930	39-43	Lower alluvial aquifer	5.0 U
PCE-GW-1	4624-2	10/28/09	958	29-33	Upper alluvial aquifer	<b>150</b>
PCE-GW-2	4624-3	10/28/09	1122	39-43	Lower alluvial aquifer	5.0 U
PCE-GW-2	4624-4	10/28/09	1142	29-33	Upper alluvial aquifer	5.0 U
PCE-GW-3	4624-5	10/28/09	1402	44.5-48.5	Lower alluvial aquifer	5.0 U
PCE-GW-3	4624-5-FD	10/28/09	1402	44.5-48.5	Lower alluvial aquifer	<i>5.0 U</i>
PCE-GW-3	4624-7	10/28/09	1414	31-35	Upper alluvial aquifer	5.0 U
PCE-GW-4	4624-9	10/28/09	1546	41-45	Lower alluvial aquifer	<b><u>9.1</u></b>
PCE-GW-4	4624-10	10/28/09	1607	31-35	Upper alluvial aquifer	<b>87</b>
PCE-GW-4	4624-10-FD	10/28/09	1607	31-35	Upper alluvial aquifer	<b><u>83</u></b>
PCE-GW-5	4624-12	10/28/09	1708	39-43	Lower alluvial aquifer	5.0 U
PCE-GW-5	4624-14	10/28/09	1728	29-33	Upper alluvial aquifer	5.0 U
PCE-GW-6	4624-16	10/29/09	840	39-43	Lower alluvial aquifer	5.0 U
PCE-GW-6	4624-17	10/29/09	855	30-33	Upper alluvial aquifer	<b><u>370</u></b>

Shaded cells indicated detection

Bold Underlined numbers indicate detection above MCL

Italic indicates field duplicate sample result

MCL - Maximum Contaminant Level

bgs - below ground surface

ID - identification number

U - The Analyte was not detected at or above the reporting limit

ft - Feet

$\mu\text{g/L}$  - micrograms per Liter

**ATTACHMENT 4**

**SANBORN MAPS**



**Le Mars**

18th Plymouth SE

LeMars, IA 51031

Inquiry Number: 2583798.1

September 15, 2009

## Certified Sanborn® Map Report

# Certified Sanborn® Map Report

9/15/09

**Site Name:**

Le Mars  
18th Plymouth SE  
LeMars, IA 51031

**Client Name:**

HydroGeologic, Inc.  
8245 Nieman Road  
Lenexa, KS 66214



EDR Inquiry # 2583798.1

Contact: Matt Schlegel

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## Certified Sanborn Results:

**Site Name:** Le Mars  
**Address:** 18th Plymouth SE  
**City, State, Zip:** LeMars, IA 51031  
**Cross Street:**  
**P.O. #** EP9036  
**Project:** Hwy 3  
**Certification #** 356F-4506-B13A



Sanborn® Library search results  
Certification # 356F-4506-B13A

**Maps Provided:**

1883	1923
1888	1947
1893	1961
1899	
1907	
1913	

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- University Publications of America
- EDR Private Collection

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## **Certified Sanborn® Map Report Enhancements for 2009**

The accompanying Certified Sanborn Map Report reflects a number of enhancements that make it easier for you to review these historical maps. EDR has digitally joined together the more than one million fire insurance maps from the Sanborn Library collection so that your target property is centered, making it easier for you to review adjoining properties. Here is a list of the new features:

- Your target property is centered on each map. You can quickly locate your target property and view adjoining properties. Plus, adjoining properties are included more often, reducing your need to refer to additional maps.
- All maps are now displayed at a uniform scale. This makes it easier for you to view changes to the property over time.
- We've increased coverage by adding thousands of new maps from 40 cities for years 1994-2007.
- A new Map Key and Sheet Thumbnails let you reference sheet numbers, year and volume of original Sanborn Map panels used for this report.

For more information about the new enhancements to the Certified Sanborn Map Report, contact your EDR representative at 800-352-0050.

## Sanborn Sheet Thumbnails

This Certified Sanborn Map Report is based upon the following Sanborn Fire Insurance map sheets.



### 1961 Source Sheets



Volume 1, Sheet 2



Volume 1, Sheet 3



Volume 1, Sheet 7



Volume 1, Sheet 9

### 1947 Source Sheets



Volume 1, Sheet 7



Volume 1, Sheet 2



Volume 1, Sheet 3



Volume 1, Sheet 9

### 1923 Source Sheets



Volume 1, Sheet 2



Volume 1, Sheet 7



Volume 1, Sheet 9



Volume 1, Sheet 3

### 1913 Source Sheets



Volume 1, Sheet 2



Volume 1, Sheet 4



Volume 1, Sheet 6

**1907 Source Sheets**



Volume 1, Sheet 2



Volume 1, Sheet 4



Volume 1, Sheet 6

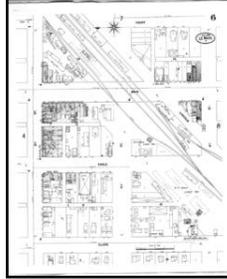
**1899 Source Sheets**



Volume 1, Sheet 2



Volume 1, Sheet 4



Volume 1, Sheet 6

**1893 Source Sheets**



Volume 1, Sheet 2

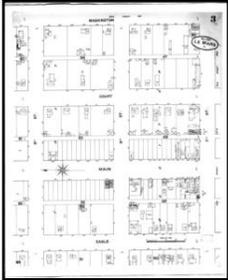


Volume 1, Sheet 3



Volume 1, Sheet 4

**1888 Source Sheets**



Volume 1, Sheet 3



Volume 1, Sheet 4

**1883 Source Sheets**

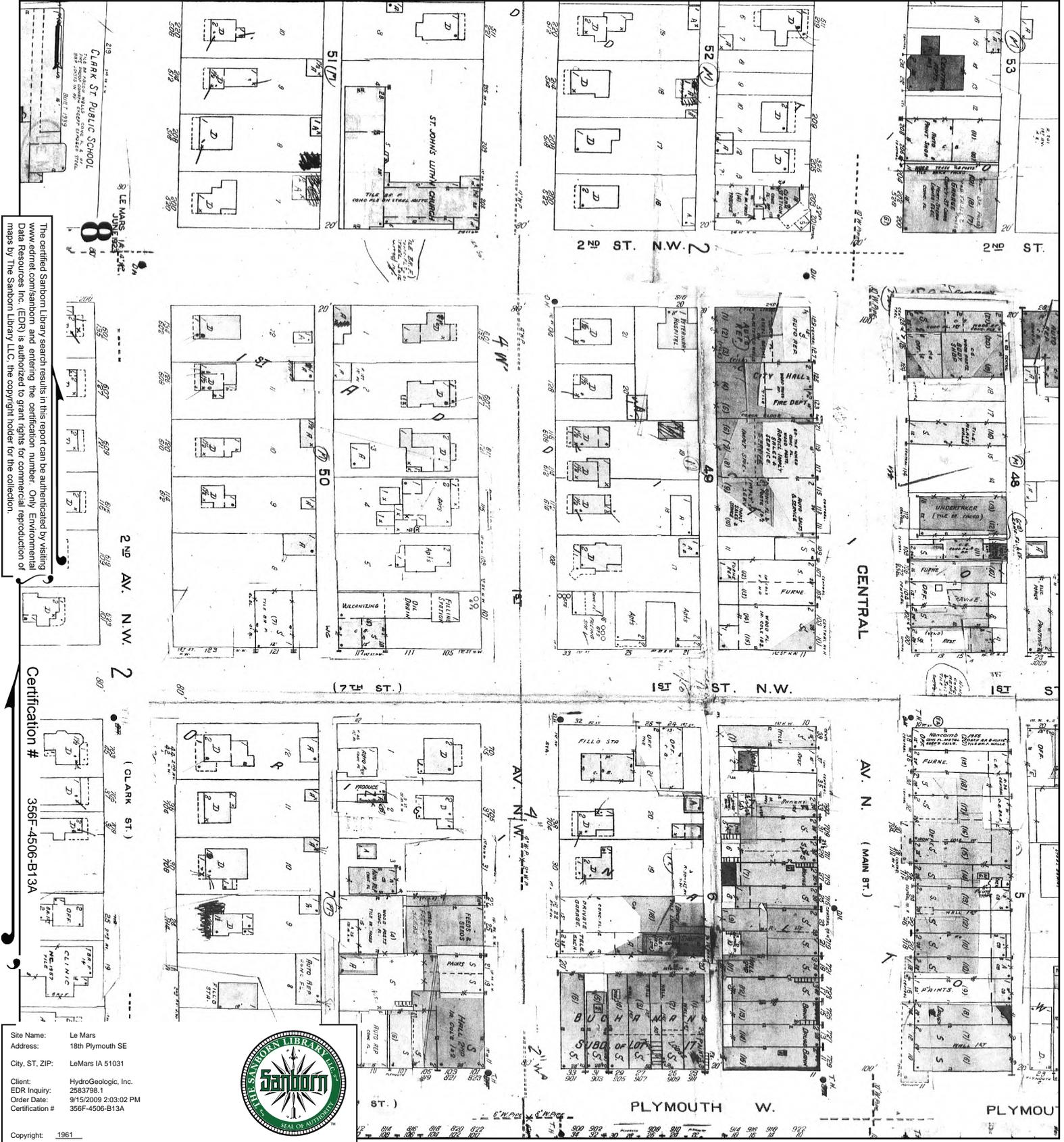


Volume 1, Sheet 2



Volume 1, Sheet 3

# 1961 Certified Sanborn Map



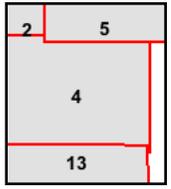
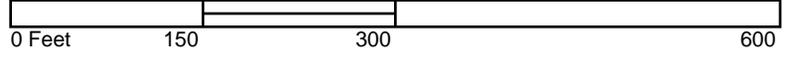
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Certification # 356F-4506-B13A

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A



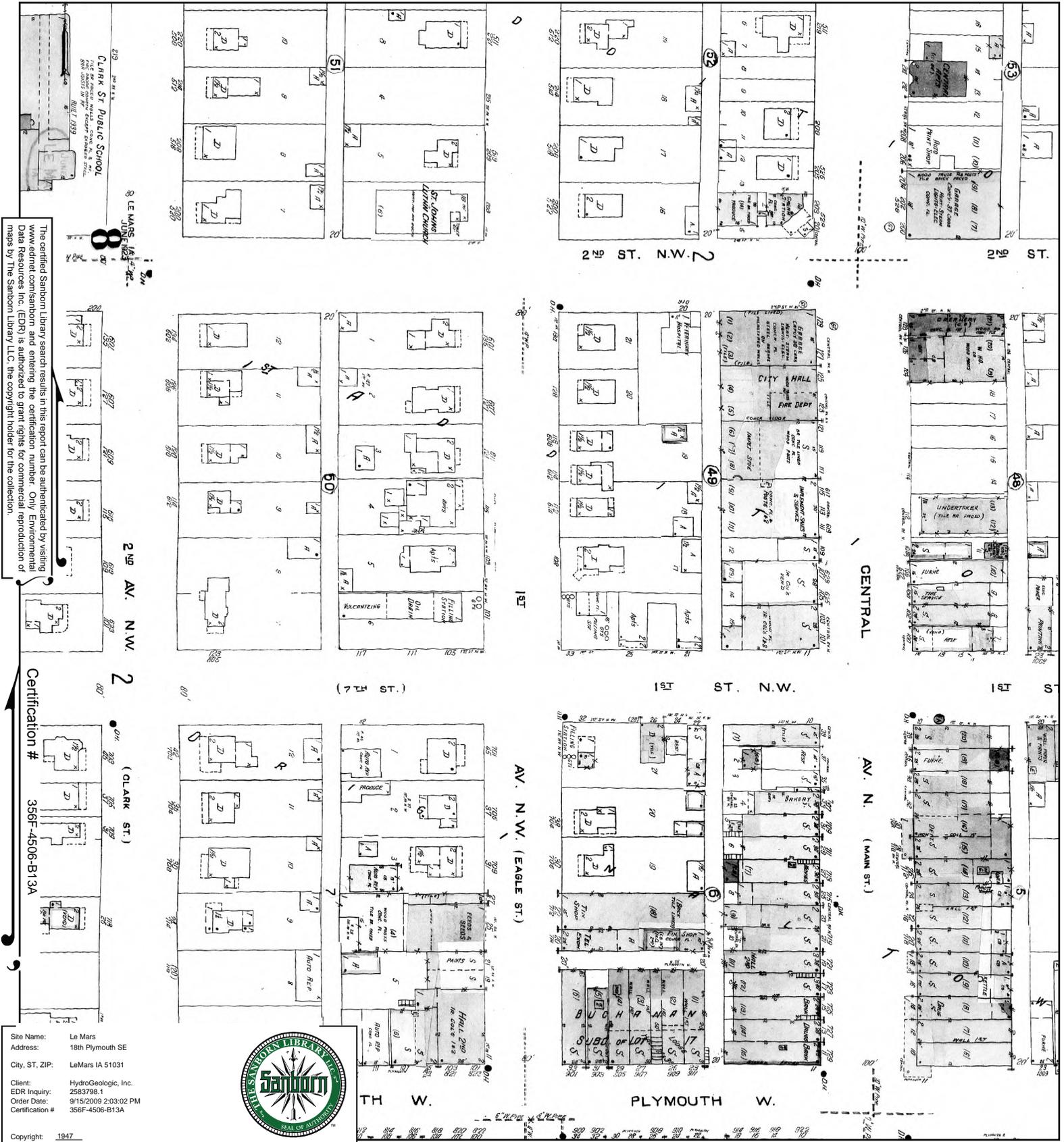
This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



- Volume 1, Sheet 2
- Volume 1, Sheet 3
- Volume 1, Sheet 7
- Volume 1, Sheet 9



# 1947 Certified Sanborn Map



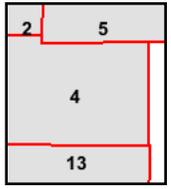
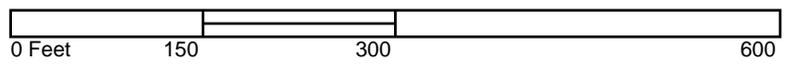
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Site Name: Le Mars  
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 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
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 Certification # 356F-4506-B13A  
 Copyright: 1947



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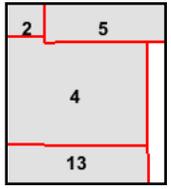
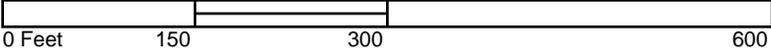


- Volume 1, Sheet 7
- Volume 1, Sheet 2
- Volume 1, Sheet 3
- Volume 1, Sheet 9

# 1923 Certified Sanborn Map



This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



- Volume 1, Sheet 2
- Volume 1, Sheet 7
- Volume 1, Sheet 9
- Volume 1, Sheet 3



# 1913 Certified Sanborn Map

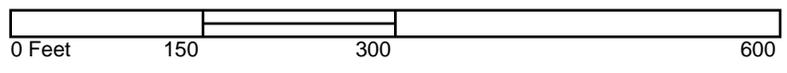


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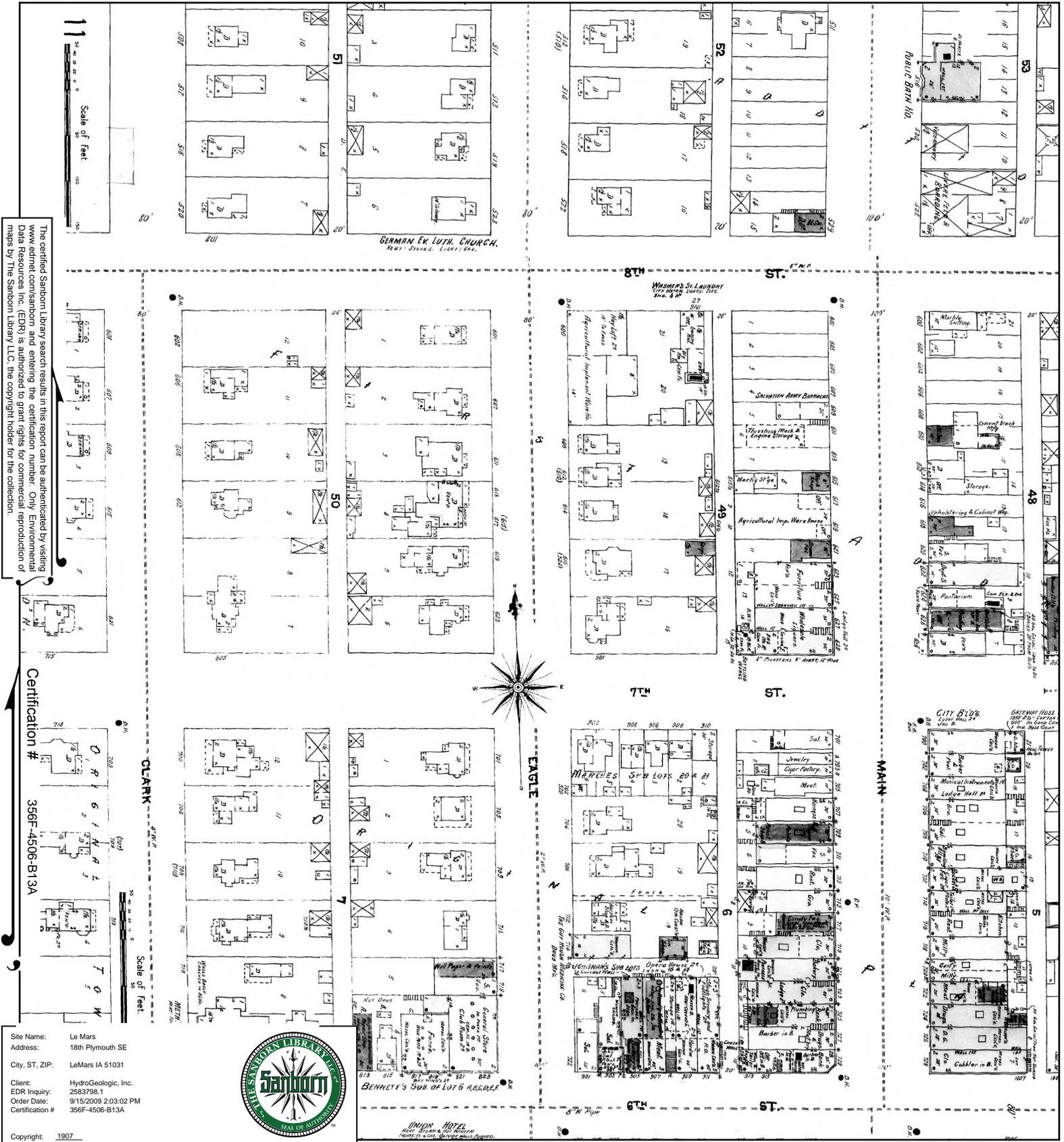


4	5
6	7
8	9

Volume 1, Sheet 2  
 Volume 1, Sheet 4  
 Volume 1, Sheet 6



# 1907 Certified Sanborn Map



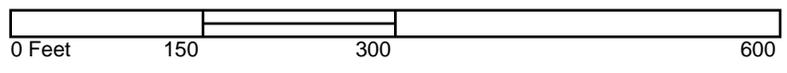
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Certification # 356F-4506-B13A

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 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification #: 356F-4506-B13A



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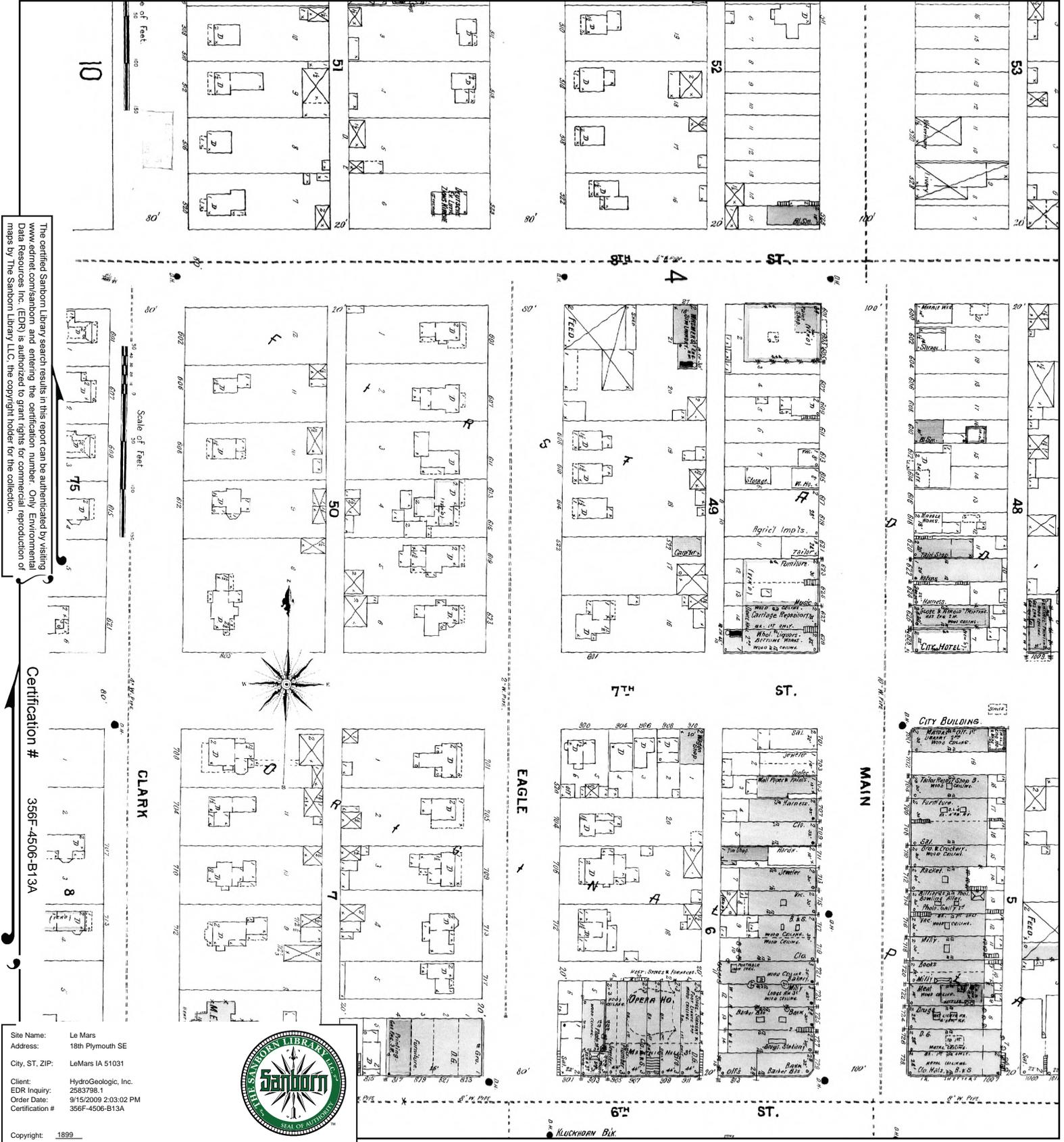


4	5
6	7
8	9

Volume 1, Sheet 2  
 Volume 1, Sheet 4  
 Volume 1, Sheet 6



# 1899 Certified Sanborn Map



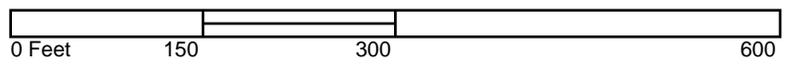
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Certification # 356F-4506-B13A

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A



This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



4	5
6	7
8	9

Volume 1, Sheet 2  
 Volume 1, Sheet 4  
 Volume 1, Sheet 6





# 1888 Certified Sanborn Map



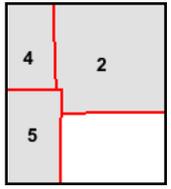
The certified Sanborn Library search results in this report can be authenticated by visiting [www.edrnet.com/sanborn](http://www.edrnet.com/sanborn) and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

Certification # 356F-4506-B13A

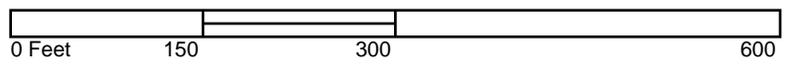
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 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
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 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A  
 Copyright: 1888



This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



Volume 1, Sheet 3  
 Volume 1, Sheet 4



# 1883 Certified Sanborn Map

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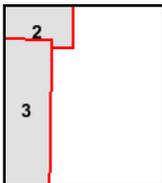
Certification # 356F-4506-B13A

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A

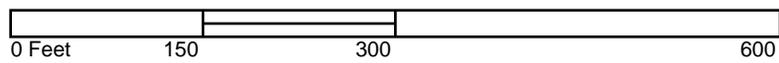
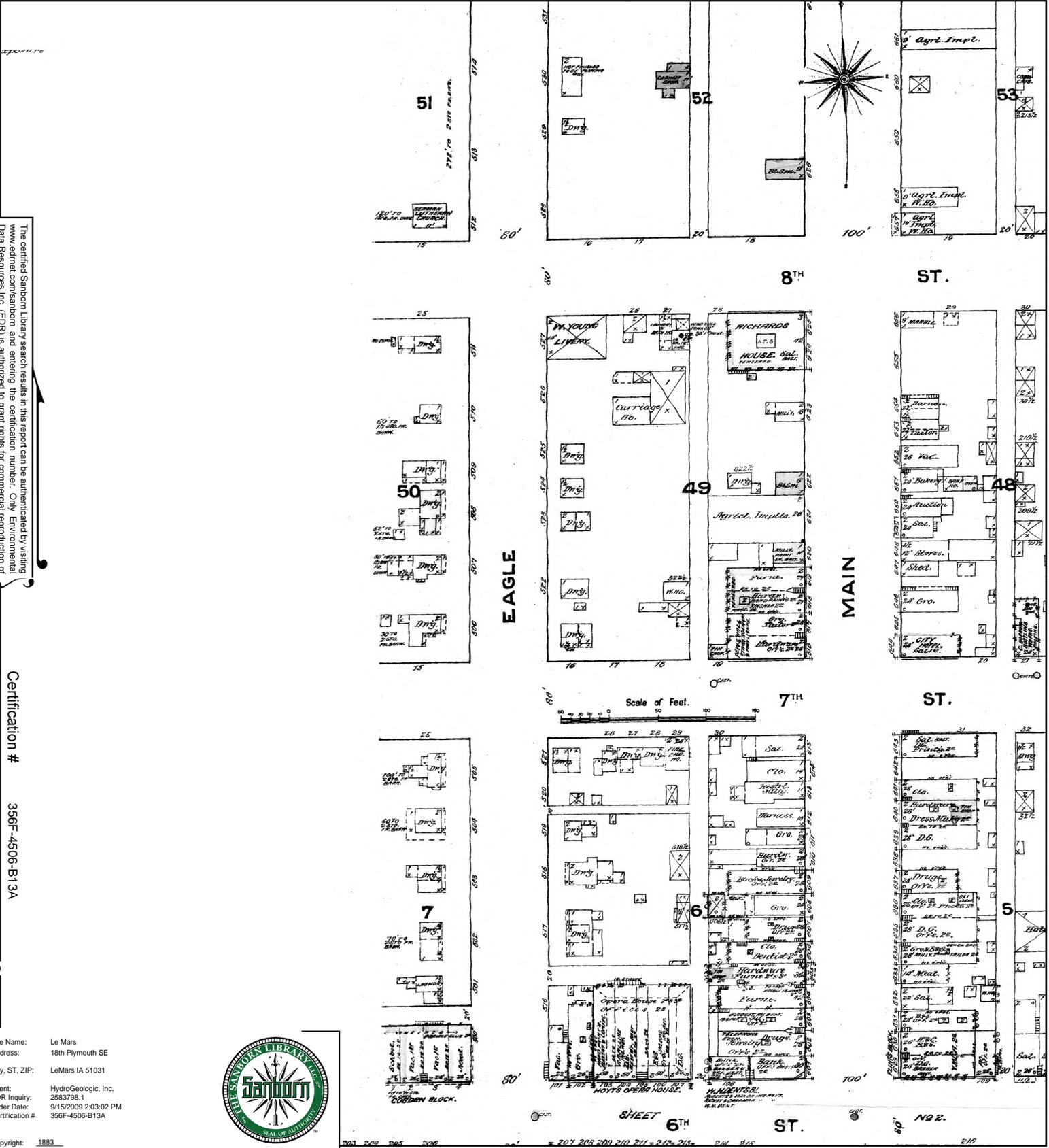


Copyright: 1883

This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



Volume 1, Sheet 2  
 Volume 1, Sheet 3





**Le Mars**

18th Plymouth SE

LeMars, IA 51031

Inquiry Number: 2583798.1

September 15, 2009

## Certified Sanborn® Map Report

# Certified Sanborn® Map Report

9/15/09

**Site Name:**

Le Mars  
18th Plymouth SE  
LeMars, IA 51031

**Client Name:**

HydroGeologic, Inc.  
8245 Nieman Road  
Lenexa, KS 66214



EDR Inquiry # 2583798.1

Contact: Matt Schlegel

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by HydroGeologic, Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting [www.edrnet.com/sanborn](http://www.edrnet.com/sanborn) and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

## Certified Sanborn Results:

**Site Name:** Le Mars  
**Address:** 18th Plymouth SE  
**City, State, Zip:** LeMars, IA 51031  
**Cross Street:**  
**P.O. #** EP9036  
**Project:** Hwy 3  
**Certification #** 356F-4506-B13A



Sanborn® Library search results  
Certification # 356F-4506-B13A

**Maps Provided:**

1883	1923
1888	1947
1893	1961
1899	
1907	
1913	

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- Library of Congress
- University Publications of America
- EDR Private Collection

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## **Certified Sanborn® Map Report Enhancements for 2009**

The accompanying Certified Sanborn Map Report reflects a number of enhancements that make it easier for you to review these historical maps. EDR has digitally joined together the more than one million fire insurance maps from the Sanborn Library collection so that your target property is centered, making it easier for you to review adjoining properties. Here is a list of the new features:

- Your target property is centered on each map. You can quickly locate your target property and view adjoining properties. Plus, adjoining properties are included more often, reducing your need to refer to additional maps.
- All maps are now displayed at a uniform scale. This makes it easier for you to view changes to the property over time.
- We've increased coverage by adding thousands of new maps from 40 cities for years 1994-2007.
- A new Map Key and Sheet Thumbnails let you reference sheet numbers, year and volume of original Sanborn Map panels used for this report.

For more information about the new enhancements to the Certified Sanborn Map Report, contact your EDR representative at 800-352-0050.

## Sanborn Sheet Thumbnails

This Certified Sanborn Map Report is based upon the following Sanborn Fire Insurance map sheets.



### 1961 Source Sheets



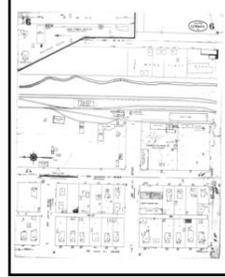
Volume 1, Sheet 2



Volume 1, Sheet 4



Volume 1, Sheet 5

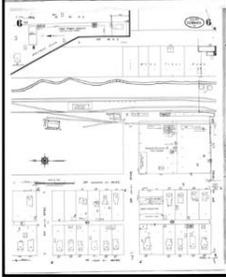


Volume 1, Sheet 6

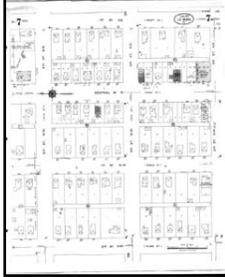


Volume 1, Sheet 7

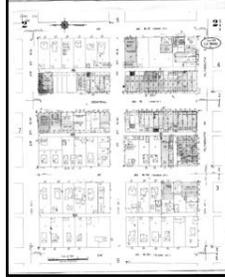
### 1947 Source Sheets



Volume 1, Sheet 6



Volume 1, Sheet 7



Volume 1, Sheet 2



Volume 1, Sheet 4

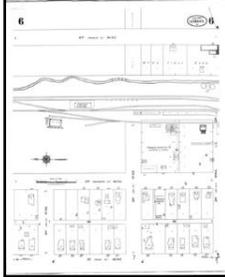


Volume 1, Sheet 5

### 1923 Source Sheets



Volume 1, Sheet 2



Volume 1, Sheet 6



Volume 1, Sheet 7



Volume 1, Sheet 4

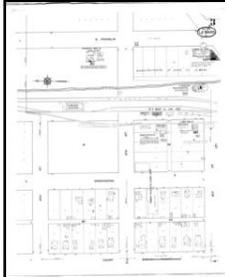


Volume 1, Sheet 5

### 1913 Source Sheets



Volume 1, Sheet 2



Volume 1, Sheet 3



Volume 1, Sheet 4



Volume 1, Sheet 5

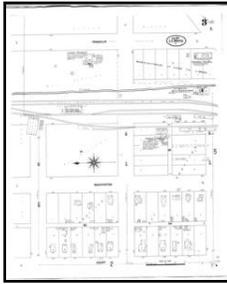


Volume 1, Sheet 7

**1907 Source Sheets**



Volume 1, Sheet 2



Volume 1, Sheet 3



Volume 1, Sheet 4



Volume 1, Sheet 5

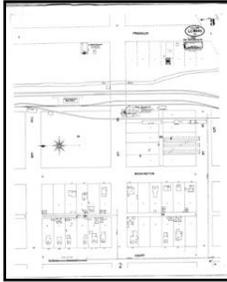


Volume 1, Sheet 7

**1899 Source Sheets**



Volume 1, Sheet 2



Volume 1, Sheet 3



Volume 1, Sheet 4



Volume 1, Sheet 5



Volume 1, Sheet 7

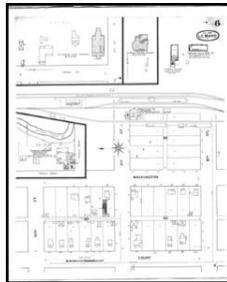
**1893 Source Sheets**



Volume 1, Sheet 2



Volume 1, Sheet 3



Volume 1, Sheet 6



Volume 1, Sheet 7

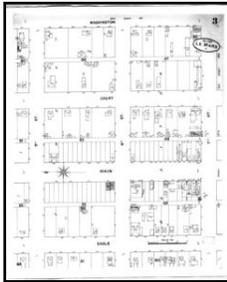


Volume 1, Sheet 8

**1888 Source Sheets**



Volume 1, Sheet 2



Volume 1, Sheet 3



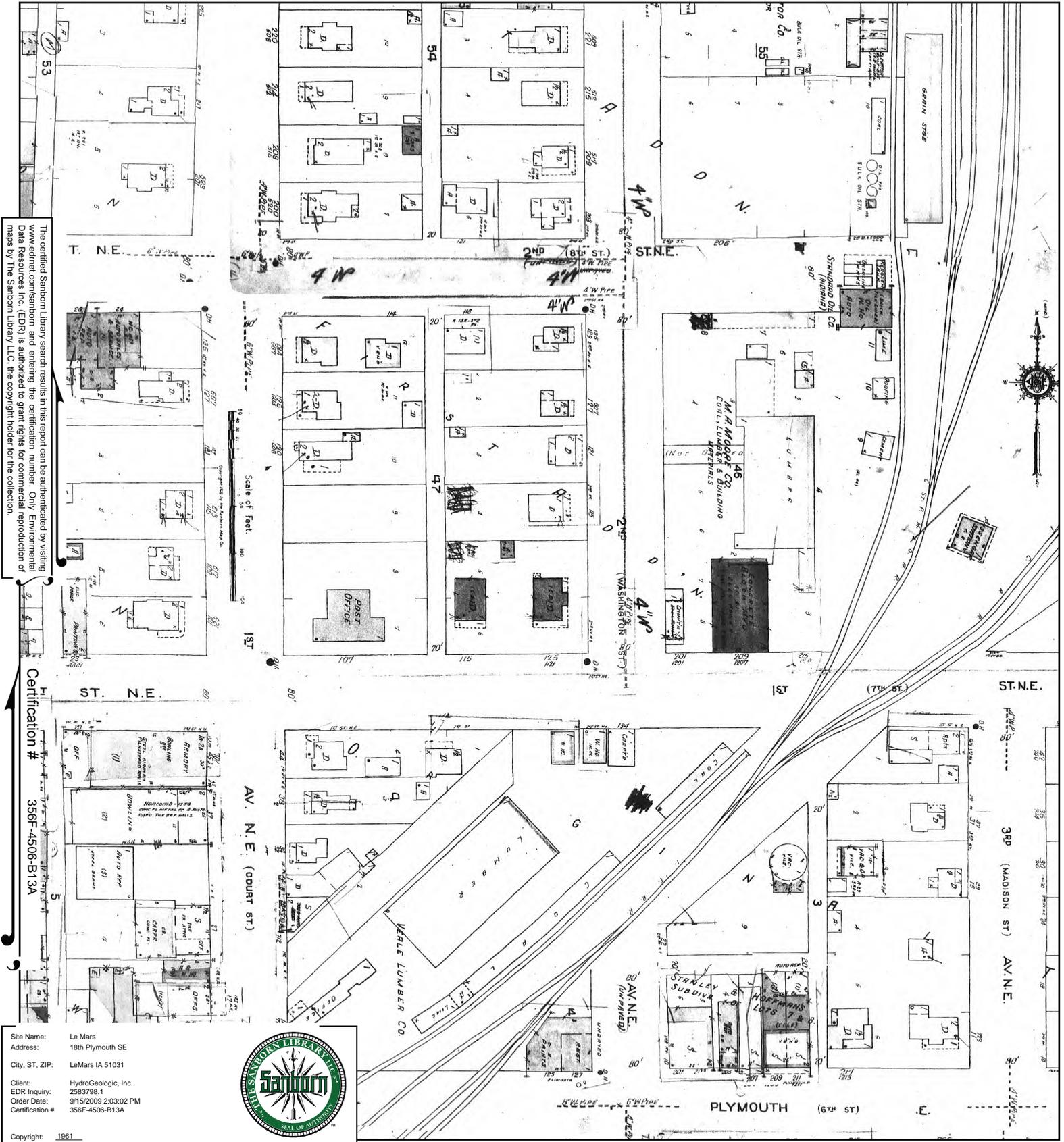
Volume 1, Sheet 4

**1883 Source Sheets**



Volume 1, Sheet 2

# 1961 Certified Sanborn Map



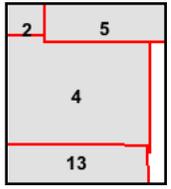
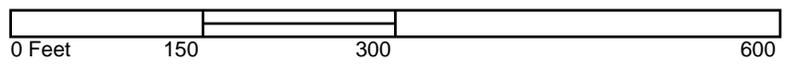
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 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification #: 356F-4506-B13A



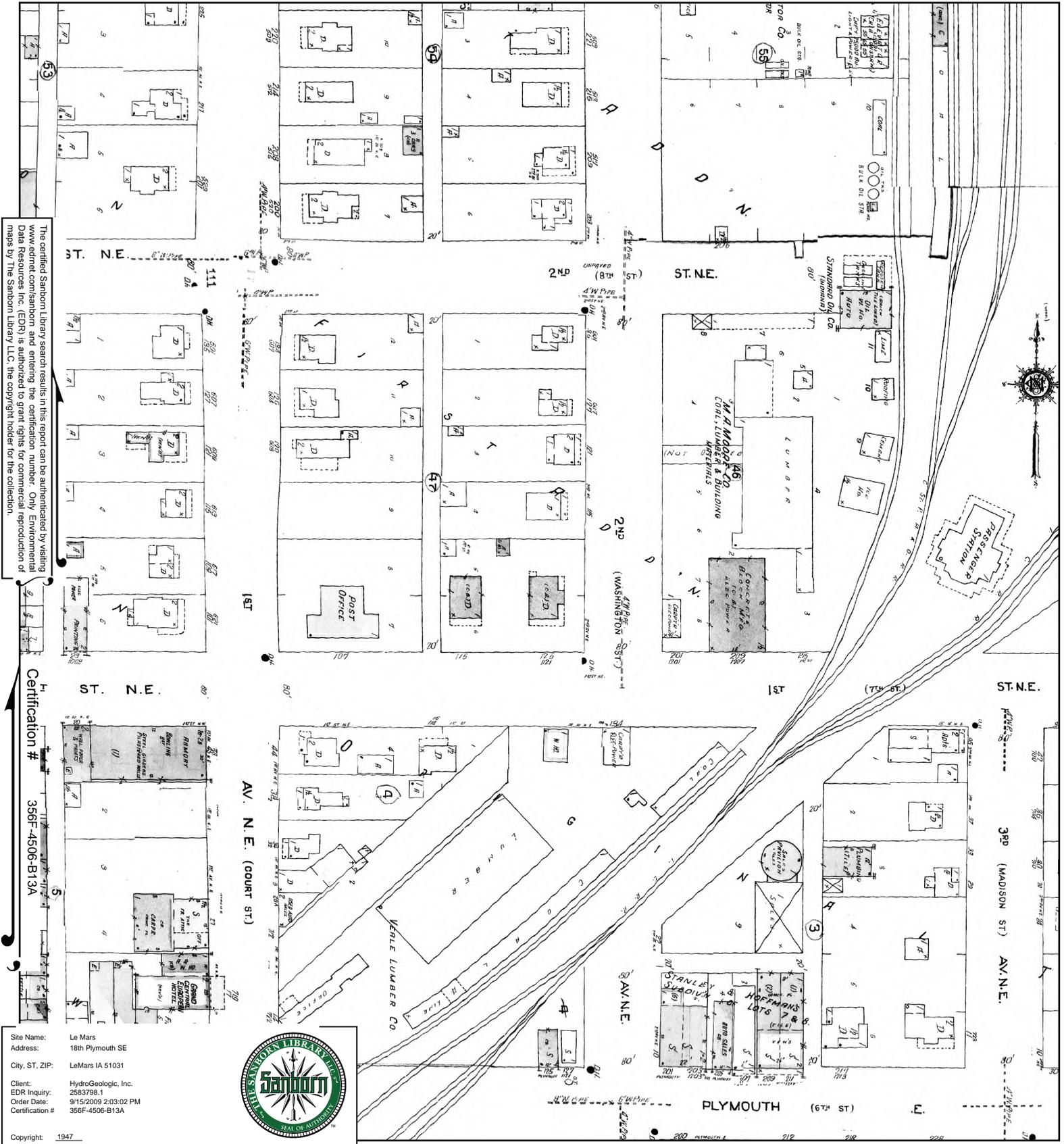
This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



- Volume 1, Sheet 2
- Volume 1, Sheet 4
- Volume 1, Sheet 5
- Volume 1, Sheet 6
- Volume 1, Sheet 7



# 1947 Certified Sanborn Map



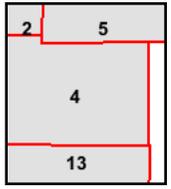
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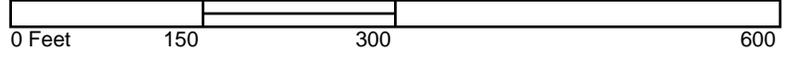
Site Name: Le Mars  
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 City, ST, ZIP: LeMars IA 51031  
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 EDR Inquiry: 2583798-1  
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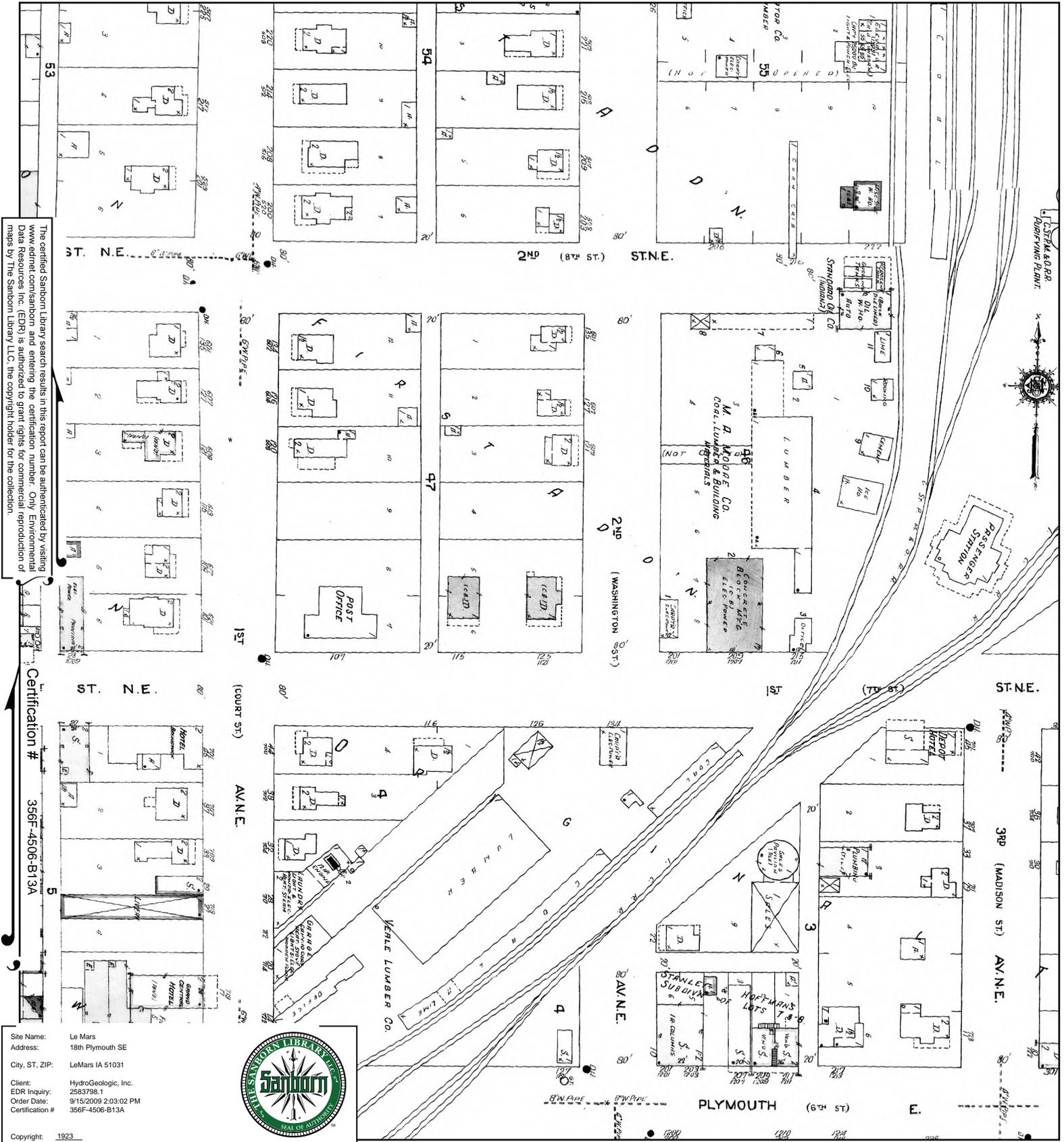
This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



- Volume 1, Sheet 6
- Volume 1, Sheet 7
- Volume 1, Sheet 2
- Volume 1, Sheet 4
- Volume 1, Sheet 5



# 1923 Certified Sanborn Map



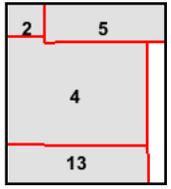
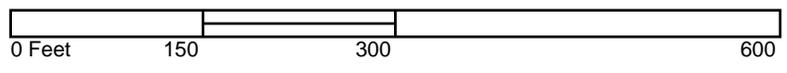
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 Certification # 356F-4506-B13A



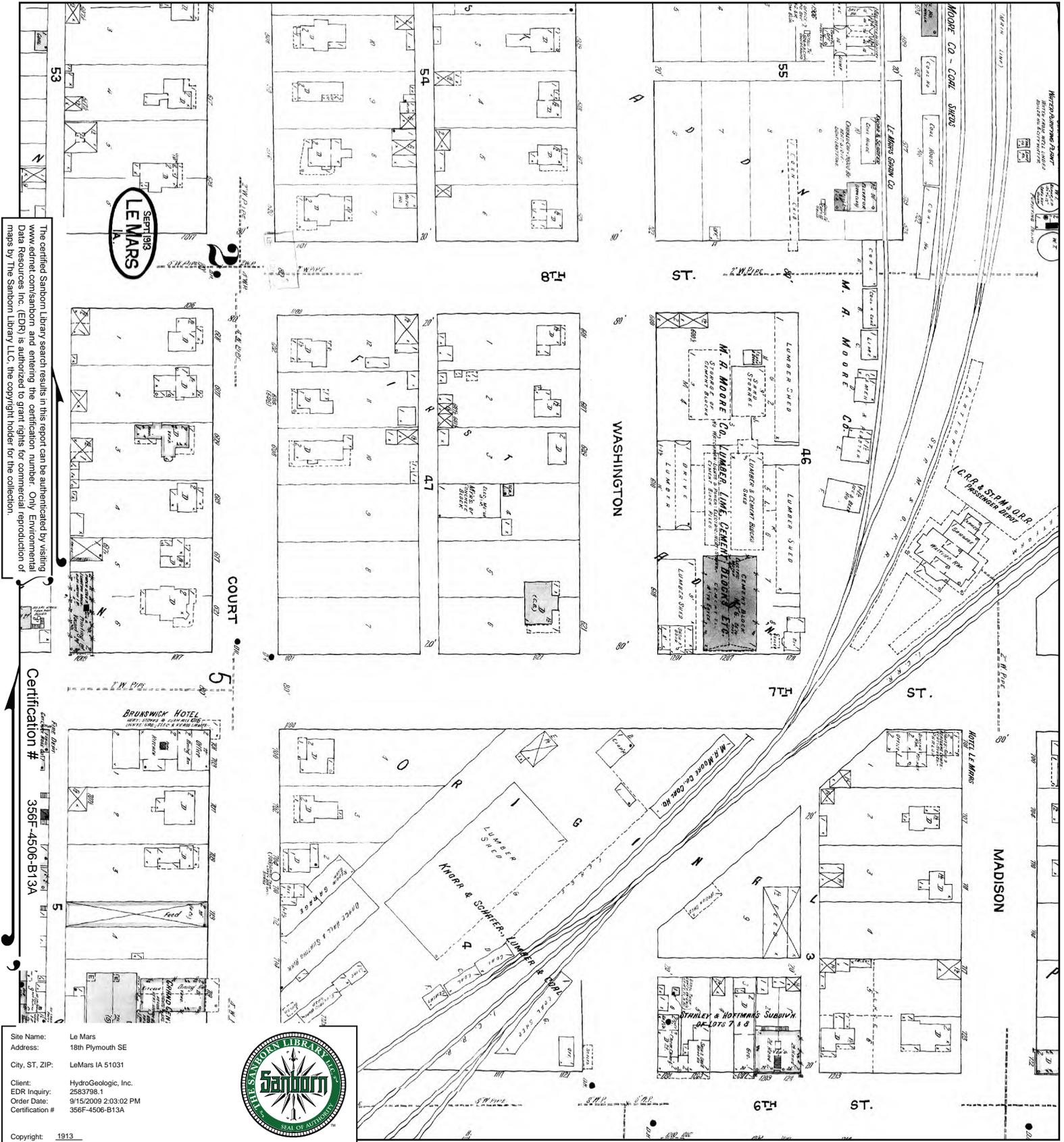
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- Volume 1, Sheet 2
- Volume 1, Sheet 6
- Volume 1, Sheet 7
- Volume 1, Sheet 4
- Volume 1, Sheet 5



# 1913 Certified Sanborn Map



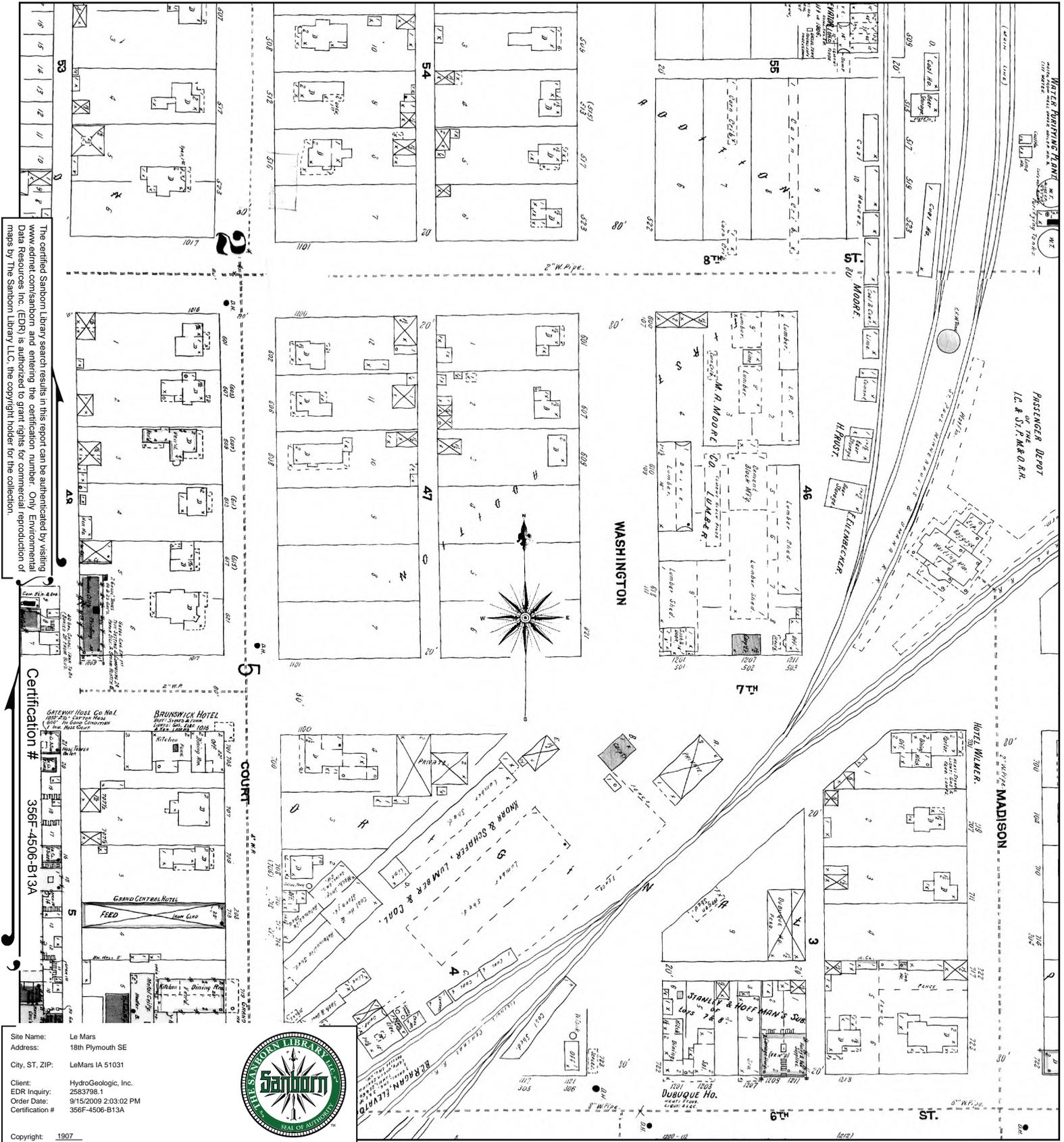
This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



4	5
6	7
8	9

- Volume 1, Sheet 2
- Volume 1, Sheet 3
- Volume 1, Sheet 4
- Volume 1, Sheet 5
- Volume 1, Sheet 7

# 1907 Certified Sanborn Map



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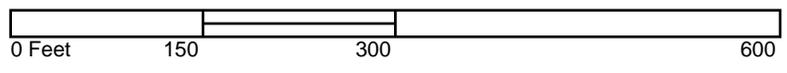
**Certification # 356F-4506-B13A**

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A



Copyright: 1907

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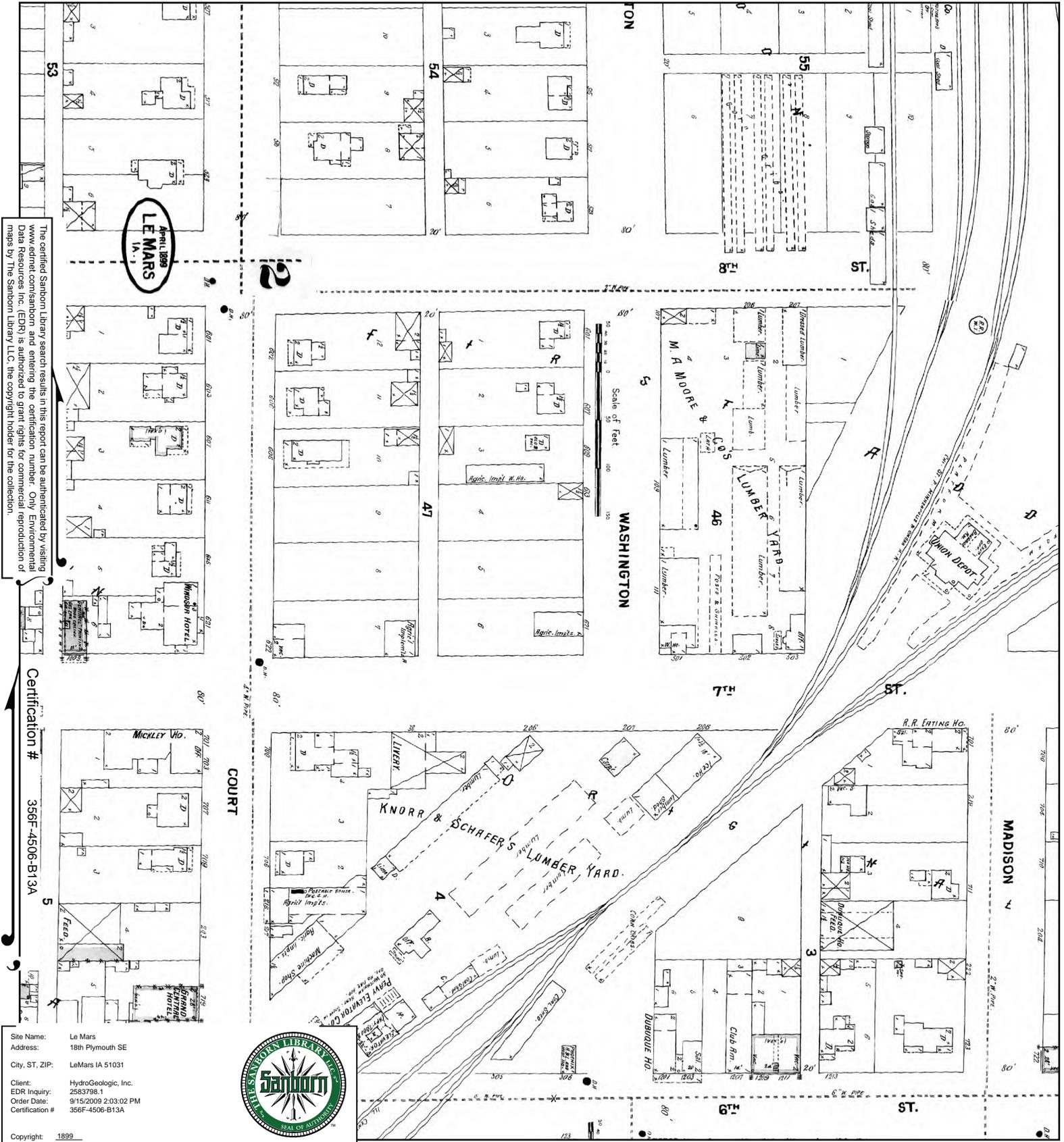


4	5
6	7
8	9

- Volume 1, Sheet 2
- Volume 1, Sheet 3
- Volume 1, Sheet 4
- Volume 1, Sheet 5
- Volume 1, Sheet 7



# 1899 Certified Sanborn Map

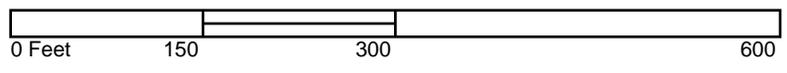


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Certification # 356F-4506-B13A



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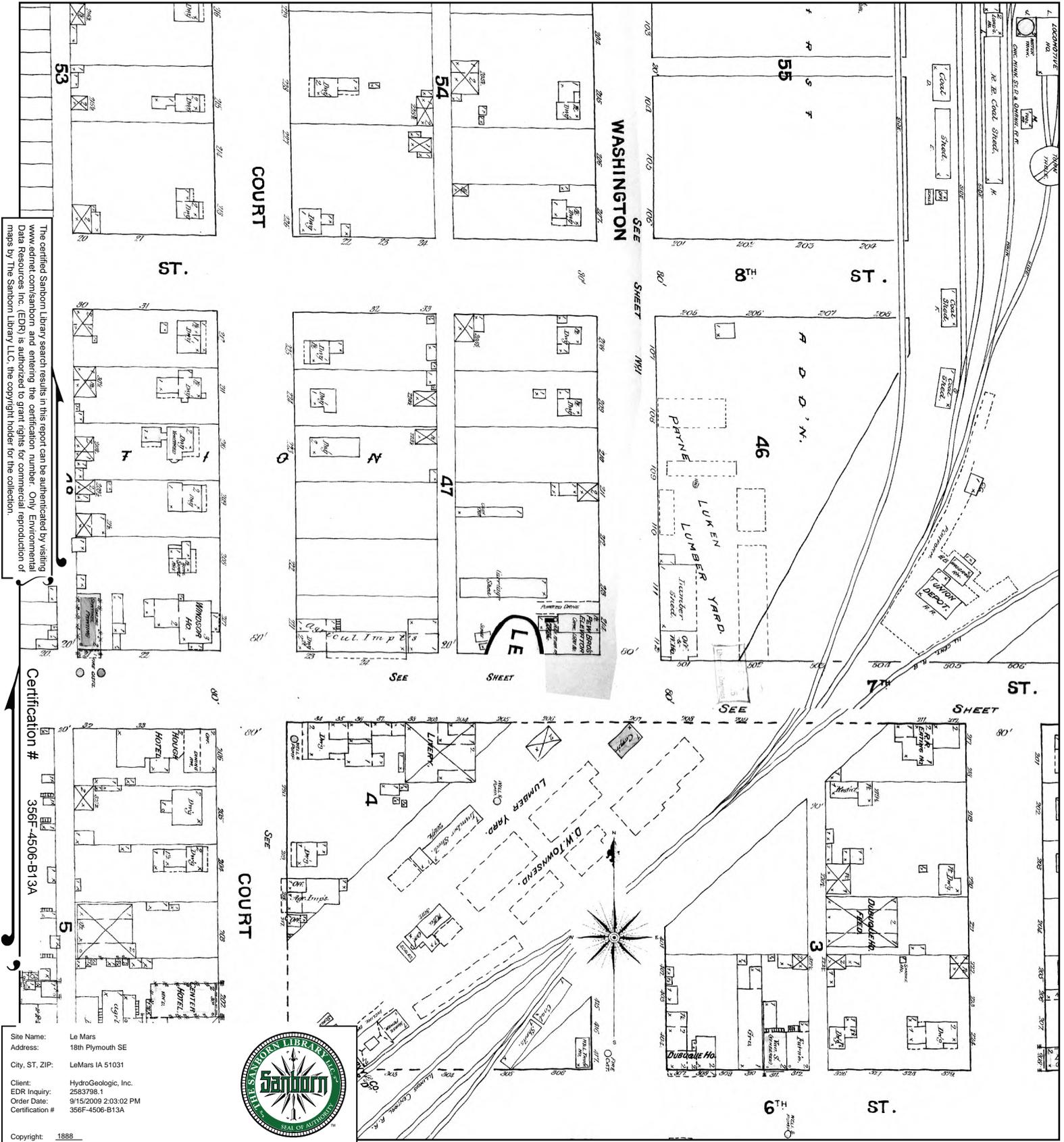


4	5
6	7
8	9

- Volume 1, Sheet 2
- Volume 1, Sheet 3
- Volume 1, Sheet 4
- Volume 1, Sheet 5
- Volume 1, Sheet 7



# 1888 Certified Sanborn Map



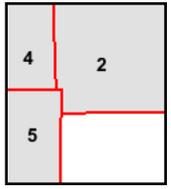
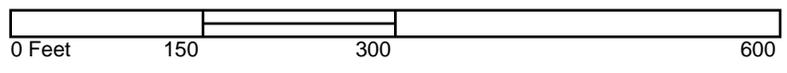
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Certification # 356F-4506-B13A

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification #: 356F-4506-B13A



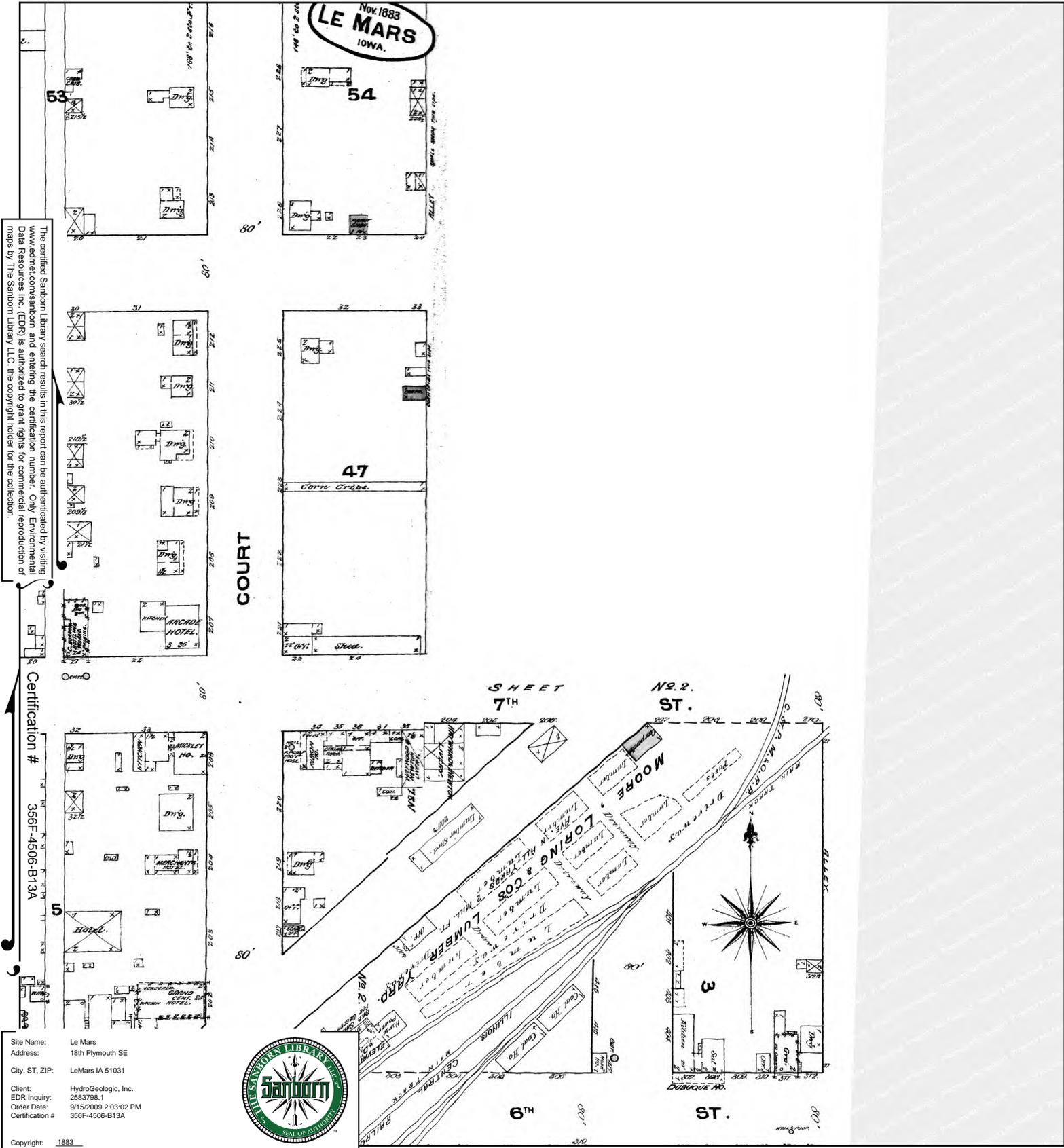
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- Volume 1, Sheet 2
- Volume 1, Sheet 3
- Volume 1, Sheet 4



# 1883 Certified Sanborn Map



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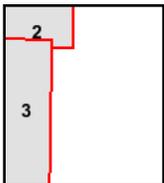
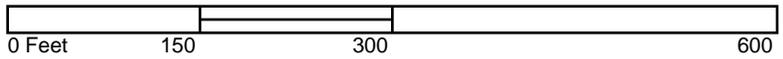
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 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A

Copyright: 1883



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Volume 1, Sheet 2





**Le Mars**

18th Plymouth SE

LeMars, IA 51031

Inquiry Number: 2583798.1

September 15, 2009

## Certified Sanborn® Map Report

# Certified Sanborn® Map Report

9/15/09

**Site Name:**

Le Mars  
18th Plymouth SE  
LeMars, IA 51031

**Client Name:**

HydroGeologic, Inc.  
8245 Nieman Road  
Lenexa, KS 66214



EDR Inquiry # 2583798.1

Contact: Matt Schlegel

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by HydroGeologic, Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting [www.edrnet.com/sanborn](http://www.edrnet.com/sanborn) and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

## Certified Sanborn Results:

**Site Name:** Le Mars  
**Address:** 18th Plymouth SE  
**City, State, Zip:** LeMars, IA 51031  
**Cross Street:**  
**P.O. #** EP9036  
**Project:** Hwy 3  
**Certification #** 356F-4506-B13A



Sanborn® Library search results  
Certification # 356F-4506-B13A

### Maps Provided:

1883	1923
1888	1947
1893	1961
1899	
1907	
1913	

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- Library of Congress
- University Publications of America
- EDR Private Collection

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- Your target property is centered on each map. You can quickly locate your target property and view adjoining properties. Plus, adjoining properties are included more often, reducing your need to refer to additional maps.
- All maps are now displayed at a uniform scale. This makes it easier for you to view changes to the property over time.
- We've increased coverage by adding thousands of new maps from 40 cities for years 1994-2007.
- A new Map Key and Sheet Thumbnails let you reference sheet numbers, year and volume of original Sanborn Map panels used for this report.

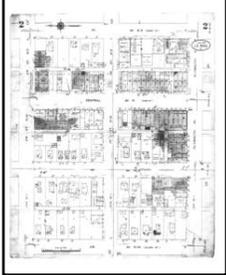
For more information about the new enhancements to the Certified Sanborn Map Report, contact your EDR representative at 800-352-0050.

## Sanborn Sheet Thumbnails

This Certified Sanborn Map Report is based upon the following Sanborn Fire Insurance map sheets.



### 1961 Source Sheets



Volume 1, Sheet 2



Volume 1, Sheet 3



Volume 1, Sheet 4

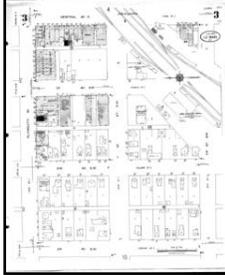


Volume 1, Sheet 12

### 1947 Source Sheets



Volume 1, Sheet 2



Volume 1, Sheet 3



Volume 1, Sheet 4



Volume 1, Sheet 12

### 1923 Source Sheets



Volume 1, Sheet 2



Volume 1, Sheet 12



Volume 1, Sheet 3

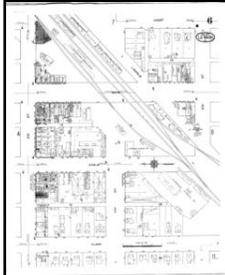


Volume 1, Sheet 4

### 1913 Source Sheets



Volume 1, Sheet 4



Volume 1, Sheet 6



Volume 1, Sheet 8

**1907 Source Sheets**



Volume 1, Sheet 4



Volume 1, Sheet 6

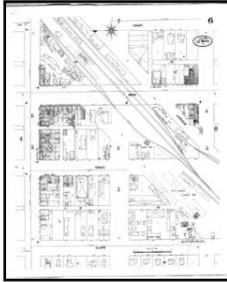


Volume 1, Sheet 8

**1899 Source Sheets**



Volume 1, Sheet 4



Volume 1, Sheet 6



Volume 1, Sheet 8

**1893 Source Sheets**



Volume 1, Sheet 3



Volume 1, Sheet 4



Volume 1, Sheet 5

**1888 Source Sheets**



Volume 1, Sheet 4



Volume 1, Sheet 5

**1883 Source Sheets**

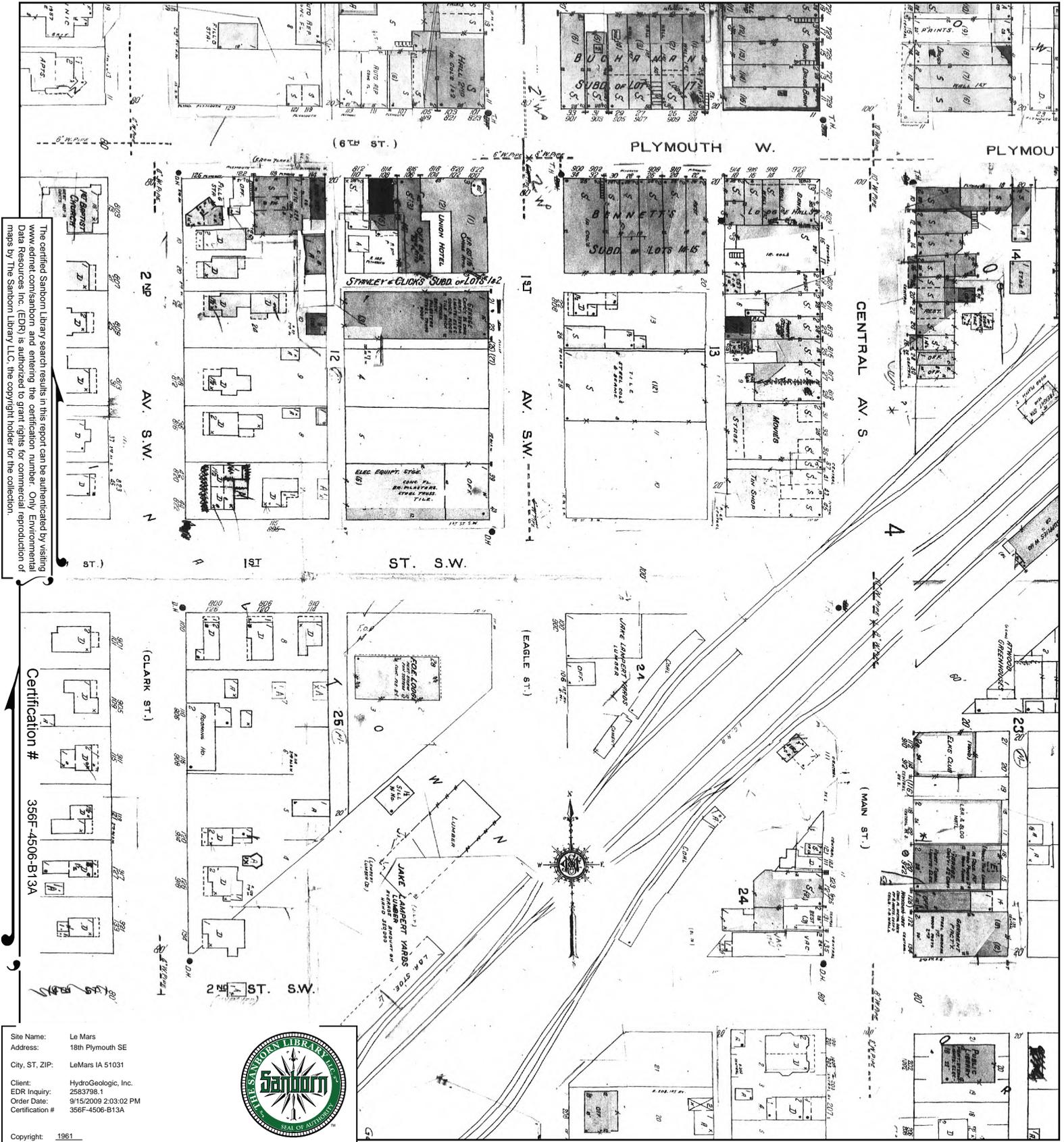


Volume 1, Sheet 2



Volume 1, Sheet 3

# 1961 Certified Sanborn Map



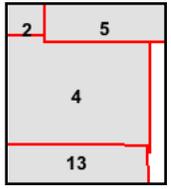
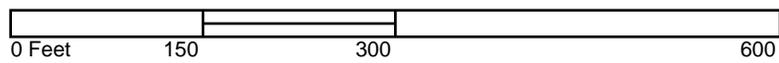
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Certification # 356F-4506-B13A

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A



This Certified Sanborn Map combines the following sheets (thumbnails on page 3).

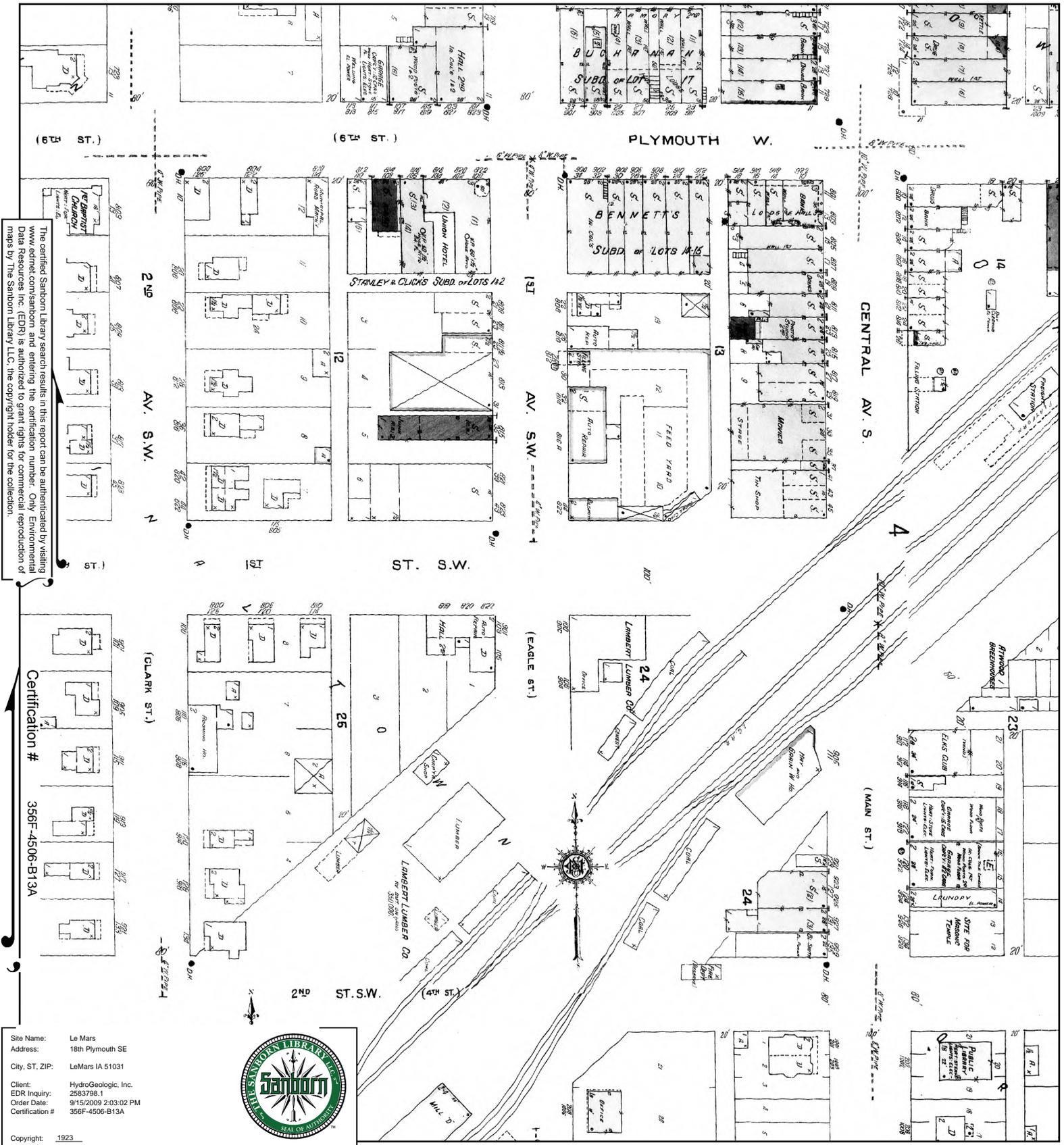


- Volume 1, Sheet 2
- Volume 1, Sheet 3
- Volume 1, Sheet 4
- Volume 1, Sheet 13





# 1923 Certified Sanborn Map

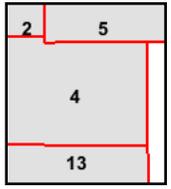
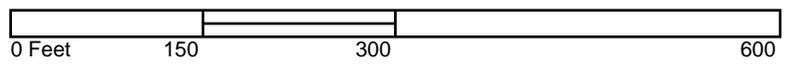


Certification # 356F-4506-B13A

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
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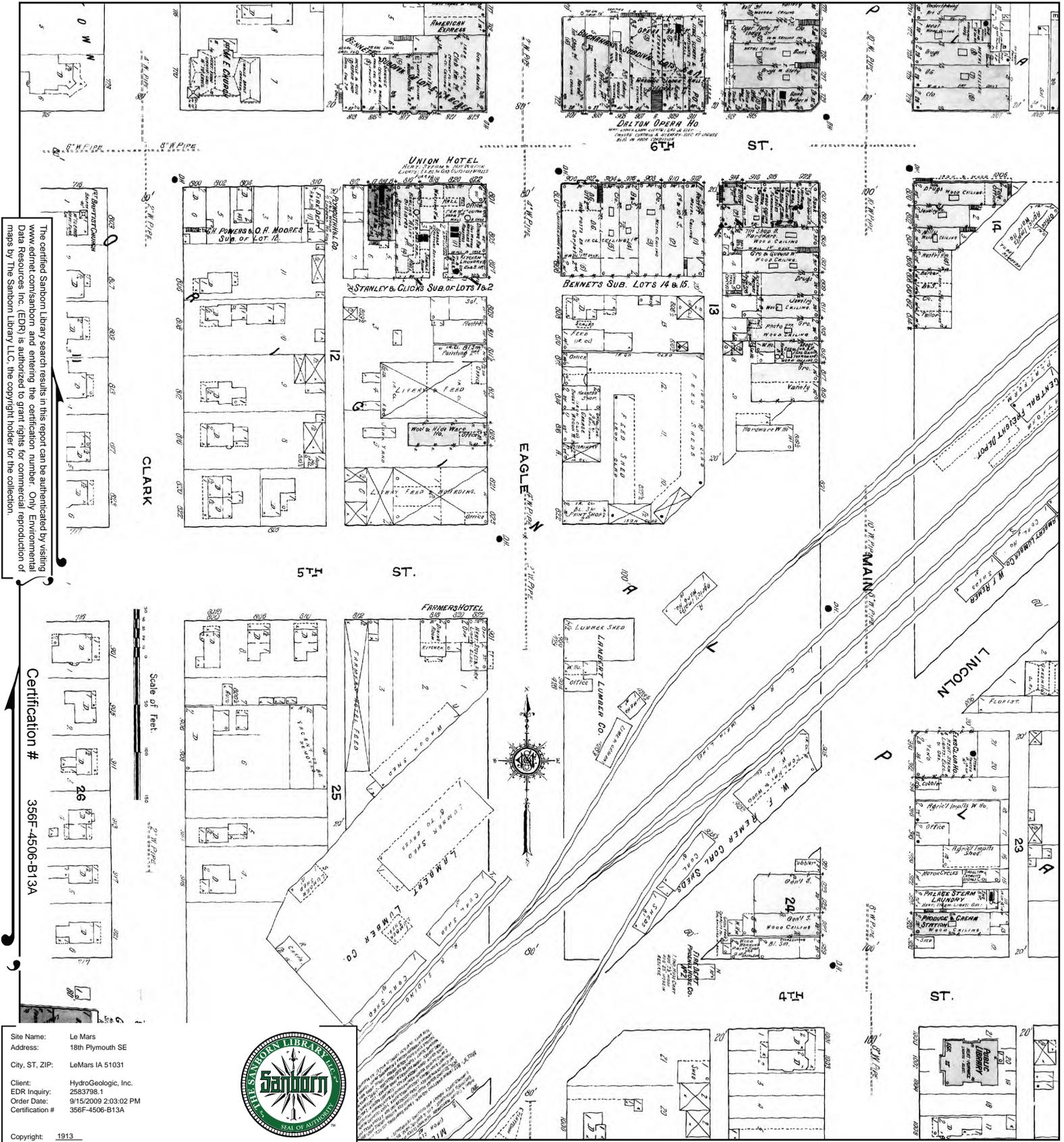
This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



- Volume 1, Sheet 2
- Volume 1, Sheet 12
- Volume 1, Sheet 3
- Volume 1, Sheet 4



# 1913 Certified Sanborn Map



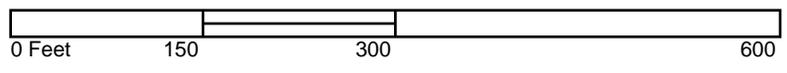
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Certification # 356F-4506-B13A

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A  
 Copyright: 1913



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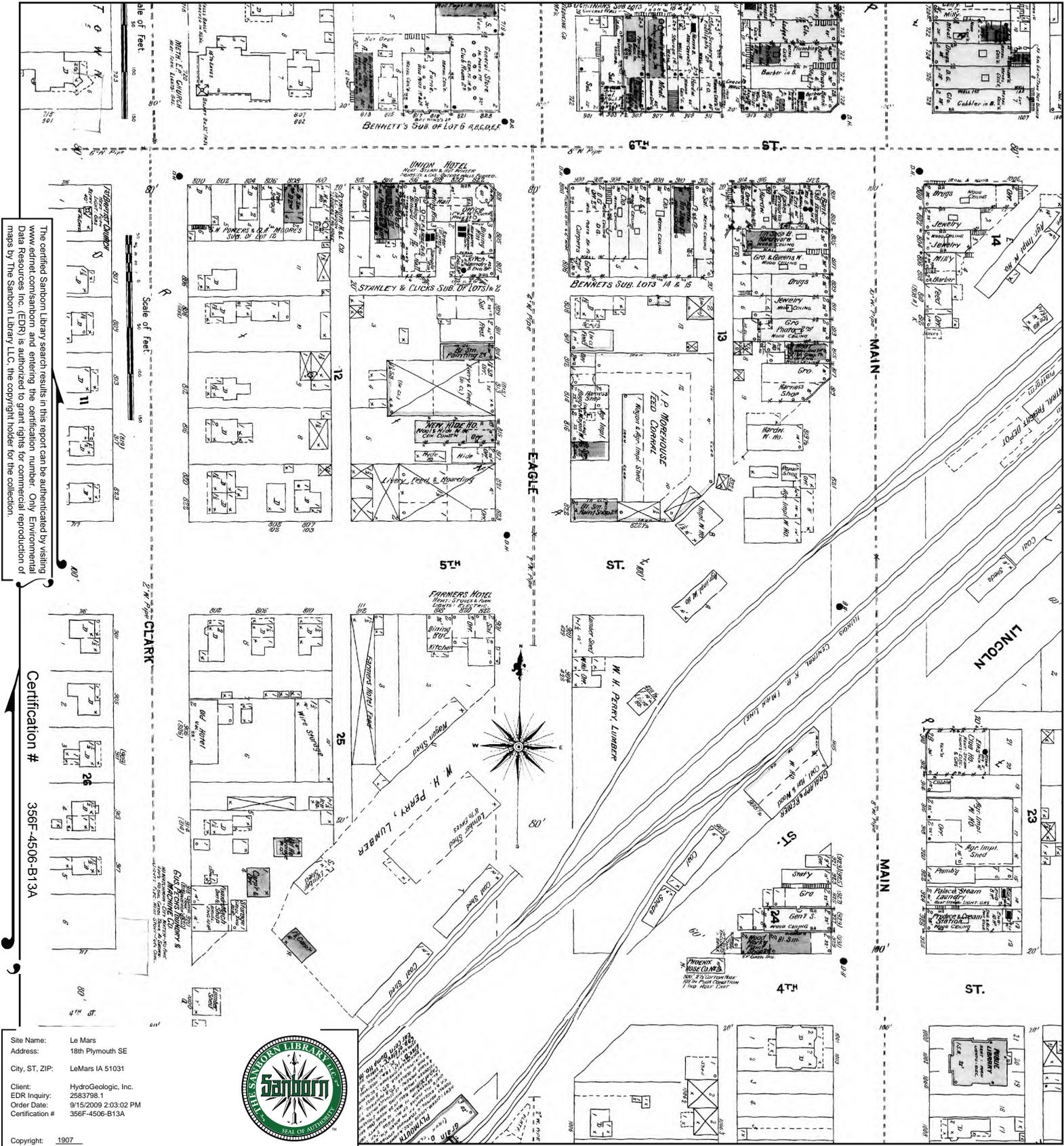


4	5
6	7
8	9

Volume 1, Sheet 4  
 Volume 1, Sheet 6  
 Volume 1, Sheet 8



# 1907 Certified Sanborn Map



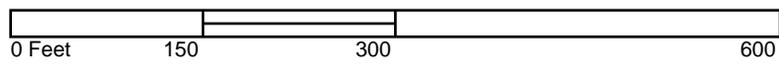
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Certification # 356F-4506-B13A

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A  
 Copyright: 1907



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4	5
6	7
8	9

Volume 1, Sheet 4  
 Volume 1, Sheet 6  
 Volume 1, Sheet 8



# 1899 Certified Sanborn Map



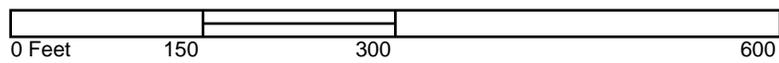
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 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A  
 Copyright: 1899



This Certified Sanborn Map combines the following sheets (thumbnails on page 3).

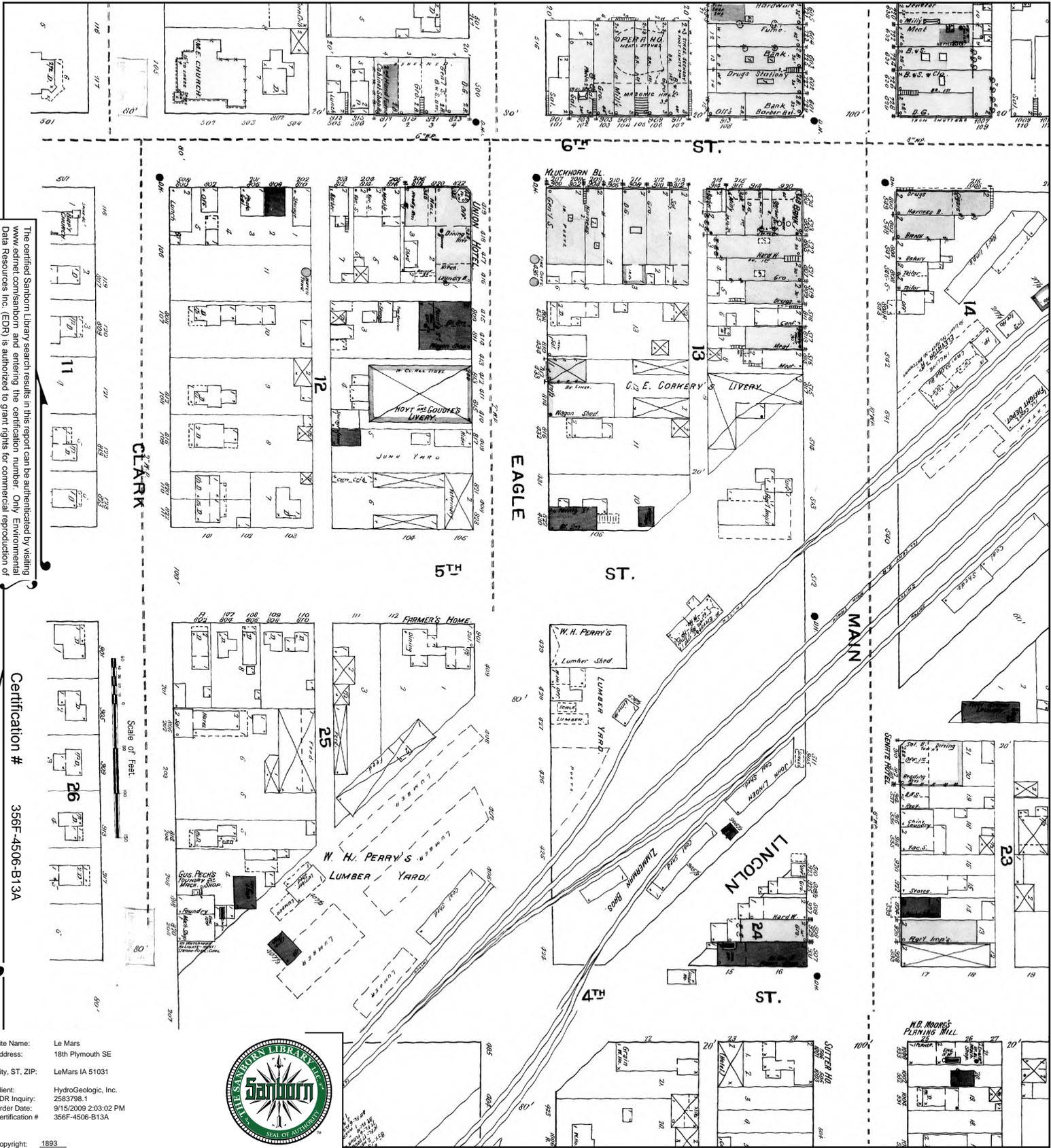


4	5
6	7
8	9

Volume 1, Sheet 4  
 Volume 1, Sheet 6  
 Volume 1, Sheet 8



# 1893 Certified Sanborn Map



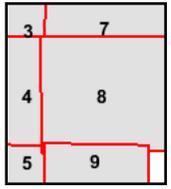
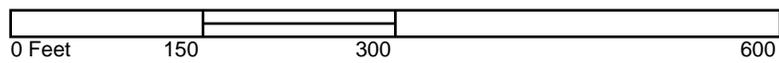
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 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification #: 356F-4506-B13A  
 Copyright: 1893



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Volume 1, Sheet 3  
 Volume 1, Sheet 4  
 Volume 1, Sheet 5





# 1883 Certified Sanborn Map

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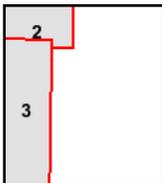
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Site Name: Le Mars  
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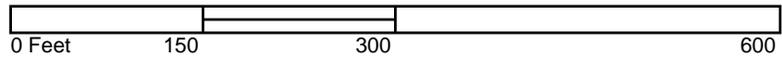
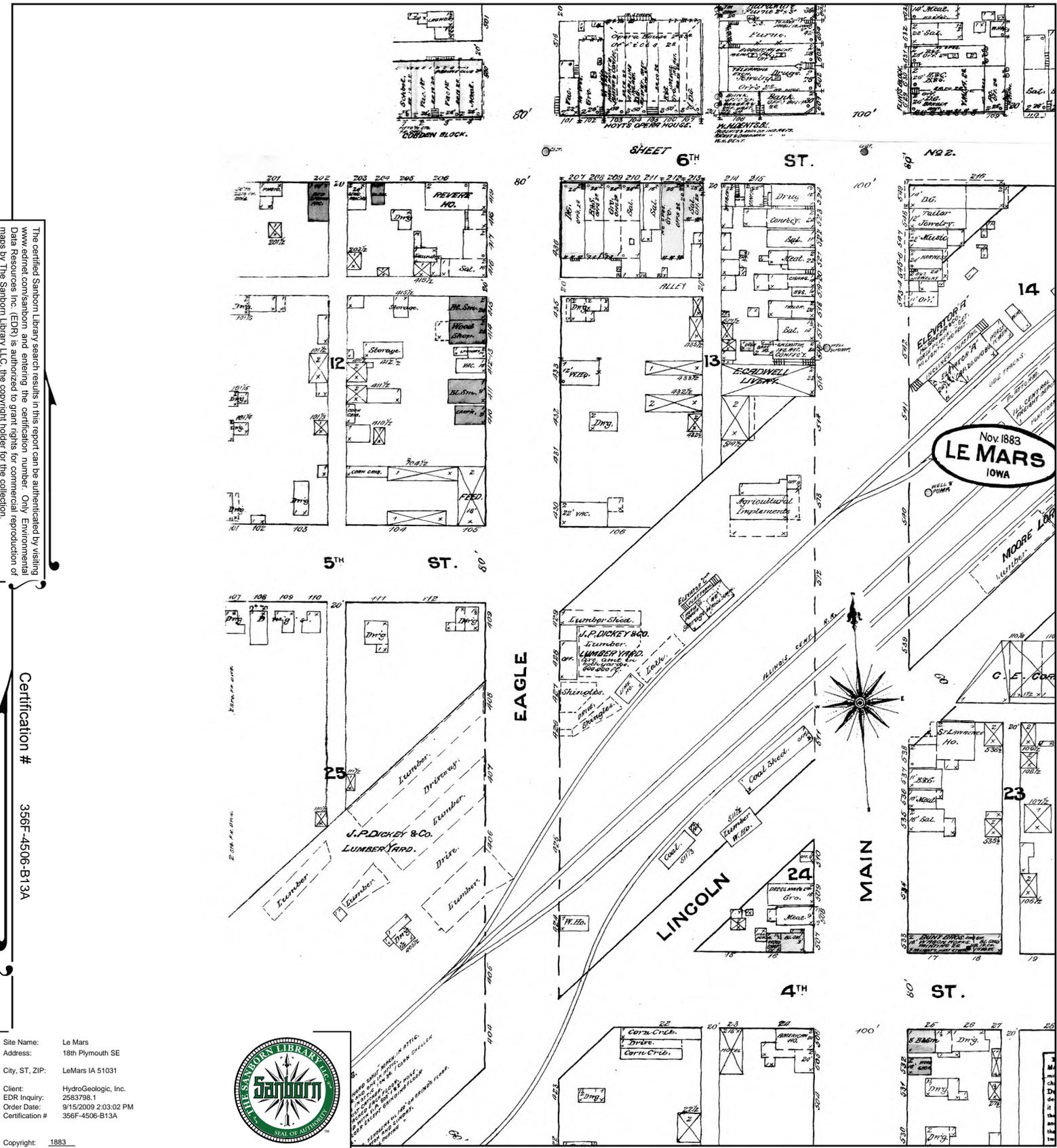


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Volume 1, Sheet 2  
 Volume 1, Sheet 3





**Le Mars**

18th Plymouth SE

LeMars, IA 51031

Inquiry Number: 2583798.1

September 15, 2009

## Certified Sanborn® Map Report

# Certified Sanborn® Map Report

9/15/09

**Site Name:**

Le Mars  
18th Plymouth SE  
LeMars, IA 51031

**Client Name:**

HydroGeologic, Inc.  
8245 Nieman Road  
Lenexa, KS 66214



EDR Inquiry # 2583798.1

Contact: Matt Schlegel

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**City, State, Zip:** LeMars, IA 51031  
**Cross Street:**  
**P.O. #** EP9036  
**Project:** Hwy 3  
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Sanborn® Library search results  
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1888	1947
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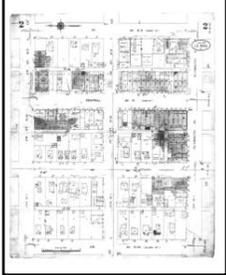
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## Sanborn Sheet Thumbnails

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### 1961 Source Sheets



Volume 1, Sheet 2



Volume 1, Sheet 4



Volume 1, Sheet 5



Volume 1, Sheet 13

### 1947 Source Sheets



Volume 1, Sheet 2



Volume 1, Sheet 4



Volume 1, Sheet 5



Volume 1, Sheet 13

### 1923 Source Sheets



Volume 1, Sheet 4



Volume 1, Sheet 5



Volume 1, Sheet 13

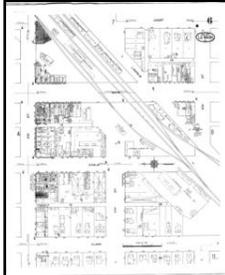


Volume 1, Sheet 2

### 1913 Source Sheets



Volume 1, Sheet 7



Volume 1, Sheet 6



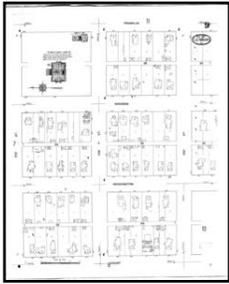
Volume 1, Sheet 5



Volume 1, Sheet 4

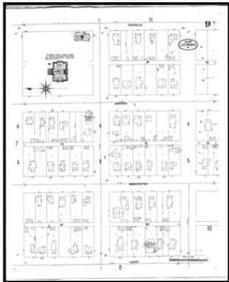


Volume 1, Sheet 8



Volume 1, Sheet 9

**1907 Source Sheets**



Volume 1, Sheet 9



Volume 1, Sheet 8



Volume 1, Sheet 7



Volume 1, Sheet 6

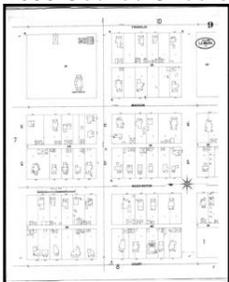


Volume 1, Sheet 5



Volume 1, Sheet 4

**1899 Source Sheets**



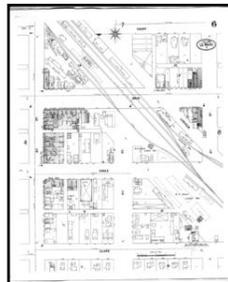
Volume 1, Sheet 9



Volume 1, Sheet 8



Volume 1, Sheet 7



Volume 1, Sheet 6



Volume 1, Sheet 5



Volume 1, Sheet 4

**1893 Source Sheets**



Volume 1, Sheet 9



Volume 1, Sheet 8



Volume 1, Sheet 7



Volume 1, Sheet 5



Volume 1, Sheet 4



Volume 1, Sheet 3

**1888 Source Sheets**



Volume 1, Sheet 5



Volume 1, Sheet 4



Volume 1, Sheet 2

**1883 Source Sheets**

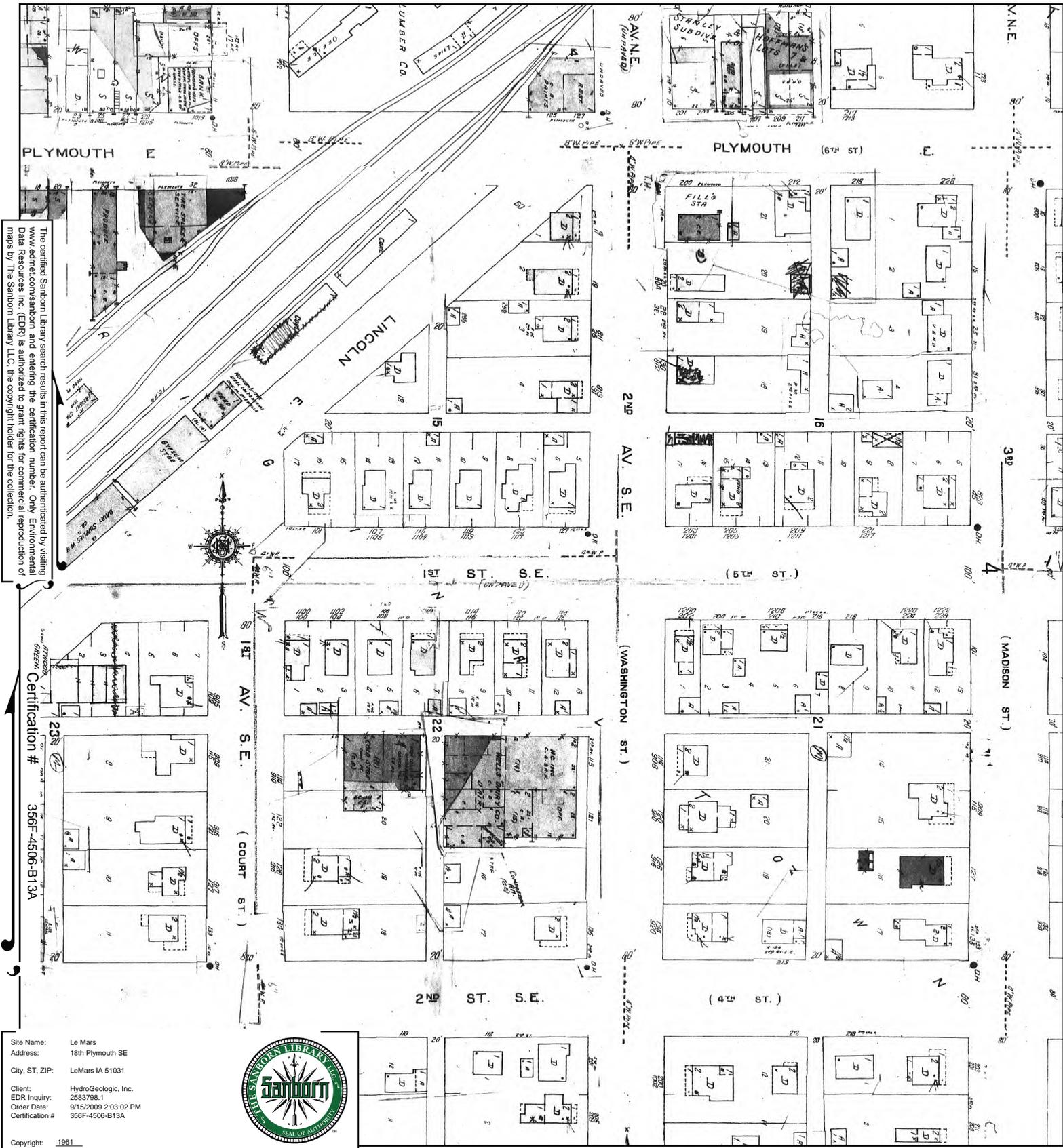


Volume 1, Sheet 3



Volume 1, Sheet 2

# 1961 Certified Sanborn Map



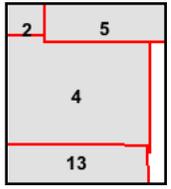
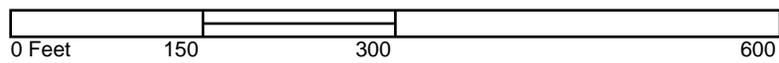
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ATWOOD GREEN Certification # 356F-4506-B13A



Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification #: 356F-4506-B13A  
 Copyright: 1961

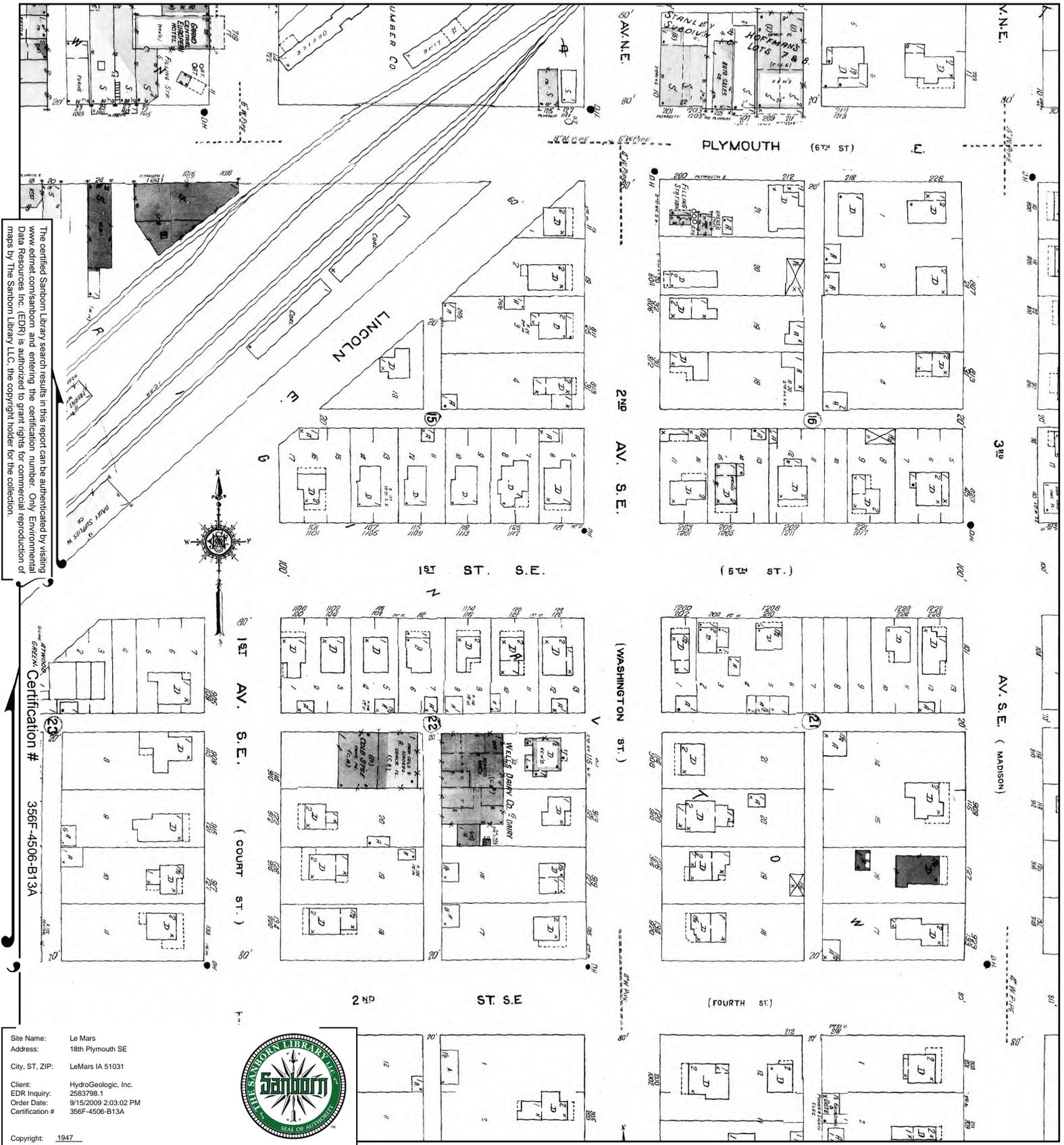
This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



- Volume 1, Sheet 2
- Volume 1, Sheet 4
- Volume 1, Sheet 5
- Volume 1, Sheet 13



# 1947 Certified Sanborn Map



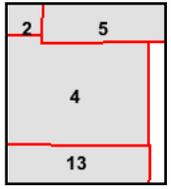
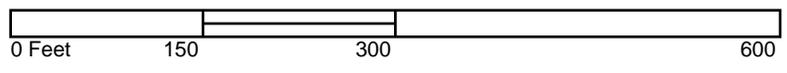
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ATWOOD Certification # 356F-4506-B13A

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A  
 Copyright: 1947



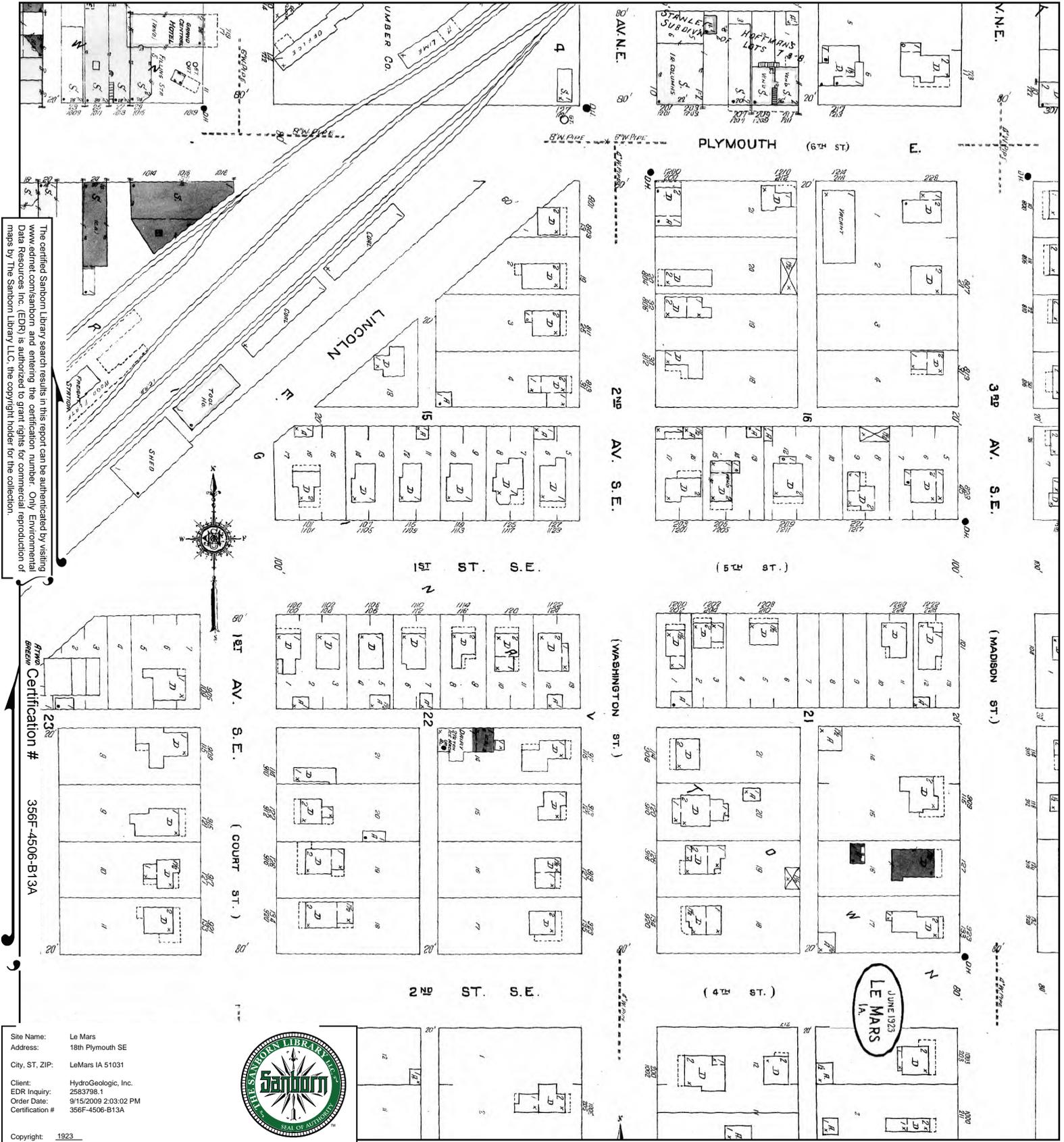
This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



- Volume 1, Sheet 2
- Volume 1, Sheet 4
- Volume 1, Sheet 5
- Volume 1, Sheet 13



# 1923 Certified Sanborn Map



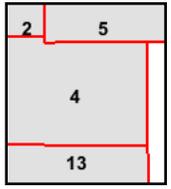
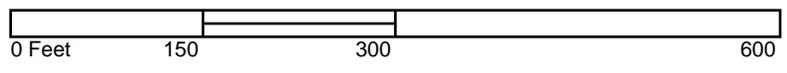
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Primo  
Certification # 356F-4506-B13A

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification #: 356F-4506-B13A  
 Copyright: 1923



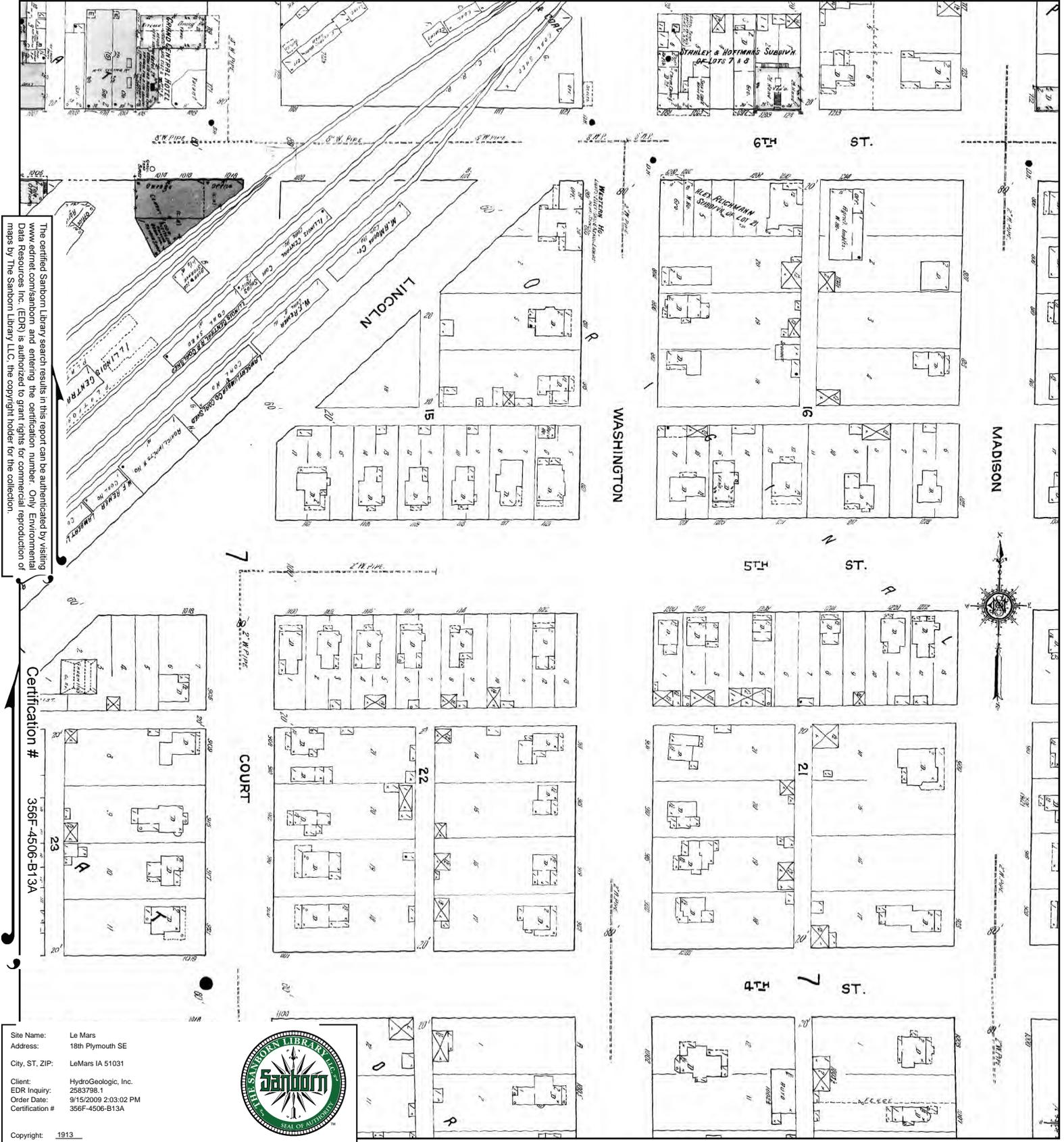
This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



- Volume 1, Sheet 4
- Volume 1, Sheet 5
- Volume 1, Sheet 13
- Volume 1, Sheet 2



# 1913 Certified Sanborn Map



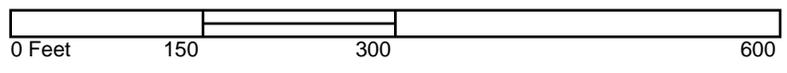
The certified Sanborn Library search results in this report can be authenticated by visiting [www.ednet.com/sanborn](http://www.ednet.com/sanborn) and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

Certification # 356F-4506-B13A

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A



This Certified Sanborn Map combines the following sheets (thumbnails on page 3).

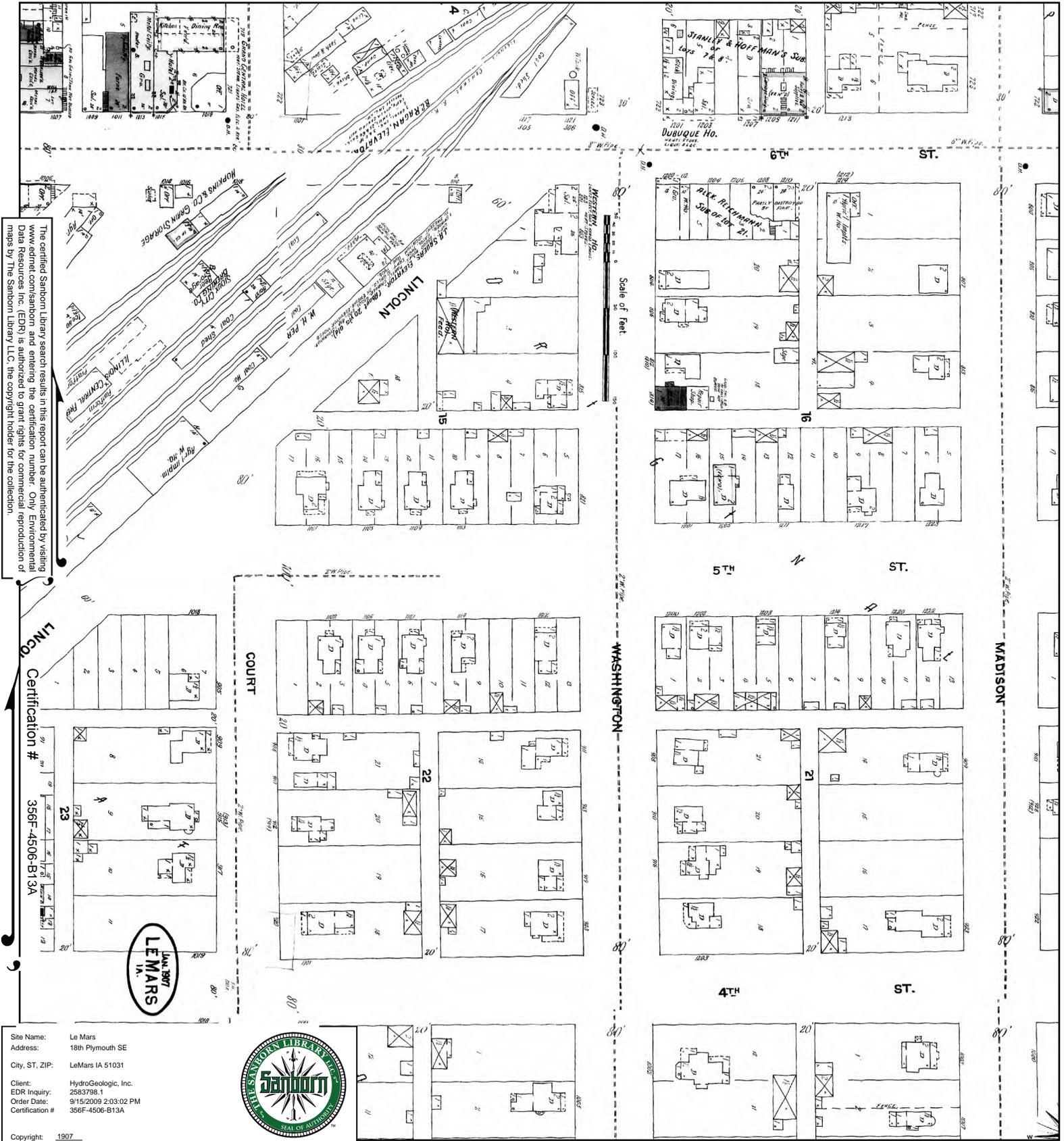


4	5
6	7
8	9

- Volume 1, Sheet 7
- Volume 1, Sheet 6
- Volume 1, Sheet 5
- Volume 1, Sheet 4
- Volume 1, Sheet 8



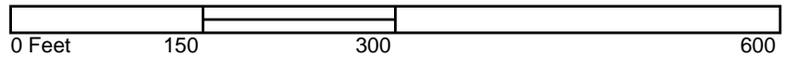
# 1907 Certified Sanborn Map



Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification #: 356F-4506-B13A



This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



4	5
6	7
8	9

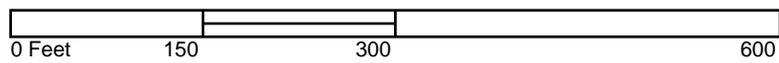
- Volume 1, Sheet 9
- Volume 1, Sheet 8
- Volume 1, Sheet 7
- Volume 1, Sheet 6
- Volume 1, Sheet 5



# 1899 Certified Sanborn Map



This Certified Sanborn Map combines the following sheets (thumbnails on page 3).

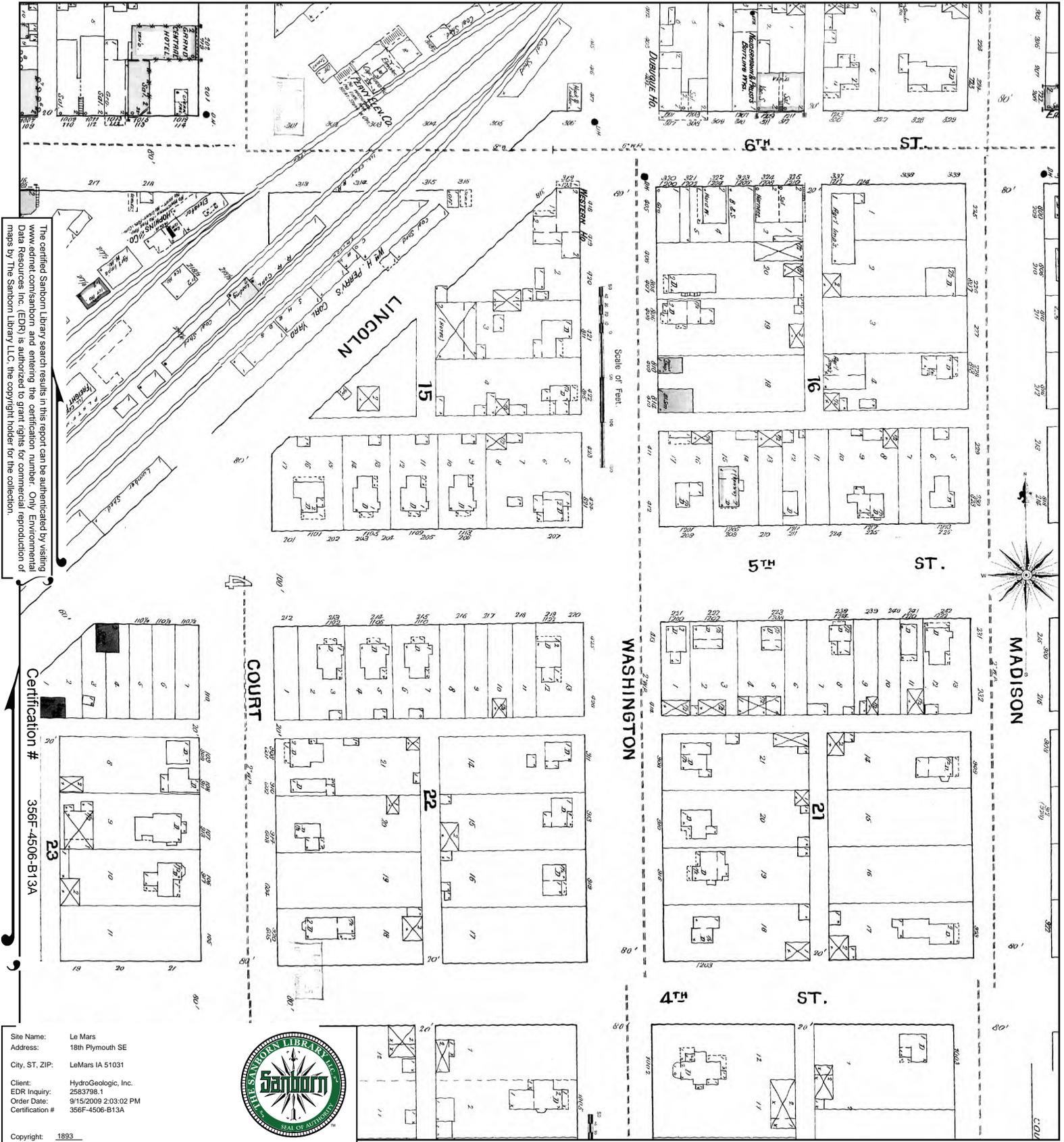


4	5
6	7
8	9

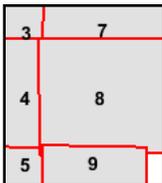
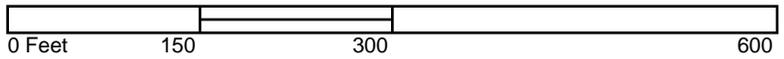
- Volume 1, Sheet 9
- Volume 1, Sheet 8
- Volume 1, Sheet 7
- Volume 1, Sheet 6
- Volume 1, Sheet 5



# 1893 Certified Sanborn Map



This Certified Sanborn Map combines the following sheets (thumbnails on page 3).

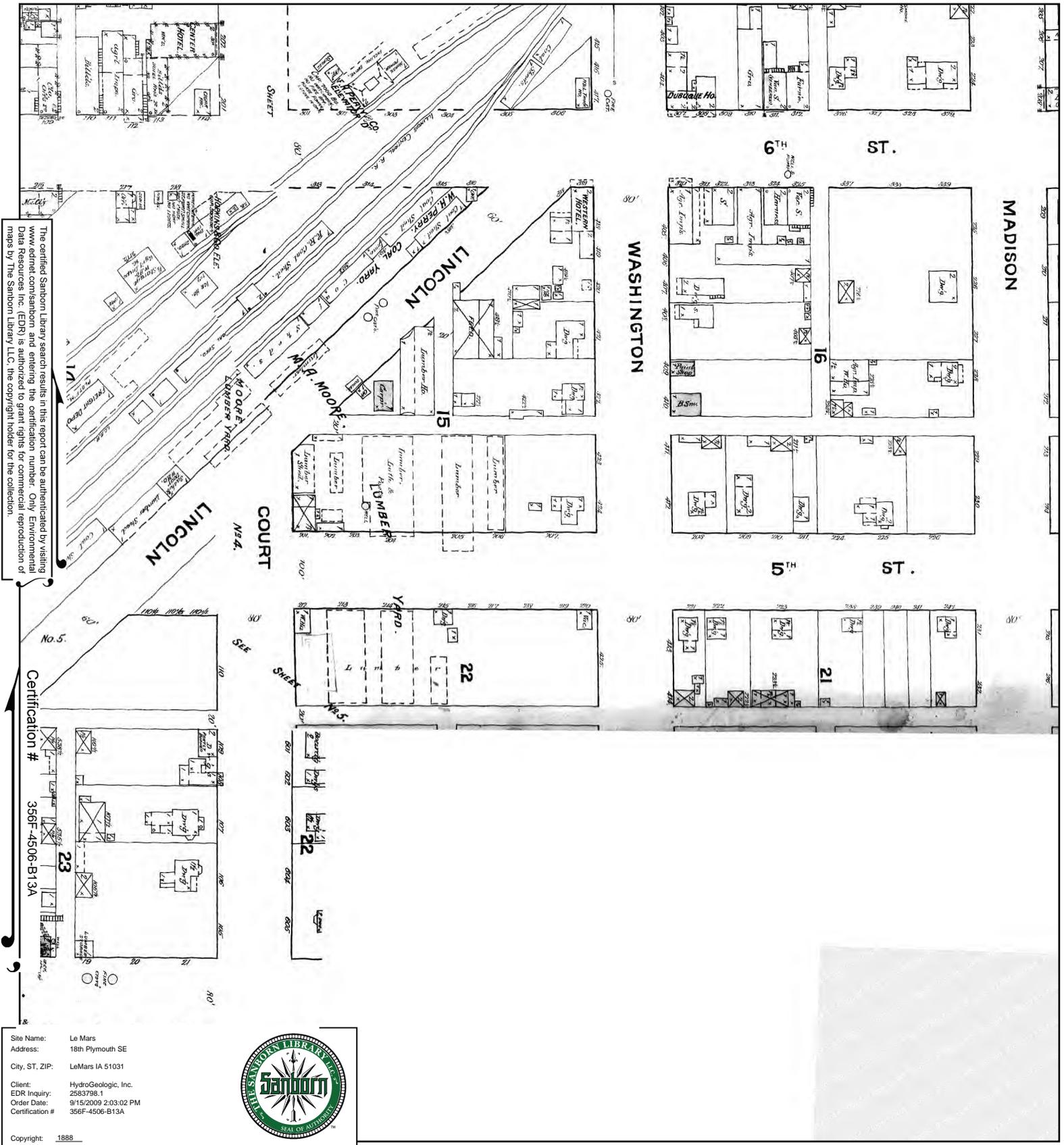


- Volume 1, Sheet 9
- Volume 1, Sheet 8
- Volume 1, Sheet 7
- Volume 1, Sheet 5
- Volume 1, Sheet 4

Volume 1, Sheet 3



# 1888 Certified Sanborn Map



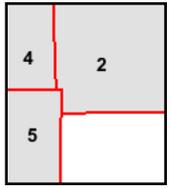
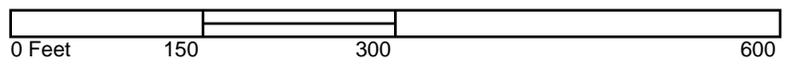
The certified Sanborn Library search results in this report can be authenticated by visiting [www.ednr.com/sanborn](http://www.ednr.com/sanborn) and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

Certification # 356F-4506-B13A

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A



This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



- Volume 1, Sheet 5
- Volume 1, Sheet 4
- Volume 1, Sheet 2



# 1883 Certified Sanborn Map



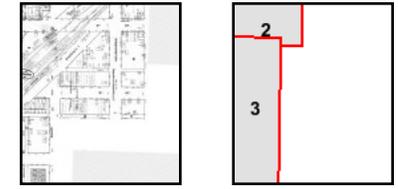
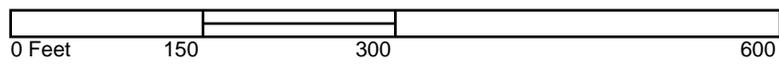
The certified Sanborn Library search results in this report can be authenticated by visiting [www.edrnet.com/sanborn](http://www.edrnet.com/sanborn) and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

Certification # 356F-4506-B13A

Site Name: Le Mars  
 Address: 18th Plymouth SE  
 City, ST, ZIP: LeMars IA 51031  
 Client: HydroGeologic, Inc.  
 EDR Inquiry: 2583798-1  
 Order Date: 9/15/2009 2:03:02 PM  
 Certification # 356F-4506-B13A



This Certified Sanborn Map combines the following sheets (thumbnails on page 3).



Volume 1, Sheet 3  
 Volume 1, Sheet 2



**ATTACHMENT 5**

**SOIL BORING LITHOLOGIC LOGS, CHAIN OF CUSTODY RECORD,  
FIELD SHEETS, AND FIELD INSTRUMENT CALIBRATION SHEETS**

HTW DRILLING LOG							HOLE NO PCE-GW-1	
1. COMPANY NAME HydroGeoLogic, Inc.			2. DRILLING CONTRACTOR PSA Environmental			SHEET 1 of 4		
3. PROJECT Highway 3 PCE				4. LOCATION Le Mars, IA				
5. NAME OF DRILLER Aaron Sence				6. MANUFACTIRERS DESIGNATION OF DRILL Geoprobe				
7. SIZES & TYPES OF DRILLING & SAMPLING EQUIPMENT		5' Macrocore sampler		8. HOLE LOCATION 2nd Ave. & Plymouth St.				
				9. SURFACE ELEVATION NA				
				10. DATE STARTED 10/27/09		11. DATE COMPLETED 10/27/09		
12. OVERBURDEN THICKNESS NA				15. DEPTH GROUNDWATER ENCOUNTERED 29.0				
13. DEPTH DRILLED INTO ROCK NA				16. DEPTH TO WATER & TIME AFTER DRILLING COMPLETED NA				
14. TOTAL DEPTH OF HOLE 45.0ft				17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA				
18. GEOTECHNICAL SAMPLES NA		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES NA				
20. SAMPLES FOR CHEMICAL ANALYSIS NA		VOC	METALS	OTHER (Specify)	OTHER (Specify)	OTHER (Specify)	21. TOTAL CORE REC. %	
22. DEPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER	23. SIGNATURE OF INSPECTOR Spencer Dulaney			
		Bentonite						
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c		Field Screening Results (PID) d	Recovery e	Analytical Sample No. f	Blow Counts g	REMARKS (Collection Time/Depth) h
	1.0	Concrete Loose brown soil		0.0				Head Space: PID Bag No. 1-1 Reading: 0.0
	2.0	No recovery			1/5			
	3.0							
	4.0							
	5.0			0.0				
	6.0	<b>Silt, ML</b> Dense, moist, non-plastic, non-cohesive, dark yellowish brown (10YR 4/4)		0.0				
	7.0			0.0				
	8.0			0.0				
	9.0	No recovery			3/5			
	10.0							

# HTW DRILLING LOG

HOLE NO PCE-GW-1

PROJECT Highway 3 PCE

INSPECTOR Spencer Dulaney

SHEET 2 of 4

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results (PID) d	Recovery e	Analytical Sample No. f	Blow Counts g	REMARKS (Collection Time/Depth) h
	11.0	Same as above	17				Head Space: PID Bag No. 1-3 Reading: 7.5
	12.0		18	5/5			
	13.0		13				
	14.0		18.0				
	15.0	Same as above	101				Head Space: PID Bag No. 1-4 Reading: 5.0
	16.0		6.2				
	17.0	<b>Well graded sand w/ gravel, SW</b> Fine to coarse grained with fine gravel, medium dense, moist, yellowish brown (10YR5/4)	5.4	4/5			
	18.0		26.5				
	19.0	No recovery	27.0				
	20.0						Head Space: PID Bag No. 1-5 Reading: 0.0
	21.0	<b>Poorly graded sand, SP</b> fine to medium grained, medium dense, yellowish brown (10YR 5/4)	7.8				
	22.0		20.0	5/5			
	23.0		32.0				
	24.0		19.0				
	25.0		14.0				
	26.0		8.0				Head Space: PID Bag No. 1-6 Reading: 0.3
	27.0						

PROJECT Highway 3 PCE

HOLE NO. PCE-GW-1

# HTW DRILLING LOG

HOLE NO PCE-GW-1

PROJECT Highway 3 PCE

INSPECTOR Spencer Dulaney

SHEET 3 of 4

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results (PID) d	Recovery e	Analytical Sample No. f	Blow Counts g	REMARKS (Collection Time/Depth) h
		Same as above	10.8	5/5			
	28.0	<b>Poorly graded sand, SP</b> Fine to medium grained, medium dense, yellowish brown (10YR 5/6)	9.0				
	29.0		2.0				
	30.0	Saturated at 29.0ft					
	31.0	Same as above	0.0				Head Space: PID Bag No. 1-7 Reading: 0.0
	31.0	Coarsening with depth	0.0				
	32.0		0.0	2.7/5			
	33.0	No recovery	0.0				
	34.0						
	35.0		0.0				
	36.0	<b>Well graded sand, SW</b> Fine to coarse sand, medium dense, trace fine gravel, wet, non-plastic, non-cohesive, light yellowish brown (10YR 6/4)	0.0				Head Space: PID Bag No. 1-8 Reading: 0.0
	37.0		0.0				
	38.0	No recovery	0.0	3.1/5			
	39.0						
	40.0	No recovery					
	41.0						
	42.0	Same as above		2/5			
	43.0	<b>Driller-clay/till @ 43ft</b> Hard, moist, plastic, cohesive, dark gray (2.5Y4/1)					
	44.0	No recovery					

PROJECT Highway 3 PCE

HOLE NO. PCE-GW-1

# HTW DRILLING LOG

HOLE NO PCE-GW-1

PROJECT Highway 3 PCE

INSPECTOR Spencer Dulaney

SHEET 4 of 4

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results (PID) d	Recovery e	Analytical Sample No. f	Blow Counts g	REMARKS (Collection Time/Depth) h
	45.0	BOTTOM OF BORING: 45ft	0.0				
	46.0						
	47.0						
	48.0						
	49.0						
	50.0						
	51.0						
	52.0						
	53.0						
	54.0						
	55.0						
	56.0						
	57.0						
	58.0						
	59.0						
	60.0						
	61.0						

HTW DRILLING LOG							HOLE NO PCE-GW-2	
1. COMPANY NAME HydroGeoLogic, Inc.			2. DRILLING CONTRACTOR PSA Environmental			SHEET 1 of 4		
3. PROJECT Highway 3 PCE			4. LOCATION Le Mars, IA					
5. NAME OF DRILLER Aaron Sence			6. MANUFACTIRERS DESIGNATION OF DRILL Geoprobe					
7. SIZES & TYPES OF DRILLING & SAMPLING EQUIPMENT		5' Macrocore sampler		8. HOLE LOCATION Central Ave. and 1st Ave. NW				
				9. SURFACE ELEVATION NA				
				10. DATE STARTED 10/27/09		11. DATE COMPLETED 10/27/09		
12. OVERBURDEN THICKNESS NA			15. DEPTH GROUNDWATER ENCOUNTERED 29.0					
13. DEPTH DRILLED INTO ROCK NA			16. DEPTH TO WATER & TIME AFTER DRILLING COMPLETED NA					
14. TOTAL DEPTH OF HOLE 45.0ft			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA					
18. GEOTECHNICAL SAMPLES NA		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES NA				
20. SAMPLES FOR CHEMICAL ANALYSIS NA		VOC	METALS	OTHER (Specify)	OTHER (Specify)	OTHER (Specify)	21. TOTAL CORE REC. %	
22. DEPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER	23. SIGNATURE OF INSPECTOR Spencer Dulaney			
		Hydrated Bentonite						
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c		Field Screening Results (PID) d	Recovery e	Analytical Sample No. f	Blow Counts g	REMARKS (Collection Time/Depth) h
	1.0	Asphalt Fill material, silt, brick fragments		0.0				Head Space: PID Bag No. 2-1 Reading: 0.0
	2.0	<b>Silty clay, CL</b> Medium dense, moist, dark yellowish brown (10YR3/4)		0.0	2.9/5			
	3.0	No recovery						
	4.0							
	5.0							
	6.0	<b>Silt, ML</b> Stiff, moist, low plasticity, cohesive, brown (10YR5/3)		0.0				Head Space: PID Bag No. 2-2 Reading: 0.0
	7.0			0.0	3.2/5			
	8.0	No recovery		0.0				
	9.0							
	10.0							

# HTW DRILLING LOG

HOLE NO PCE-GW-2

PROJECT Highway 3 PCE

INSPECTOR Spencer Dulaney

SHEET 2 of 4

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results (PID) d	Recovery e	Analytical Sample No. f	Blow Counts g	REMARKS (Collection Time/Depth) h
	11.0	Same as above	7.0				Head Space: PID Bag No. 2-3 Reading: 1.9
	12.0		18.0				
	13.0		51.0	5/5			
	14.0		6.6				
	15.0		3.5				
	16.0	Same as above	6.0				
	17.0		12.2				Head Space: PID Bag No. 2-4 Reading: 0.0
	18.0	Gravel at contact	0.0	5/5			
	19.0	<b>Poorly graded fine sand , PW</b> Dense, damp, yellowish brown (10YR5/6)	0.0				
	20.0		0.0				
	21.0	<b>Silt, ML</b> Stiff, moist, low plasticity, cohesive, brown (10YR 5/3)	0.0				Head Space: PID Bag No. 2-5 Reading: 0.0
	22.0	<b>Sand w/ trace gravel, SW</b> Medium dense, slightly moist, brown (10YR5/3)	0.0	5/5			
	23.0		2.0				
	24.0	<b>Poorly graded sand, SP</b> Medium dense, moist, non-cohesive, light yellowish brown (10YR6/4)	5.0				
	25.0	No recovery	1.0				
	26.0	Same as above	0.0				Head Space: PID Bag No. 2-6 Reading: 0.0
	27.0						

PROJECT Highway 3 PCE

HOLE NO. PCE-GW-2

# HTW DRILLING LOG

HOLE NO PCE-GW-2

PROJECT Highway 3 PCE

INSPECTOR Spencer Dulaney

SHEET 3 of 4

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results (PID) d	Recovery e	Analytical Sample No. f	Blow Counts g	REMARKS (Collection Time/Depth) h
			0.0	3.7/5			
	28.0		0.0				
	29.0		0.0				
	30.0	Same as above	11.0				Head Space: PID Bag No. 2-7 Reading: 0.0
	31.0	<b>Sand w/ trace gravel, SW</b> Fine to coarse sand, trace fine gravel, medium dense, non-cohesive, brown (10YR4/3)	18.0				
	32.0		25.0	3.5/5			
	33.0	<b>Poorly graded medium sand, SP</b> Medium dense, non-cohesive, iron staining, yellowish red (5YR4/6)	40.0				
	34.0	No recovery					
	35.0	Same as above	3.5				Head Space: PID Bag No. 2-8 Reading: 0.0
	36.0	<b>Well graded sand, SW</b> Fine to coarse, trace sand and gravel, non-cohesive, light brownish gray (10YR6/2)	2.5				
	37.0		0.1	3.5/5			
	38.0		0.1				
	39.0	No recovery					
	40.0	No recovery					
	41.0						
	42.0	Same as above		2.8/5			
	43.0	Till, hard, moist, plastic, cohesive, dark gray (2.5Y4/1)	0.0				
	44.0						

PROJECT Highway 3 PCE

HOLE NO. PCE-GW-2

# HTW DRILLING LOG

HOLE NO PCE-GW-2

PROJECT Highway 3 PCE

INSPECTOR Spencer Dulaney

SHEET 4 of 4

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	Field Screening Results (PID) d	Recovery e	Analytical Sample No. f	Blow Counts g	REMARKS (Collection Time/Depth) h
	45.0	BOTTOM OF BORING: 45ft	0.0				
	46.0		0.0				
	47.0						
	48.0						
	49.0						
	50.0						
	51.0						
	52.0						
	53.0						
	54.0						
	55.0						
	56.0						
	57.0						
	58.0						
	59.0						
	60.0						
	61.0						

**CHAIN OF CUSTODY RECORD  
ENVIRONMENTAL PROTECTION AGENCY REGION VII**

ACTIVITY LEADER(Print) <i>Dan Gervey</i>	NAME OF SURVEY OR ACTIVITY <i>DGA 7R900V HWY3 PCE 5.7P</i>	DATE OF COLLECTION <i>28 10 09</i> DAY MONTH YEAR	SHEET <i>1</i> of <i>1</i>
---	---	---	-------------------------------

SAMPLE NUMBER	TYPE OF CONTAINERS				VOA SET (2 VIALS EA)	SAMPLED MEDIA				RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)	
	CUBITAINER	BOTTLE	BOTTLE	BOTTLE		water	soil	sediment	dust		other
	NUMBERS OF CONTAINERS PER SAMPLE NUMBER										
<i>4624-1</i>	<i>1</i>	<i>1</i>			<i>1</i>	<i>X</i>					
<i>4624-2</i>					<i>1</i>	<i>X</i>					
<i>4624-3</i>					<i>1</i>	<i>X</i>					
<i>4624-4</i>					<i>1</i>	<i>X</i>					
<i>4624-5</i>					<i>1</i>	<i>X</i>					
<i>4624-5-FD</i>					<i>1</i>	<i>X</i>				<i>Field duplicate</i>	
<i>4624-7</i>					<i>1</i>	<i>X</i>					
<i>4624-8</i>					<i>1</i>	<i>X</i>					
<i>4624-9</i>					<i>3</i>	<i>X</i>				<i>EXTRA VOLUME FOR ANALYSIS</i>	
<i>4624-10</i>					<i>1</i>	<i>X</i>					
<i>4624-10FD</i>					<i>1</i>	<i>X</i>					
<i>4624-13-FB</i>					<i>1</i>	<i>X</i>				<i>Preservative Blank</i>	
<i>4624-12</i>					<i>1</i>	<i>X</i>					
<i>4624-14</i>					<i>1</i>	<i>X</i>					
<i>4624-15-FB</i>					<i>1</i>	<i>X</i>				<i>Trip blank</i>	
<i>4624-16</i>					<i>1</i>	<i>X</i>					
<i>4624-17</i>					<i>1</i>	<i>X</i>					

*ASR Complete!*

DESCRIPTION OF SHIPMENT	MODE OF SHIPMENT
<input type="checkbox"/> PIECE(S) CONSISTING OF _____ BOX(ES) <input checked="" type="checkbox"/> ICE CHEST(S), OTHER _____	<input type="checkbox"/> COMMERCIAL CARRIER: _____ <input type="checkbox"/> COURIER <input checked="" type="checkbox"/> SAMPLER CONVEYED (SHIPPING DOCUMENT NUMBER) _____

PERSONNEL CUSTODY RECORD			
RELINQUISHED BY (SAMPLER) <i>[Signature]</i>	DATE <i>10/29/09</i>	TIME <i>17:00</i>	REASON FOR CHANGE OF CUSTODY <i>TRANSPOV</i>
<input checked="" type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			
RELINQUISHED BY <i>[Signature]</i>	DATE <i>10/30/09</i>	TIME <i>11:50</i>	REASON FOR CHANGE OF CUSTODY <i>[Signature]</i>
<input type="checkbox"/> SEALED <input checked="" type="checkbox"/> UNSEALED			
RELINQUISHED BY	DATE	TIME	REASON FOR CHANGE OF CUSTODY
<input type="checkbox"/> SEALED <input type="checkbox"/> UNSEALED			

Sample Collection Field Sheet  
US EPA Region 7  
Kansas City, KS

ASR Number: 4624 Sample Number: 1 QC Code: \_\_\_ Matrix: Water Tag ID: 4624-1-\_\_\_

Project ID: DGA7R400 Project Manager: Daniel Garvey  
Project Desc: Highway 3 PCE site sampling  
City: Le Mars State: Iowa  
Program: Superfund  
Site Name: Highway 3 PCE - Site Evaluation/Disposition Site ID: A7R4 Site OU: 00

Location Desc: ~~PCE-GW-1 @ 39-43~~ <sup>64</sup> PCE-GW-1 @ 39-43

External Sample Number: \_\_\_\_\_

Expected Conc: (or Circle One: Low Medium High) Date: 10/28/09 Time(24 hr): 04:30  
Latitude: \_\_\_\_\_ Sample Collection: Start: \_\_\_\_\_ End: \_\_\_\_\_  
Longitude: \_\_\_\_\_

Laboratory Analyses:

Container	Preservative	Holding Time	Analysis
2 - 40mL VOA vial	4 Deg C, HCL to pH<2	14 Days	1 VOCs in Water by GC/MS

Sample Comments:

(N/A)

Sta 10/28/09  
~~PID = < 1000~~  
HAPSITE DATA < 30 PCE  
  
Hapsite = 30 U

Sample Collected By: JH









# Sample Collection Field Sheet

US EPA Region 7

Kansas City, KS

ASR Number: 4624    Sample Number: <sup>5</sup> ~~6~~ 5H    QC Code: FD    Matrix: Water    Tag ID: 4624 ~~6~~ <sup>-5-FD</sup> 5H

Project ID: DGA7R400    Project Manager: Daniel Garvey  
Project Desc: Highway 3 PCE site sampling  
City: Le Mars    State: Iowa  
Program: Superfund  
Site Name: Highway 3 PCE - Site Evaluation/Disposition    Site ID: A7R4    Site OU: 00

Location Desc: PCE-6W-3 @ 44.5-48.5

External Sample Number: \_\_\_\_\_

Expected Conc: \_\_\_\_\_ (or Circle One: Low Medium High)    Date: \_\_\_\_\_    Time(24 hr): \_\_\_\_\_  
Latitude: \_\_\_\_\_    Sample Collection: Start: 10/28/09    14:02  
Longitude: \_\_\_\_\_    End:   /  /        :  

Container	Preservative	Holding Time	Analysis
2 - 40mL VOA vial	4 Deg C, HCL to pH<2	14 Days	1 VOCs in Water by GC/MS

Sample Comments:  
(N/A)

PED readings = 0.1

1 tap site PCE = 30 u

Sample Collected By: JH





Sample Collection Field Sheet  
US EPA Region 7  
Kansas City, KS

ASR Number: 4624 Sample Number: 9 QC Code: \_\_ Matrix: Water Tag ID: 4624-9-\_\_

Project ID: DGA7R400 Project Manager: Daniel Garvey  
Project Desc: Highway 3 PCE site sampling  
City: Le Mars State: Iowa  
Program: Superfund  
Site Name: Highway 3 PCE - Site Evaluation/Disposition Site ID: A7R4 Site OU: 00

Location Desc: PCE-GW-F @ 41.0 - 45.0

External Sample Number: \_\_\_\_\_

Expected Conc: (or Circle One: Low Medium High) Date Time(24 hr)

Latitude: \_\_\_\_\_ Sample Collection: Start: 10/28/09 15:46  
Longitude: \_\_\_\_\_ End: 1/1 :\_\_

Laboratory Analyses:

Container	Preservative	Holding Time	Analysis
2 - 40mL VOA vial	4 Deg C, HCL to pH<2	14 Days	1 VOCs in Water by GC/MS

Sample Comments:

(N/A)

PID = 0.0

Extra Volume For MS/MSD

HAPS, 7e PCE = 304

Sample Collected By: JH









# Sample Collection Field Sheet

US EPA Region 7

Kansas City, KS

ASR Number: 4624    Sample Number: 14    QC Code: \_\_\_    Matrix: Water    Tag ID: 4624-14-\_\_\_

Project ID: DGA7R400

Project Manager: Daniel Garvey

Project Desc: Highway 3 PCE site sampling

City: Le Mars

State: Iowa

Program: Superfund

Site Name: Highway 3 PCE - Site Evaluation/Disposition

Site ID: A7R4    Site OU: 00

Location Desc: PCE-GW-5 @ 29-33

External Sample Number: \_\_\_\_\_

Expected Conc: \_\_\_\_\_ (or Circle One: Low Medium High)    Date \_\_\_\_\_    Time(24 hr) \_\_\_\_\_

Latitude: \_\_\_\_\_

Sample Collection: Start: 10/29/09    17:28

Longitude: \_\_\_\_\_

End:   /  /        :  

## Laboratory Analyses:

Container	Preservative	Holding Time	Analysis
2 - 40mL VOA vial	4 Deg C, HCL to pH<2	14 Days	1 VOCs in Water by GC/MS

## Sample Comments:

(N/A)

PID = 4.5

Hapsite PCE = 304

Sample Collected By: JH









**EQUIPMENT MAINTENANCE  
AND CALIBRATION RECORD**

May 3 PCE 5:10

Contract/Project: Cleburne St. Well Site

Equipment Description: Mini Rate - P1B

Activity: Geopack DPF

Equipment ID: U80949Y

Equipment Serial No.:

Calibration Date/Time	Parameter	Standard Used (Concentration)	Lot Control No./Expiration Date	Post Calibration Reading	Comments Pass/Fail	Signature
10/27/09 11:15	VOC's	ISO6451-1M9	09-3732 3/16/2011	105	PASS	
10/28/09 7:37	VOC's	ISO6451-1M9	09-3732 3/16/2011	103	PASS	
10/29/09 08:11	VOC's	ISO6451-1M9	09-3732 3/16/2011	98.3	PASS	

Maintenance Performed: \_\_\_\_\_

**ATTACHMENT 6**

**EPA REGION 7 LABORATORY DATA PACKAGE,  
HAPSITE® RESULTS TABLE**

United States Environmental Protection Agency  
Region 7  
901 N. 5th Street  
Kansas City, KS 66101

Date: 11/23/2009

Subject: Transmittal of Sample Analysis Results for ASR #: 4624

Project ID: DGA7R400

Project Description: Highway 3 PCE site sampling

From: Michael F. Davis, Chief  
Chemical Analysis and Response Branch, Environmental Services Division

To: Daniel Garvey  
SUPR/EFLR

Enclosed are the analytical data for the above-referenced Analytical Services Request (ASR) and Project. The Regional Laboratory has reviewed and verified the results in accordance with procedures described in our Quality Manual (QM). In addition to all of the analytical results, this transmittal contains pertinent information that may have influenced the reported results and documents any deviations from the established requirements of the QM.

Please contact us within 14 days of receipt of this package if you determine there is a need for any changes. Please complete the enclosed Customer Satisfaction Survey and Data Disposition/Sample Release memo for this ASR as soon as possible. The process of disposing of the samples for this ASR will be initiated 30 days from the date of this transmittal unless an alternate release date is specified on the Data Disposition/Sample Release memo.

If you have any questions or concerns relating to this data package, contact our customer service line at 913-551-5295.

Enclosures

cc: Analytical Data File.

Project Manager: Daniel Garvey

Org: SUPR/EFLR

Phone: 913-551-7600

Project ID: DGA7R400

Project Desc: Highway 3 PCE site sampling

Location: Le Mars

State: Iowa

Program: Superfund

Site Name: Highway 3 PCE - Site Evaluation/Disposition

Site ID: A7R4 Site OU: 00

Purpose: Site Characterization

GPRA PRC: 302DD2C

## Explanation of Codes, Units and Qualifiers used on this report

Sample QC Codes: QC Codes identify the type of sample for quality control purpose.

Units: Specific units in which results are reported.

\_\_\_ = Field Sample

ug/L = Micrograms per Liter

FB = Field Blank

FD = Field Duplicate

Data Qualifiers: Specific codes used in conjunction with data values to provide additional information on the quality of reported results, or used to explain the absence of a specific value.

(Blank) = Values have been reviewed and found acceptable for use.

U = The analyte was not detected at or above the reporting limit.

UJ = The analyte was not detected at or above the reporting limit. The reporting limit is an estimate.

Project ID: DGA7R400

Project Desc: Highway 3 PCE site sampling

Sample No	QC Code	Matrix	Location Description	External Sample No	Start Date	Start Time	End Date	End Time	Receipt Date
1 - ___		Water	PCE-GW-1 at 39-43		10/28/2009	09:30			10/30/2009
2 - ___		Water	PCE-GW-1 at 29-33		10/28/2009	09:58			10/30/2009
3 - ___		Water	PCE-GW-2 at 39.0-43.0		10/28/2009	11:22			10/30/2009
4 - ___		Water	PCE-GW-2 at 29.0-33.0		10/28/2009	11:42			10/30/2009
5 - ___		Water	PCE-GW-3 at 44.5-48.5		10/28/2009	14:02			10/30/2009
5 - FD		Water	PCE-GW-3 at 44.5-48.5/Field Duplicate of sample 5		10/28/2009	14:02			10/30/2009
7 - ___		Water	PCE-GW-3 at 31-35		10/28/2009	14:14			10/30/2009
8 - ___		Water	Equipment Rinsate sample		10/28/2009	14:35			10/30/2009
9 - ___		Water	PCE-GW-4 at 41-45		10/28/2009	15:46			10/30/2009
10 - ___		Water	PCE-GW-4 at 31-35'		10/28/2009	16:07			10/30/2009
10 - FD		Water	PCE-GW-4 at 31-35'/Field Duplicate of sample 10		10/28/2009	16:07			10/30/2009
12 - ___		Water	PCE-GW-5 at 39-43		10/28/2009	17:08			10/30/2009
13 - FB		Water	Preservative Blank		10/28/2009	16:47			10/30/2009
14 - ___		Water	PCE-GW-5 at 29-33		10/29/2009	17:28			10/30/2009
15 - FB		Water	Routine VOA Trip Blank sample		10/22/2009	06:31	10/28/2009	17:45	10/30/2009
16 - ___		Water	PCE-GW-6 at 39-43		10/29/2009	08:40			10/30/2009
17 - ___		Water	PCE-GW-6 at 30-33		10/29/2009	08:55			10/30/2009

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 Analysis      Comments About Results For This Analysis
 

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## 1    VOCs in Water by GC/MS

Lab: Region 7 ESAT Contract Lab (In-House)

Method: EPA Region 7 RLAB Method 3230.1F

Samples: 1-\_\_      2-\_\_      3-\_\_      4-\_\_      5-\_\_      5-FD      7-\_\_  
           8-\_\_      9-\_\_      10-\_\_      10-FD      12-\_\_      13-FB      14-\_\_  
           15-FB      16-\_\_      17-\_\_

## Comments:

Samples 4, 7, 14, 17, 10, 10-FD, and 2 had a pH of approximately 7 which indicated that they were not preserved properly. All of these samples were shot after the seventh day from collection. No data was qualified based on the pH.

1,2-Dichloroethane-d4 (+23.7%), 1,2-Dichloroethane (+21.2%), Dibromochloromethane (+21.3%), Bromoform (+28.7%), and 1,2-Dibromo-3-Chloropropane (+26.4%) were UJ-coded in samples 17, 1, 2, 10, 10-FD, 16, and 4. These analytes were not found in the samples at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to the continuing calibration check not meeting accuracy specifications. The actual reporting limit for these analytes may be higher than the reported value.

Carbon Tetrachloride (83%, 84%-119%), 1,2-Dichloroethane (80%, 84%-117%), Bromodichloromethane (84%, 85%-116%), and Bromoform (80%, 83%-119%) were UJ-coded in samples 13-FB, 15-FB, 9, 3, 5, 5-FD, 7, 8, 12, and 14. These analytes were not found in the samples at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to low recovery of these analytes in the laboratory control sample. The actual reporting limit for these analytes may be higher than the reported value.

1,2-Dichloroethane (79%, 84%-117%), Bromodichloromethane (83%, 85%-116%), Dibromochloromethane (79%, 86%-119%), and Bromoform (71%, 83%-119%) were UJ-coded in samples 17, 1, 2, 10, 10-FD, 16, and 4. These analytes were not found in the samples at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to low recovery of these analytes in the laboratory control sample. The actual reporting limit for these analytes may be higher than the reported value.

Bromodichloromethane (78%, 79%-121%), Bromoform (64% & 63%, 77%-122%), Dibromochloromethane (73% & 73%, 86%-118%), 1,2-Dibromoethane (82% & 81%, 90%-114%), 1,2-Dichloroethane (71% & 70%, 83%-121%), trans-1,3-Dichloropropene (74% & 73%, 84%-117%), 4-Methyl-2-Pentanone (75% & 74%, 79%-125%), Styrene (55% & 54%, 83%-121%), and 1,1,2-Trichloroethane (85% & 85%, 86%-115%) were UJ-coded in sample 9. These analytes were not found in the sample at or above the reporting limit, however, the reporting limit is an estimate (UJ-coded) due to low recovery of these analytes in the laboratory matrix spike. The actual reporting limit for these analytes may be higher than the reported value.

Analysis/ Analyte	Units	1-__	2-__	3-__	4-__
1 VOCs in Water by GC/MS					
Acetone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromodichloromethane	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Bromoform	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Bromomethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Disulfide	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	ug/L	5.0 U	5.0 U	5.0 UJ	5.0 U
Chlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroform	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Cyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 UJ	5.0 UJ	5.0 U	5.0 UJ
Dibromochloromethane	ug/L	5.0 UJ	5.0 UJ	5.0 U	5.0 UJ
1,2-Dibromoethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
1,1-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Ethyl Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Isopropylbenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	10 U	10 U	10 U	10 U
Methylcyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Naphthalene	ug/L	10 U	10 U	10 U	10 U
Styrene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5.0 U	150	5.0 U	5.0 U
Toluene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

ASR Number: 4624  
Project ID: DGA7R400

RLAB Approved Sample Analysis Results  
Project Desc: Highway 3 PCE site sampling

11/23/2009

Analysis/ Analyte	Units	1-__	2-__	3-__	4-__
Trichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Trichlorofluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
m and/or p-Xylene	ug/L	10 U	10 U	10 U	10 U
o-Xylene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

Analysis/ Analyte	Units	5-__	5-FD	7-__	8-__
1 VOCs in Water by GC/MS					
Acetone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromodichloromethane	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Bromoform	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Bromomethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Disulfide	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Chlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroform	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Cyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dibromochloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
1,1-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Ethyl Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Isopropylbenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	10 U	10 U	10 U	10 U
Methylcyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Naphthalene	ug/L	10 U	10 U	10 U	10 U
Styrene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Toluene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

ASR Number: 4624  
Project ID: DGA7R400

RLAB Approved Sample Analysis Results  
Project Desc: Highway 3 PCE site sampling

11/23/2009

Analysis/ Analyte	Units	5-__	5-FD	7-__	8-__
Trichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Trichlorofluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
m and/or p-Xylene	ug/L	10 U	10 U	10 U	10 U
o-Xylene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

Analysis/ Analyte	Units	9-__	10-__	10-FD	12-__
1 VOCs in Water by GC/MS					
Acetone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromodichloromethane	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Bromoform	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Bromomethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Disulfide	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	ug/L	5.0 UJ	5.0 U	5.0 U	5.0 UJ
Chlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroform	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Cyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 U	5.0 UJ	5.0 UJ	5.0 U
Dibromochloromethane	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 U
1,2-Dibromoethane	ug/L	5.0 UJ	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
1,1-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,3-Dichloropropene	ug/L	5.0 UJ	5.0 U	5.0 U	5.0 U
Ethyl Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Isopropylbenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	10 U	10 U	10 U	10 U
Methylcyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	ug/L	5.0 UJ	5.0 U	5.0 U	5.0 U
Naphthalene	ug/L	10 U	10 U	10 U	10 U
Styrene	ug/L	5.0 UJ	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	9.1	87	83	5.0 U
Toluene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	ug/L	5.0 UJ	5.0 U	5.0 U	5.0 U

ASR Number: 4624

RLAB Approved Sample Analysis Results

11/23/2009

Project ID: DGA7R400

Project Desc: Highway 3 PCE site sampling

Analysis/ Analyte	Units	9-__	10-__	10-FD	12-__
Trichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Trichlorofluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
m and/or p-Xylene	ug/L	10 U	10 U	10 U	10 U
o-Xylene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

Analysis/ Analyte	Units	13-FB	14-__	15-FB	16-__
1 VOCs in Water by GC/MS					
Acetone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Bromodichloromethane	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Bromoform	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Bromomethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Disulfide	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 U
Chlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloroform	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Chloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Cyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 UJ
Dibromochloromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 UJ
1,2-Dibromoethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
1,1-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,2-Dichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,3-Dichloropropene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Ethyl Benzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Isopropylbenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	10 U	10 U	10 U	10 U
Methylcyclohexane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Naphthalene	ug/L	10 U	10 U	10 U	10 U
Styrene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Toluene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

ASR Number: 4624

RLAB Approved Sample Analysis Results

11/23/2009

Project ID: DGA7R400

Project Desc: Highway 3 PCE site sampling

Analysis/ Analyte	Units	13-FB	14-__	15-FB	16-__
Trichloroethene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Trichlorofluoromethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl Chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
m and/or p-Xylene	ug/L	10 U	10 U	10 U	10 U
o-Xylene	ug/L	5.0 U	5.0 U	5.0 U	5.0 U

Analysis/ Analyte	Units	17-__
1 VOCs in Water by GC/MS		
Acetone	ug/L	5.0 U
Benzene	ug/L	5.0 U
Bromodichloromethane	ug/L	5.0 UJ
Bromoform	ug/L	5.0 UJ
Bromomethane	ug/L	5.0 U
2-Butanone	ug/L	5.0 U
Carbon Disulfide	ug/L	5.0 U
Carbon Tetrachloride	ug/L	5.0 U
Chlorobenzene	ug/L	5.0 U
Chloroethane	ug/L	5.0 U
Chloroform	ug/L	5.0 U
Chloromethane	ug/L	5.0 U
Cyclohexane	ug/L	5.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 UJ
Dibromochloromethane	ug/L	5.0 UJ
1,2-Dibromoethane	ug/L	5.0 U
1,2-Dichlorobenzene	ug/L	5.0 U
1,3-Dichlorobenzene	ug/L	5.0 U
1,4-Dichlorobenzene	ug/L	5.0 U
Dichlorodifluoromethane	ug/L	5.0 U
1,1-Dichloroethane	ug/L	5.0 U
1,2-Dichloroethane	ug/L	5.0 UJ
1,1-Dichloroethene	ug/L	5.0 U
cis-1,2-Dichloroethene	ug/L	5.0 U
trans-1,2-Dichloroethene	ug/L	5.0 U
1,2-Dichloropropane	ug/L	5.0 U
cis-1,3-Dichloropropene	ug/L	5.0 U
trans-1,3-Dichloropropene	ug/L	5.0 U
Ethyl Benzene	ug/L	5.0 U
2-Hexanone	ug/L	5.0 U
Isopropylbenzene	ug/L	5.0 U
Methyl Acetate	ug/L	5.0 U
Methyl tert-butyl ether	ug/L	10 U
Methylcyclohexane	ug/L	5.0 U
Methylene Chloride	ug/L	5.0 U
4-Methyl-2-Pentanone	ug/L	5.0 U
Naphthalene	ug/L	10 U
Styrene	ug/L	5.0 U
1,1,2,2-Tetrachloroethane	ug/L	5.0 U
Tetrachloroethene	ug/L	370
Toluene	ug/L	5.0 U
1,2,3-Trichlorobenzene	ug/L	5.0 U
1,2,4-Trichlorobenzene	ug/L	5.0 U
1,1,1-Trichloroethane	ug/L	5.0 U
1,1,2-Trichloroethane	ug/L	5.0 U

ASR Number: 4624  
Project ID: DGA7R400

RLAB Approved Sample Analysis Results  
Project Desc: Highway 3 PCE site sampling

11/23/2009

Analysis/ Analyte	Units	17-__
Trichloroethene	ug/L	5.0 U
Trichlorofluoromethane	ug/L	5.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	5.0 U
Vinyl Chloride	ug/L	5.0 U
m and/or p-Xylene	ug/L	10 U
o-Xylene	ug/L	5.0 U

United States Environmental Protection Agency  
Region VII  
901 N. 5th Street  
Kansas City, KS 66101

Date: \_\_/\_\_/\_\_\_\_

Subject: Data Disposition/Sample Release for ASR #: 4624  
Project ID: DGA7R400  
Project Description: Highway 3 PCE site sampling

From: Daniel Garvey  
SUPR/EFLR

To: Kaye Dollmann  
ENSV/RLAB

I have received and reviewed the Transmittal of Sample Analysis Results for the above-referenced Analytical Services Request(ASR) and have indicated my findings below by checking one of the boxes for Data Disposition.

I understand all samples will be disposed upon receipt of this form, unless samples are requested to be held. If I do not return this form all samples will be disposed of on \_\_\_\_\_.

- "RELEASED" - Read-only to all Region 7 employees and contractors that have R7LIMS "Customer" account. All Samples may be disposed of upon receipt of this form if not requested to be held.
- "Project Manager Accessible" - Available on the LAN in R7LIMS for my use only. All Samples may be disposed of upon receipt of this form if not requested to be held.
- "Archived" - THIS DATA IS OF A SENSITIVE NATURE. Any future reports must be requested through the laboratory. All samples may be disposed of upon receipt of the form if not requested to be held.

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Hold Samples - I have determined that the samples need to be held until \_\_\_\_\_, after which time they will be disposed of in accordance with applicable regulations.  
The reason for the hold is:

Samples are associated with a legal proceeding.

Question/Concern with data - possible reanalysis requested.

Other: \_\_\_\_\_

Le Mars Screening Level GCMS October 2009

Sample Number	Time of Analysis	Date of Analysis	Benzene in ppb	Toluene in ppb	PCE in ppb	Ethylbenzene in ppb	Total Xylene in ppb	Naphthalene in ppb	Comments
PCE-GW1 29-33	11:12	10/28/2009	30U	30U	243	30U	30U	30U	No other peaks, Dilution Factor 2
PCE-GW1 39-43	10:49	10/29/2009	0.5U	0.5U	0.5U	0.5U	0.5U	1.0U	No other peaks
PCE-GW2 29-33	13:13	10/28/2009	30U	30U	30U	30U	30U	30U	No other peaks, low level sample froze overnight and further analyses was not possible because sample was destroyed
PCE-GW2 39-43	12:37	10/29/2009	0.5U	0.5U	0.5U	0.5U	0.5U	1.0U	No other peaks
PCE-GW3 31-35	9:56	10/29/2009	0.5U	0.59	0.5U	0.5U	0.5U	1.0U	No other peaks
PCE-GW3 44.5-48.5	12:11	10/29/2009	0.5U	0.5U	0.5U	0.5U	0.5U	1.0U	No other peaks
PCE-GW4 31-35	17:45	10/28/2009	30U	30U	70	30U	30U	30U	No other peaks
PCE-GW4 41-45	18:10	10/28/2009	30U	30U	30U	30U	30U	30U	Contains: PCE at very low levels, low level sample froze overnight and further analyses was not possible because sample was destroyed
PCE-GW5 29-33	11:16	10/29/2009	0.5U	0.5U	1.57	0.5U	0.5U	1.0U	No other peaks
PCE-GW5 39-43	11:44	10/29/2009	0.5U	0.5U	0.5U	0.5U	0.5U	1.0U	Sample frozen but still sealed, no bubble when thawed
PCE-GW6 30-33	19:26	10/29/2009	10.5U	10.5U	545	10.5U	10.5U	21U	No other peaks, Dilution Factor 21
PCE-GW6 39-43	20:35	10/29/2009	1.0U	1.0U	1.0U	1.0U	1.0U	2.0U	No other peaks, Dilution Factor 2