

PHASE I ENVIRONMENTAL SITE ASSESSMENT
LEWIS AND CLARK RURAL WATER SYSTEM
IOWA EMERGENCY CONNECTIONS
SIOUX CENTER TO SHELDON, IOWA

GEOTEK #04-101-5



GEOTEK ENGINEERING & TESTING SERVICES, INC.



**GEOTEK ENGINEERING
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April 30, 2004

Lewis & Clark Rural Water System, Inc.
401 E. 8th Street, Suite 306
Sioux Falls, SD 57103

Attn: Mr. Troy Larson

Subj: Phase I Environmental Site Assessment
Lewis and Clark Rural Water System
Iowa Emergency Connections
Sioux Center to Sheldon, Iowa
GeoTek #04-101-5

Dear Mr. Larson:

We have completed a Phase I Environmental Site Assessment for the referenced project. We are transmitting three copies of our report. This work was done in accordance with your acceptance of our January 7, 2004 contract.

Please refer to our conclusions and recommendations for the major findings and recommendations we have made.

If you have questions or concerns regarding the information presented in this report, or if we can be of additional service, please contact our office.

GeoTek Engineering & Testing Services, Inc.

Tracy A. Michel
Project Manager

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SUMMARY

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-00 of the proposed Lewis and Clark Rural Water System, Iowa Emergency Connections from Sioux Center to Sheldon, Iowa. Any exceptions to, or deletions from, this practice are described in the Purpose and Scope of Services sections of the report and contract. This assessment has not revealed evidence of recognized environmental conditions in connection with the property.

INTRODUCTION

Purpose

This Phase I Environmental Site Assessment was conducted during the period of February 17 to April 30, 2004. The purpose of this Phase I Environmental Site Assessment was to evaluate the potential presence of hazardous substances and soil/groundwater contamination due to past/current land use practices at the site, or from nearby off-site operations.

Scope of Services

The scope of services for this assessment was performed in accordance with the American Society for Testing and Materials (ASTM) Standard E1527-00 included the following tasks:

1. Review of information on the geology and hydrogeology of the site vicinity. Review of available information, if any, regarding previous sampling and analysis of soil, groundwater or surface water conducted at the site.
2. Review of the subject property, records, and interview of individuals associated with the property regarding the present or past existence of suspect asbestos containing materials, environmental permits or licenses, hazardous or potentially hazardous substances, distressed vegetation, stained soil, unusual grade changes, random dumping or on-site disposal, suspect lead containing materials, suspect polychlorinated biphenyls (PCBs), and underground/aboveground storage tanks.



3. Conduct a site vicinity reconnaissance to identify nearby off-site facilities that could potentially impact the subject property.
4. Review of available historical resources such as aerial photographs, fire insurance maps, tax assessor records, recorded land title records, USGS topographic maps, street directories, county atlases, and building department records, to identify, as nearly as possible, past uses of the property.
5. Review of reasonably available regulatory agency information and records. Verbal and/or written communication with federal, state and local environmental regulatory agencies having jurisdiction to determine compliance with regulations concerning the usage, storage, treatment and disposal of hazardous substances.
6. Visually observe property for evidence of wetlands. Interview landowners for historic knowledge of presence of wetlands. If available, review a published wetlands map from USDA or US Fish & Wildlife Service.
7. Complete the Level 1 Contaminant Survey Checklist for each parcel in the project area.
8. Preparing a report presenting our observations, pertinent documents, opinions, and recommendations.

Significant Assumptions

This report presents the results of our work performed at the referenced site. This work was performed in accordance with our contract dated January 7, 2004 (Appendix A).

Limitations and Exceptions

Information contained herein was obtained through a limited work scope by means of interviews, document research, and on-site observations. Conclusions are based on available information. However, this is not to imply that this is all of the information that exists which may be pertinent to the environmental liabilities of the site. The intent of this study was to identify environmental problems that would be evident to an environmental professional and was not intended to represent an exhaustive research of all potential hazards which may exist. Furthermore, certain potential environmental hazards reported in this study may require more comprehensive analysis to fully assess their magnitude and financial impact.

This report is representative of present conditions only. Situations or activities which occur subsequent to this report and which result in adverse environmental impacts are not relevant to this study.

Special Terms and Conditions

The scope of our services did not include collecting or analyzing physical evidence for the presence or lack of contaminants such as asbestos, urea formaldehyde, mold, petroleum, PCBs, nitrates, herbicides, pesticides or insecticides, or radon gas unless stated above.

Similarly, an assessment of wetlands, mineral rights investigation, drinking water testing, indoor air quality, or environmental audits of operations, environmental practices or management was also not included in the scope of work.

With respect to our review of recorded land title records (if provided by Client), we have not provided an opinion as to marketability of title and have not otherwise warranted as to condition of title.

User Reliance

No individual, corporation, or interest other than Lewis and Clark Rural Water System, Inc. and Banner Associates may rely on this report without prior authorization from GeoTek Engineering & Testing Services, Inc.

SITE DESCRIPTION

Location and Legal Description

The site is an approximate 25-mile stretch of proposed water line easement, which also includes 4 municipal service connections and a reservoir/pump station site. The proposed emergency connection system stretches from Sioux Center north to Hull, and then east past Boyden and Sheldon, Iowa. Proposed Right of Way widths along the project site are as follows:

<u>Main Transmission Pipeline (16" & 18")</u>	
Permanent Easement.....	60 feet
Temporary Construction Easement.....	40 feet
Total.....	100 feet
<u>Service Pipelines (6", 8", 10" & 12")</u>	
Permanent Easement.....	50 feet
Temporary Construction Easement.....	30 feet
Total.....	80 feet

In addition to the proposed pipeline, a 4 to 5 acre reservoir site is proposed in Section 10-96-45. This area is currently cropland.



There are several property owners along the proposed route. Legal descriptions of properties on or adjacent to the proposed system are summarized in Table 1.

Site and Vicinity General Characteristics

The site and vicinity is agricultural land with farmsteads and residential properties. The vicinity is generally level with a few seasonal waterways.

Current Use of the Property

The site and vicinity is primarily agricultural land (cropland) with scattered farmsteads. Areas near Sioux Center have a few newer homes, an apartment building, and a municipal water facility. The proposed pipeline will also connect to municipal water systems in Hull, Boyden, and Sheldon, Iowa.

Description of Improvements

There are no structures within the proposed easements. Adjacent land has structures at several farmsteads.

Current Uses of Adjoining Properties

The vicinity is generally agricultural land with farmsteads, commercial farming operations, and residential properties.

A drive-by survey of the immediate site vicinity (approximately 500') revealed the following items of apparent significance such as suspect UST locations, potential hazardous waste generators, industrial properties, etc:

1. The Town of Sioux Center water treatment plant was formerly the municipal sewage plant. Lagoon areas have been filled and are currently CRP land with a grass cover.
2. The Sioux County Highway shop is located on the opposite side of 13th Avenue from the proposed pipeline at East 1st Street in Sioux Center, Iowa (Section 4-95-45, NW of Allan Kempers'). Evidence of underground petroleum storage was observed including two vent pipes and dispenser islands. A placard on the door also indicates chemical storage within the building. Evidence of uncontrolled releases was not noted.
3. An electrical substation was observed off-site to the northeast of the intersection of 330th Street and Harrison Avenue. Transformers may contain PCBs. Evidence of releases of transformer oil were not observed.

3. Small (<2000 gallon) aboveground tanks were noted at the following properties:
Dennis Jansen
Roger Bahrenfuss
Dennis Fiilr

USER PROVIDED INFORMATION

We have not been informed of environmental liens, activity or land use limitations, or a value reduction of the subject property due to environmental reasons. Previous environmental assessments are not known to exist for the site.

An abstract of title or other title records for the subject property were not available for review.

RECORDS REVIEW

Copies of regulatory lists reviewed are attached in Appendix B.

National Priority List

The U.S. Environmental Protection Agency (EPA) National Priority List (NPL) was reviewed for facilities within an approximate one-mile radius of the subject property. The NPL is a list of federal superfund sites of known releases or threatened releases of hazardous substances, pollutants or contaminants throughout the United States. The NPL serves to identify sites that appear to warrant remedial actions or investigations.

There were no listed sites within the radius reviewed.

CERCLIS List

The U.S. E.P.A. CERCLIS (Comprehensive Environmental Cleanup Liability Information System) list was reviewed for facilities within an approximate one-half mile radius of the subject property. The CERCLIS list is an automated inventory system used by the EPA to keep record of hazardous sites or potential uncontrolled hazardous sites which may require cleanup based upon state investigation efforts and upon notifications received as provided by the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA or "Superfund"). It does not necessarily imply that an environmental problem exists at any particular site listed. The sites are in various stages of investigation.

There were no listed sites within the radius reviewed.

Archive CERCLIS List

The U.S. E.P.A. CERCLIS (Comprehensive Environmental Cleanup Liability Information System) list of NFRAP (no further remedial action planned) sites was reviewed for facilities within an approximate one-half mile radius of the subject property.

There were no listed sites within the radius reviewed.

RCRIS List

The U.S. E.P.A. Resource Conservation and Recovery Information System (RCRIS) list was reviewed for facilities within an approximate one-fourth mile radius of the subject property (one mile radius for treatment, storage, and disposal facilities, and facilities subject to corrective action). The RCRIS site list is a printout of permitted generators and transporters of hazardous waste, and hazardous waste treatment, storage or disposal facilities regulated by the RCRA Act of 1976.

LQG = large quantity generator, over 1000 kilograms (about 2200 lbs)/month of hazardous waste.

SQG = small quantity generator, 100-1000 kg (about 220-2200 lbs)/month of hazardous waste.

CESQG = conditionally exempt small quantity generator, less than 100 kg (about 220 lbs)/month of hazardous waste.

Listed sites within the radius reviewed were:

1. Safety Kleen Household Hazardous Waste, 931 13th Ave NE, Sioux Center, no info. on quantity.

Emergency Response Notification System

This EPA list of reported spills was reviewed for facilities within an approximate ¼ mile radius of the subject property.

There were no listed sites within the radius reviewed.

Iowa Department of Natural Resources (IDNR)

A. Regulated USTs within an approximate 1/4th mile radius are listed below. The tank status is also given. Some sites may be beyond the 1/4 mile radius, however lack of a specific street address prevented precise locating.

1. Sioux Feed Inc., Rte. 1 Box 30A, Sioux Center,
2. Joe's Ready Mix, South Pit, Sioux Center,
3. Irene Ranschau, Box 210, Sioux Center
4. Richard Maassen, Rte. 2 Box 85, Hull
5. Henry Hoekstra, 3145 Harrison Avenue, Hull
6. Howard Te Slaa, Rte. 2 Box 6, Hull
7. Arlen De Wit, Rte. 1, Hull
8. Gerrit Nettinga, Rte. 2, Hull
9. Henry C. Moss, K52, Hull
10. John Bakker, Rte. 23 Box 106 Hwy 18, Hull
11. John Stegemann, no address, Boyden

B. Regulated ASTs within an approximate 1/4th mile radius. Some sites may be beyond the 1/4 mile radius, however lack of a specific street address prevented precise locating. Farm fuel tanks less than 1100 gallons capacity are exempt from registration.

1. Van Wyk, PO Box 389, Sheldon

C. Leaking Underground Storage Tank Report

Reported leaking underground storage tank (LUST) sites within an approximate 1/2-mile radius are listed below. These sites are in various stages of investigation. Some sites may be beyond the 1/2 mile radius, however lack of a specific street address prevented precise locating.

- IDNR #8LTA20 Sioux Feed Inc., Rte. 1 Box 30A, No Action Required
- IDNR #9LTL16 Maintenance Shop, 1288 E. 1st Street, No Action Required
- IDNR #8LTQ07 County Shed, North Sherman, No Action Required
- IDNR #8LTU88 D&J Hatchery Inc., 916 Main Street, No Action Required
- IDNR #9LTF10 Farmers Coop Assoc. Lumberyard Site, Railroad & Main Street, No Action Required
- IDNR #7LTA01 Kum & Go #771, Jct Hwy 18 & 60, Sheldon, High Risk
- IDNR #7LTG79 Hardee's Restaurant, Hwys 18 & 60, Sheldon, High Risk
- IDNR #7LTN14 Sheldon Apco, 208 West Park Street, No Action Required
- IDNR #9LTD75 Northwest Iowa Community College, 603 West Park Street, No Action Required

The above listed businesses were not observed adjacent to the site during the site visit.

D. Registry of Hazardous Waste or Hazardous Substance Disposal Sites

This list contains hazardous waste or hazardous substance disposal sites. The list was reviewed for sites within an approximate one-mile radius.

There were no listed sites within the radius reviewed.

E. Iowa Permitted Solid Waste Management Facilities

This list contains mostly active, but also some closed landfills, and was reviewed for facilities within an approximate one half-mile radius.

There were no listed sites within the radius reviewed.

HISTORICAL RESOURCES REVIEW

Aerial Photograph Review

A review was conducted of available historical aerial photographs from various sources. Photographs for various portions of the site from 1938, 1962, 1968, 1973, 1978, 1984, 1990, and 2004 were reviewed. The following pertinent information about the site and vicinity was obtained from the review. The photo source is listed. Copies of the photos (where available) are attached in Appendix C.

- * 1938 – (O'Brien County only) USDA Soil Conservation Service (Scale 1" = 1320')

The site and vicinity appears to be vacant land. Railroad tracks along Highway 60 are not seen. The Floyd River appears as today.

- * 1962 – (O'Brien County only) USDA Soil Conservation Service (Scale 1" = 660')

The site and vicinity remain as previously seen.

- * 1968 – (O'Brien County only) USDA Soil Conservation Service (Scale 1" = 660')

The site and immediate vicinity remains as agricultural land.

- * 1973 – (Entire Site) Sioux County Highway Department (Scale 1" = 660')

The site is primarily agricultural land and farmsteads, as today. The former sewage lagoons are seen east of the current water treatment plant in Sioux Center. No apartments or newer housing development are present at Sioux Center. A small structure is seen at the current location of the electrical substation in Section 33-97-45. A gravel pit is seen across the road to the north of the site at Sheldon in Section 19-97-42.

- * 1978 – (O'Brien County only) USDA Natural Resources Conservation Service (Scale 1" = 660')

The site and vicinity remain as previously seen.

- * 1984 – (Entire Site) Sioux County Highway Department (Scale 1" = 400')

The site and vicinity remain as previously seen.

- * 1990 – (Entire Site) USDA Natural Resources Conservation Service (Scale 1" = 660')

The sewage lagoons are no longer seen, and the water treatment plant is now seen. The housing development is present in the northeast quarter of Section 4-95-45 at Sioux Center. The apartment building is not present.

- * 2004 – (Entire Site) Horizons Inc. via HDR Engineering Inc. (Scale 1" = 200')

Carriage House Apartments have been added adjacent to the site in Sioux Center. The site appears as today.

City Directories

The subject property consists of rural land, therefore city directory information was not available.

Fire Insurance Maps

The subject property consists of rural land, therefore fire insurance map information was not available.

Topographic Maps

A review was conducted of available historical topographic maps from various sources. The following pertinent information regarding the subject property and vicinity was observed (Figures 1A-E).

* 1964 Sioux Center, Iowa 7.5-Minute Series Map; Photorevised 1980

Beginning at the current location of the Sioux Center Water Treatment Plant, the site is mostly vacant land or agricultural land. A sewage disposal area is indicated in Section 9-95-45. A few farmsteads are shown along the proposed path, as seen today. A newer housing development in Section 4-95-45 is shown as an addition to the map in the 1980 revision.

The elevation of the site ranges from 1380-1420' above mean sea level. Unnamed intermittent streams are indicated in nearly each mile section, with drainage generally to the east. Section line roads appear as today.

* 1964 Hull, Iowa 7.5-Minute Series Map

The site is mostly vacant land or agricultural land. A few farmsteads are shown along the proposed path, as seen today.

The elevation of the site ranges from 1410-1480' above mean sea level. Unnamed intermittent streams are indicated in nearly each mile section, with drainage generally to the east. Section line roads appear as today.

* 1964 Boyden, Iowa 7.5-Minute Series Map

The site is mostly vacant land or agricultural land. A few farmsteads are shown along the proposed path, as seen today.

The elevation of the site ranges from 1390-1460' above mean sea level. Unnamed intermittent streams are indicated in nearly each mile section, with drainage generally to the south. The West Branch Floyd River is located in Section 27-97-44. Section line roads appear as today.

* 1964 Matlock, Iowa 7.5-Minute Series Map

The site is mostly vacant land or agricultural land. A few farmsteads are shown along the proposed path, as seen today.

The elevation of the site ranges from 1420-1480' above mean sea level. Unnamed intermittent streams are indicated in nearly each mile section, with drainage generally to the north or south. Section line roads appear as today.

* 1964 Sheldon, Iowa 7.5-Minute Series Map

The site is mostly vacant land or agricultural land. A few farmsteads are shown along the proposed path, as seen today. There are several gravel pits in the area, although none are immediately adjacent to the site.

The elevation of the site ranges from 1380-1400' above mean sea level. Unnamed intermittent streams are indicated in nearly each mile section, with drainage towards the Floyd River, intersecting the subject site in Section 30-97-42. Section line roads appear as today.

SITE RECONNAISSANCE

Methodology and Limiting Conditions

Exterior observations were made by traversing the perimeter of the property. These minimum maintenance roads were closed during our site visit: 330th from Harrison to Hickory, 310th from Ironwood to Jackson, and 310th from Marsh Avenue to McKinley. The closed road on 330th was directly viewed over the entire mile. The sections on 310th Street were partially traversed on foot with the remainder viewed with binoculars.

Six inches of snow cover over most of the site limited our view of the land surface during the February 27, 2004 site visit (Sioux Center to Hull). Much of the snow had melted for the portion of the site visited on March 9, 2004 (Hull to Sheldon).

Hydrogeology

Geologic logs of the Iowa Department of Natural Resources indicate the site is underlain by Quaternary Till. Till is a heterogeneous mixture of boulders, sand, silt, and clay. A layer of loess (wind-deposited silt) may be present at the surface. Till thickness ranges from 250' to nearly 600' beneath the site.

Beneath the surficial deposits may be shale deposits of the Carlile, Greenhorn, and Graneros Member. The Dakota Sandstone is the bedrock unit beneath the till and shale (Munter, 1983).

Shallow groundwater may be present within 10' to 15' of the land surface. The groundwater gradient is often in the direction of the topographic gradient. Gradient varies within the study area, but is generally to the east towards the Floyd River.

Groundwater is also present within the Dakota Sandstone and is considered an aquifer (Munter, 1983).

Soils on the site can generally be divided into three associations (O'Connor, 1990 & Dankert, 1981).

Galva-Colo-Calco Association: These soils are nearly level and gently sloping, well drained to poorly drained silty soils that formed in loess (wind-deposited silt) and alluvium on bottomland and stream benches.

Primghar-Galva-Marcus Association: These soils are nearly level to gently sloping, somewhat poorly drained, well drained, and poorly drained silty soils that formed in loess on uplands.

Galva-Radford Association: These soils are nearly level to moderately sloping, well drained and somewhat poorly drained silty soils that formed in loess and alluvium on uplands, bottomland, and alluvial fans.

General Site Setting

The subject site was visited on February 27 (330th Street & Harrison Avenue to Sioux Center) and March 9 (330th Street & Harrison to Sheldon). The reconnaissance visit was performed to make visual observations of existing site conditions and land use practices.

The site is agricultural land, pasture, and residential land. Proposed right-of-way is 80' to 100' wide. In addition to the proposed pipeline, a 4 to 5 acre reservoir site is proposed in Section 10-96-45. This area is currently cropland.

Evidence of cisterns, water supply wells, sumps, distressed vegetation, unusual grade changes, surface stains, or on-site waste disposal was not observed on-site.

Note that our site observations were limited by about 6" of snow cover. Photographs of the site area attached in Appendix D.

Hazardous or Potentially Hazardous Materials

Hazardous or potentially hazardous materials were not observed or reported to exist on-site. Agricultural and lawn chemicals such as herbicides, pesticides, insecticides, fertilizers, etc., have likely been applied to the site in the past. If used or handled on-site, there is potential for uncontrolled releases to have occurred. We presume there is no concern regarding agricultural chemical usage at crop/lawn application rates. Evidence of uncontrolled releases was not observed.

PCB Review

Several pole and pad mounted electrical transformers were observed along the path of the proposed site. The transformers are suspected to contain polychlorinated biphenyls (PCBs). Markings indicating PCB content were not observed. Evidence of leaks was not observed.

Underground/Aboveground Storage Tank Review

Evidence of aboveground or underground storage tanks (ASTs/USTs) was not observed on-site. Tanks were noted on a few adjacent farmsteads as indicated in the site vicinity section. Evidence of uncontrolled releases from the nearby off-site tanks was not observed.

INTERVIEWS

Level 1 Contaminant Survey questionnaires were mailed to property owners along the proposed path and are attached in Appendix E. Of the 101 properties along the path, 75 questionnaires were completed, 4 owners indicated they would not respond, and 22 received no response. A tabulation of property owner questionnaire returns is summarized in Table 2. The consultant's portion of the questionnaire is summarized in the "Site Reconnaissance" and "Records Review" sections of this report. Significant items were not indicated by the consultant's review.

A review of property owner responses indicates primarily "No" responses. Seven "Yes" responses were received and are detailed below. The "yes" items were not considered environmentally significant with respect to the project. In addition, the "yes" items are considered off-site but nearby on their respective farmsteads.

1. Gertrude & John DeGroot – Yes response to "pit, pond, or lagoon" on property referred to an underground concrete manure pit.
2. John DeGroot – Yes response to "pit, pond, or lagoon" on property referred to an underground concrete manure pit.
3. Galen & Sharon Drent – Yes response to "pit, pond, or lagoon" on property referred to an underground concrete manure pit.
4. Evert & Jennie Van Maanen – Yes response to "pit, pond, or lagoon" on property referred to a hog manure lagoon.
5. David & Dorene Vander Zwaag – Yes response to "pit, pond, or lagoon" on property referred to a septic tank for household sewage.
6. Corwin & Harriet Dolieslager – Yes response to "waste materials dumped on property" referred to a former silage pit now used for household trash and brush which is periodically burned.

7. City of Sioux Center – City utility supervisor, Murray Hulstein noted the former wastewater treatment facility east of the current water treatment plant. Mr. Hulstein indicated wastewater treatment was a trickling filter system, and there were no “treatment lagoons.” Filters were removed and the site was filled with soil. The area is currently farmed.

FINDINGS

The following summarizes our professional opinions regarding the Phase I Environmental Site Assessment performed on the subject property, based on the information presented in the previous sections of this report.

- * The site was reviewed for evidence of stained surface areas, unusual grade changes, distressed vegetation, or on-site waste disposal. Unusual items were not noted.
- * Potentially asbestos-containing building materials were not observed on-site.
- * Potential lead-based paint was not observed on-site.
- * Several electrical transformers were observed along the subject path. The transformers are suspected to contain polychlorinated biphenyls (PCBs). Markings indicating PCB content were not observed. Evidence of leaks was not observed.
- * Hazardous or potentially hazardous materials were not observed or reported to exist on-site. Agricultural and lawn chemicals such as herbicides, pesticides, insecticides, fertilizers, etc., have likely been applied to the site in the past. Evidence of uncontrolled releases of ag chemicals or fertilizers was not observed.
- * Aboveground or underground storage tanks were not observed on-site.
- * The IDNR has several reports of leaks, spills or releases near the site. The releases are not suspected to impact the site. The subject site was not listed.
- * Excluding regulated storage tanks (USTs and ASTs) there is one off-site property on other regulatory listings of the US EPA and IDNR. The listing is not considered environmentally significant with respect to the subject property.

OPINION

We recommend no further assessment unless other unanticipated evidence of an environmental concern arises.

If there is proposed site earthwork involving over 1 acre of land (i.e. construction), the property may become subject to federal storm water rules.

CONCLUSIONS

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-00 of the proposed Lewis and Clark Rural Water System, Iowa Emergency Connections from Sioux Center to Sheldon, Iowa. This assessment has not revealed evidence of recognized environmental conditions in connection with the property.

DEVIATIONS

Any exceptions to, or deletions from, this practice are described in the "Scope of Services" section of this report.

ADDITIONAL SERVICES

Asbestos Review

The subject property was surveyed for obvious suspected asbestos containing building materials. As there are no structures on-site, suspect asbestos containing building materials were not observed. Historical information has not indicated past structures on the site, which would indicate a potential for subsurface asbestos-containing debris.

Lead Review

As there are no structures on-site, suspect lead-based paint was not observed.

Wetlands

US Fish & Wildlife Service National Wetlands Inventory maps from the USGS National Map were reviewed. The map was based on aerial photos from May 1983. There were no wetlands mapped on-site however, intermittent streams throughout the site would be considered wetlands. Copies of the maps are attached in Appendix F.

REFERENCES

- Burkhart, M.R., Availability and Quality of Water from the Dakota Aquifer, Northwest Iowa, US Geological Survey Water-Supply Paper 2215, 1984.
- Dankert, Wayne N., et al., Soil Survey of O'Brien, Iowa, USDA Soil Conservation Service, 1981.
- Iowa Department of Natural Resources, Registered USTs and LUST sites, February 9, 2004.
- Iowa Department of Natural Resources, Permitted Solid Waste Management Facilities, December 30, 2003.
- Iowa Department of Natural Resources, Registry of Hazardous Waste or Hazardous Substance Disposal Sites & Hazardous Waste Remedial Fund, February 17, 2004.
- Iowa Division of Public Health Engineering, State Department of Health, Iowa Public Water Supply Data, 1964.
- Iowa State Fire Marshall, Registered AST sites, August 4, 2003.
- Munter, J.A. and others, Hydrology and Stratigraphy of the Dakota Formation in Northwest Iowa, Iowa Geological Survey Water Supply Bulletin, November 13, 1983
- O'Connor, Thomas, Soil Survey of Sioux County, Iowa, USDA Soil Conservation Service, 1990.
- US Environmental Protection Agency (EPA), Archive CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System), January 15, 2004.
- US Environmental Protection Agency (EPA), CERCLIS and NPL (National Priorities List), January 9, 2004.
- US EPA, Emergency Release Notification System List, February 8, 2004.
- US EPA, RCRIS Facility List, November 9, 2003.
- US Geological Survey, Boyden, Iowa Quadrangle, 7.5-minute series map, 1964.
- US Geological Survey, Hull, Iowa Quadrangle, 7.5-minute series map, 1964.
- US Geological Survey, Matlock, Iowa Quadrangle, 7.5-minute series map, 1964.
- US Geological Survey, Sheldon, Iowa Quadrangle, 7.5-minute series map, 1964.
- US Geological Survey, Sioux Center, Iowa Quadrangle, 7.5-minute series map, 1980.
- Wahl, Kenneth D., and others, Hydrology of the Surficial Aquifer in the Floyd River Basin, Iowa, Iowa Geological Survey Water Supply Bulletin, Number 12, 1982.

SIGNATURE OF ENVIRONMENTAL PROFESSIONALS

The conclusions and recommendations contained in this report present our professional opinions. These opinions were arrived in accordance with currently accepted hydrogeological and engineering practices at this time and location. Other than this, no warranty is implied or intended.

Tracy A. Michel
Project Manager

This report was reviewed by:

Jerald K. Zutz
Project Manager



Figures

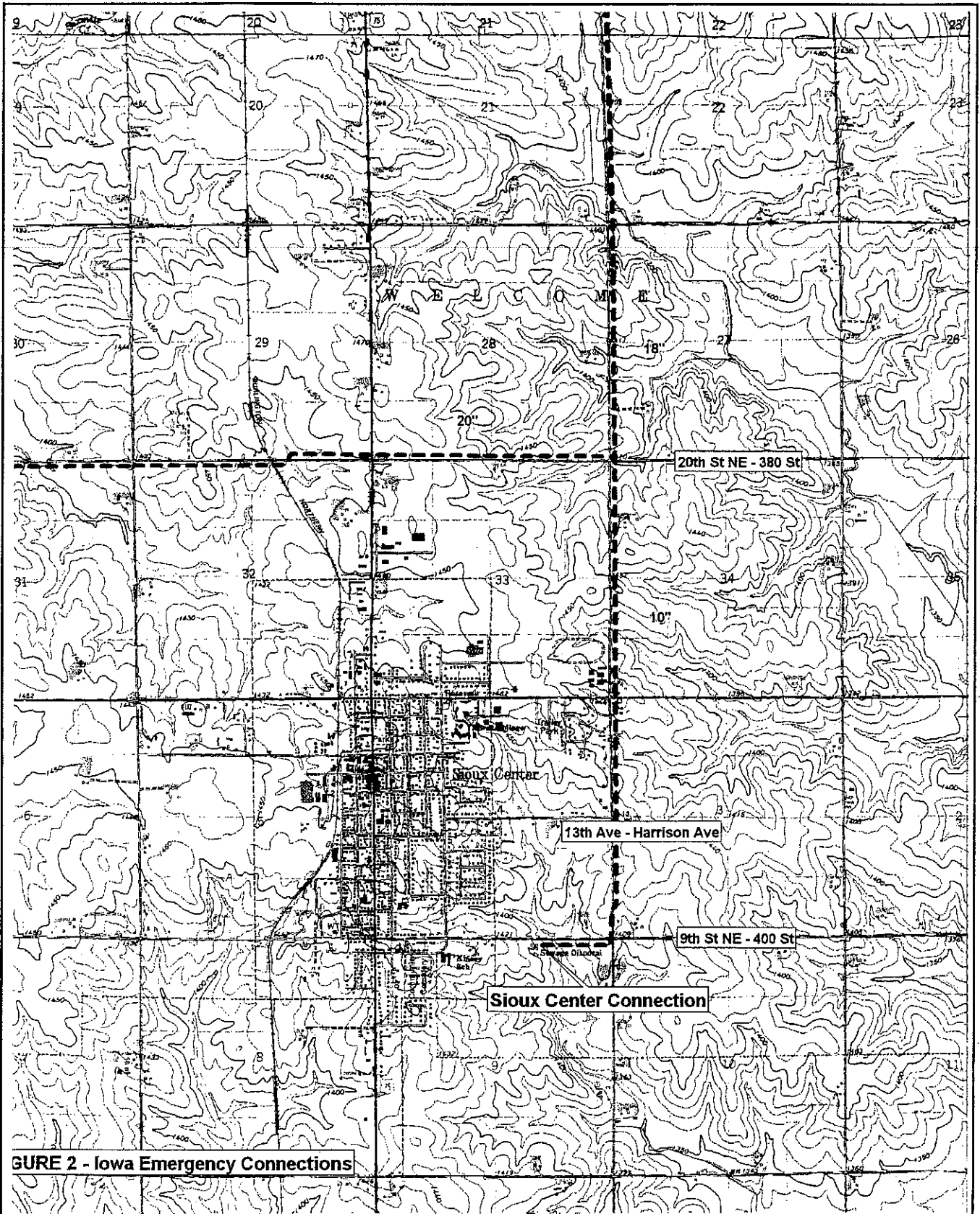


FIGURE 1A
 TOPOGRAPHIC MAP/SITE MAP
 LEWIS & CLARK IOWA EMERGENCY CONNECTIONS
 SIOUX CENTER TO SHELDON, IOWA

PROJECT #: 04-101-5	
DRAWN BY:	CHECKED BY:
GEOTEK ENGINEERING & TESTING SERVICES, INC.	

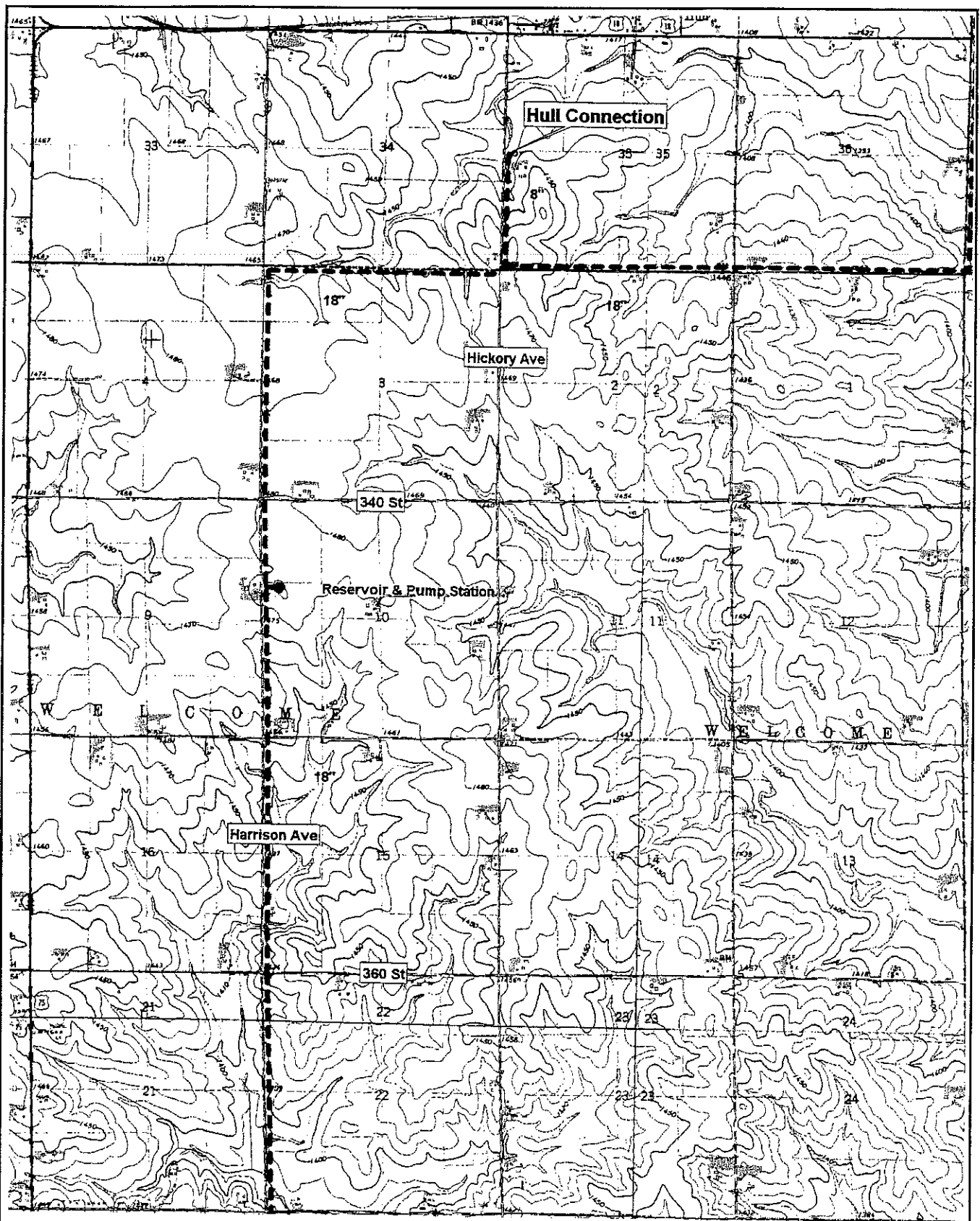


FIGURE 1B
 TOPOGRAPHIC MAP/SITE MAP
 LEWIS & CLARK IOWA EMERGENCY CONNECTIONS
 SIOUX CENTER TO SHELDON, IOWA

PROJECT #: 04-101-5

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CHECKED BY:

**GEOTEK ENGINEERING &
 TESTING SERVICES, INC.**

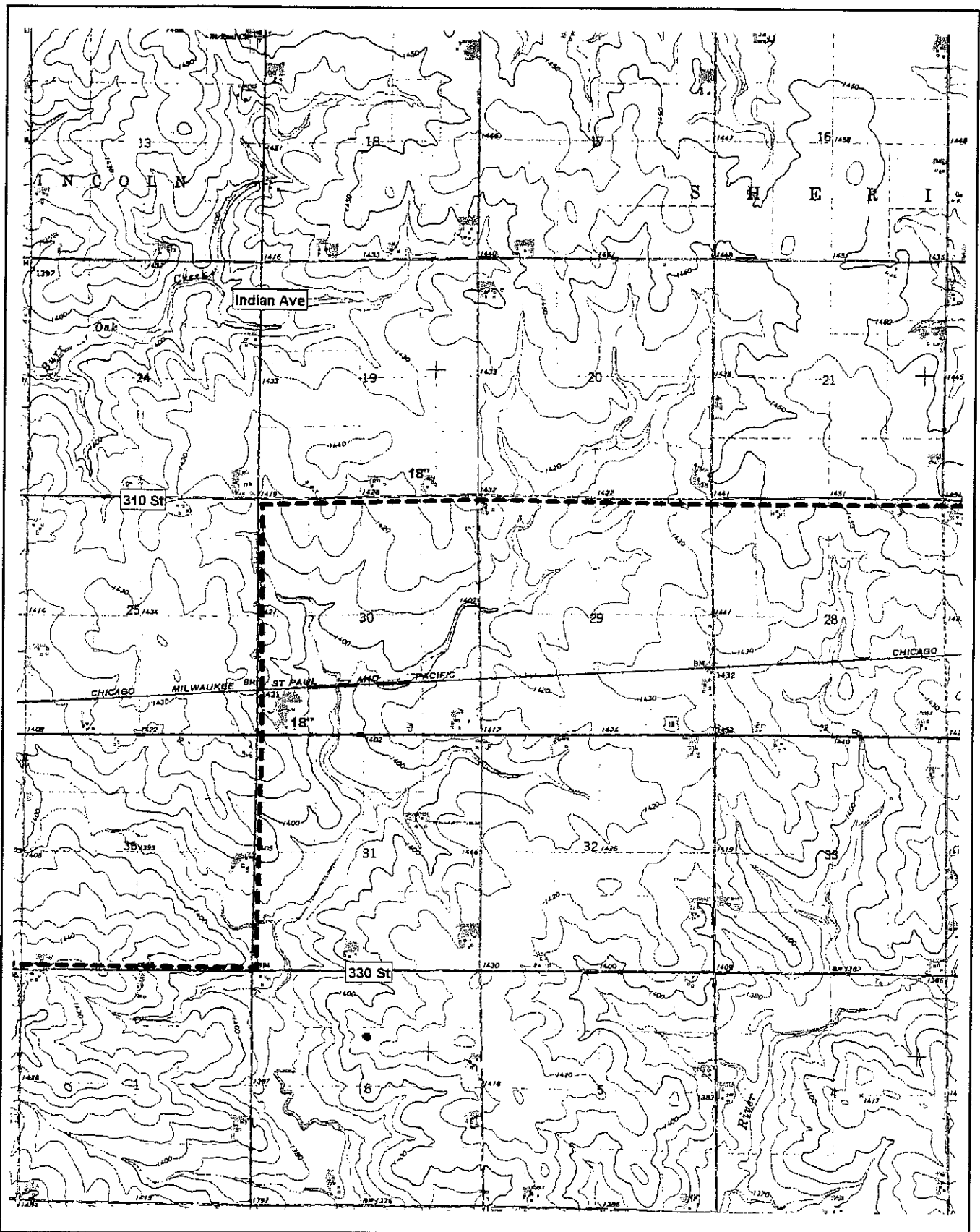


FIGURE 1C
 TOPOGRAPHIC MAP/SITE MAP
 LEWIS & CLARK IOWA EMERGENCY CONNECTIONS
 SIOUX CENTER TO SHELDON, IOWA

PROJECT #: 04-101-5

DRAWN BY:

CHECKED BY:

GEOTEK ENGINEERING &
 TESTING SERVICES, INC.

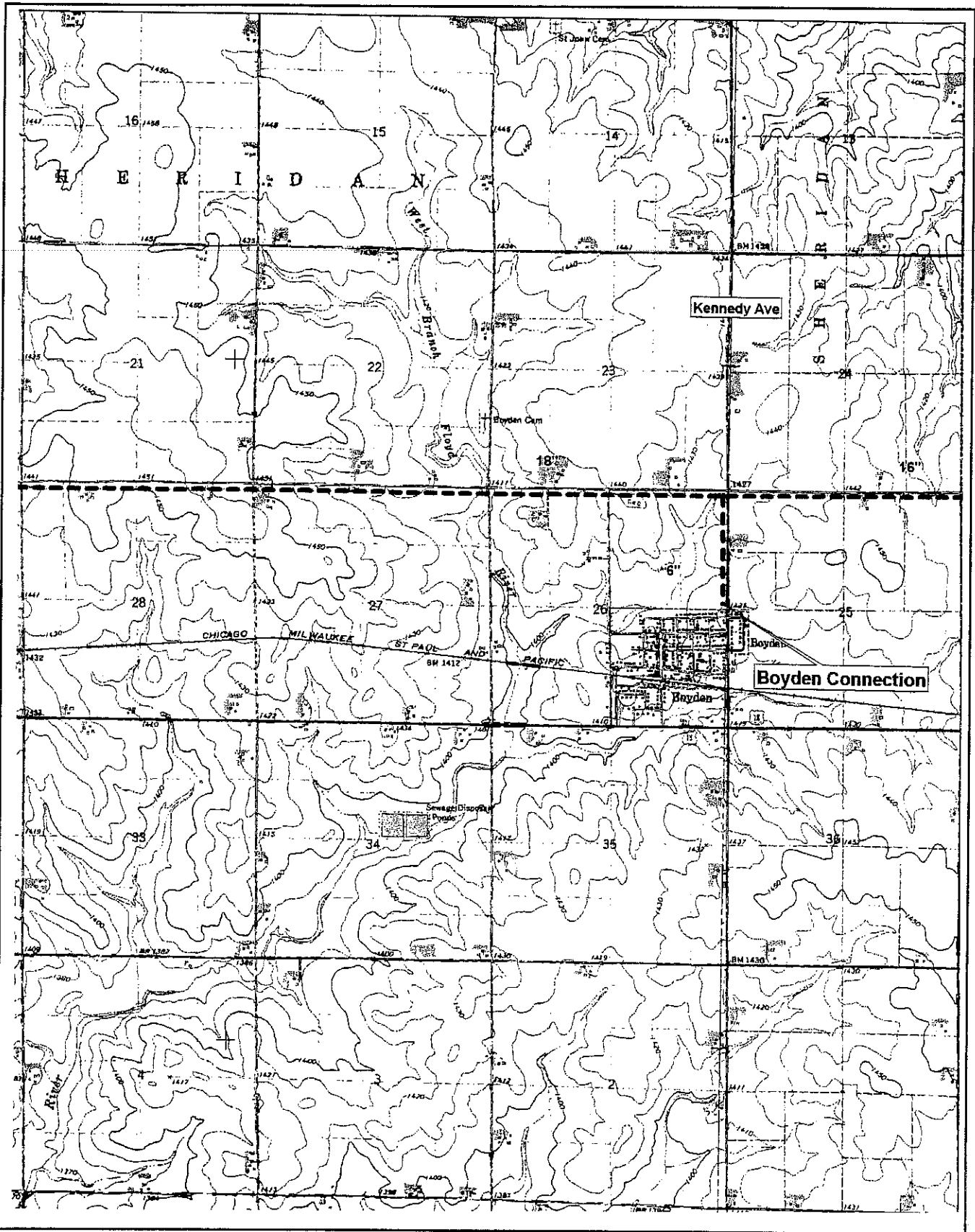


FIGURE 1D
 TOPOGRAPHIC MAP/SITE MAP
 LEWIS & CLARK IOWA EMERGENCY CONNECTIONS
 SIOUX CENTER TO SHELDON, IOWA

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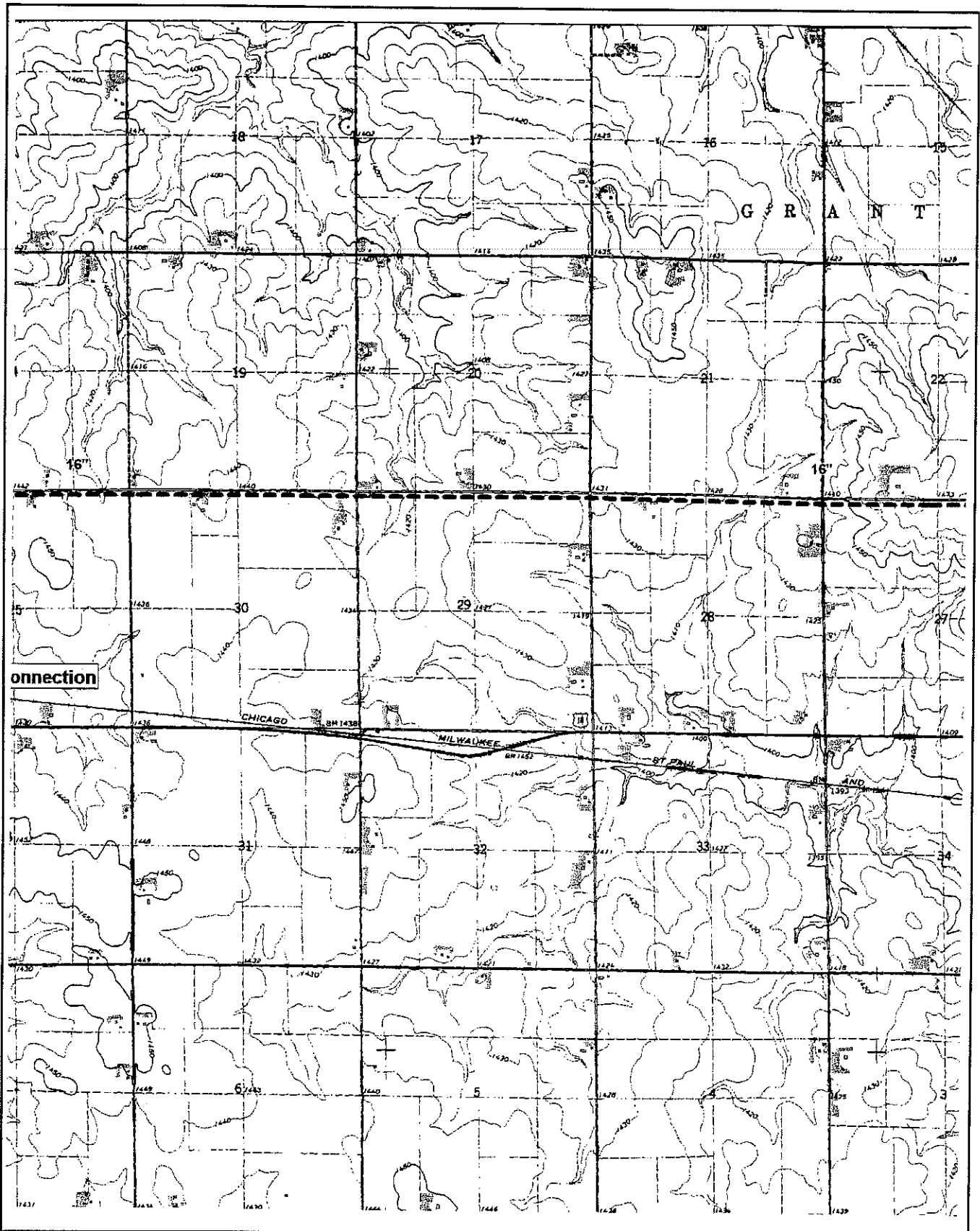


FIGURE 1E
 TOPOGRAPHIC MAP/SITE MAP
 LEWIS & CLARK IOWA EMERGENCY CONNECTIONS
 SIOUX CENTER TO SHELDON, IOWA

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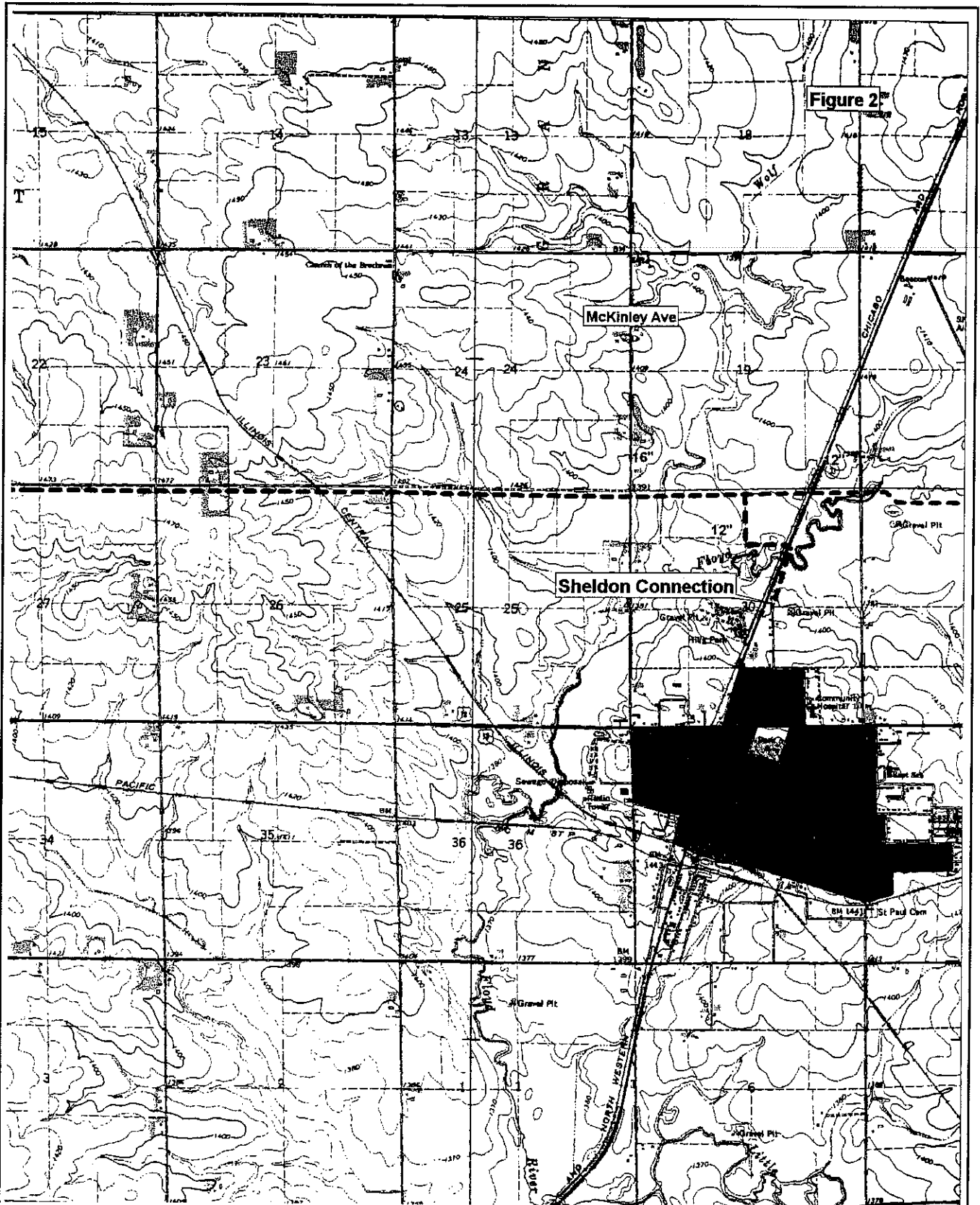


FIGURE 1F
 TOPOGRAPHIC MAP/SITE MAP
 LEWIS & CLARK IOWA EMERGENCY CONNECTIONS
 SIOUX CENTER TO SHELDON, IOWA

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