



PHASE I ENVIRONMENTAL SITE ASSESSMENT

Union Corporate Center Lot 13-2
Corporate Drive
Union, Missouri

Presented to:



Hazardous Waste Program - Brownfields Voluntary Cleanup Section

PO Box 176
Jefferson City, MO 65102

Presented by:

SCS ENGINEERS

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Fairview Heights, IL 62208
(618) 628-2001

June 2018
File No. 27218177.00

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Prepared for:

Missouri Department of Natural Resources
Hazardous Waste Program-Brownfields/Voluntary Cleanup Program
PO Box 176
Jefferson City, Missouri 65102-0176

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June 19, 2018
File No. 27218177.00

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Missouri Department of Natural Resources
Hazardous Waste Program – Brownfields/Voluntary Cleanup Program
PO Box 176
Jefferson City, Missouri 65102-0176

Subject: **Phase I Environmental Site Assessment**
Union Corporate Center Lot 13-2
Corporate Drive
Union, Missouri

Dear Ms. O'Keefe:

SCS Engineers has prepared this Phase I Environmental Site Assessment (Phase I ESA) report for the above referenced site. The Phase I ESA was completed in general accordance with the *ASTM E 1527-13 Standard Practice for Environmental Assessments: Phase I Environmental Site Assessment Process*.

SCS Engineers appreciates the opportunity to provide these environmental services. If you have questions or comments, do not hesitate to contact our office at (913) 681-0030.

Sincerely,



Randy Homburg
Staff Professional
SCS ENGINEERS

rlh/slm



Susan L. McCart, P.E., P.G.
Senior Project Manager
SCS ENGINEERS

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EXECUTIVE SUMMARY

SCS Engineers (SCS) has completed a Phase I Environmental Site Assessment (Phase I ESA) of the Union Corporate Center Lot 13-2 property located on Corporate Drive in Union, Franklin County, Missouri. The subject site consists of an approximately 36.98-acre property, currently undeveloped and used as agricultural farmland, and owned by the Union Development Corporation.

A summary of findings is provided below. However, details are not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein.

- The subject site is located between an area of recent commercial and industrial development to the north, west, and south, and recent residential development to the east. The subject site is currently undeveloped and used primarily as agricultural farmland. Based on review of historical resources, the site was generally undeveloped and rural, and used as agricultural farmland since at least 1901. There does not appear to have been any buildings, development or improvements on the property that represent an environmental concern to the subject site.
- Adjoining properties appear to have been generally undeveloped and rural land starting in 1901 and from 1945 to 1953, with only a small farm appearing to the west of the subject site, and then a small residential development to the east appearing from 1964 to 1995. From 2001 through the present, the area surrounding has experienced significant development, with the construction of Progress Parkway and Corporate Drive, commercial and industrial developments to the west and north, and a large residential development to the east. None of the surrounding developments or properties appear to represent an environmental concern to the subject site.
- No items of environmental concern were identified during the site reconnaissance.
- The subject site was identified twice (once as Union Development Center, and as Union Corporate center – Union Corporate Center – Proposed Missouri Certified Site) in the ASTM-required SHWS regulatory database. Based on information provided in the Geosearch Database report, the subject site is under assessment and no contaminants of environmental concerns have been identified.
- No offsite facilities were listed in the ASTM-required standard databases, within the ASTM-required search radius for each database.
- Unmapped facilities were not identified in the Geosearch report in the ASTM-required standard databases.

1.0 INTRODUCTION

SCS Engineers (SCS) was retained by the Missouri Department of Natural Resources (MDNR) – Brownfields/Voluntary Cleanup Program (BVCP) to perform a Phase I Environmental Site Assessment (Phase I ESA) of the Union Corporate Center Lot 13-2 property located on Corporate Drive in Union, Franklin County, Missouri.

1.1 OBJECTIVE

The purpose of the Phase I ESA was to determine the presence of recognized environmental conditions (RECs) at or adjacent to the subject site, as a result of current or historic site land use or from a known or suspected offsite source. ASTM Practice E 1527-13 defines a REC as: *the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property.*

ASTM Practice E 1527-13 further defines a controlled REC as: *a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls;* and a historical REC as: *a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls.*

1.2 SCOPE OF SERVICES

This Phase I ESA is based on:

- Reviews of federal, tribal, state, and local government records.
- Visual inspections of the site and adjoining properties performed on June 4, 2018.
- Review of historical site use information (topographic maps, aerial photographs, fire insurance maps, existing reports, etc.).
- Commonly known or reasonably ascertainable information about the site (e.g., interviews with appropriate regulatory agency personnel and review of agency files review of available documents, interviews with other knowledgeable persons).
- Degree of obviousness of the presence or likely presence of contamination at the site, and the ability to detect the contamination by appropriate investigation.
- Information provided as a result of the additional inquiries conducted by the user.

1.3 ASSESSMENT STANDARDS AND LIMITATIONS

This Assessment was conducted in general accordance with the following:

- Environmental Protection Agency (EPA), 40 CFR Part 312, Standards and Practices for All Appropriate Inquiries; Final Rule (AAI);
- American Society for Testing and Materials (ASTM) Standard Practice for Phase I Environmental Site Assessment Process E 1527-13; and
- The scope, conditions, and limitations of the Contract.

The Client understands the above-referenced EPA and ASTM standards were not developed to identify all environmental risk to property. The standards were developed to allow a user to qualify for the innocent purchaser defense, bona fide prospective purchaser defense, and contiguous property owner defense to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, a.k.a Superfund) liability. This Assessment is intended to constitute an appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice, as part of the due diligence process required by CERCLA, the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the Small Business Liability Relief and Brownfields Revitalization Act of 2002 (Acts).

This assessment focused on potential sources of hazardous substances and petroleum products that could be considered a *recognized environmental condition* and liability due to their presence in significant concentrations (e.g., above acceptable limits set by the federal, state, or local government) or due to the potential for exposure and risk due to contaminant migration and complete exposure pathways (e.g., soil vapor inhalation or groundwater ingestion). Materials that contain substances that are not currently deemed hazardous by the United States Environmental Protection Agency (US EPA) or the Missouri Department of Natural Resources (MDNR) were not included in the assessment.

Unless specifically included in SCS's scope of services, building materials such as asbestos, lead-based paint, lead in drinking water, urea formaldehyde, and pressure-treated lumber are not considered in this report, nor are building issues such as fire safety, indoor air quality (with the possible exception of vapor intrusion), mold, or similar matters. SCS did not evaluate the site for compliance with land use, zoning, or similar laws. This assessment also excludes regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, and high-voltage power lines. This report is not intended to be an environmental compliance audit.

Hazardous substances occurring naturally in plants, soils, and rocks (e.g., heavy metals, naturally occurring asbestos, or radon) are not typically considered in these investigations. Similarly, construction debris (e.g., discarded concrete, asphalt) is not considered, unless obvious indications suggest that hazardous substances are likely to be present in significant concentrations or likely to migrate.

An evaluation of business environmental risk associated with a parcel of commercial real estate may necessitate investigation beyond that included herein.

SCS assumes no responsibility for the accuracy of information obtained from, compiled by, or provided by third-party sources, such as regulatory agency listings. Unless obviously inaccurate or if information exists to the contrary, SCS assumes information collected during this environmental site assessment is accurate and correct. Unless warranted, information collected has not been independently validated as part of this assessment.

The following information is the responsibility of the user (40 CFR 312.22) and is addressed in a questionnaire provided to the user:

- Specialized knowledge or experience of the user.
- The relationship of the purchase price to the fair market value of the property. The purchaser of a property is required to consider whether any differential between the purchase price and the fair market value of the property is due to the presence of releases or potential releases of hazardous substances at the property.

Shelf Life of AAI Documents

The AAI rule specifies that “all appropriate inquiries” must be conducted within a one-year period prior to the date a property is acquired. The U.S. EPA has defined the acquisition date to be the date on which the property title is transferred. To ensure full coverage under the AAI rule, a valid ESA report must be completed within a 12-month period prior to transfer of title. However, selected ESA report components and supporting information sources must be updated if they were completed more than six months (180 days) prior to title transfer. The specific ESA components with a 180-day shelf life include:

- Site inspection;
- Interviews with knowledgeable persons;
- Review of government regulatory records;
- Search for environmental cleanup liens; and
- Declaration/signature of certifying Environmental Professional.

1.4 USER RELIANCE

This Phase I ESA report has been prepared for the exclusive use and reliance of the MDNR-BVCP, the City of Union, Missouri, and Union Development Corporation. Use or reliance by any other party is prohibited without the written authorization of the MDNR-BVCP, the City of Union, Missouri, and SCS.

2.0 SITE DESCRIPTION

2.1 LOCATION AND LEGAL DESCRIPTION

The subject site is located east and southeast of Corporate Drive, in Union, Franklin County, Missouri. The subject site consists of approximately 36.98 acres of land. Based on review of Franklin County Assessor's Office information, the subject site comprises parcel 21-3-06.1-0-034-004.000, and is owned by the Union Development Corporation (UDC). It is located in Section 6, Township 42 North, Range 1 East. The legal description of the subject site is:

Vacant Land Lot 2 Union
Corporate Center Phase XIII PT NW,
N of Prairie Dell Road

A Site Location Map (**Figure 1**) is included in **Appendix A**.

2.2 SITE AND VICINITY GENERAL CHARACTERISTICS

The subject site and vicinity are generally located in a mixed-use commercial and industrial area of Union. A photographic log of the general site conditions and characteristics is included in **Appendix B**.

2.3 CURRENT USE OF SUBJECT SITE

The subject site is currently undeveloped and used as agricultural farmland.

2.4 SITE IMPROVEMENTS

The subject site is undeveloped. Corporate Drive is located northwest of the subject site. Storm water drainage and utilities are located along Corporate Drive immediately west of the subject site.

2.5 ADJOINING PROPERTY USE

The following table summarizes adjacent¹ land use and observations in the immediate site vicinity.

Direction	Land Use	Comments
North	Aspire Machine Tool; Mentz Foundations; Undeveloped	A mixture of developed and undeveloped commercial properties.

¹ Adjacent is defined by ASTM E1527-13 as any real property the border of which is contiguous or partially contiguous with that of the site or would be contiguous or partially contiguous with that of the site but for a street, road, or other public thoroughfare separating them.

Direction	Land Use	Comments
East	Residential Development	A residential development is located east of the subject site.
West	EMJ Metals, Town and Country Metal, Spire Natural Gas	A mixture of commercial and light industrial properties.
South	Heat and Control, Inc., Sieve Contractors Inc., Water Tower	A mixture of commercial properties and municipal water supply.

2.6 VAPOR INTRUSION ASSESSMENT

The Vapor Intrusion (VI) standard is conservative in nature as it presumes that a Potential Vapor Intrusion Condition (PVIC) does exist at a property until the presence of VIC can affirmatively be ruled out. For VI to be present, known or probable impacts to soil or groundwater from volatile organic compounds (VOCs) at the site or adjoining property (within 0.33 miles) need only be identified for a PVIC to exist.

Based on the information reviewed while performing this Phase I ESA, there are no potential sources of contamination within 0.33-miles of the subject site. Therefore, it does not appear that a PVIC exists in relation to current use of the site.

3.0 USER PROVIDED INFORMATION

In order to qualify for one of the landowner liability protections offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2002, 40 CFR Part 312 requires the user (Client) provide the following information to the environmental professional. Information in this section is taken directly from the User Questionnaire, completed by Mr. Robert W. Borgmann, President of the Union Development Corporation (UDC). A copy of the User Questionnaire is provided in **Appendix C**.

3.1 TITLE RECORDS

Title records for the site were not provided by the client. Based on a review the Franklin County Assessor's Office Information, the subject site is owned by the UDC.

3.2 ENVIRONMENTAL LIENS OR ACTIVITY AND USE LIMITATIONS

According Mr. Borgmann, the UDC is not aware of information regarding environmental liens or activity and use limitations (AULs) pertaining to the subject site.

3.3 SPECIALIZED KNOWLEDGE

Based on information provided by Mr. Borgmann, the UDC does not have specialized knowledge regarding the subject site.

3.4 COMMONLY KNOWN OR REASONABLY ASCERTAINABLE INFORMATION

Mr. Borgmann did not provide SCS with commonly known or reasonably ascertainable information material to *recognized environmental conditions* in connection with the subject site. He did indicate it is commonly known that the sub site is vacant and used as farmland.

3.5 VALUATION REDUCTION FOR ENVIRONMENTAL ISSUES

According to Mr. Borgmann, the purchase price is reasonable and fair market value.

3.6 PRESENCE OR LIKELY PRESENCE OF CONTAMINATION

Mr. Borgmann indicated the UDC is not aware of any obvious indicators that point to the presence or likely presence of contamination at the property.

3.7 OWNER, PROPERTY MANAGER, AND OCCUPANT INFORMATION

The subject site is currently owned by the UDC and is vacant.

3.8 REASON FOR PERFORMING PHASE I ESA

Based on information provided by the UDC, the purpose of this Phase I ESA is to complete “all appropriate inquiry” and thereby satisfy one of the landowner liability protection requirements provided by federal law under the Small Business Liability Relief and Brownfields Revitalization Act of 2002.

4.0 PHYSICAL SETTING

4.1 TOPOGRAPHY

A topographic map for the site vicinity was reviewed and is summarized in the following table:

Reported Elevation	Ranging from approximately 560 to 620 feet above mean sea level
Reported Slope Direction	To the North
Source	United States Geological Survey 7.5 Minute Topographic Map, Moselle, MO Quadrangle, 2012

The site topography ranges from approximately 560 feet above mean sea level (msl) near the north of the site, to approximately 620 feet above msl at the southern edge of the site. An unnamed intermittent stream is located through the center of the subject site.

4.2 GEOLOGY

Based on information obtained from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey for Franklin County, Missouri, surface soils at the property consist primarily of the Hartville silt loam (1 to 8 percent slopes). Based on review of geologic information obtained from the University of Missouri, Center for Applied Research and Environmental Systems (CARES), the subject site is underlain by the Ordovician age Jefferson City Dolomite, comprised primarily of oolitic dolomite, with beds of sandstone and shale.

4.3 GROUNDWATER

In the absence of subsurface data, including groundwater measurements, many professionals assume shallow groundwater generally follows a subdued replica of surface topography. However, the direction of groundwater flow cannot be determined with certainty until a geological subsurface investigation is performed and groundwater is encountered.

Influences on groundwater flow direction include such factors as surface topography, hydrology, above ground structures, underground structures, site grading activities, lithology, sedimentology, weathering, and other factors beyond the scope of this study. Using these factors, SCS anticipates the groundwater flow direction is to the north, which is consistent with the topography and the nearest surface water body. This flow direction has been assumed in evaluating up and downgradient locations.

According to review of the information provided in the Geosearch Database Report, no public water supply or domestic wells were identified within one-half mile of the subject site. There is one private water well located 0.48-miles west of the subject site.

5.0 HISTORICAL USE INFORMATION

In accordance with the ASTM Standard and AAI rule, numerous reasonably ascertainable standard historical information sources were reviewed, and an attempt was made to interpret the historical site and site vicinity land use back to the obvious first developed use of the site. The following table summarizes the historical resources reviewed as part of this assessment:

Resource	Location	Years Available
Aerial Photographs	Geosearch, Inc. Aerial Package 5/29/2018 Google Earth Aerial (October 2016)	1945, 1953, 1964, 1967, 1979, 1995, 2003, 2004, 2005, 2006, 2007, 2009, 2010, 2012, 2014, 2016
City Directories	Geosearch City Directory Standard Report 6/1/2018	2001 to 2016
Sanborn Fire Insurance Maps	Geosearch FIM Abstract 5/29/2018	None Available – Unmapped Property Area
Topographic Maps	Geosearch Historical Topographic Map 5/30/2018	1901, 1947, 1950, 1969, 1980, 2012

Based on these reference materials, the following table presents a chronology of the site and surrounding area. Copies of select historic reference materials are included in **Appendix D**.

Year	Description	Source(s)
1901, 1945-1953	The subject site and the surrounding properties appear to be rural, undeveloped land primarily used as agricultural farmland. There is one residence, which appears to be a farm, to the west of the subject site.	Historic Topographic Maps and Aerial Photographs
1964-1995	The subject site is undeveloped and used primarily as agricultural farmland. A pond appears on the west-central portion of the subject site. The surrounding properties are the same, with the exception of what appears to be a small residential development to the east.	Historic Topographic Maps and Aerial Photographs
2001-2014	The subject site is undeveloped and used primarily as agricultural farmland. The pond on the subject site has reduced significantly in size. The surrounding properties have been developed, with the construction of Progress Parkway and Corporate Drive to the west, commercial and industrial properties to the west and north, as well as the construction of a large residential development to the east. The properties immediately south of the subject site remain undeveloped.	Historic Topographic Maps, City Directories, and Aerial Photographs
2016-2018	The subject site and the surrounding properties are the same as previously described, except that there is additional commercial/industrial development immediately to the west of the subject site.	Historic Topographic Maps, City Directories, and Aerial Photographs

Historical Use Summary of Site

The earliest documentation shows the subject site has been undeveloped and rural, and used as agricultural farmland since 1901 to the present. There does not appear to have been any buildings, development or improvements on the property, with the exception of the pond that

appears in the 1964 aerial photograph, which reduces in size, as indicated in the 2003 aerial photograph.

Historical Use Summary of Surrounding Area

Adjoining properties appear to have been generally undeveloped and rural land starting in 1901 and from 1945 to 1953, with only a small farm appearing to the west of the subject site, and then a small residential development to the east appearing from 1964 to 1995. From 2001 through the present, the area surrounding has experienced significant development, with the construction of Progress Parkway and Corporate Drive, commercial and industrial developments to the west and north, and a large residential development to the east.

6.0 SITE RECONNAISSANCE

A reconnaissance of the site and surrounding area was conducted on June 4, 2018, by Daniel Broeckling and Ashley Edwards of SCS Engineers. Mr. Broeckling and Ms. Edwards were unaccompanied during the site reconnaissance. Site maps are provided in **Appendix A**. Photographs are provided in **Appendix B**.

Access to the site is available from Corporate Drive to the west. SCS performed the Phase I ESA site reconnaissance, unless otherwise noted, by observing the subject site from the perimeter, as well as observing accessible portions of the subject site in a general grid pattern.

General weather conditions observed during the site reconnaissance were warm and sunny, and visibility was good.

The following table summarizes information in connection with the site:

Assessor Parcel Number	21-3-06.1-0-034-004.000
Address	Corporate Drive
Area	36.98 Acres
Site Land Use	Undeveloped/ Agricultural
Occupant	Unoccupied
Number of Buildings	None
Interpreted Construction Date	Unknown
Construction Type	None
Site Grounds	Undeveloped/ Agricultural
High-Power Transmission Lines	High power transmission lines were not observed at the site.
Storm Drains	One storm water drainage culvert was located on the subject site, allowing storm water from developments to the west onto the subject site.

A summary of uses and conditions regarding the site consistent with the ASTM E1527-13 standard practice is provided below. For each of the uses or conditions identified at the site, detailed information is discussed in the 'Notes' column.

Site Observations Summary

Potential Environmental Concern	Observed	Not Observed	Notes
Hazardous Substances in Connection with the Site Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No hazardous substances or indications of hazardous waste handling were observed at the site.

Site Observations Summary

Potential Environmental Concern	Observed	Not Observed	Notes
Petroleum Products in Connection with the Site Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No petroleum products were observed in Connection with the Site Use
Aboveground or Underground Storage Tanks (ASTs/USTs)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No underground storage tanks were observed to the southwest of the fuel dispensers.
Suspect Containers Not in Connection with Site Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No suspect containers were identified at the site.
Electrical or Mechanical Equipment Likely to Contain PCBs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No electrical or mechanical equipment likely to contain PCBs were identified on the subject site.
Exterior or Interior Stains or Corrosion	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No exterior or interior stains or corrosion
Drywells, Drains or Sumps	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No drywells, drains, or sumps were observed at the site, other than the two storm drains previously noted.
Process Wastewater Discharges	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No discharges of wastewater were observed at the site.
Septic or Sewage Tanks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No septic or sewage tanks were identified at the site.
Pits, Ponds or Lagoons	<input checked="" type="checkbox"/>	<input type="checkbox"/>	A small pond was observed on the west central part of the subject site. The pond appears to be temporarily man made due to incomplete grading and improper drainage plan
Pools of Liquid or Standing Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No pools of liquid or standing water were noted beyond the above noted pond.
Solid Waste Dumping, Landfills or Suspected Fill Material	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Solid waste dumping was not observed at the site.
Pesticide and Herbicide Management	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No storage of pesticides or herbicides were observed at the site.
Stained Soil or Pavement, Leaking Pipes and Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No vehicle fluids stains were observed in the parking spots located around the store.
Stressed Vegetation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No signs of stressed vegetation were observed at the site.
Wells	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No domestic water wells were observed at the site.
Air Emissions	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No current sources of air emissions were identified during SCS Engineers' onsite reconnaissance.
Odors	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No unusual or noxious odors were noted during SCS Engineers' onsite reconnaissance.
General Housekeeping Concerns	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No general housekeeping issues were observed during SCS Engineers' onsite reconnaissance.

Site Observations Summary

Potential Environmental Concern	Observed	Not Observed	Notes
Other Uses or Conditions of Concern	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No other concerns of an environmental nature were identified.

Based on the above observations, environmental concerns in connection with the subject site were not identified during the site reconnaissance.

7.0 INTERVIEWS

7.1 INTERVIEW WITH MANAGER/OWNER/OCCUPANT

The following table lists persons interviewed, as part of this Phase I ESA. Information reported by interviewed parties is discussed in pertinent sections of this report.

Name	Property	Function	Date	Phone/E-mail
Robert W. Borgmann	655 South 291 Highway	Owner Representative	6/7/2018	636-583-3600

According to information provided by Mr. Borgmann, the subject site was purchased by the UDC in 1993. He is not aware of any environmental liens or deed restrictions associated with the subject site, and he was also not aware of any environmental incidents or wells on the subject site. Mr. Borgmann indicated the property has been used as agricultural farmland.

In addition, Mr. Borgmann indicated three other assessments have been conducted on other properties that comprise the Union Corporate Center development, which are adjacent to the subject site. The assessments were identified as follows:

- June 2014, SCI Engineering for City of Union
- January 2, 2011, Terranext Project No. 17102622 DNR/Brownfields
- January 28, 2010, Terranext Project No. 17102605 DNR/Brownfields

MDNR provided the cover letter and conclusions of the June 2014 SCI Engineering report to SCS, which stated that no recognized environmental conditions were identified. The remaining reports/findings were not provided to SCS.

7.2 LOCAL AGENCY REVIEW

Local regulatory agencies and other sources were contacted in an effort to identify known or suspected contamination sites, or incidents of hazardous waste storage or disposal which might have resulted in soil or groundwater contamination at the property. SCS submitted an information request to the Union Fire Protection District. SCS has not received a response from the Union Fire Protection District at this time. If pertinent information is received from the department following the submittal of this report, an addendum will be issued to the client.

8.0 REGULATORY DATABASE REVIEW

SCS reviewed the federal and state environmental database records pertaining to the subject and adjacent properties. SCS retained Geosearch, Inc. to perform a review of public environmental records. The results of the database searches are presented in **Appendix E**. The summary of the ASTM-required federal and state database search results are presented below. Listed facility address locations and their distances from the subject site were verified or corrected based on review of street maps, on-line parcel maps and/or site reconnaissance, as necessary, and thus the distances listed in the database report may not correspond to the distances listed in the tables below. Information in this section is subject to the accuracy of the data provided by Geosearch and the date at which the information is updated. Although SCS has made a cursory attempt to note the location of unmapped facilities during the site reconnaissance, the scope herein does not include the locating of facilities listed as "unmappable".

Federal Database	Description	Radius (Miles)	Mapped Facilities
NPL	The National Priorities List (NPL) is the USEPA's database of uncontrolled or abandoned hazardous waste facilities that have been listed for priority remedial actions under the Superfund Program.	1.0	0
Delisted NPL	The Delisted NPL List is the USEPA's database of NPL sites that have been deleted from the NPL where no further response is appropriate.	0.5	0
CERCLIS/ CERC-NFRAP	The CERCLIS database is a compilation of facilities which the USEPA has investigated or is currently investigating for a release or threatened release of hazardous substances pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980. NFRAP (No Further Remedial Action Planned) refers to facilities that have been removed and archived from its inventory of CERCLA sites.	0.5	0
RCRA CORRACTS	The USEPA maintains a list of RCRA facilities associated with treatment, storage, and disposal (TSD) of hazardous materials that are undergoing "corrective action". A "corrective action" order is issued when there has been a release of hazardous waste or constituents into the environment from a RCRA facility.	1.0	0
RCRA TSD	The USEPA maintains a list of RCRA facilities associated with treatment, storage, and disposal (TSD) of hazardous materials.	0.5	0

Federal Database	Description	Radius (Miles)	Mapped Facilities
RCRA Generators	The Resource Conservation and Recovery Act (RCRA) Generators database, maintained by the USEPA, lists facilities that generate hazardous waste as part of their normal business practices. Generators are listed as large, small, or conditionally exempt. Large quantity generators (LQG) produce at least 1000 kg/month of non-acutely hazardous waste or 1 kg/month of acutely hazardous waste. Small quantity generators (SQG) produce 100-1000 kg/month of non-acutely hazardous waste. Conditionally exempt small quantity generators (CESQG) are those that generate less than 100 kg/month of non-acutely hazardous waste. Non-generators (NonGen) are generators that do not presently produce hazardous waste.	*Site and adjoining properties only	0
IC/EC	The US Institutional Control (IC) and US Engineering Control (EC) lists are maintained by the USEPA and consist of sites with institutional controls or engineering controls in place intended to prevent human exposure to contaminants.	0.5	0
ERNS	The Emergency Response Notification System (ERNS) is a listing compiled by the USEPA on reported releases of petroleum and hazardous substances to the air, soil and/or water.	Site	0

*The ASTM minimum search distance for the RCRIS small and large quantity hazardous waste generators (SQGs and LQGs) is identified as "site and adjoining properties." Since ASTM does not define a specific search distance for "site and adjoining properties," EDR utilizes a 0.25 mile search distance to satisfy this criterion. SCS then determines based on site reconnaissance whether a generator is actually located within the ASTM-required minimum search distance.

State Database	Description	Radius (Miles)	Mapped Facilities
SHWS	The Site Hazardous Waste Sites (SHWS) list is maintained by the MDNR and contains sites that are listed on the state's equivalent to CERCLIS. These sites may or may not be listed on the federal CERCLIS list.	1.0	2
SWF/LF	The MDNR maintains a database of Solid Waste Facilities located within Missouri. The database information may include the facility name, class, operation type, area, estimated operational life, and owner.	0.5	0
LUST/ LAST	The MDNR provides a computer generated database of the Leaking Underground Storage Tanks (LUSTs) and Leaking Aboveground Storage Tanks (LASTs) in the State of Missouri.	0.5	0
UST/ AST	The MDNR has compiled a database of registered Underground Storage Tanks in the State of Missouri, which may include the owner and location of the USTs. This database may also include registered Aboveground Storage Tanks (ASTs).	*Site and adjoining properties only	0
INST CONTROL	The Institutional Controls Information database is a MDNR listing of sites with engineering or institutional controls in place.	0.5	0
VCP	The Voluntary Cleanup Program (VCP) Database contains the status of all the voluntary projects administered through the MDNR VCP program.	0.5	0

State Database	Description	Radius (Miles)	Mapped Facilities
Brownfields	The Brownfields (BROWNFIELDS) database is a MDNR listing of sites identified on the Brownfields Database.	0.5	0

*The ASTM minimum search distance for the UST and AST databases is identified as "site and adjoining properties." Since ASTM does not define a specific search distance for "site and adjoining properties," EDR utilizes a 0.25 mile search distance to satisfy this criterion. SCS then determines based on site reconnaissance whether a UST or AST facility is actually located within the ASTM-required minimum search distance.

Any known or suspected contaminated sites included on these lists within 0.25 miles of the subject site are discussed in the following text. As a general rule, sites beyond a 0.25 mile radius are not anticipated to impact a site significantly. Any sites beyond 0.25 miles with a high potential to impact the site are also discussed.

Please refer to **Appendix E** for further information on these sites.

Site Listings

The subject site was identified twice (once as Union Development Center, and as Union Corporate center – Union Corporate Center – Proposed Missouri Certified Site) in the ASTM-required state hazardous waste site (SHWS) regulatory database, as well as several non-standard databases (SMARS, ECHO, FRS, and NPDES). Based on information provided in the Geosearch Database report the subject site is under assessment and no contaminants of environmental concerns have been identified.

Offsite and Nearby Listings

Offsite facilities listed in the database report were evaluated as to their potential to impact the Site. The databases included in the EDR report can be grouped into two general categories: databases reporting unauthorized releases of hazardous substances or petroleum products (e.g., LUST, ERNS, CERCLIS [a.k.a. Superfund] sites), and databases reporting permitted hazardous materials users and hazardous waste generators for which a release has not been reported to, and recorded by, the regulatory agency.

No offsite facilities were listed in the ASTM-required standard databases, within the ASTM-required search radius for each database.

The EDR database report also contains several non-standard Federal and State databases. These records are not required to be reviewed according to ASTM E1527-13. The database search did not reveal any additional facilities within 0.25 miles of the subject site.

Unmapped or Orphan Sites

Unmapped sites cannot be plotted due to inaccurate or incomplete addresses. Unmapped facilities were not identified in the Geosearch report in the ASTM-required standard databases.

9.0 FINDINGS AND OPINIONS

SCS performed a Phase I ESA of the Union Corporate Center Lot 13-2, located on Corporate Drive, Union, Franklin County, Missouri, in conformance with the scope and limitations of 40 CFR 312. SCS's Phase I ESA findings and opinions are summarized below:

- The subject site is located between an area of recent commercial and industrial development to the north, west, and south, and recent residential development to the east. The subject site is currently undeveloped and used primarily as agricultural farmland. Based on review of historical resources, the site was generally undeveloped and rural, and used as agricultural farmland since at least 1901. There does not appear to have been any buildings, development or improvements on the property that represent an environmental concern to the subject site.
- Adjoining properties appear to have been generally undeveloped and rural land starting in 1901 and from 1945 to 1953, with only a small farm appearing to the west of the subject site, and then a small residential development to the east appearing from 1964 to 1995. From 2001 through the present, the area surrounding has experienced significant development, with the construction of Progress Parkway and Corporate Drive, commercial and industrial developments to the west and north, and a large residential development to the east. None of the surrounding developments or properties appear to represent an environmental concern to the subject site.
- No items of environmental concern were identified during the site reconnaissance.
- The subject site was identified twice (once as Union Development Center, and as Union Corporate center – Union Corporate Center – Proposed Missouri Certified Site) in the ASTM-required SHWS regulatory database. Based on information provided in the Geosearch Database report the subject site is under assessment and no contaminants of environmental concerns have been identified.
- No offsite facilities were listed in the ASTM-required standard databases, within the ASTM-required search radius for each database.
- Unmapped facilities were not identified in the Geosearch report in the ASTM-required standard databases.

9.1 DATA FAILURE/DATA GAPS

A data gap represents an inability on the part of the environmental professional to obtain information required by the standards and practices of 40 CFR 312 to fully identify conditions indicative of releases or threatened releases of hazardous substances on, at, in, or to the site.

SCS reviewed several standard historical sources as were reasonably ascertainable and likely to be useful in an attempt to determine historical use of the site back to its first developed use or back to 1940, whichever was earlier, as per the ASTM E 1527-13 Standard requirements. SCS's

earliest data source(s), a 1901 topographic map, indicates the subject site was rural and undeveloped at that time. Based on SCS's other historical sources reviewed, including additional topographic maps dating from 1947, aerial photographs dating from 1945, city directories from 2001, and interviews, the subject site does not appear to have been developed, and has been used as agricultural farmland. Based on this information, SCS can say with some certainty that the subject site has been adequately researched historically and the subject site has been and remains undeveloped - and therefore *data failure* has not been encountered.

SCS believes the site reconnaissance, historical use review, interviews, and regulatory database review were completed in sufficient accordance with the standard to identify recognized environmental conditions in association with the site. No significant data gaps were identified during this assessment.

10.0 CONCLUSIONS

SCS has performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E 1527-13 of Union Corporate Center Lot 13-2, located on Corporate Drive, Union, Franklin County, Missouri, the subject site. Any exceptions to, or deletions from, this practice are described in Section 11.0 of this report. This assessment has revealed no evidence of *recognized environmental conditions* in connection with the site:

11.0 DEVIATIONS OR ADDITIONAL SERVICES

The Phase I ESA was completed in general accordance with *ASTM Practice E 1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. No deletions or deviations from this practice were identified by SCS during this assessment.

SCS did not perform additional services in conjunction with this scope of work.

12.0 SIGNATURE(S) OF ENVIRONMENTAL PROFESSIONAL(S)

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

SCS appreciates the opportunity to provide environmental services to the MDNR-BVCP.



Randy Homburg
Staff Professional



Susan L. McCart, P.E., P.G.
Senior Project Manager

13.0 REFERENCES

ASTM, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process," ASTM Designation E 1527-13, Published November 2013.

Geosearch, Inc. Radius Report, Order Number 109125, Job Number 240069, dated May 30, 2018.

Local Government

Brown, Richard, Closure, Release, & Investigations Unit, MDNR; records request response by e-mail dated February 7, 2018.

Franklin County, Missouri GIS Department; online mapping and parcel records (<http://www.franklinmo.net/assr/Assessor.aspx>).

Physical Setting Information

Missouri Geosciences Technical Resource Assessment Tool (GeoSTRAT); hydrogeologic information for Franklin County.

USDA Natural Resources Conservation Service (NRCS) Web Soil Survey for Franklin County, Missouri (<http://websoilsurvey.nrcs.usda.gov/app/>).

University of Missouri, Center for Agricultural, Resource and Environmental Systems (<http://www.cares.missouri.edu>); geologic information for Franklin County.

Historical

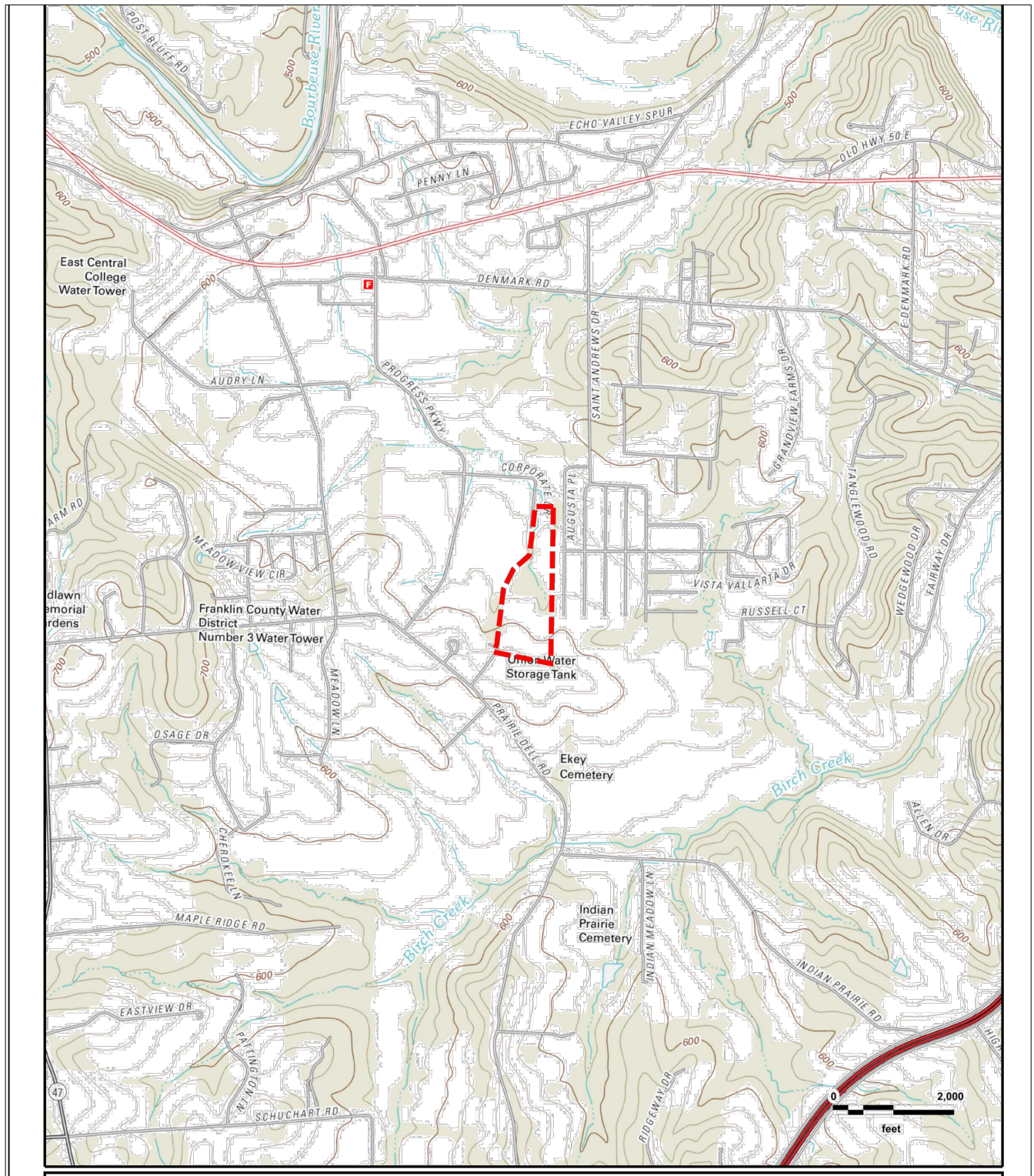
Aerial photographs dated 1945, 1953, 1964, 1967, 1979, 1984, 1995, 2003, 2004, 2005, 2006, 2007, 2009, 2010, 2012, 2014, and 2016, Geosearch, Inc. Historical Aerials Package dated May 29, 2018; and 2018, GoogleEarth.

Geosearch, Inc. City Directory Standard Report, 5-year intervals from 2001 to 2016, dated June 1, 2018.

USGS Topographic Maps dated 1901 (DeSoto, Missouri), 1947 and 1950 (St. Clair, Missouri), and 1969, 1980 and 2012 (Moselle, Missouri), Geosearch Historical Topographic Maps, dated May 30, 2018.

APPENDIX A

FIGURES



NOTE: Background image from Historical Topographic map Moselle, MO (dated 2012).

0 2000 4000
SCALE FEET



SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS AND CONTRACTORS
13 Executive Drive, Suite 1
Fairview Heights, Illinois 62208
PH. (618) 628-2001 FAX. (618) 628-2002

SITE LOCATION MAP
PHASE I ESA REPORT
Corporate Drive
UNION, MISSOURI

CHK. BY:	RLH	DWN. BY:	DB	DSN. BY:	RLH	PROJ. NO.	27218177.00
PROJ. MGR:	RLH	DATE:	06/19/18	CADD FILE:	FIGURES.DWG	FIGURE NO.	1

APPENDIX B

SITE PHOTOGRAPHS

**Union Corporate Center Phase I ESA
Union, MO**

Photo #1

Photographer: Daniel Broeckling

Date: 6/4/18

Description:

Adjacent south property, Heat & Control
south of Subject site.



Photo #2

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Adjacent west property, Empty lot and
Town & Country Metal.



Photo #3

Photographer: Daniel Broeckling

Date: 6/4/18

Description:

Road improvement on the west side of
Subject site facing South.



**Union Corporate Center Phase I ESA
Union, MO**

Photo #4

Photographer: Daniel Broeckling

Date: 6/4/18

Description:

Southern part of Subject site facing North



Photo #5

Photographer: Daniel Broeckling

Date: 6/4/18

Description:

The southern part of Subject site Facing Southeast.



Photo #6

Photographer: Daniel Broeckling

Date: 6/4/18

Description:

Road improvements and adjacent west properties as seen from Subject site facing Southwest.



Union Corporate Center Phase I ESA
Union, MO

Photo #7

Photographer: Daniel Broeckling

Date: 6/4/18

Description:

Adjacent south parcel, city water tower as seen when facing southeast.



Photo #8

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Adjacent east parcels, residential, from the subject site.



Photo #9

Photographer: Ashley Edwards

Date: 6/4/18

Description:

A barbed wire fence and wooded area in the middle of the subject site.



**Union Corporate Center Phase I ESA
Union, MO**

Photo #10

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Barbed wire fence and wooded area in the middle of the subject site.



Photo #11

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Southern section of subject site facing north.



Photo #12

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Cleared brush/trees (wood pile) in the northwest edge of the southern half of subject site



**Union Corporate Center Phase I ESA
Union, MO**

Photo #13

Photographer: Ashley Edwards

Date: 6/4/18

Description:

A small pond in the wooded area of the center of the subject site, view from the road improvement facing east.



Photo #14

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Road improvement facing south. Adjacent west site Earle M. Jorgenson Co.



Photo #15

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Adjacent southwest parcel, Town & Country Metal facing south from the southern part of Subject site



**Union Corporate Center Phase I ESA
Union, MO**

Photo #16

Photographer:

Date: 6/4/18

Description:

Facing west from southern section of subject site, west adjacent parcels Union Machinery and Bugeye Technologies



Photo #17

Photographer: Ashley Edwards

Date: 6/4/18

Description:

A ditch improvement that runs between the road and the subject site on the western side.



Photo #18

Photographer: Ashley Edwards

Date: 6/4/18

Description:

A dried creek bed that leads southeast into the trees on the center section of the subject site.



**Union Corporate Center Phase I ESA
Union, MO**

Photo #19

Photographer: Ashley Edwards

Date: 6/4/18

Description:

A drainage improvement that drains into the ditch next to subject site, facing east at the center of the subject site.



Photo #20

Photographer: Ashley Edwards

Date: 6/4/18

Description:

A wood pile in the northern part of the southern section of the subject site, facing northeast.



Photo #21

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Underground AT&T telephone cable on the Western side of the center of the subject site.



Union Corporate Center Phase I ESA
Union, MO

Photo #22

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Water valve next to the underground telephone cable on the western edge of the northern section of the subject site, facing southeast.



Photo #23

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Water hydrant and water line near the water valve on the western edge of the northern half of the subject site, facing east.



Photo #24

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Storm water drainage under the road leads southeast into the central section of the subject site, facing northeast.



**Union Corporate Center Phase I ESA
Union, MO**

Photo #25

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Looking north across the northern section of the subject site at the north adjacent parcels, an empty lot and Aspire Machine Tool.



Photo #26

Photographer: Ashley Edwards

Date: 6/4/18

Description:

North adjacent parcels, Aspire Machine Tool and an empty lot, north of the northern section of the subject site, facing north.



Photo #27

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Adjacent parcel, Mentz Foundations to the north west of the northern section of the subject site.



**Union Corporate Center Phase I ESA
Union, MO**

Photo #28

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Adjacent east parcels, Housing development seen from the northern section of the subject site, facing east.



Photo #29

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Adjacent west parcel, Spire and vacant lot looking west from the northern section of the subject site.



Photo #30

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Facing west from southern section of subject site, west adjacent parcels.



Union Corporate Center Phase I ESA
Union, MO

Photo #32

Photographer: Ashley Edwards

Date: 6/4/18

Description:

West adjacent parcel, empty lot with business in the background across the road improvement from the northern section of the subject site.



Photo #33

Photographer: Daniel Broeckling

Date: 6/4/18

Description:

Adjacent west parcel, empty lot across from center location of the subject site with Town and Country Metal in the background.



Photo #34

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Adjacent west parcel in foreground (Sieve Contractors - empty lot) with Town and Country Metal in the background, as seen from the southern section of the subject site.



**Union Corporate Center Phase I ESA
Union, MO**

Photo #35

Photographer: Ashley Edwards

Date: 6/4/18

Description:

Adjacent west southwest parcel, Sieve Contractors with propane tank, facing southwest from the southern section of the subject site.



APPENDIX C

USER PROVIDED INFORMATION

Project No.: 27218177.00

Project Name: Union Corporate Center Phase I ESA

OWNER/OPERATOR QUESTIONNAIRE

Site name: Union Corporate Center

Site address: Corporate Drive

Union, MO 63084

Interviewee: Robert W. Borgmann

Title: President, Union Development Corporation

Date: 6/12/2018

SECTION I – Undeveloped Property (If this site is developed, go to SECTION II)

1. How long have you owned (or been involved in) this property?

The Union Development Corporation purchased the site in 1993.

2. To the best of your knowledge, has there ever been any development on this property? If yes, what and when was the nature of that development?

Previous use was agricultural/farmland.

3. To the best of your knowledge, have there ever been any environmental or soils investigations conducted on this Property? If yes, what kind and when? Are there any reports available?

June 2014, SCI Engineering for City of Union

January 2, 2011, Terranext Project No. 17102622 DNR/Brownfields

January 28, 2010, Terranext Project No. 17102605 DNR/Brownfields

4. Are you aware of any environmental liens or deed restrictions associated with this property? If yes, please describe.

No

5. To the best of your knowledge, have there ever been any incidents of chemical spills/dumping or waste disposal on or close to this property?

No

6. Are there any wells on the site? If yes, what are they used for?

No

SECTION II – Developed Property

1. What is your involvement with this property and when did that involvement begin?
2. To the best of your knowledge, how long has the current development been on the property? What was there before the current development?
3. Does this facility use, store, manufacture, or dispose of chemicals or petroleum products? What types (be as specific as possible)?
4. If the answer to Question 3 above was “Yes,” may we review MSDS, business plans, hazardous material inventories, manifest files, SPCC plans (whatever is applicable)?
5. Do you have any environmental permits (wastewater discharge, air emissions, hazardous material storage, etc.)? Have there ever been any Notices of Violation in regards to any of these permits?

6. Have any environmental investigations ever been conducted on this property? When and why? Are there any reports available that we can review?
7. Has the facility ever been subject to an environmental health and safety regulatory action, complaint, or lawsuit? When and why? What was the outcome?
8. Have there been any know chemical spills or releases on this property?
9. Are there any underground or aboveground storage tanks on this property? How many? Sizes? Ages?
10. Where is wastewater discharged to? To the best of your knowledge, have there ever been any on-site wastewater disposal systems (septic tank, leach field, cesspool, dry well, etc.)?
11. To the best of your knowledge, are there any environmental liens or deed restrictions associated with this property? If yes, please describe.

USER QUESTIONNAIRE¹

Site Name: _____

Site Address: _____

In reference to Section 6, User Responsibilities, of the ASTM E1527-13 Standard Practice, the Environmental Professional (SCS Engineers) for this Phase I ESA is required to inquire with the user (Client) regarding their knowledge or possession of information that may assist in identifying recognized environmental conditions (RECs) pertaining to the Subject Site.

In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2002 (the “Brownfields Amendments”), the user must conduct the following inquiries required by 40 CFR 312.25, 312.28, 312.29, 312.30, and 312.31. These inquiries must also be conducted by USEPA Brownfield Assessment and Characterization grantees. The user should provide the following information to the Environmental Professional overseeing this Phase I ESA. Failure to conduct these inquiries could result in a determination that “all appropriate inquiries” is not complete.

- (1) **Environmental Cleanup Liens (40 CFR 312.25).** Did a search of recorded land title records (or judicial records where appropriate) identify any environmental liens filed or recorded against the property under federal, tribal, state or local law?

☐ Yes ☐ No

If Yes, explain and/or provide information:

- (2) **Activity and Use Limitations (40 CFR 312.26(a)(1)(v) and (vi)).** Did a search of recorded land title records (or judicial records, where appropriate) identify any AULs such as engineering controls, land use restrictions, or institutional controls that are in place at the property and/or have been filed or recorded against the property under federal, tribal, state or local law?

☐ Yes ☐ No

If Yes, explain and/or provide information:

¹This document is designed to comply with Section X3, User Questionnaire, of ASTM E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, and the USEPA AAI regulations (40 CFR §312).



USER QUESTIONNAIRE (Continued)

- (3) **Specialized Knowledge or Experience (40 CFR 312.28).** Do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

☐ Yes ☐ No

If Yes, explain and/or provide information:

- (4) **Purchase Price vs. Fair Market Value (40 CFR 312.29).** Does the purchase price being paid for this property reasonably reflect the fair market value of the property?

☐ Yes ☐ No

If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?

☐ Yes ☐ No

If Yes, explain and/or provide information:

- (5) **Commonly Known or Reasonably Ascertainable Information (40 CFR 312.30).** Are you aware of commonly known or reasonably ascertainable information about the property that would help the Environmental Professional to identify conditions indicative of releases or threatened releases? For example,

- (a) Do you know the past use of the property?
- (b) Do you know specific chemicals that are present or once were present at the property?
- (c) Do you know of spills or other chemical releases that have taken place at the property?
- (d) Do you know of any environmental cleanups that have taken place at the property?

☐ Yes ☐ No

If Yes, explain and/or provide information:

The property is vacant, prior use was farmland.



USER QUESTIONNAIRE (Continued)

- (6) **Obvious Indications of Contamination (40 CFR 312.31).** Based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination of the property?

☐ Yes ☐ No

If Yes, explain and/or provide information:

User Questionnaire Completed By:

Name: _____

Title: _____

Date: _____



APPENDIX D

HISTORIC SITE USE INFORMATION

Historical Aerials Package

Target Property:

***Union Corporate Center Lot 13-2
Corporate Drive
Union, Franklin, Missouri 63084***

Prepared For:

SCS Engineers-St. Louis

Order #: 109125

Job #: 240076

Project #: 27218177.00

Date: 5/29/2018

Target Property Summary

Union Corporate Center Lot 13-2

Corporate Drive

Union, Franklin, Missouri 63084

USGS Quadrangle: **Moselle**

Target Property Geometry: **Area**

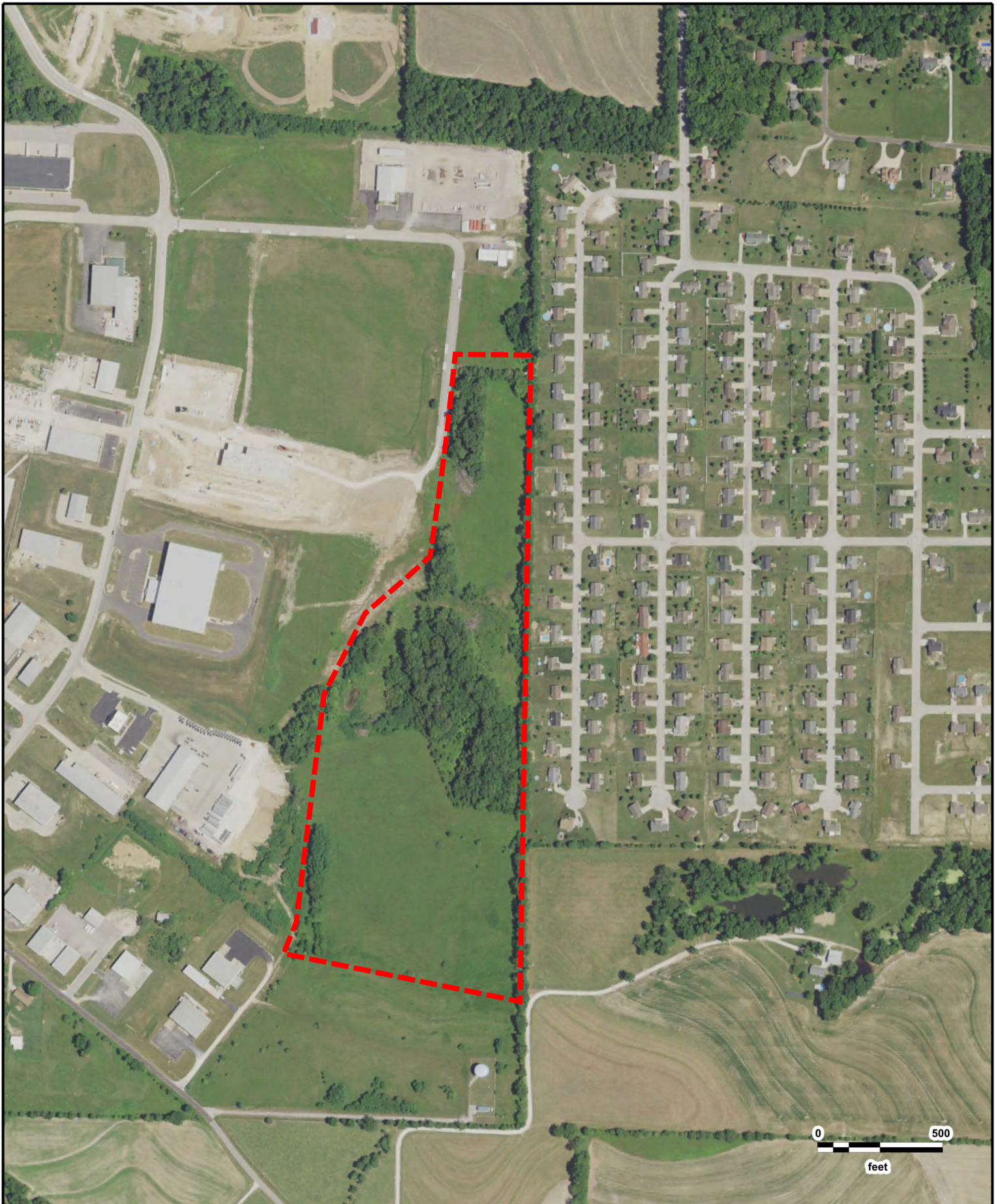
Target Property Longitude(s)/Latitude(s):

**(-90.955539000, 38.421137000), (-90.955685000, 38.414044000), (-90.958981000, 38.414569000),
(-90.958808000, 38.414911000), (-90.958418000, 38.417415000), (-90.957846000, 38.418305000),
(-90.957249000, 38.418707000), (-90.956937000, 38.418931000), (-90.956810000, 38.419650000),
(-90.956715000, 38.420197000), (-90.956592000, 38.421151000)**

Aerial Research Summary

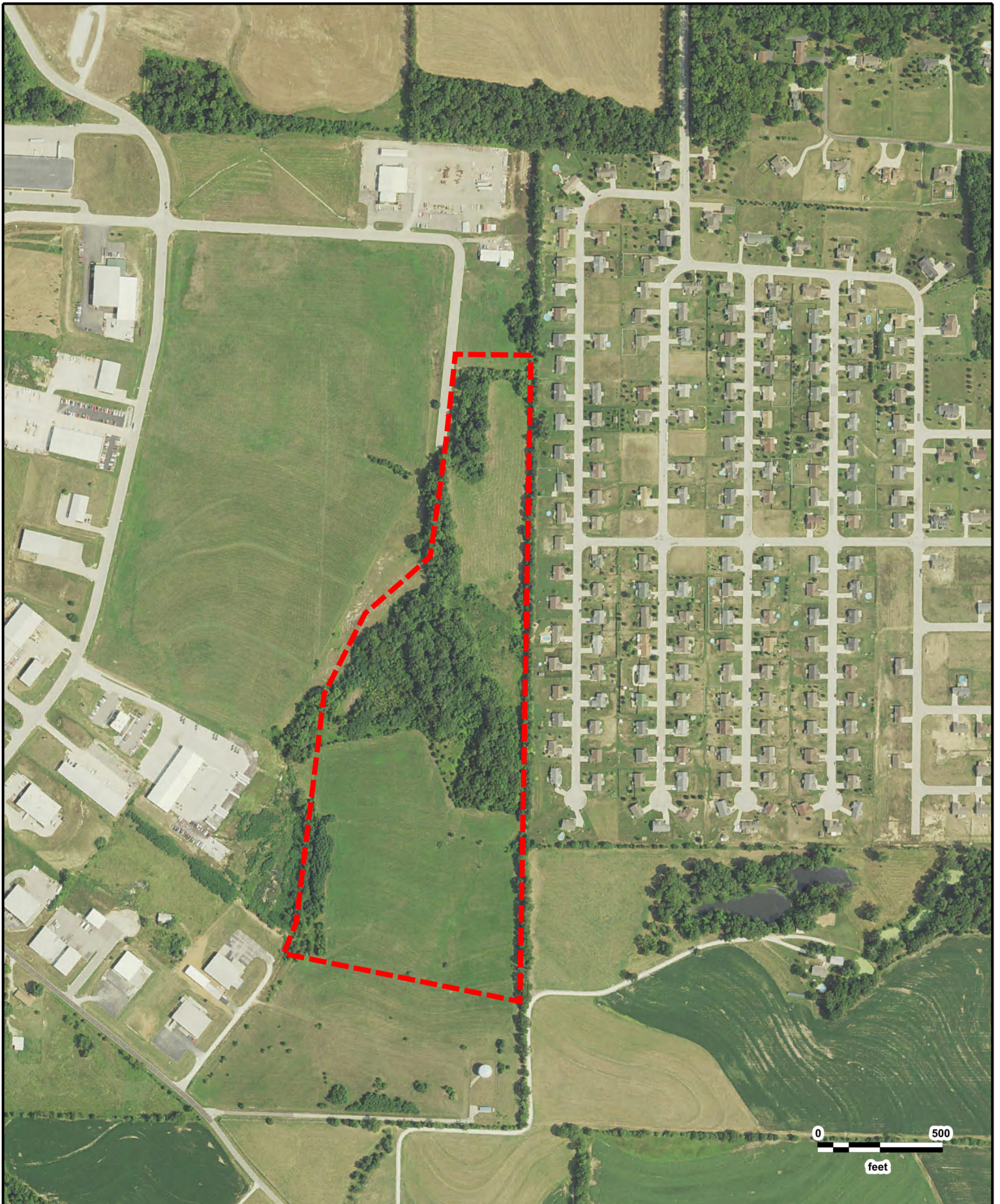
<u>Date</u>	<u>Source</u>	<u>Scale</u>	<u>Frame</u>
2016	USDA	1" = 500'	N/A
2014	USDA	1" = 500'	N/A
2012	USDA	1" = 500'	N/A
2010	USDA	1" = 500'	N/A
2009	USDA	1" = 500'	N/A
2007	USDA	1" = 500'	N/A
2006	USDA	1" = 500'	N/A
2005	USDA	1" = 500'	N/A
2004	USDA	1" = 500'	N/A
2003	USDA	1" = 500'	N/A
04/06/1995	USGS	1" = 500'	N/A
04/18/1984	USGS	1" = 500'	159-217
12/02/1979	USGS	1" = 500'	1-121
01/20/1967	USGS	1" = 500'	1-39
04/14/1964	USGS	1" = 500'	1-203
04/16/1953	USAF	1" = 500'	5-252
02/24/1945	USGS	1" = 500'	6-54

Disclaimer - The information provided in this report was obtained from a variety of public sources. GeoSearch cannot ensure and makes no warranty or representation as to the accuracy, reliability, quality, errors occurring from data conversion or the customer's interpretation of this report. This report was made by GeoSearch for exclusive use by its clients only. Therefore, this report may not contain sufficient information for other purposes or parties. GeoSearch and its partners, employees, officers and independent contractors cannot be held liable for actual, incidental, consequential, special or exemplary damages suffered by a customer resulting directly or indirectly from any information provided by GeoSearch.



Union Corporate Center Lot 13-2
USDA
2016

GeoSearch



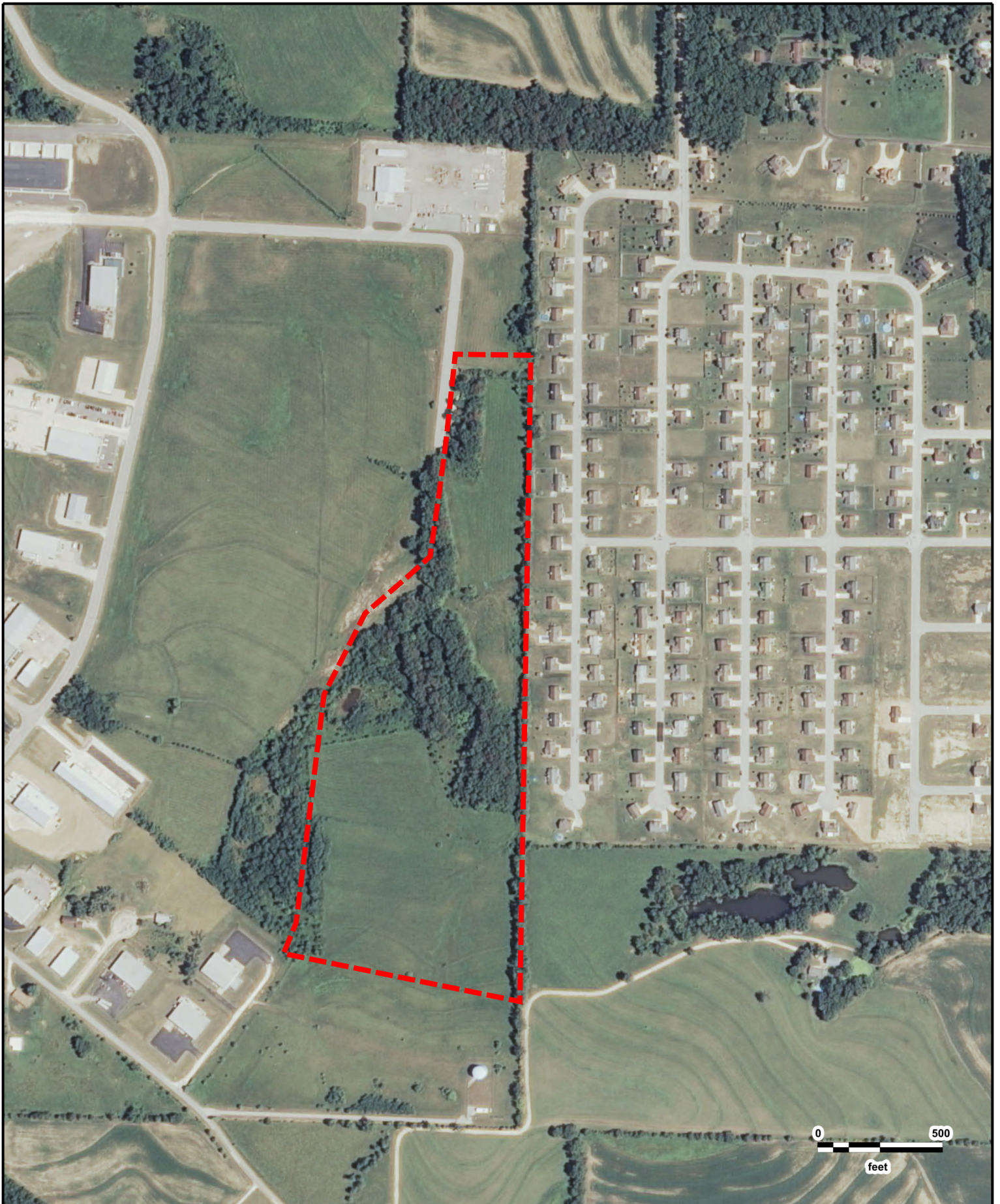
Union Corporate Center Lot 13-2
USDA
2014

GeoSearch



Union Corporate Center Lot 13-2
USDA
2012

GeoSearch

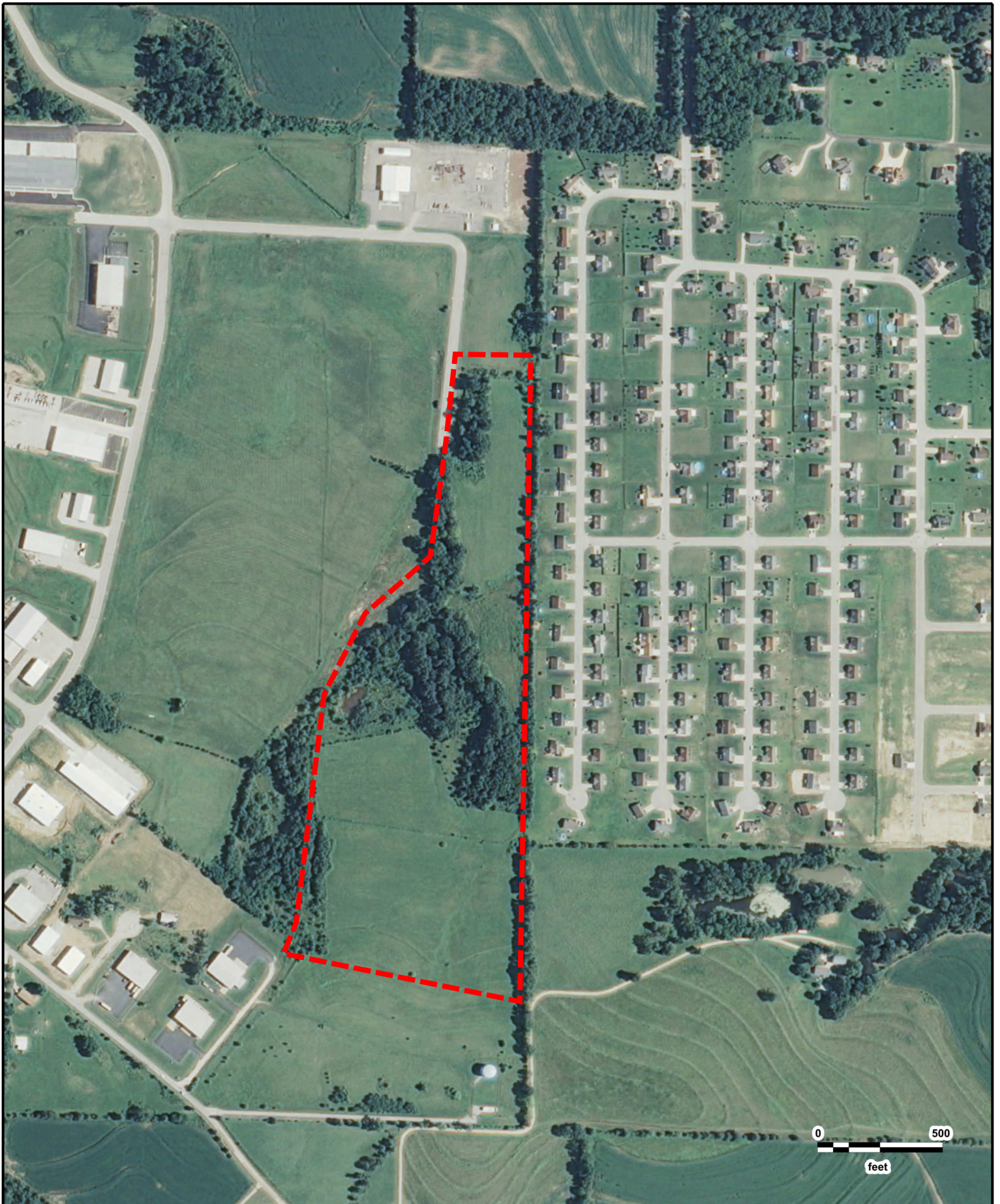


0 500
feet



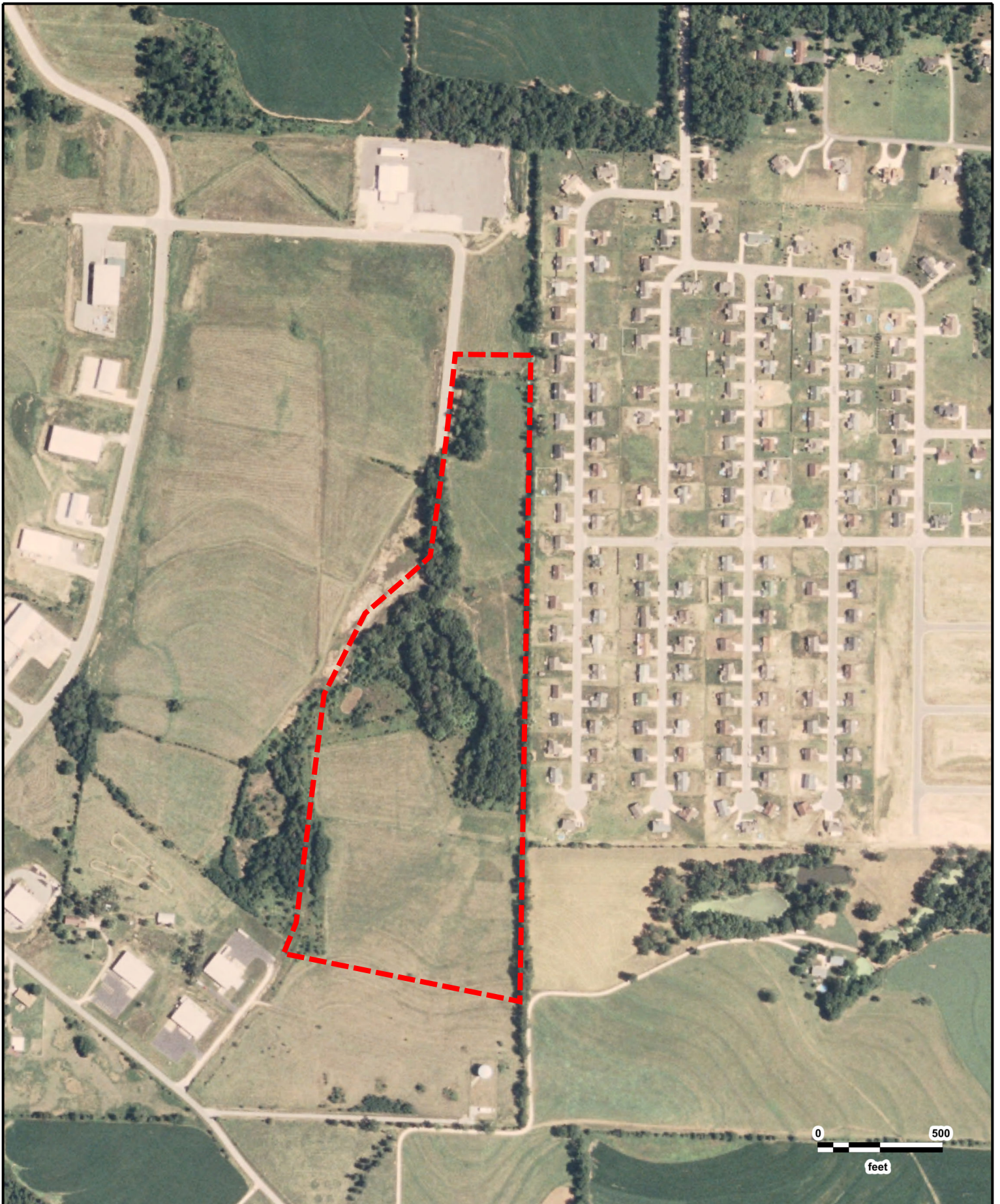
Union Corporate Center Lot 13-2
USDA
2010

GeoSearch



Union Corporate Center Lot 13-2
USDA
2009

GeoSearch



Union Corporate Center Lot 13-2
USDA
2007

GeoSearch



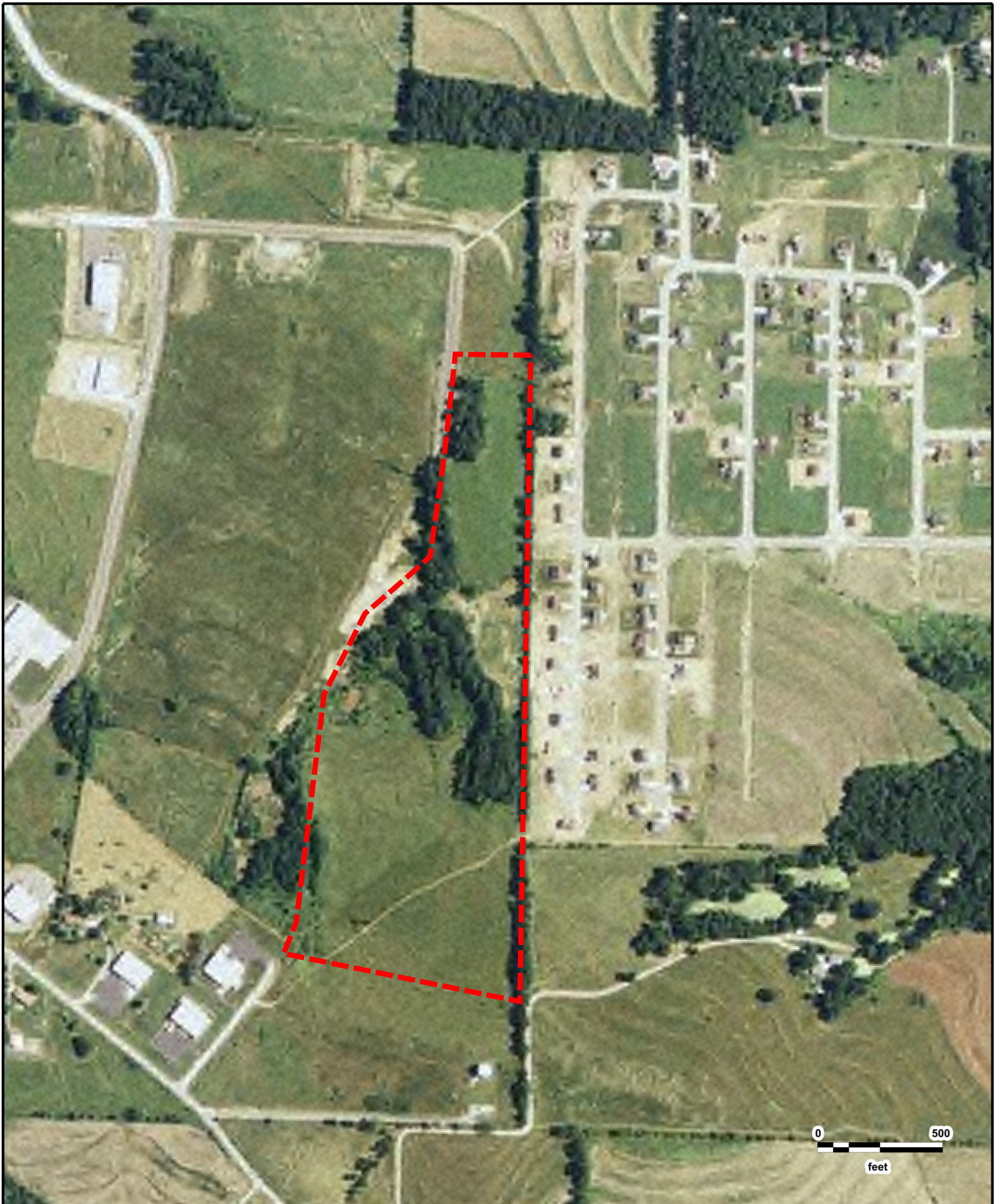
Union Corporate Center Lot 13-2
USDA
2006

GeoSearch



Union Corporate Center Lot 13-2
USDA
2005

GeoSearch



Union Corporate Center Lot 13-2
USDA
2004

GeoSearch



Union Corporate Center Lot 13-2
USDA
2003

GeoSearch



0 500
feet



Union Corporate Center Lot 13-2
USGS
04/06/1995

GeoSearch



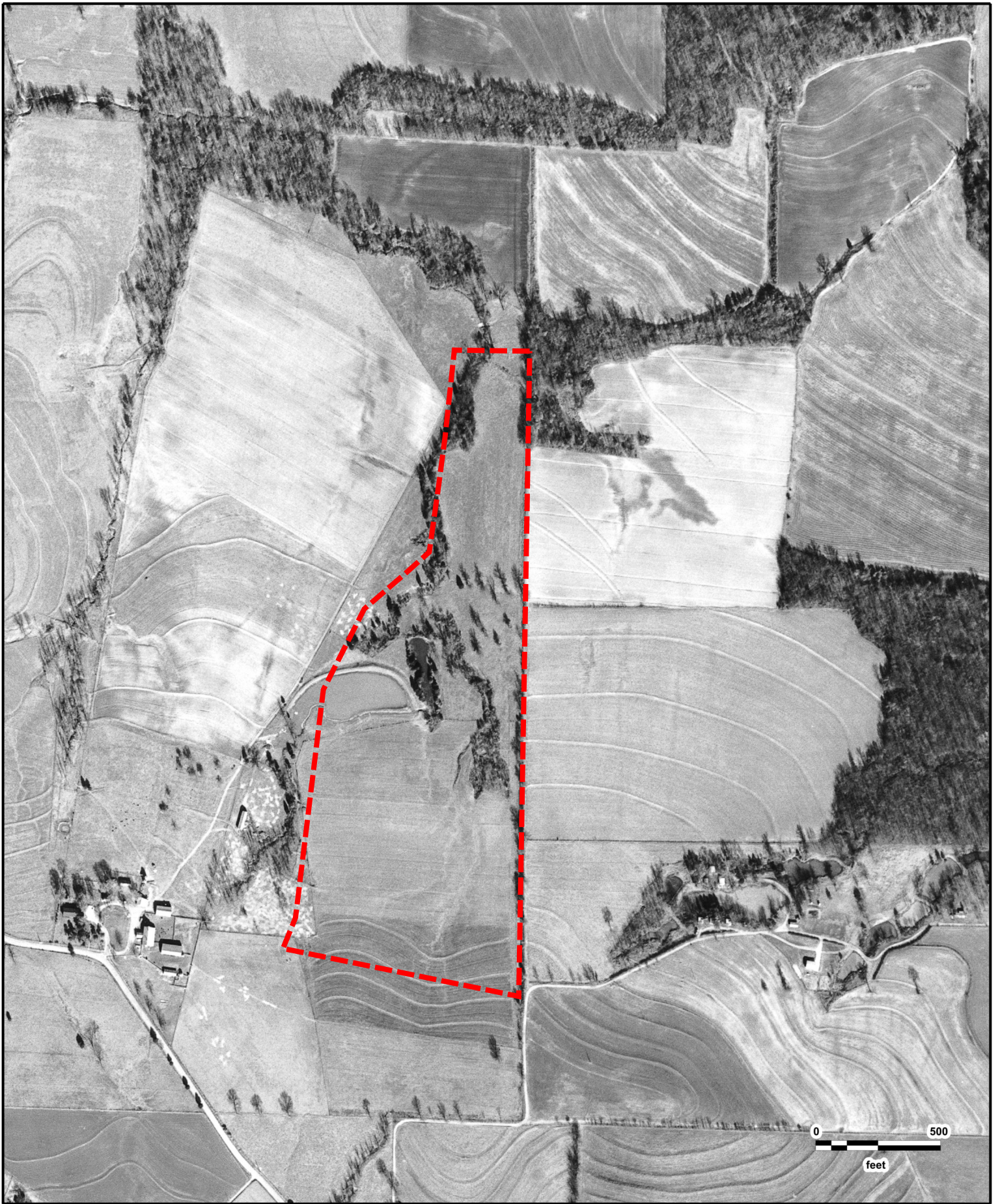
Union Corporate Center Lot 13-2
USGS
04/18/1984

GeoSearch



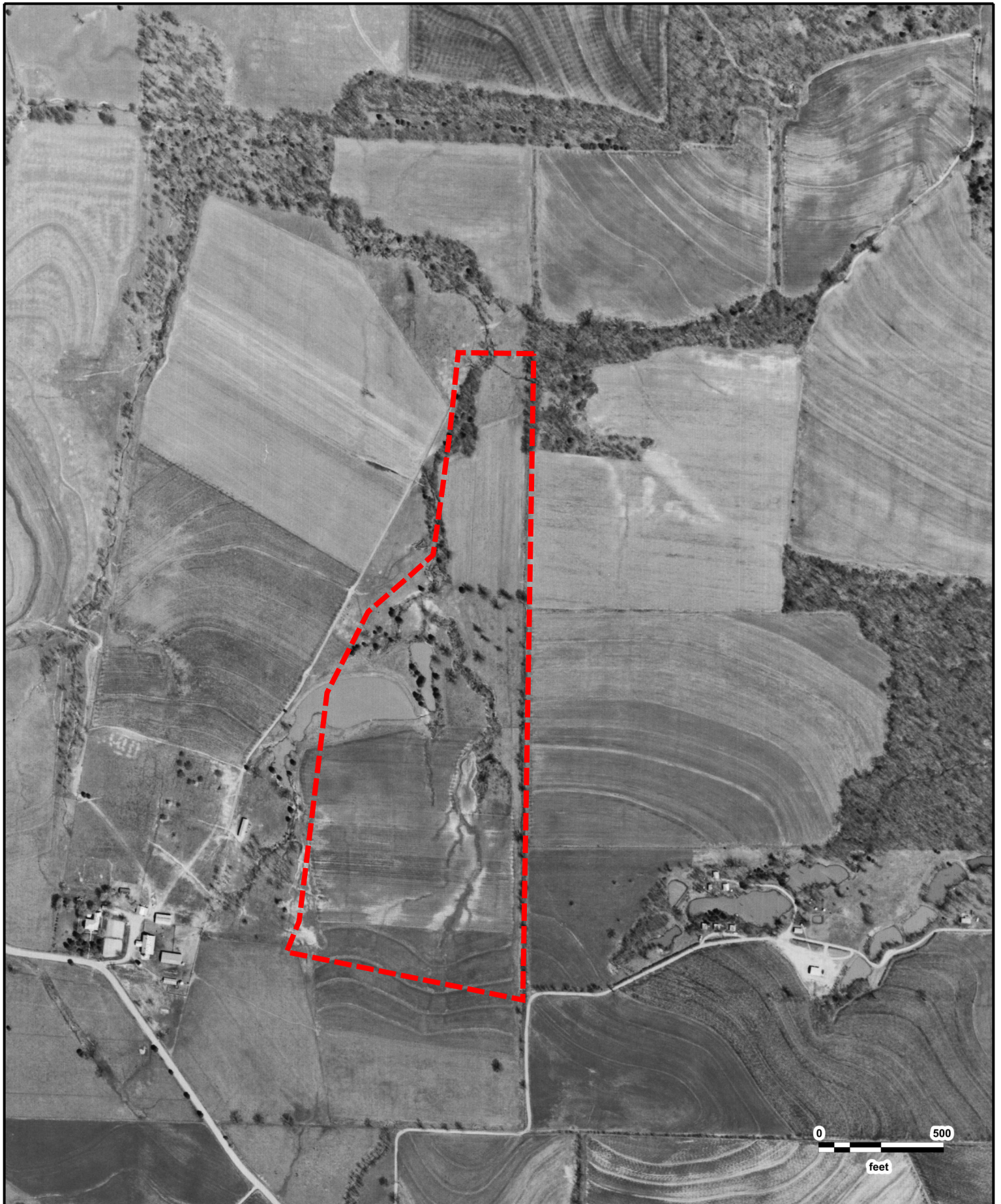
Union Corporate Center Lot 13-2
USGS
12/02/1979

GeoSearch



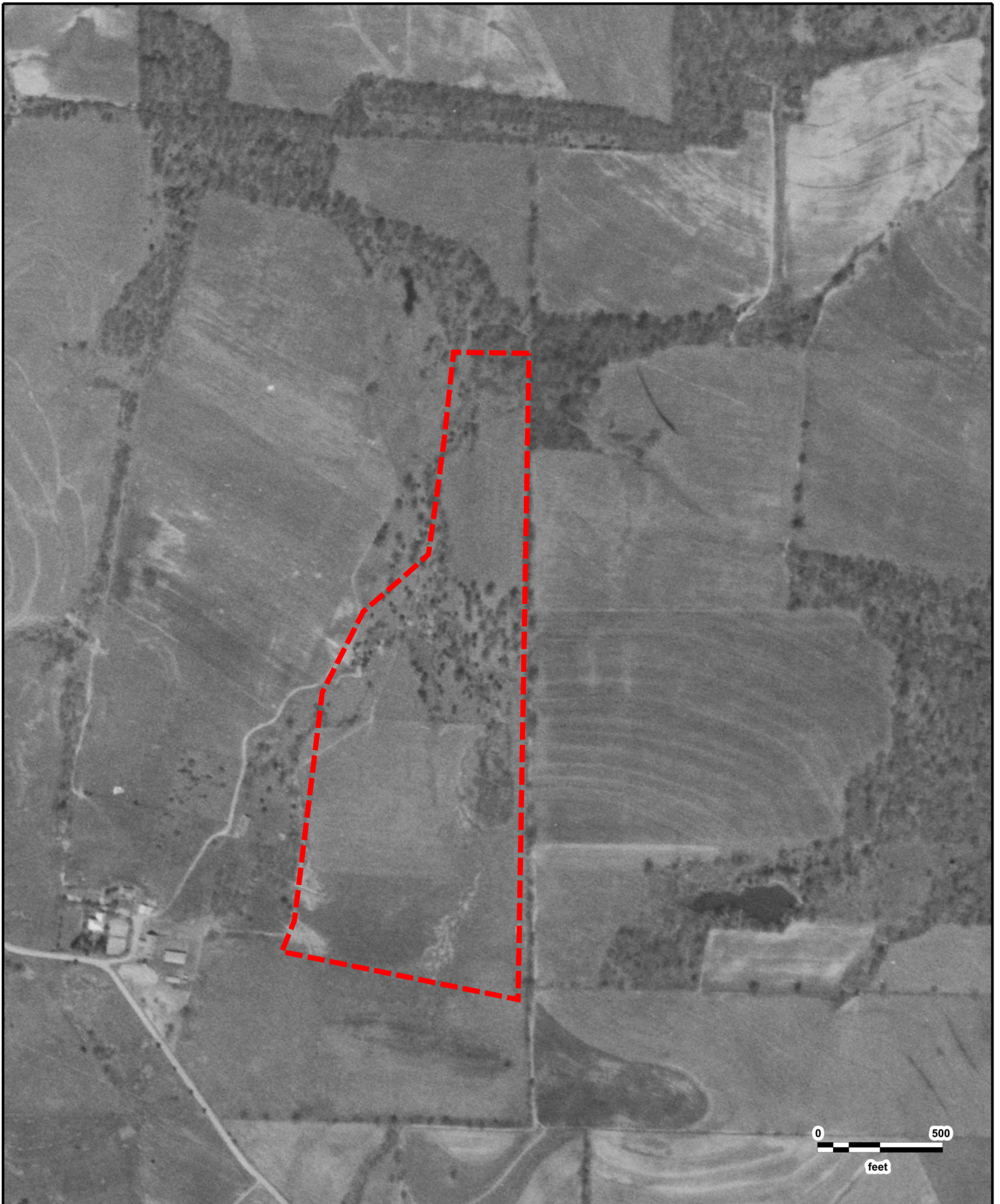
Union Corporate Center Lot 13-2
USGS
01/20/1967

GeoSearch



Union Corporate Center Lot 13-2
USGS
04/14/1964

GeoSearch



Union Corporate Center Lot 13-2
USAF
04/16/1953

GeoSearch



Union Corporate Center Lot 13-2
USGS
02/24/1945

GeoSearch

Historical By Street Number

Target Property:

*Corporate Dr,
Union, MO 63084*

Prepared For:
SCS Engineers-St. Louis

Order #: 109125
Project #: 27218177.00

Date: 6/1/2018

City Directory Historical by Street Number

1 Corporate Dr	No Listing (2001-2006); Street Begins (2011-2016)
27 Corporate Dr	No Listing (2001-2011); Silgan Plastics Llc (2016)
57 Corporate Dr	No Listing (2001-2006); Mentz Foundations Inc (2011-2016); X [End Of Listing] (2011)
67 Corporate Dr	No Listing (2001-2011); Aspire Machine Tool (2016); X [End Of Listing] (2016)

Comments: Progress Pkwy was also researched and was not listed in any directories.

City Directory Standard Report

Target Property:

*Corporate Dr,
Union, MO 63084*

Prepared For:

SCS Engineers-St. Louis

Order #: 109125

Project #: 27218177.00

Date: 6/1/2018

City Directory Standard Report

Corporate Dr, Union, MO 63084

INFOUSA

NORTH CENTRAL 2016

CORPORATE DR

1	STREET BEGINS
27	SILGAN PLASTICS LLC
57	MENTZ FOUNDATIONS INC
67	ASPIRE MACHINE TOOL
67	X [END OF LISTING]

INFOUSA

NORTH CENTRAL 2011

CORPORATE DR

1	STREET BEGINS
57	MENTZ FOUNDATIONS INC
57	X [END OF LISTING]

HAINES DIRECTORY

ST LOUIS FAR 2006
WEST SUBURBAN

CORPORATE DR

1	STREET NOT LISTED
---	-------------------

HAINES DIRECTORY

ST LOUIS FAR 2001
WEST SUBURBAN

CORPORATE DR

1	STREET NOT LISTED
---	-------------------

Comment: Progress Pkwy was also researched and was not listed in any directories.

City Directory Target Property Address

Target Property:

*Corporate Dr,
Union, MO 63084*

Prepared For:
SCS Engineers-St. Louis

Order #: 109125
Project #: 27218177.00

Date: 6/1/2018

City Directory Target Property Address

Corporate Dr, Union, MO 63084

1 CORPORATE DR

2016	STREET BEGINS	INFOUSA	NORTH CENTRAL
2011	STREET BEGINS	INFOUSA	NORTH CENTRAL
2006	STREET NOT LISTED	HAINES DIRECTORY	ST LOUIS FAR WEST SUBURBAN
2001	STREET NOT LISTED	HAINES DIRECTORY	ST LOUIS FAR WEST SUBURBAN

27 CORPORATE DR

2016	SILGAN PLASTICS LLC	INFOUSA	NORTH CENTRAL
------	---------------------	---------	---------------

57 CORPORATE DR

2016	MENTZ FOUNDATIONS INC	INFOUSA	NORTH CENTRAL
2011	MENTZ FOUNDATIONS INC	INFOUSA	NORTH CENTRAL
2011	X [END OF LISTING]	INFOUSA	NORTH CENTRAL

67 CORPORATE DR

2016	ASPIRE MACHINE TOOL	INFOUSA	NORTH CENTRAL
2016	X [END OF LISTING]	INFOUSA	NORTH CENTRAL

Comment: Progress Pkwy was also researched and was not listed in any directories.



FIM Abstract

Target Property:
Union Corporate Center Lot 13-2
Corporate Drive
Union, Franklin County, Missouri 63084

Prepared For:
SCS Engineers-St. Louis

Order #: 109125
Job #: 240074
Project #: 27218177.00
PO #: 27218177.00
Date: 05/29/2018

TARGET PROPERTY SUMMARY

**Union Corporate Center Lot 13-2
Corporate Drive
Union, Franklin County, Missouri 63084**

USGS Quadrangle: **Moselle, MO**

Target Property Geometry: **Area**

Target Property Longitude(s)/Latitude(s):

**(-90.955539, 38.421137), (-90.955685, 38.414044), (-90.958981, 38.414569), (-90.958808, 38.414911),
(-90.958418, 38.417415), (-90.957846, 38.418305), (-90.957249, 38.418707), (-90.956937, 38.418931),
(-90.956810, 38.419650), (-90.956715, 38.420197), (-90.956592, 38.421151), (-90.955539, 38.421137)**

County/Parish Covered:

Franklin (MO)

Zipcode(s) Covered:

Union MO: 63084

State(s) Covered:

MO

***Target property is located in Radon Zone 2.**

**Zone 2 areas have a predicted average indoor radon screening level between 2 and 4 pCi/L
(picocuries per liter).**

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Date: 05/29/18

GS Job Number: 109125

Company Name: Raba Kistner Environmental-San Antonio

Project Number: 27218177.00

Site Information: Union Corporate Center Lot 13-2
Corporate Drive,
Union, MO 63084

The collections of fire insurance maps listed below were reviewed according to the site information supplied by client. Based on the information provided, no coverage is available.

Library of Congress
University Publications of America
Other Libraries (universities, state, local, etc.).

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Historical Topographic Maps

Target Property:
***Union Corporate Center Lot 13-2
Corporate Drive
Union, Franklin, Missouri 63084***

Prepared For:
SCS Engineers-St. Louis

***Order #: 109125
Job #: 240071
Project #: 27218177.00
Date: 5/30/2018***

Target Property Summary

Union Corporate Center Lot 13-2

Corporate Drive

Union, Franklin, Missouri 63084

USGS Quadrangle: **Moselle**

Target Property Geometry: **Area**

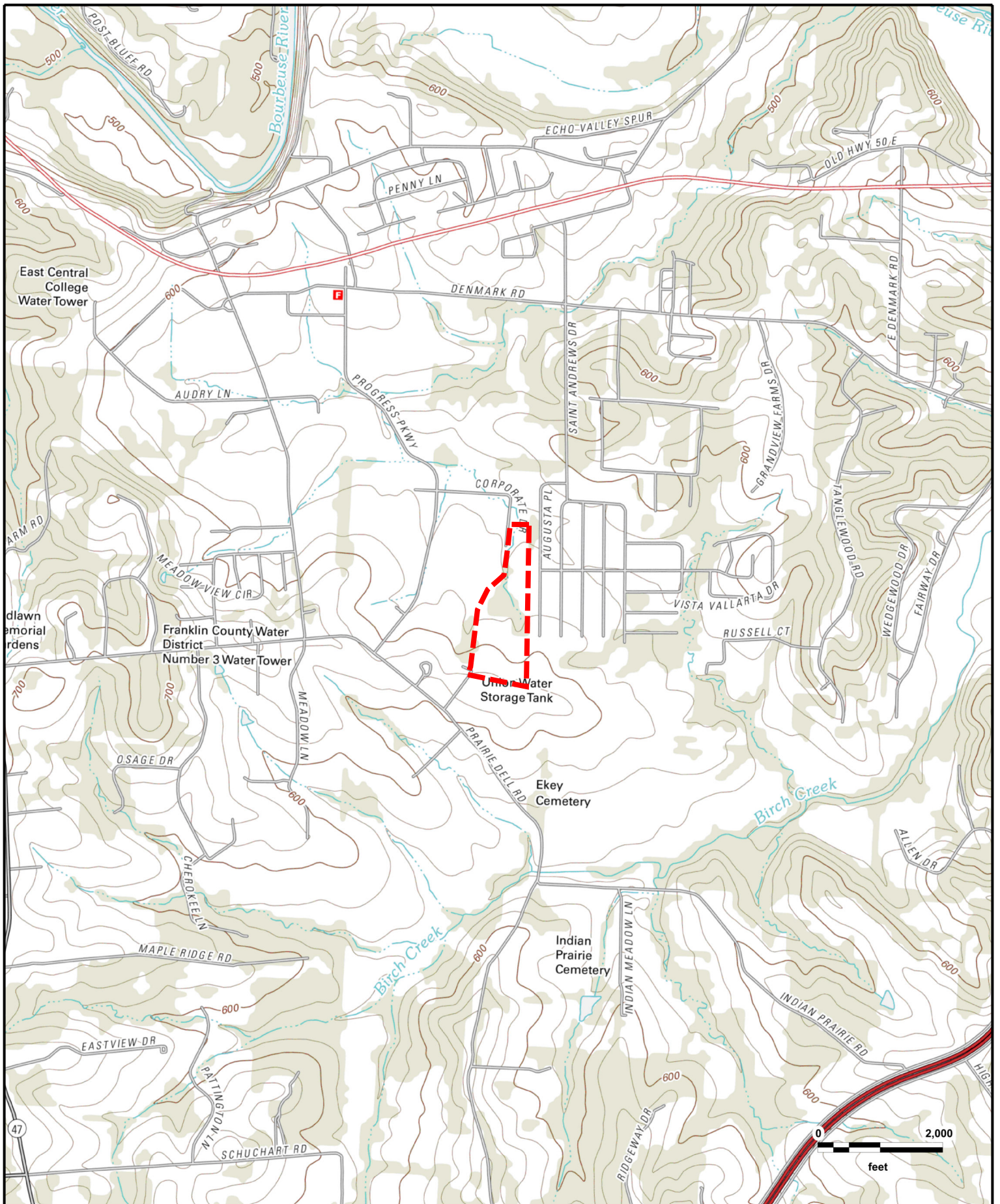
Target Property Longitude(s)/Latitude(s):

**(-90.955539000, 38.421137000), (-90.955685000, 38.414044000), (-90.958981000, 38.414569000),
(-90.958808000, 38.414911000), (-90.958418000, 38.417415000), (-90.957846000, 38.418305000),
(-90.957249000, 38.418707000), (-90.956937000, 38.418931000), (-90.956810000, 38.419650000),
(-90.956715000, 38.420197000), (-90.956592000, 38.421151000)**

Topographic Map Summary

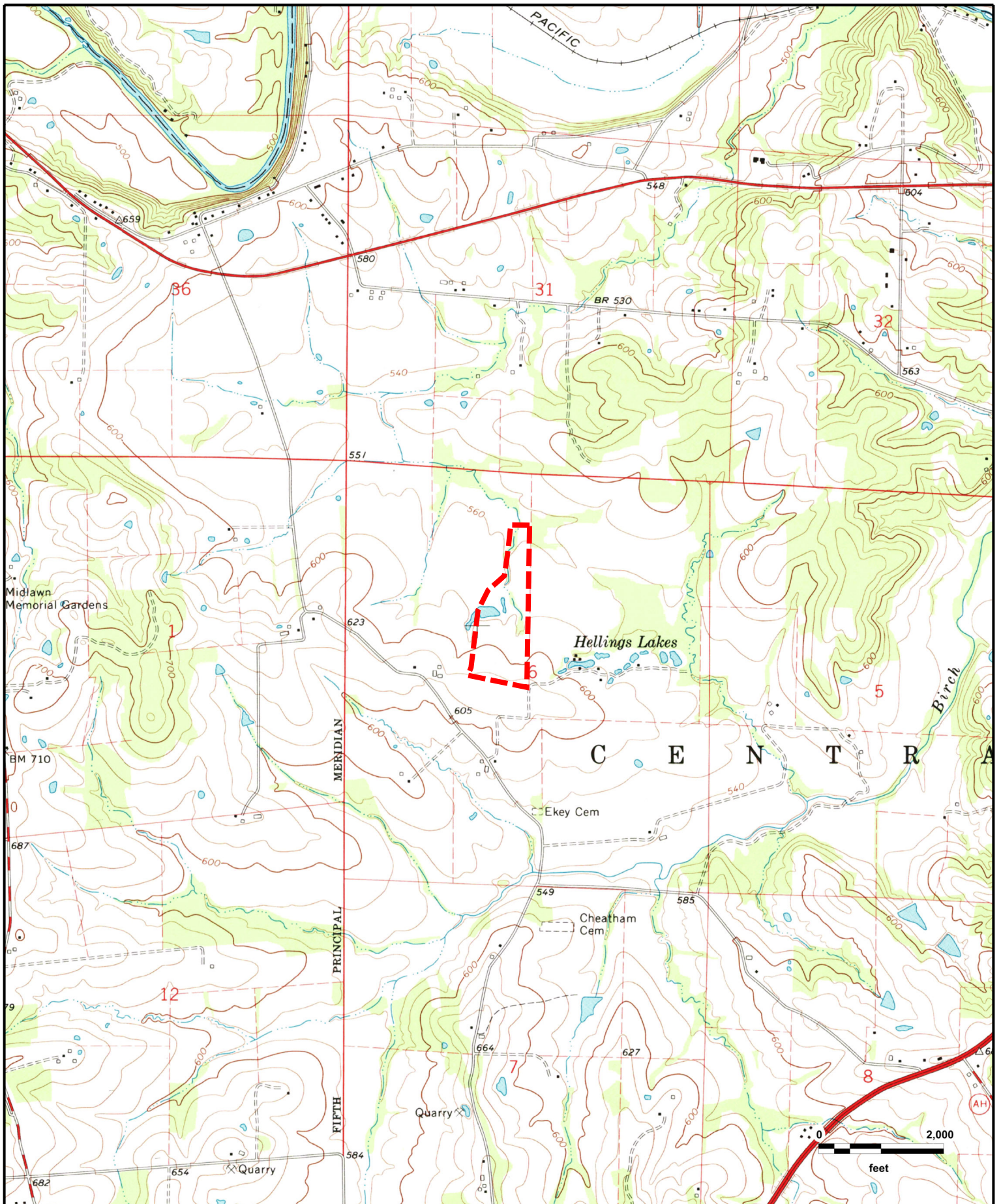
<u>Date</u>	<u>Quadrangle</u>	<u>Scale</u>
2012	Moselle, MO	1" = 2000'
1969 PHOTOINSPECTED 1980	Moselle, MO	1" = 2000'
1969	Moselle, MO	1" = 2000'
1950	St. Clair, MO	1" = 5208'
1947	St. Clair, MO	1" = 5208'
1901	De Soto, MO	1" = 10420'

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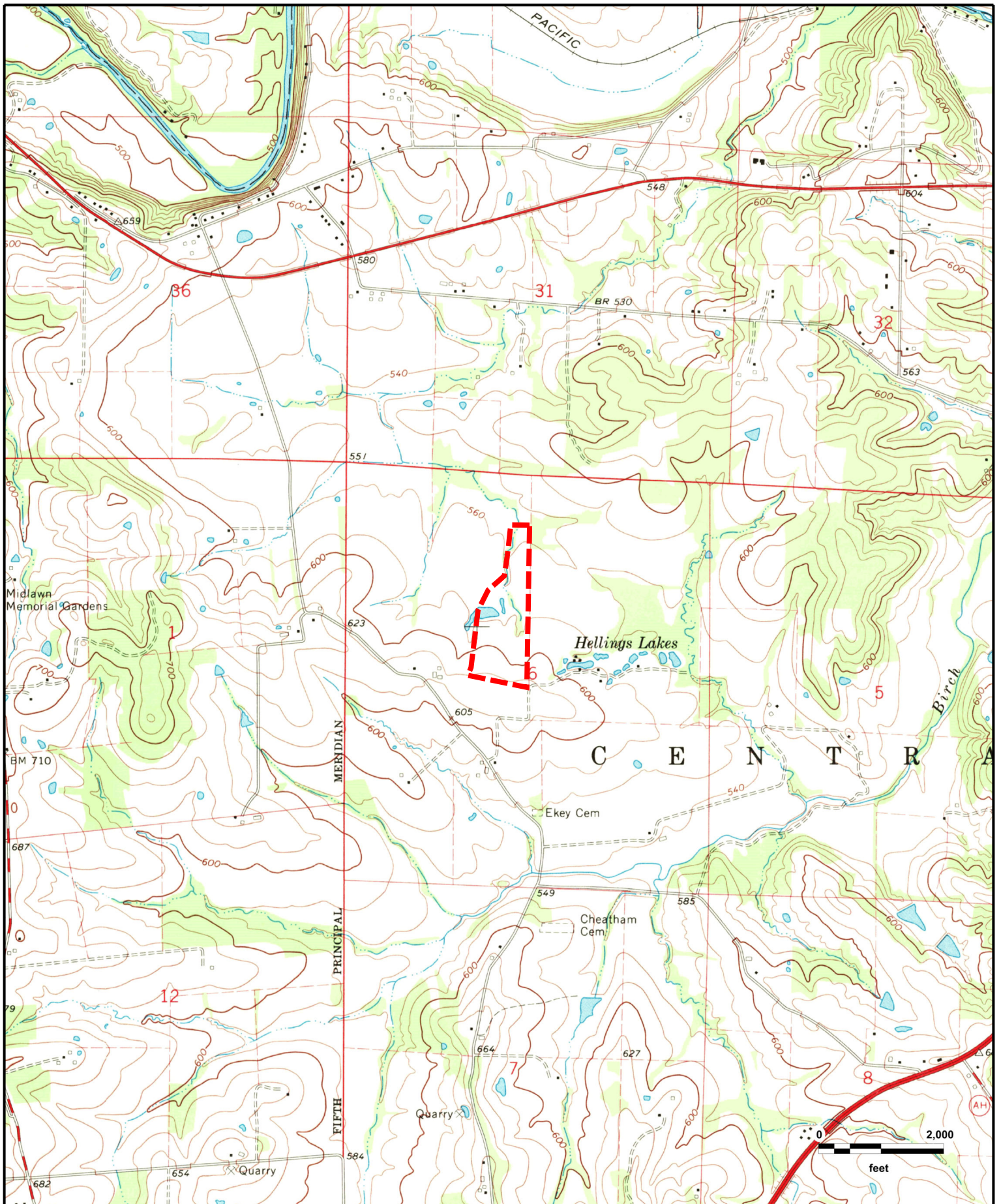
**Union Corporate Center Lot 13-2
Moselle, MO (2012)**

GeoSearch



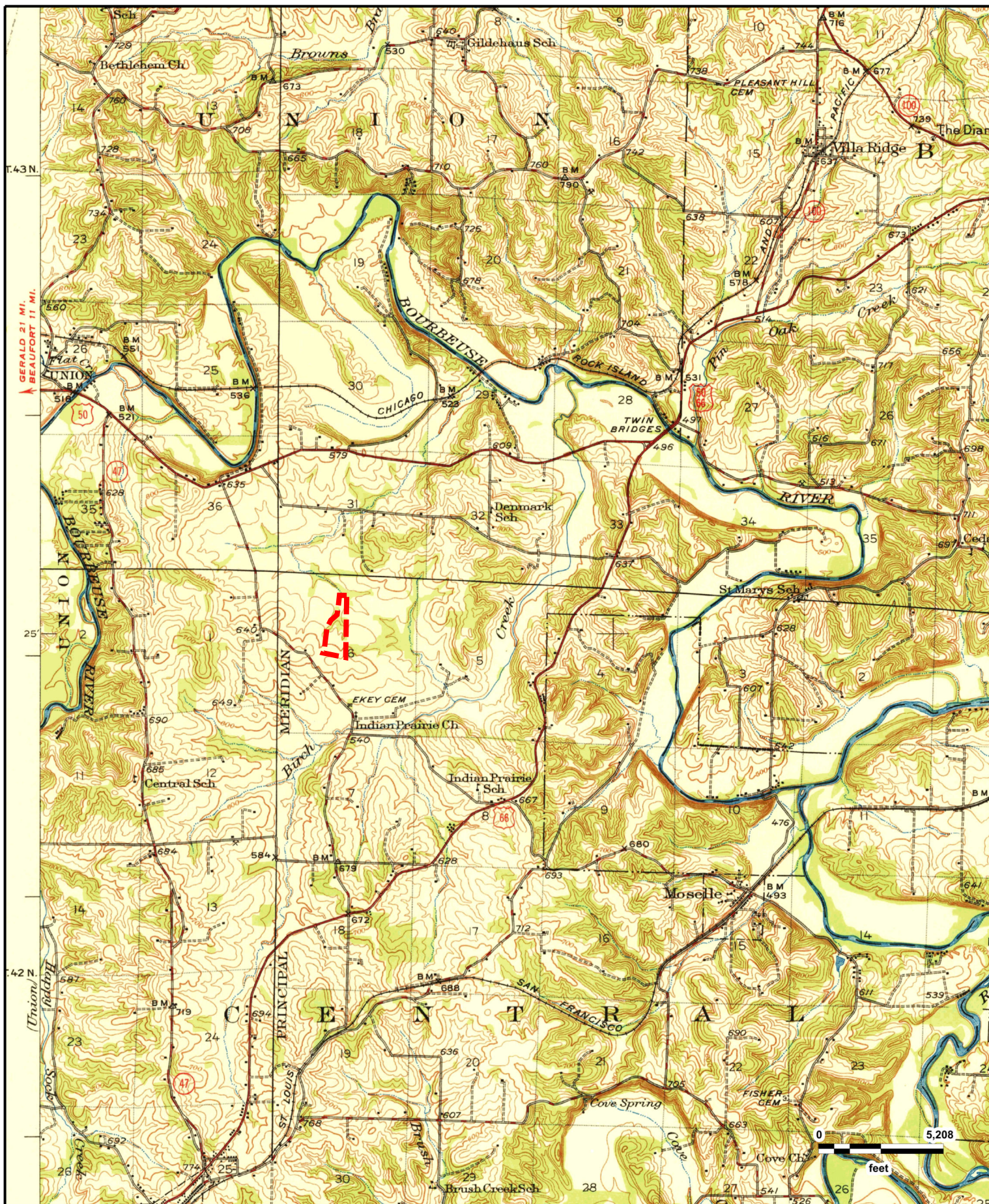
Union Corporate Center Lot 13-2
Moselle, MO (1980)

GeoSearch



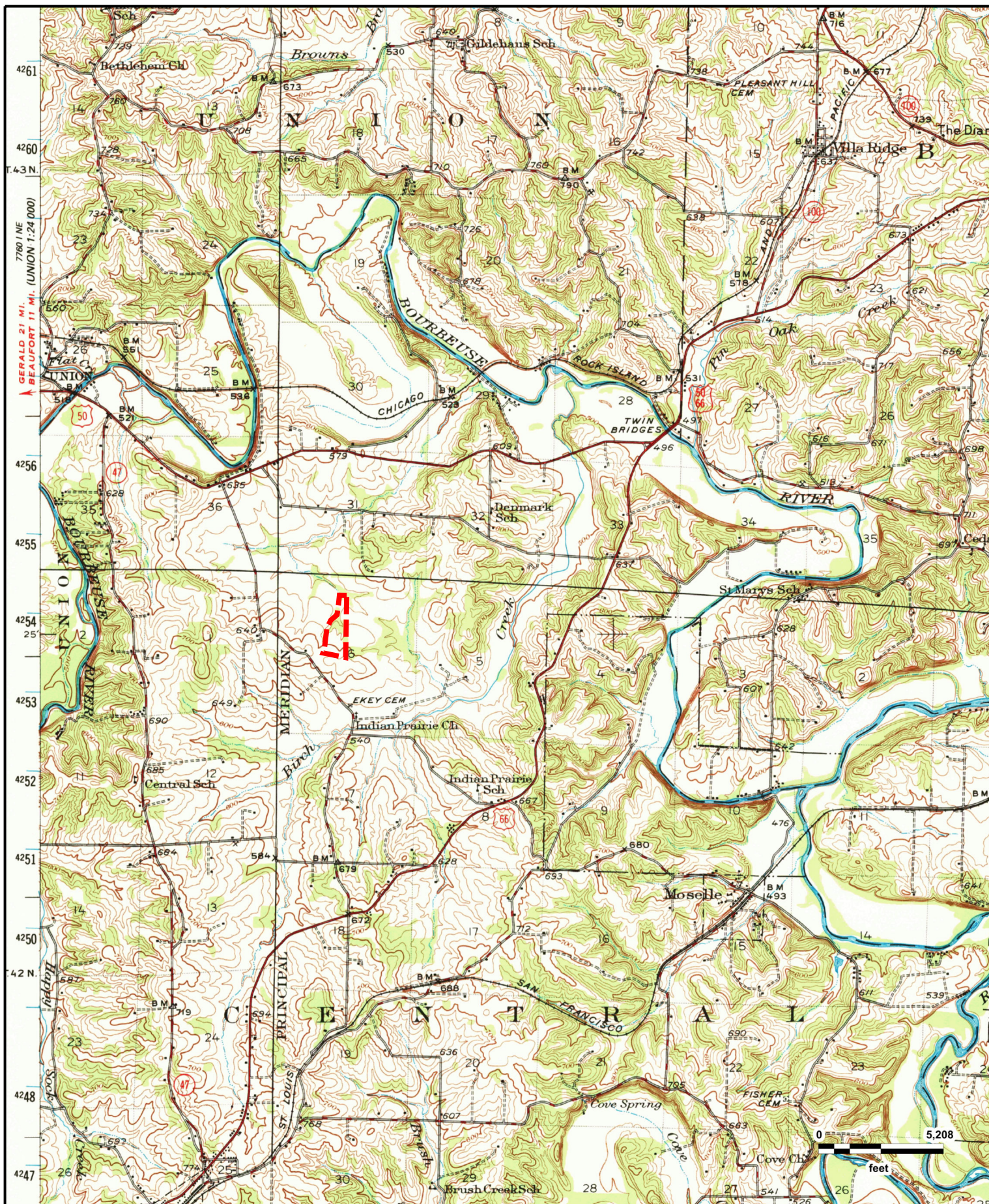
Union Corporate Center Lot 13-2
Moselle, MO (1969)

GeoSearch



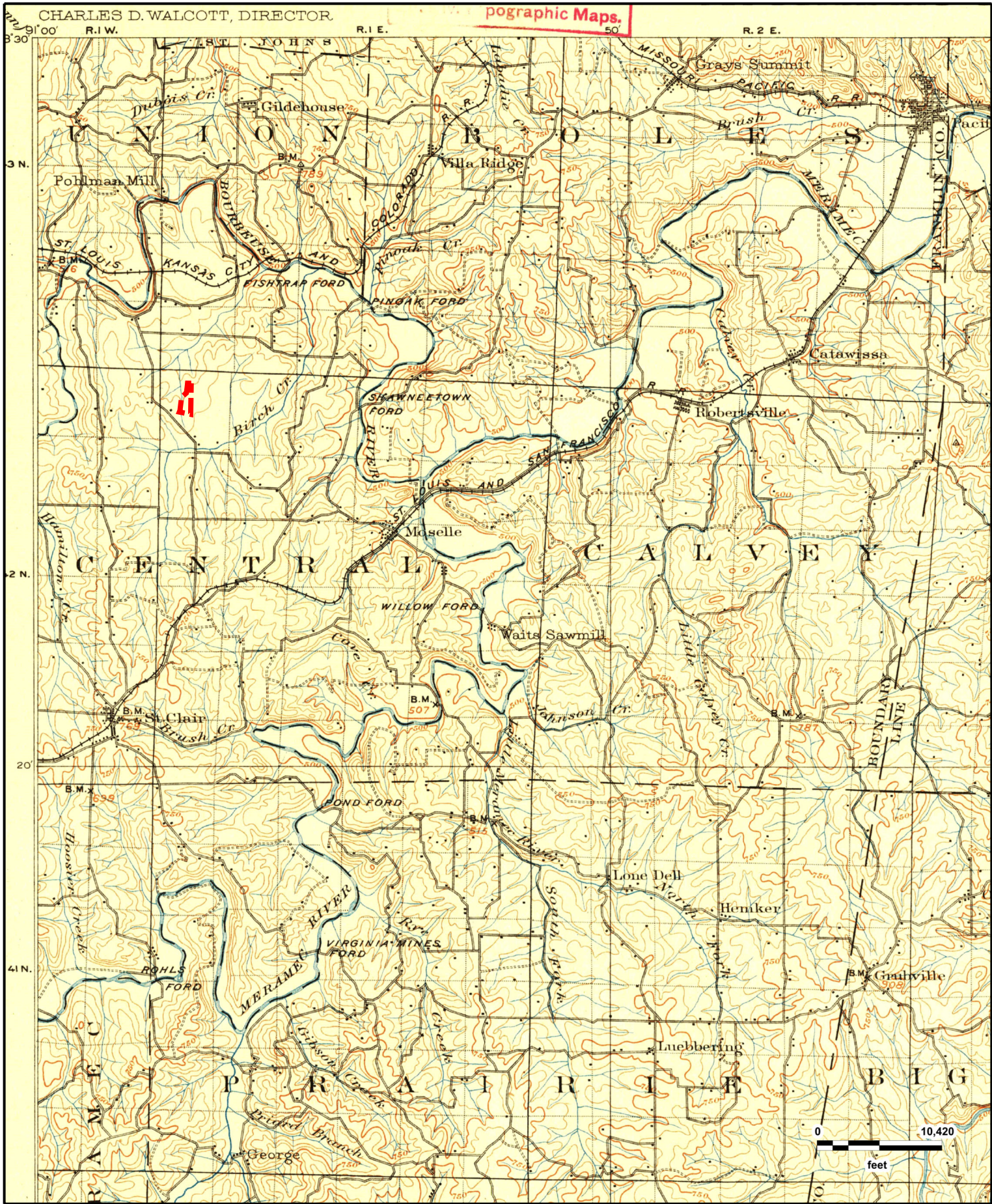
Union Corporate Center Lot 13-2
St. Clair, MO (1950)

GeoSearch



Union Corporate Center Lot 13-2
St. Clair, MO (1947)

GeoSearch



Union Corporate Center Lot 13-2
De Soto, MO (1901)



APPENDIX E

REGULATORY DATABASE REPORT



On time. On target. In touch.™

GeoPlus Oil & Gas Report

[Satellite view](#)

Target Property:

**Union Corporate Center Lot 13-2
Corporate Drive
Union, Franklin County, Missouri 63084**

Prepared For:

SCS Engineers-St. Louis

Order #: 109125

Job #: 240073

Project #: 27218177.00

PO #: 27218177.00

Date: 05/30/2018

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<i>Oil & Gas Map</i>	3
<i>Environmental Records Definitions</i>	5

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Target Property Summary

Target Property Information

Union Corporate Center Lot 13-2

Corporate Drive

Union, Missouri 63084

Coordinates

Area

USGS Quadrangle

Moselle, MO

Geographic Coverage Information

County/Parish: Franklin (MO)

ZipCode(s):

Union MO: 63084

Database Radius Summary

STATE (MO) LISTING

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
OG	0.5000	0	0	0	0	NS	NS	0

SUB-TOTAL		0	0	0	0	0	0	0
-----------	--	---	---	---	---	---	---	---

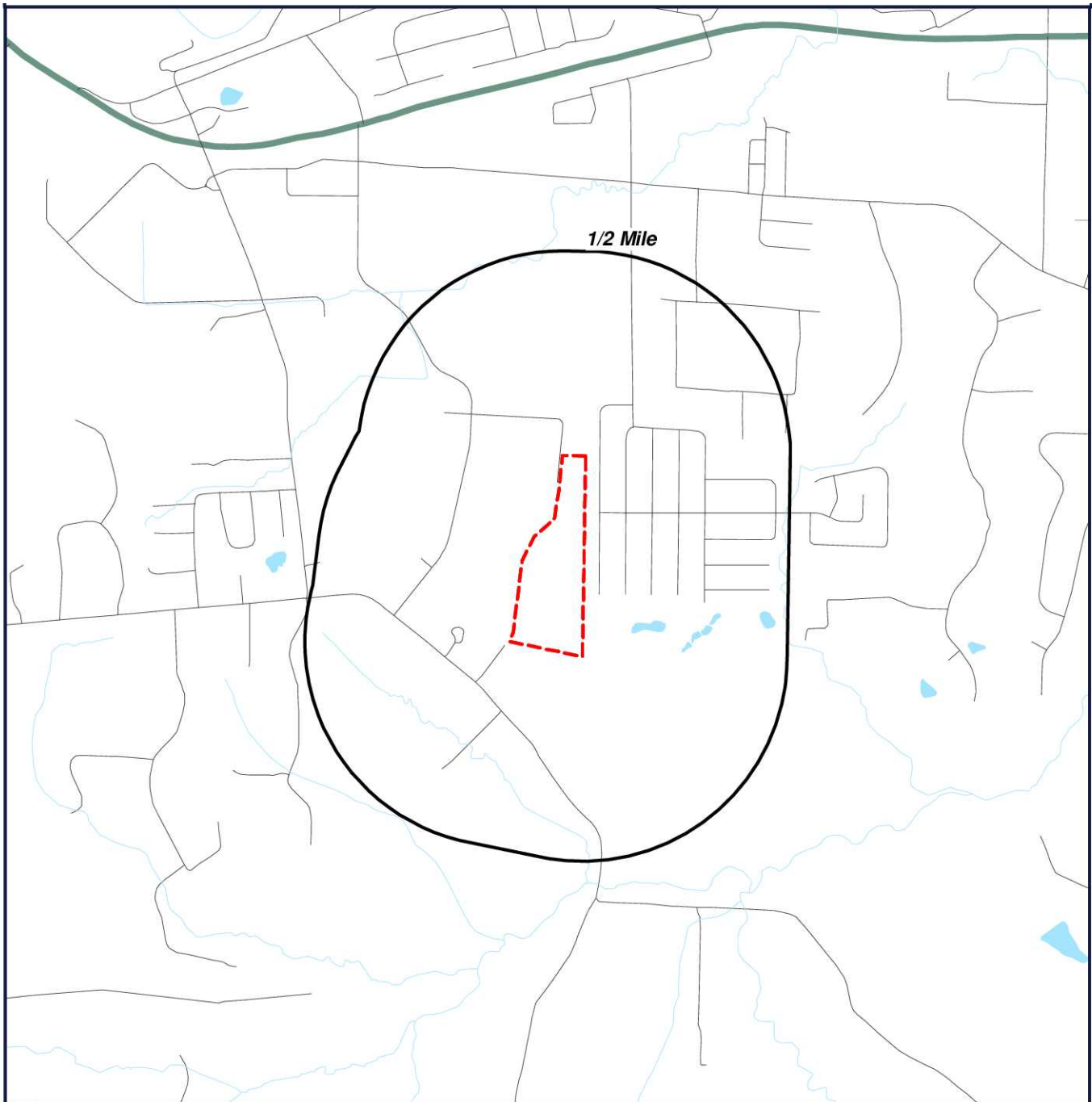
TOTAL		0	0	0	0	0	0	0
-------	--	---	---	---	---	---	---	---

NOTES:

NS = NOT SEARCHED

TP/AP = TARGET PROPERTY/ADJACENT PROPERTY

OIL & GAS MAP



-  Target Property (TP)
-  Well Location

**Union Corporate Center Lot 13-
2
Corporate Drive
Union, Missouri
63084**



0' 1000' 2000' 3000'
SCALE: 1" = 2000'

[Click here to access Satellite view](#)

Located Sites Summary

No Records Found.

Environmental Records Definitions - STATE (MO)

OG

Oil and Gas Well Database

VERSION DATE: 02/01/17

This oil and gas well database is maintained by the Geological Survey Program of the Missouri Department of Natural Resources. The database contains permits for over 12,000 wells. Well status includes under construction, active, inactive, plugged and abandoned.



On time. On target. In touch.™

GeoPlus Physical Setting Maps

[Satellite view](#)

Target Property:

***Union Corporate Center Lot 13-2
Corporate Drive
Union, Franklin County, Missouri 63084***

Prepared For:

SCS Engineers-St. Louis

Order #: 109125

Job #: 240075

Project #: 27218177.00

PO #: 27218177.00

Date: 05/30/2018

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<i>FEMA Map</i>	2
<i>FEMA Report</i>	3
<i>NWI Map</i>	4
<i>NWI Report</i>	5
<i>SOIL Map</i>	6
<i>SOIL Report</i>	7
<i>GEOLOGY Map</i>	8
<i>GEOLOGY Report</i>	9

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Target Property Summary

Target Property Information

Union Corporate Center Lot 13-2

Corporate Drive

Union, Missouri 63084

Coordinates

Area

USGS Quadrangle

Moselle, MO

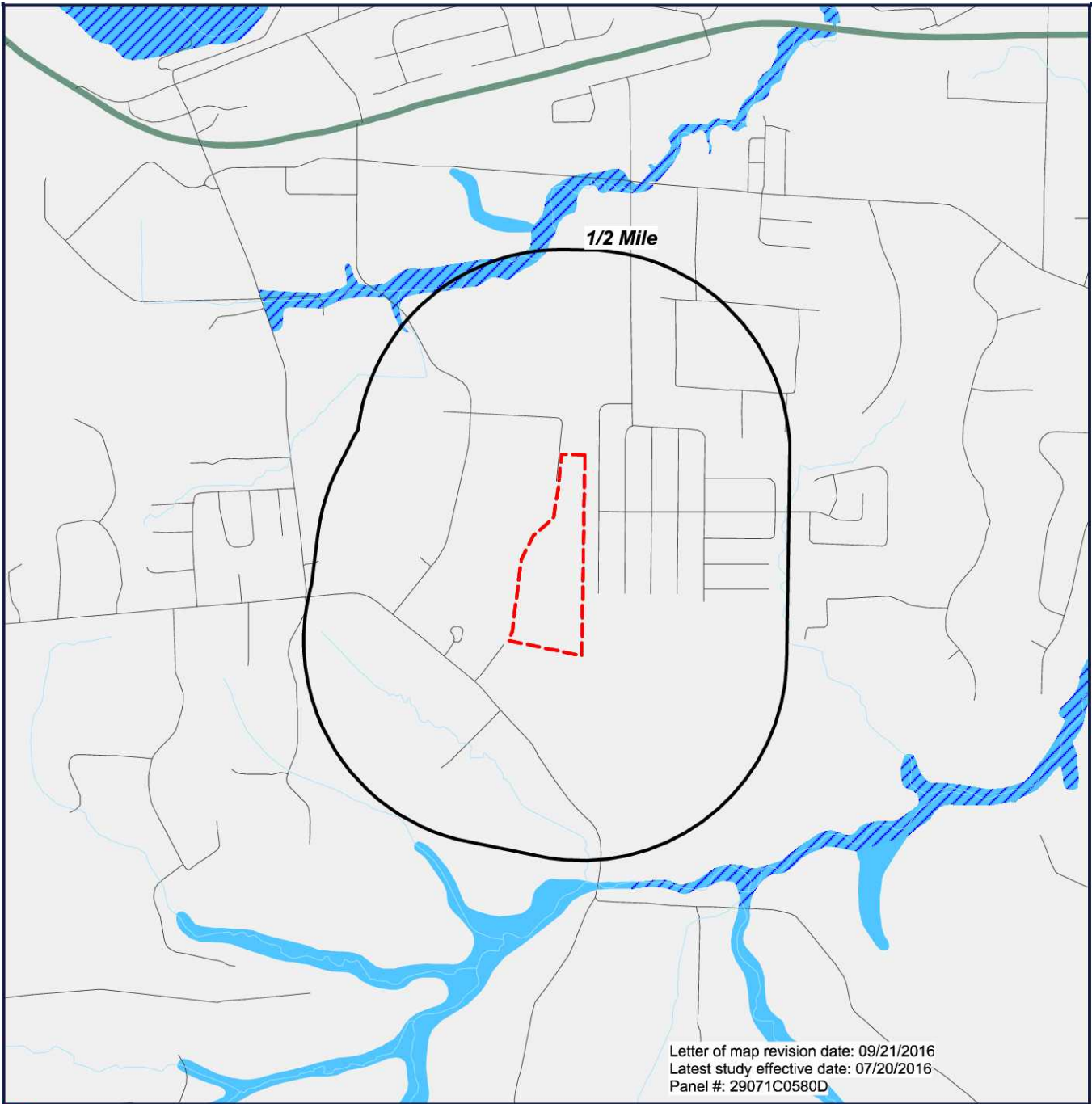
Geographic Coverage Information

County/Parish: Franklin (MO)

ZipCode(s):

Union MO: 63084

FEMA Map



Target Property (TP)

Union Corporate Center Lot 13-

2

**Corporate Drive
Union, Missouri
63084**

	ZONE A		ZONE D
	ZONE AE		ZONE X
	ZONE AH		AREA NOT INCLUDED
	ZONE A0		OPEN WATER
	ZONE AR		NDA - DIGITAL DATA NOT AVAILABLE
	ZONE V		
	ZONE VE		



0' 1000' 2000' 3000'
SCALE: 1" = 2000'

[Click here to access Satellite view](#)

FEMA Report

FEMA - Federal Emergency Management Agency

The National Flood Hazard Layer (NFHL) data used in this report is derived from the Federal Emergency Management Agency. The NFHL dataset is a compilation of effective Flood Insurance Rate Map (FIRM) databases (a collection of the digital data that are used in GIS systems for creating new Flood Insurance Rate Maps) and Letters of Map Change (Letters of Map Amendment and Letters of Map Revision only) that create a seamless GIS data layer for United States and its territories. The NFHL is updated as new study or LOMC data becomes effective. Note: Currently, not all areas have modernized FIRM database data available. As a result, users may need to refer to the effective Flood Insurance Rate Map for effective flood hazard information. This data was provided by the Federal Emergency Management Agency's Map Service Center in November of 2013.

FEMA Flood Zone Definitions within Search Radius

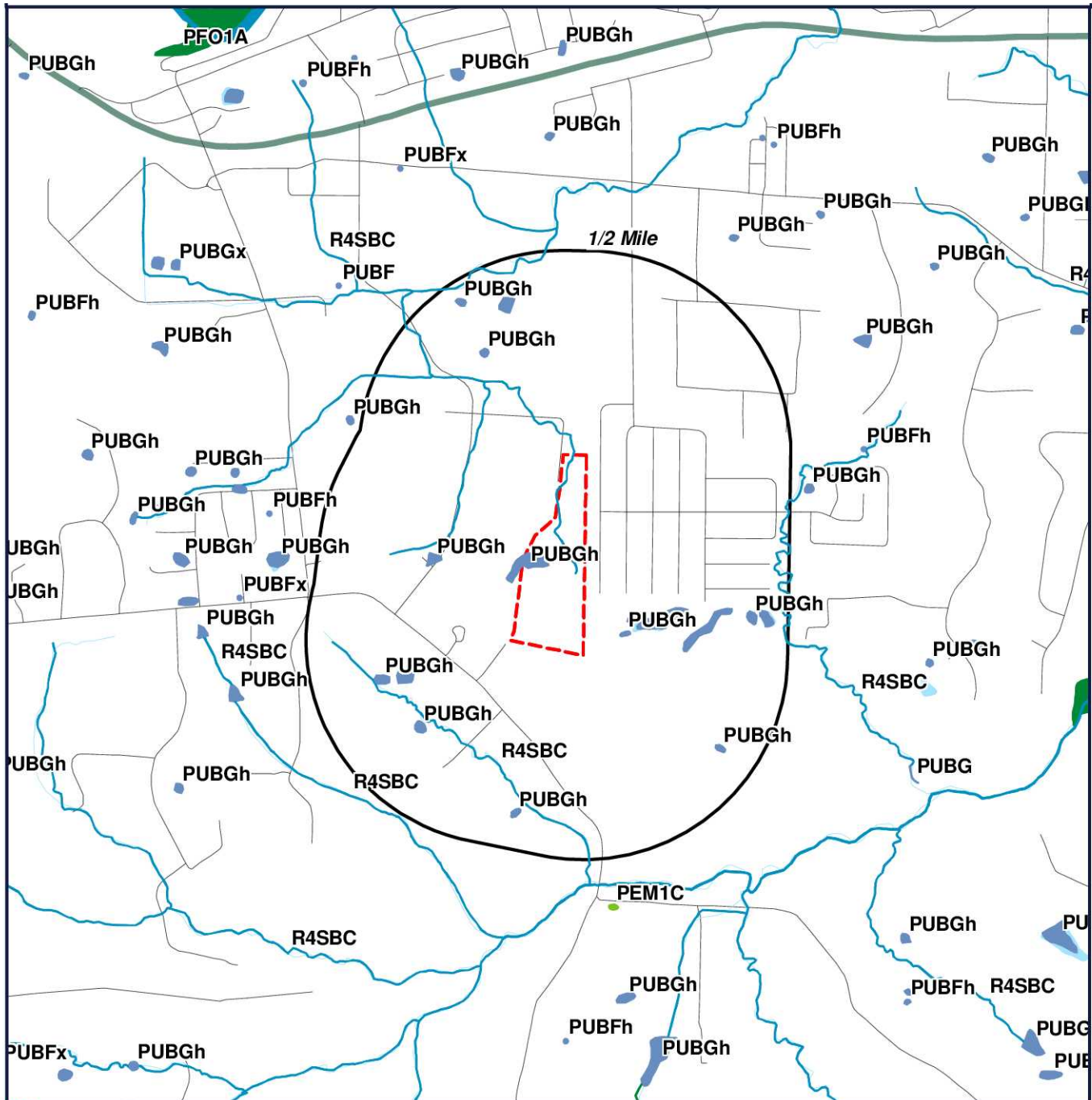
AE	Zone AE
-----------	----------------

Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. BFEs are shown within these zones. (Zone AE is used on new and revised maps in place of Zones A1–A30.)

X	Zone X
----------	---------------

An area that is determined to be outside the 100 and 500 year floodplains.

NWI Map



Target Property (TP)

Union Corporate Center Lot 13-

Map Date: 09/19/2016

ESTUARINE AND MARINE DEEPWATER
 ESTUARINE AND MARINE WETLAND
 FRESHWATER EMERGENT WETLAND
 FRESHWATER FORESTED/ SHRUB WETLAND

LAKE
 OTHER
 RIVERINE

FRESHWATER POND
 NDA - DIGITAL DATA NOT AVAILABLE

2
Corporate Drive
Union, Missouri
63084



0' 1000' 2000' 3000'
 SCALE: 1" = 2000'

[Click here to access Satellite view](#)

NWI Report

NWI - National Wetlands Inventory

The US NWI digital data bundle is a set of records of wetlands location and classification as defined by the U.S. Fish & Wildlife Service. This dataset is one of a series available in 7.5 minute by 7.5 minute blocks containing ground planimetric coordinates of wetlands point, line, and area features and wetlands attributes. When completed, the series will provide coverage for all of the contiguous United States, Hawaii, Alaska, and U.S. protectorates in the Pacific and Caribbean. The digital data as well as the hardcopy maps that were used as the source for the digital data are produced and distributed by the U.S. Fish & Wildlife Service's National Wetlands Inventory project. Currently, this data is only available in select counties throughout the United States.

NWI Definitions within Search Radius

PUBGh

SYSTEM: **PALUSTRINE**

CLASS: **UNCONSOLIDATED BOTTOM**

SPECIAL MODIFIER: **DIKED/IMPOUNDED**

R4SBC

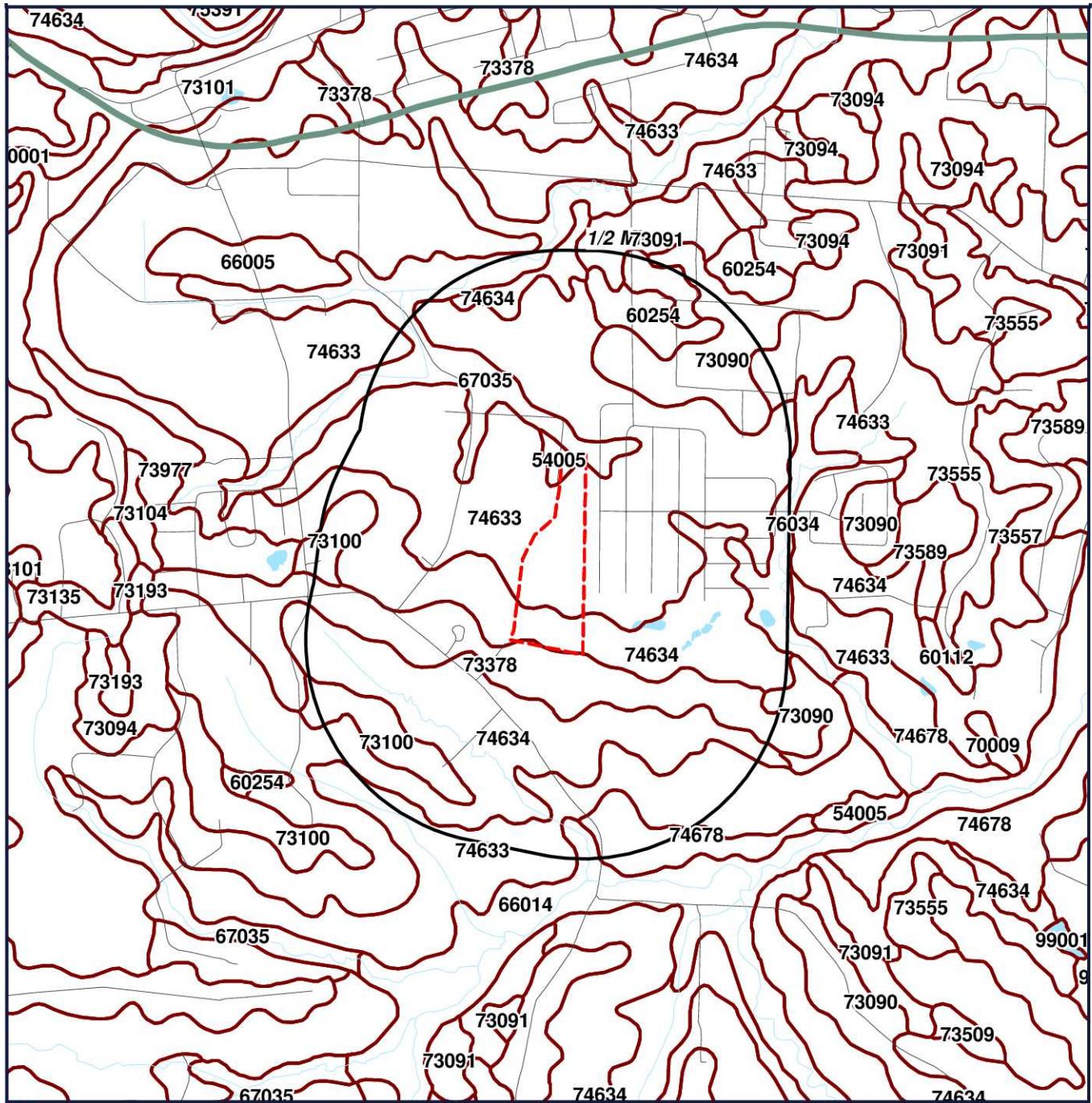
SYSTEM: **RIVERINE**

SUBSYSTEM: **INTERMITTENT**

CLASS: **STREAMBED**

WATER REGIME: **SEASONALLY FLOODED**

Soil Map



 Target Property (TP)

 SOIL BOUNDARY

 NOTCOM - DIGITAL DATA NOT AVAILABLE/NOT COMPLETE

**Union Corporate Center Lot 13-
2
Corporate Drive
Union, Missouri
63084**



0' 1000' 2000' 3000'
SCALE: 1" = 2000'

[Click here to access Satellite view](#)

SOIL Report

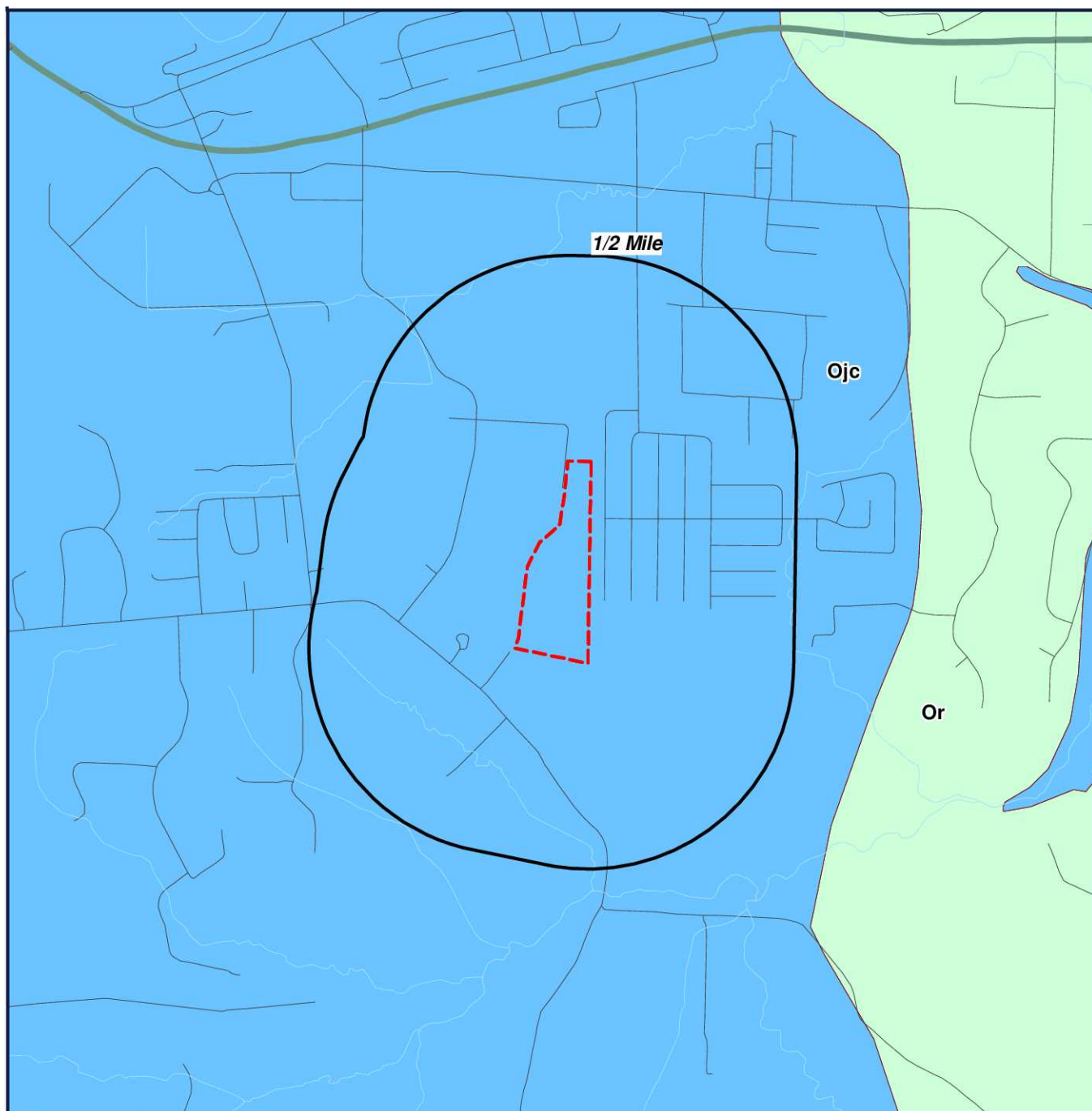
Soil Surveys

The soil data used in this report is obtained from the Natural Resources Conservation Service (NRCS). The NRCS is the primary federal agency that works with private landowners to help them conserve, maintain and improve their natural resources. The soil survey contains information that can be applied in managing farms and ranches; in selecting sites for roads, ponds, buildings and other structures; and in determining the suitability of tracts of land for farming, industry and recreation. This data is available in select counties throughout the United States.

SOIL Code Definitions within Search Radius

60254	Useful silt loam, 15 to 20 percent slopes
54005	Twomile silt loam, 0 to 2 percent slopes, rarely flooded
66014	Haymond silt loam, 0 to 3 percent slopes, frequently flooded
73090	Useful silt loam, 3 to 8 percent slopes
73091	Useful silt loam, 8 to 15 percent slopes, eroded
73094	Gatewood very gravelly silt loam, 15 to 35 percent slopes, stony
73100	Wrengart silt loam, 2 to 5 percent slopes
73555	Hobson loam, 3 to 8 percent slopes
74633	Hartville silt loam, 1 to 3 percent slopes
74634	Hartville silt loam, 3 to 8 percent slopes
74678	Raccoon silt loam, 0 to 2 percent slopes, occasionally flooded
67035	Haymond silt loam, 1 to 3 percent slopes, frequently flooded
76034	Raccoon-Freeburg complex, 1 to 3 percent slopes, occasionally flooded
73378	Useful silt loam, 1 to 3 percent slopes

Geology Map



 Target Property (TP)

**Union Corporate Center Lot 13-
2
Corporate Drive
Union, Missouri
63084**



0' 1000' 2000' 3000'
SCALE: 1" = 2000'

[Click here to access Satellite view](#)

GEOLOGY Report

US GEOLOGY

THE GEOLOGY DATA USED IN THIS REPORT ORIGINATES FROM THE USGS. THE FIRST STAGE IN DEVELOPING STATE DATABASES FOR THE CONTERMINOUS UNITED STATES WAS TO ACQUIRE DIGITAL VERSIONS OF ALL EXISTING STATE GEOLOGIC MAPS. ALTHOUGH A SIGNIFICANT NUMBER OF DIGITAL STATE MAPS ALREADY EXISTED, A NUMBER OF STATES LACKED THEM. FOR THESE STATES NEW DIGITAL COMPILATIONS WERE PREPARED IN COOPERATION WITH STATE GEOLOGIC SURVEYS OR BY THE NSA (NATIONAL SURVEYS AND ANALYSIS) PROJECT. THESE NEW DIGITAL STATE GEOLOGIC MAPS AND DATABASES WERE CREATED BY DIGITIZING ALREADY EXISTING PRINTED MAPS, OR, IN A FEW CASES, BY MERGING EXISTING LARGER SCALE DIGITAL MAPS.

GEOLOGY Definitions within Search Radius

GEOLOGY SYMBOL: **Ojc**

UNIT NAME: **SMITHVILLE DOLOMITE, POWELL DOLOMITE, COTTER DOLOMITE, JEFFERSON CITY DOLOMITE**

UNIT AGE: **Phanerozoic | Paleozoic | Ordovician-Early [Ibexian]**

UNIT DESCRIPTION:

SMITHVILLE DOLOMITE, POWELL DOLOMITE, COTTER DOLOMITE, JEFFERSON CITY DOLOMITE - fine crystalline, silty, cherty dolomite, and oolitic chert with local sandstone beds

ADDITIONAL UNIT INFORMATION:

IN SOUTHEAST MO-Smithville Dolomite- (150 ft. max) cherty dolomite; Powell Dolomite- (175 ft. max) dolomite with thin beds of sandstone and shale; Cotter Dolomite- (459 ft. max) oolitic dolomite with thin beds of sandstone and shale; Jefferson City Dolo

ROCKTYPE/S: **dolostone (dolomite); sandstone; shale; conglomerate; chert**



On time. On target. In touch.™

GeoPlus Water Well Report

[Satellite view](#)

Target Property:

**Union Corporate Center Lot 13-2
Corporate Drive
Union, Franklin County, Missouri 63084**

Prepared For:

SCS Engineers-St. Louis

Order #: 109125

Job #: 240072

Project #: 27218177.00

PO #: 27218177.00

Date: 05/30/2018

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<i>Water Well Map</i>	4
<i>Located Sites Summary</i>	4
<i>Environmental Records Definitions</i>	7

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Target Property Summary

Target Property Information

Union Corporate Center Lot 13-2

Corporate Drive

Union, Missouri 63084

Coordinates

Area

USGS Quadrangle

Moselle, MO

Geographic Coverage Information

County/Parish: Franklin (MO)

ZipCode(s):

Union MO: 63084

Database Radius Summary

FEDERAL LISTING

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
NWIS	0.5000	0	0	0	0	NS	NS	0
SUB-TOTAL		0	0	0	0	0	0	0

Database Radius Summary

STATE (MO) LISTING

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
WW	0.5000	0	0	0	1	NS	NS	1

SUB-TOTAL		0	0	0	1	0	0	1
-----------	--	---	---	---	---	---	---	---

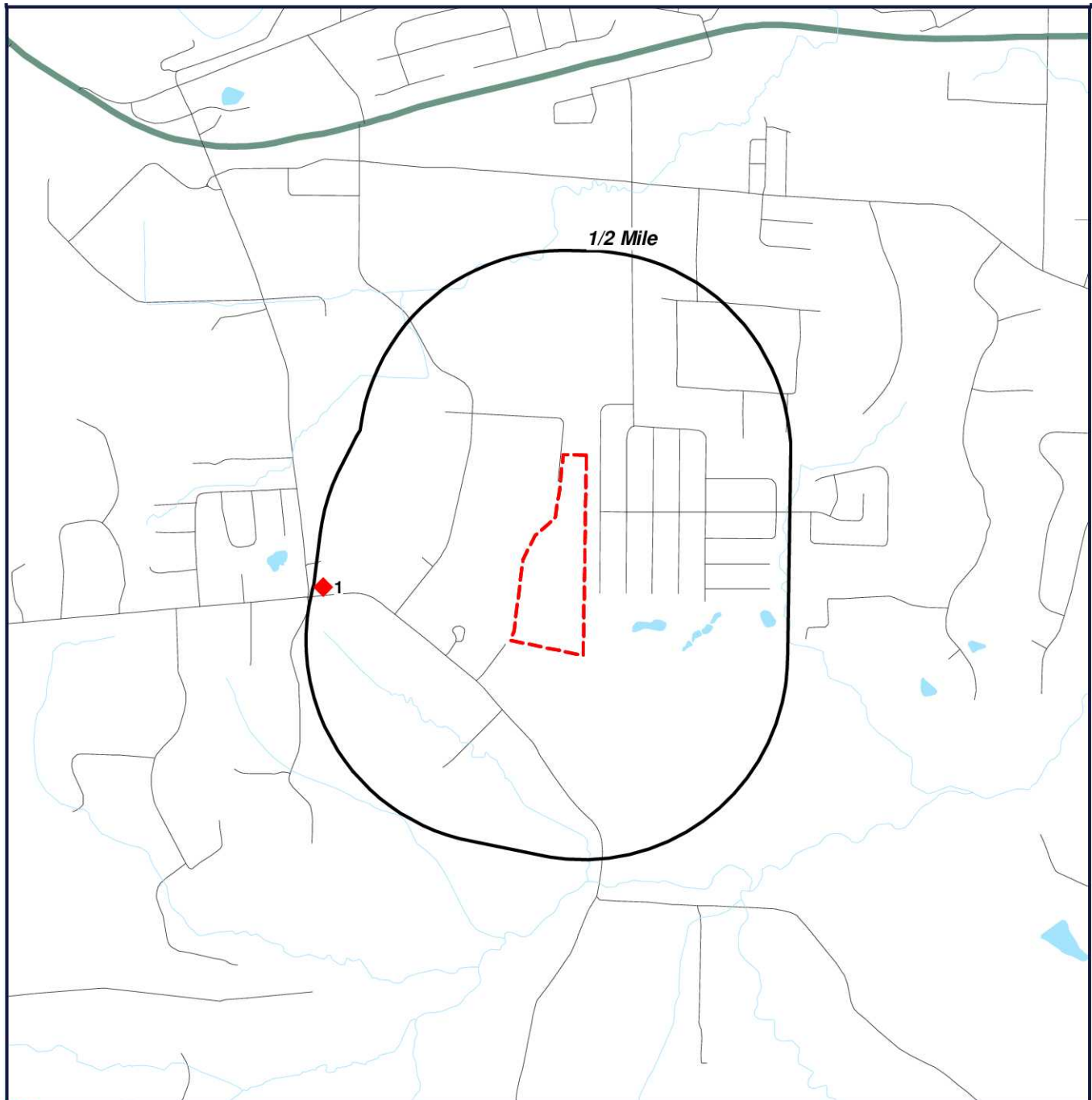
TOTAL		0	0	0	1	0	0	1
-------	--	---	---	---	---	---	---	---

NOTES:

NS = NOT SEARCHED

TP/AP = TARGET PROPERTY/ADJACENT PROPERTY

Waterwell Map



Target Property (TP)
WW

**Union Corporate Center Lot 13-
2
Corporate Drive
Union, Missouri
63084**

CONTOUR LINES REPRESENTED IN FEET



0' 1000' 2000' 3000'
SCALE: 1" = 2000'

[Click here to access Satellite view](#)

Located Sites Summary

Map ID#	Database Name	Site ID#	Distance From Site	Site Name	Address	PAGE #
1	WW	0004467	0.476 mi. WNW (2513 ft.)		FRANKLIN COUNTY, UNION, MO 63084	6

Water Well Database (WW)

[MAP ID# 1](#)

Distance from Property: 0.476 mi. (2,513 ft.) WNW

FACILITY INFORMATION

ID: **0004467**

CITY/STATE/ZIP: **UNION MO 63084**

COUNTY: **FRANKLIN**

OWNER: **MEYER, GEORGE H.**

LEASE NAME: **NOT REPORTED**

DRILLER NAME: **HAWKINS, L.E.**

DRILLER DATE: **1937/08/01**

WELL TYPE: **PRIVATE WELL**

ELEVATION: **646.00000**

DEPTH BED: **5.00000**

TOTAL DEPTH: **201.00000**

FORM TOP: **JEFFERSON CITY DOLOMITE**

FORM BOTTOM: **ROUBIDOUX FORMATION**

REMARKS: **DRILLER'S LOG ATTACHED**

[Back to Report Summary](#)

Environmental Records Definitions - FEDERAL

NWIS

United States Geological Survey National Water Information System

VERSION DATE: 12/14/16

This USGS National Water Information System database only includes groundwater wells. The USGS defines this well type as: A hole or shaft constructed in the earth intended to be used to locate, sample, or develop groundwater, oil, gas, or some other subsurface material. The diameter of a well is typically much smaller than the depth. Wells are also used to artificially recharge groundwater or to pressurize oil and gas production zones. Additional information about specific kinds of wells should be recorded under the secondary site types or the Use of Site field. Underground waste-disposal wells should be classified as waste-injection wells.

Environmental Records Definitions - STATE (MO)

WW

Water Well Database

VERSION DATE: 08/19/14

The Well Information Management System (W.I.M.S.) database is maintained by the Geological Survey Program of the Missouri Department of Natural Resources. This database contains information on location, construction and some geology for most wells constructed after October 1986.



On time. On target. In touch.™

Radius Report

[Satellite view](#)

Target Property:

***Union Corporate Center Lot 13-2
Corporate Drive
Union, Franklin County, Missouri 63084***

Prepared For:

SCS Engineers-St. Louis

Order #: 109125

Job #: 240069

Project #: 27218177.00

PO #: 27218177.00

Date: 05/30/2018

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Disclaimer

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Target Property Summary

Target Property Information

Union Corporate Center Lot 13-2
Corporate Drive
Union, Missouri 63084

Coordinates

Area centroid (-90.956872, 38.4170261)
580 feet above sea level

USGS Quadrangle

Moselle, MO

Geographic Coverage Information

County/Parish: Franklin (MO)

ZipCode(s):

Union MO: 63084

Database Summary

FEDERAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
EMERGENCY RESPONSE NOTIFICATION SYSTEM	ERNSMO	0	0	TP/AP
FEDERAL ENGINEERING INSTITUTIONAL CONTROL SITES	EC	0	0	TP/AP
LAND USE CONTROL INFORMATION SYSTEM	LUCIS	0	0	TP/AP
RCRA SITES WITH CONTROLS	RCRASC	0	0	TP/AP
RESOURCE CONSERVATION & RECOVERY ACT - GENERATOR	RCRAGR07	0	0	0.1250
RESOURCE CONSERVATION & RECOVERY ACT - NON-GENERATOR	RCRANGR07	1	0	0.1250
FEMA OWNED STORAGE TANKS	FEMAUST	0	0	0.2500
BROWNFIELDS MANAGEMENT SYSTEM	BF	0	0	0.5000
DELISTED NATIONAL PRIORITIES LIST	DNPL	0	0	0.5000
NO LONGER REGULATED RCRA NON-CORRACTS TSD FACILITIES	NLRRCRAT	0	0	0.5000
RESOURCE CONSERVATION & RECOVERY ACT - NON-CORRACTS TREATMENT, STORAGE & DISPOSAL FACILITIES	RCRAT	0	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM	SEMS	0	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM ARCHIVED SITE INVENTORY	SEMSARCH	0	0	0.5000
NATIONAL PRIORITIES LIST	NPL	0	0	1.0000
NO LONGER REGULATED RCRA CORRECTIVE ACTION FACILITIES	NLRRCRAC	0	0	1.0000
PROPOSED NATIONAL PRIORITIES LIST	PNPL	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - CORRECTIVE ACTION FACILITIES	RCRAC	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - SUBJECT TO CORRECTIVE ACTION FACILITIES	RCRASUBC	0	0	1.0000
SUB-TOTAL		1	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
AEROMETRIC INFORMATION RETRIEVAL SYSTEM / AIR FACILITY SUBSYSTEM	AIRSAFS	0	0	TP/AP
BIENNIAL REPORTING SYSTEM	BRS	0	0	TP/AP
CERCLIS LIENS	SFLIENS	0	0	TP/AP
CLANDESTINE DRUG LABORATORY LOCATIONS	CDL	0	0	TP/AP
EPA DOCKET DATA	DOCKETS	0	0	TP/AP
ENFORCEMENT AND COMPLIANCE HISTORY INFORMATION	ECHOR07	1	0	TP/AP

Database Summary

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
FACILITY REGISTRY SYSTEM	FRSMO	1	0	TP/AP
HAZARDOUS MATERIALS INCIDENT REPORTING SYSTEM	HMIRSR07	0	0	TP/AP
INTEGRATED COMPLIANCE INFORMATION SYSTEM (FORMERLY DOCKETS)	ICIS	0	0	TP/AP
INTEGRATED COMPLIANCE INFORMATION SYSTEM NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	ICISNPDES	2	0	TP/AP
MATERIAL LICENSING TRACKING SYSTEM	MLTS	0	0	TP/AP
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	NPDESR07	0	0	TP/AP
PCB ACTIVITY DATABASE SYSTEM	PADS	0	0	TP/AP
PERMIT COMPLIANCE SYSTEM	PCSR07	0	0	TP/AP
SEMS LIEN ON PROPERTY	SEMSLIENS	0	0	TP/AP
SECTION SEVEN TRACKING SYSTEM	SSTS	0	0	TP/AP
TOXIC SUBSTANCE CONTROL ACT INVENTORY	TSCA	0	0	TP/AP
TOXICS RELEASE INVENTORY	TRI	0	0	TP/AP
ALTERNATIVE FUELING STATIONS	ALTFUELS	0	0	0.2500
HISTORICAL GAS STATIONS	HISTPST	0	0	0.2500
INTEGRATED COMPLIANCE INFORMATION SYSTEM DRYCLEANERS	ICISCLEANERS	0	0	0.2500
MINE SAFETY AND HEALTH ADMINISTRATION MASTER INDEX FILE	MSHA	0	0	0.2500
MINERAL RESOURCE DATA SYSTEM	MRDS	0	0	0.2500
OPEN DUMP INVENTORY	ODI	0	0	0.5000
SURFACE MINING CONTROL AND RECLAMATION ACT SITES	SMCRA	0	0	0.5000
URANIUM MILL TAILINGS RADIATION CONTROL ACT SITES	USUMTRCA	0	0	0.5000
DEPARTMENT OF DEFENSE SITES	DOD	0	0	1.0000
FORMER MILITARY NIKE MISSILE SITES	NMS	0	0	1.0000
FORMERLY USED DEFENSE SITES	FUDS	0	0	1.0000
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM	FUSRAP	0	0	1.0000
RECORD OF DECISION SYSTEM	RODS	0	0	1.0000
SUB-TOTAL		4	0	

Database Summary

STATE (MO) LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
INSTITUTIONAL ENGINEERING CONTROLS REGISTRY	ICEC	0	0	TP/AP
REGISTERED ABOVEGROUND STORAGE TANKS	RAST	0	0	0.2500
REGISTERED UNDERGROUND STORAGE TANKS	RUST	0	0	0.2500
DELISTED STATE HAZARDOUS WASTE SITES	DSHWS	0	0	0.5000
LANDFILL AND SOLID WASTE DISPOSAL SITES	LFSWDS	0	0	0.5000
LEAKING UNDERGROUND STORAGE TANKS	LUST	0	0	0.5000
VOLUNTARY CLEANUP AND BROWNFIELD SITES	VCPBF	0	0	0.5000
STATE HAZARDOUS WASTE SITES	SHWS	2	0	1.0000
SUB-TOTAL		2	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMITS	NPDES	2	0	TP/AP
SPILLS LISTING	SPILLS	0	0	TP/AP
DRY CLEANERS	CLEANERS	0	0	0.2500
SITE MANAGEMENT AND REPORTING SYSTEM	SMARS	2	0	0.5000
SUB-TOTAL		4	0	

Database Summary

TRIBAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	USTR07	0	0	0.2500
LEAKING UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	LUSTR07	0	0	0.5000
OPEN DUMP INVENTORY ON TRIBAL LANDS	ODINDIAN	0	0	0.5000

SUB-TOTAL		0	0	
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Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
INDIAN RESERVATIONS	INDIANRES	0	0	1.0000

SUB-TOTAL		0	0	
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TOTAL		11	0	
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Database Radius Summary

FEDERAL LISTING

Standard environmental records are displayed in **bold**.

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
AIRSAFS	0.0200	0	NS	NS	NS	NS	NS	0
BRS	0.0200	0	NS	NS	NS	NS	NS	0
CDL	0.0200	0	NS	NS	NS	NS	NS	0
DOCKETS	0.0200	0	NS	NS	NS	NS	NS	0
EC	0.0200	0	NS	NS	NS	NS	NS	0
ECHOR07	0.0200	1	NS	NS	NS	NS	NS	1
ERNSMO	0.0200	0	NS	NS	NS	NS	NS	0
FRSMO	0.0200	1	NS	NS	NS	NS	NS	1
HMIRSR07	0.0200	0	NS	NS	NS	NS	NS	0
ICIS	0.0200	0	NS	NS	NS	NS	NS	0
ICISNPDES	0.0200	2	NS	NS	NS	NS	NS	2
LUCIS	0.0200	0	NS	NS	NS	NS	NS	0
MLTS	0.0200	0	NS	NS	NS	NS	NS	0
NPDES07	0.0200	0	NS	NS	NS	NS	NS	0
PADS	0.0200	0	NS	NS	NS	NS	NS	0
PCSR07	0.0200	0	NS	NS	NS	NS	NS	0
RCRASC	0.0200	0	NS	NS	NS	NS	NS	0
SEMSLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SFLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SSTS	0.0200	0	NS	NS	NS	NS	NS	0
TRI	0.0200	0	NS	NS	NS	NS	NS	0
TSCA	0.0200	0	NS	NS	NS	NS	NS	0
RCRAGR07	0.1250	0	0	NS	NS	NS	NS	0
RCRANGR07	0.1250	0	1	NS	NS	NS	NS	1
ALTFUELS	0.2500	0	0	0	NS	NS	NS	0
FEMAUST	0.2500	0	0	0	NS	NS	NS	0
HISTPST	0.2500	0	0	0	NS	NS	NS	0
ICISCLEANERS	0.2500	0	0	0	NS	NS	NS	0
MRDS	0.2500	0	0	0	NS	NS	NS	0
MSHA	0.2500	0	0	0	NS	NS	NS	0
BF	0.5000	0	0	0	0	NS	NS	0
DNPL	0.5000	0	0	0	0	NS	NS	0
NLRRCRAT	0.5000	0	0	0	0	NS	NS	0
ODI	0.5000	0	0	0	0	NS	NS	0
RCRAT	0.5000	0	0	0	0	NS	NS	0

Database Radius Summary

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
SEMS	0.5000	0	0	0	0	NS	NS	0
SEMSARCH	0.5000	0	0	0	0	NS	NS	0
SMCRA	0.5000	0	0	0	0	NS	NS	0
USUMTRCA	0.5000	0	0	0	0	NS	NS	0
DOD	1.0000	0	0	0	0	0	NS	0
FUDS	1.0000	0	0	0	0	0	NS	0
FUSRAP	1.0000	0	0	0	0	0	NS	0
NLRRCRAC	1.0000	0	0	0	0	0	NS	0
NMS	1.0000	0	0	0	0	0	NS	0
NPL	1.0000	0	0	0	0	0	NS	0
PNPL	1.0000	0	0	0	0	0	NS	0
RCRAC	1.0000	0	0	0	0	0	NS	0
RCRASUBC	1.0000	0	0	0	0	0	NS	0
RODS	1.0000	0	0	0	0	0	NS	0
SUB-TOTAL		4	1	0	0	0	0	5

Database Radius Summary

STATE (MO) LISTING

Standard environmental records are displayed in **bold**.

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
ICEC	0.0200	0	NS	NS	NS	NS	NS	0
NPDES	0.0200	2	NS	NS	NS	NS	NS	2
SPILLS	0.0200	0	NS	NS	NS	NS	NS	0
CLEANERS	0.2500	0	0	0	NS	NS	NS	0
RAST	0.2500	0	0	0	NS	NS	NS	0
RUST	0.2500	0	0	0	NS	NS	NS	0
DSHWS	0.5000	0	0	0	0	NS	NS	0
LFSWDS	0.5000	0	0	0	0	NS	NS	0
LUST	0.5000	0	0	0	0	NS	NS	0
SMARS	0.5000	2	0	0	0	NS	NS	2
VCPBF	0.5000	0	0	0	0	NS	NS	0
SHWS	1.0000	2	0	0	0	0	NS	2
SUB-TOTAL		6	0	0	0	0	0	6

Database Radius Summary

TRIBAL LISTING

Standard environmental records are displayed in **bold**.

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
USTR07	0.2500	0	0	0	NS	NS	NS	0
LUSTR07	0.5000	0	0	0	0	NS	NS	0
ODINDIAN	0.5000	0	0	0	0	NS	NS	0
INDIANRES	1.0000	0	0	0	0	0	NS	0

SUB-TOTAL		0	0	0	0	0	0	0
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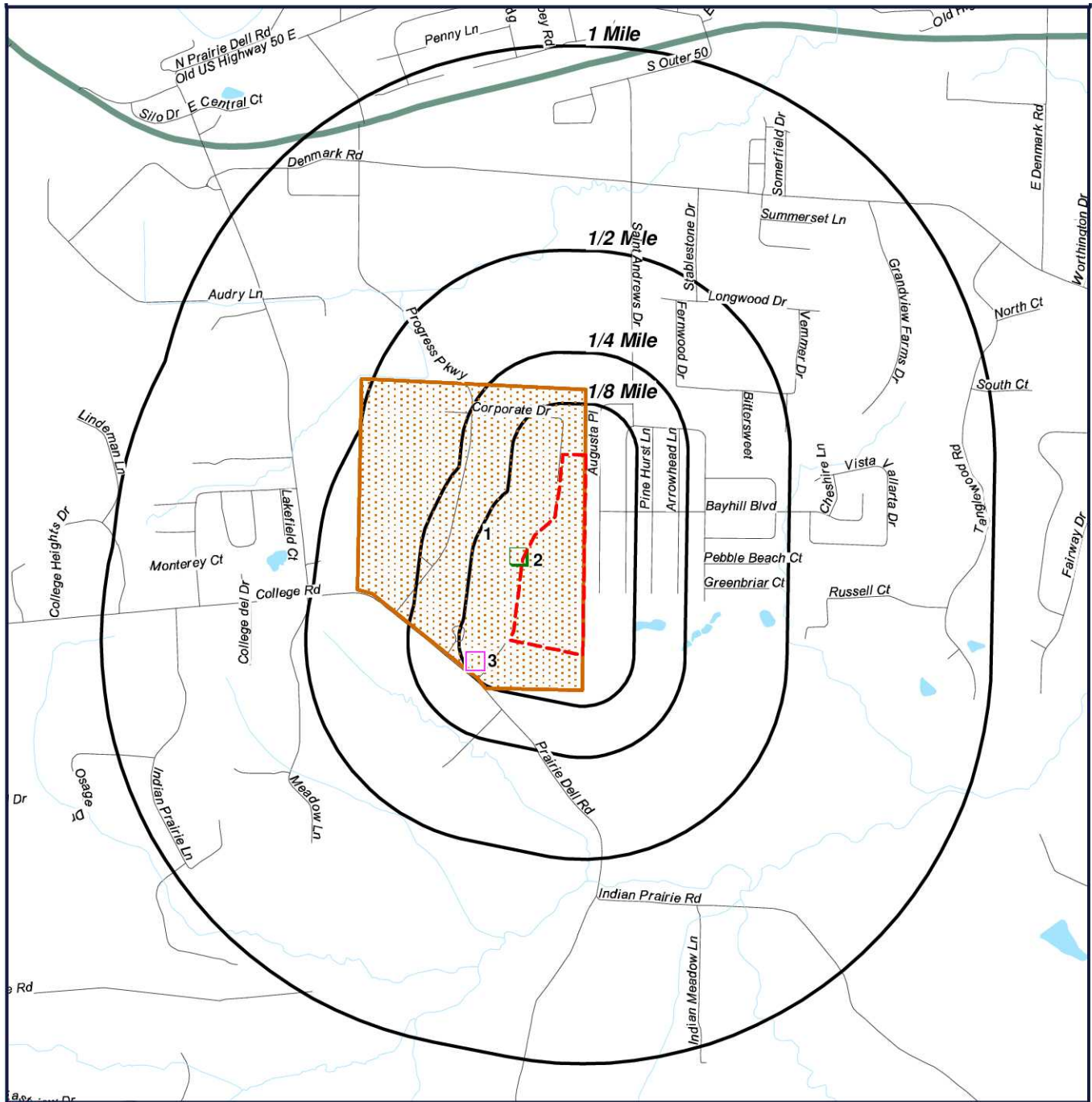
TOTAL		10	1	0	0	0	0	11
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NOTES:

NS = NOT SEARCHED

TP/AP = TARGET PROPERTY/ADJACENT PROPERTY

Radius Map 1



- Target Property (TP)
- SHWS
- SMARS
- FRSMO
- RCRANGR07

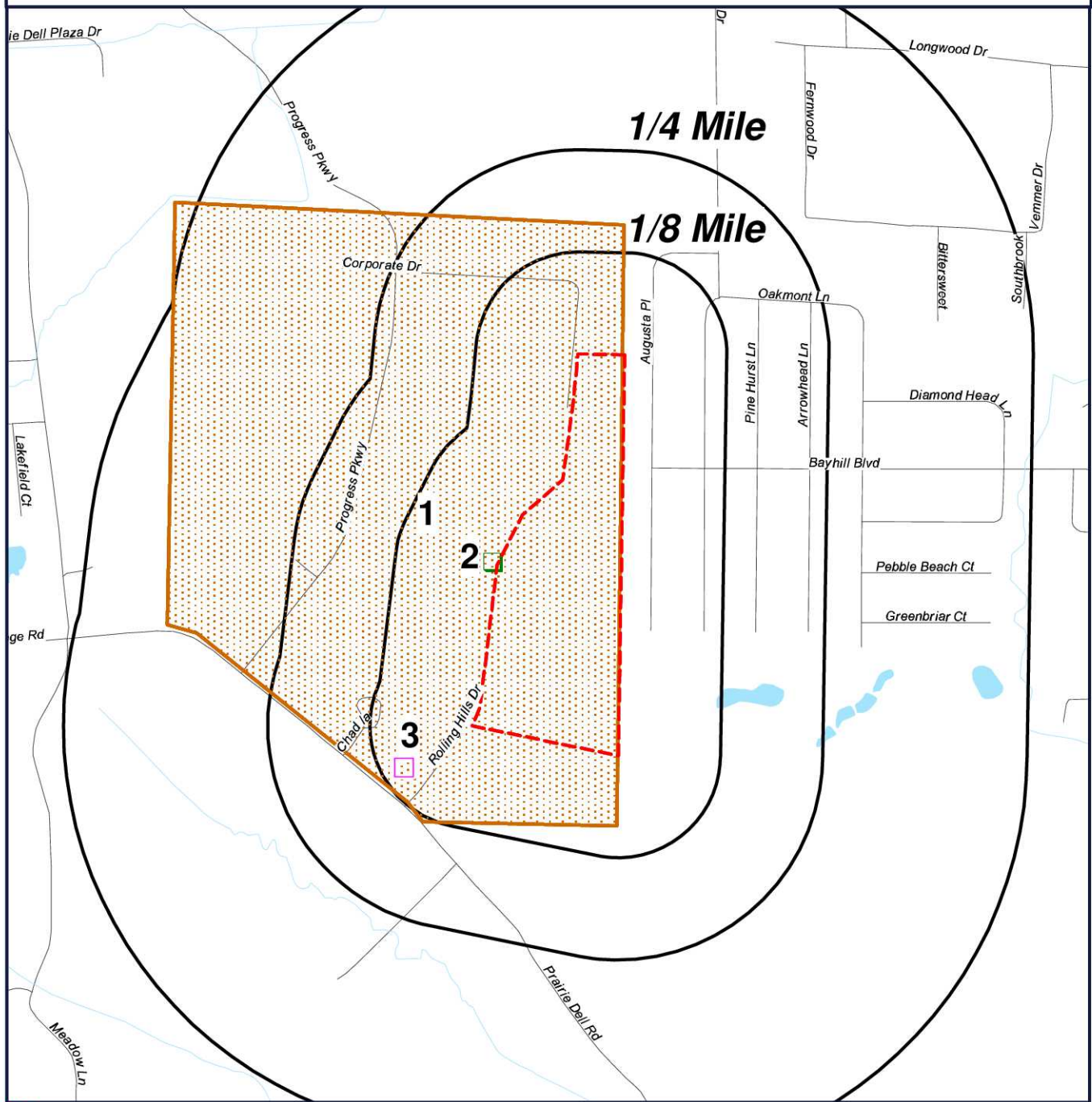
Union Corporate Center Lot 13-2
Corporate Drive
Union, Missouri
63084



0' 1000' 2000' 3000'
 SCALE: 1" = 2000'

[Click here to access Satellite view](#)

Radius Map 2



- Target Property (TP)
- SHWS
- SMARS
- FRSMO
- RCRANGR07

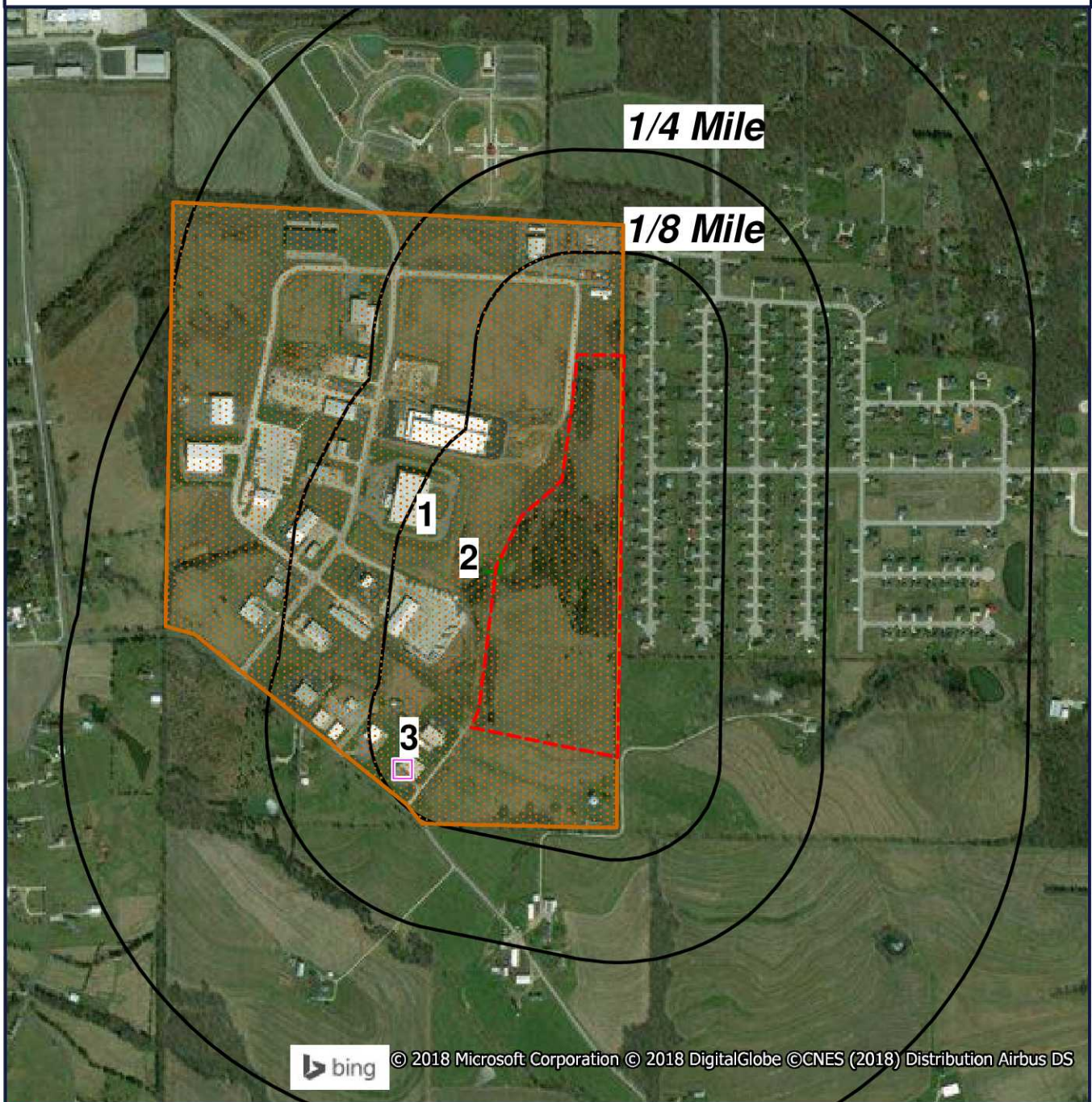
**Union Corporate Center Lot 13-
2
Corporate Drive
Union, Missouri
63084**



0' 500' 1000' 1500'
SCALE: 1" = 1000'

[Click here to access Satellite view](#)

Ortho Map



- Target Property (TP)
- SHWS
- SMARS
- FRSMO
- RCRANGR07

Quadrangle(s): Moselle
Union Corporate Center Lot 13-
2
Corporate Drive
Union, Missouri
63084

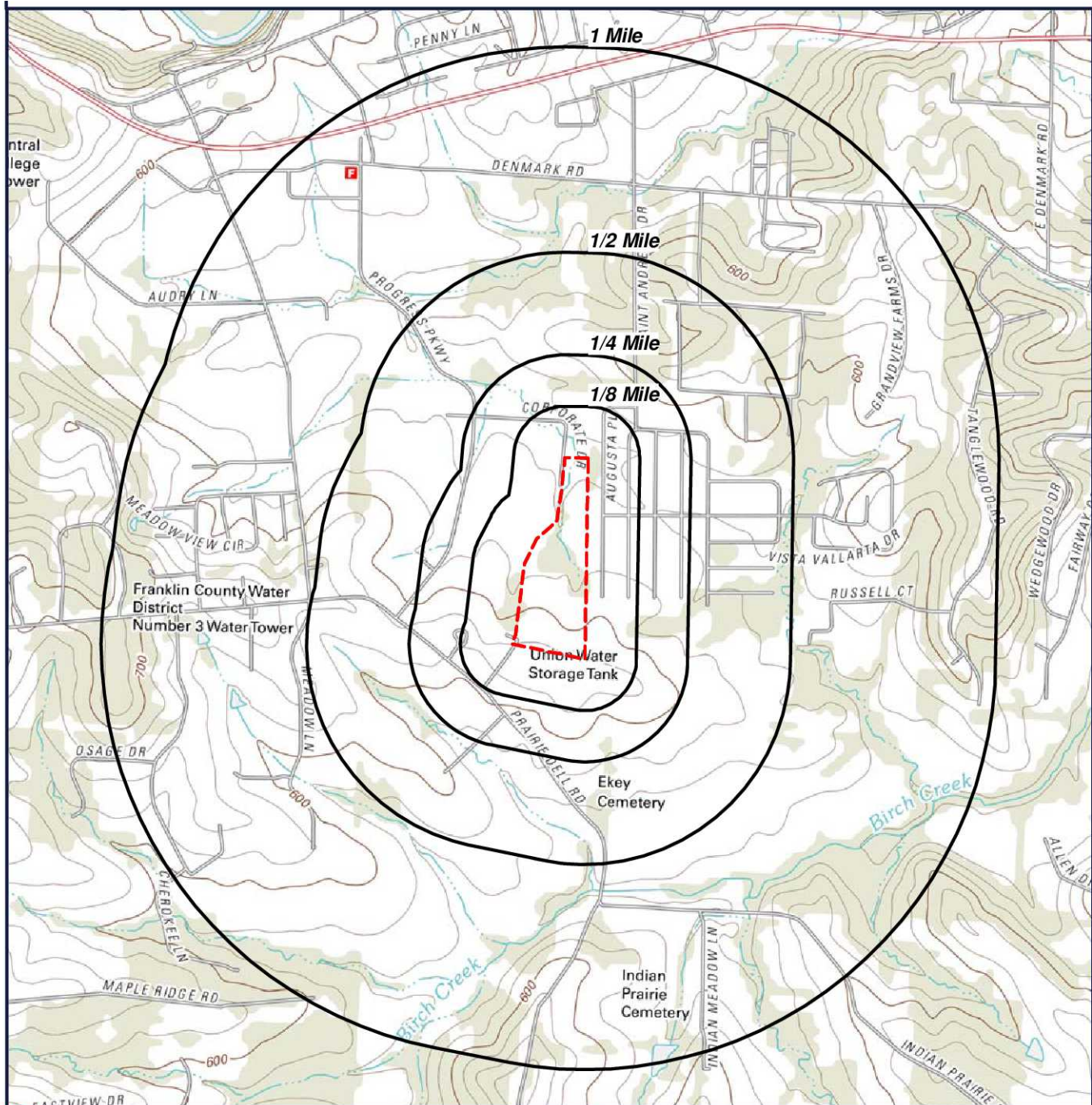


0' 500' 1000' 1500'

SCALE: 1" = 1000'

[Click here to access Satellite view](#)

Topographic Map



 Target Property (TP)

Quadrangle(s): Moselle
Source: USGS, 01/06/2012
Union Corporate Center Lot 13-2
Corporate Drive
Union, Missouri
63084



0' 1000' 2000' 3000'
SCALE: 1" = 2000'

[Click here to access Satellite view](#)

Located Sites Summary

NOTE: Standard environmental records are displayed in **bold**.

Map ID#	Database Name	Site ID#	Relative Elevation	Distance From Site	Site Name	Address	PAGE #
1	SHWS	2468719882	Higher (581 ft.)	TP	UNION CORPORATE CENTER: UNION CORPORATE CENTER - PROPOSED MI	PROGRESS PARKWAY, UNION, MO 63084	16
1	SHWS	3697444990	Higher (581 ft.)	TP	UNION CORPORATE CENTER	PROGRESS DRIVE, UNION, MO 63084	17
1	SMARS	1874507308	Higher (581 ft.)	TP	UNION CORPORATE CENTER	PROGRESS PARKWAY, UNION, MO 63084	18
1	SMARS	3045087432	Higher (581 ft.)	TP	UNION CORPORATE CENTER	PROGRESS DRIVE, UNION, MO 63084	19
2	ECHOR07	110067373005	Lower (575 ft.)	0.001 mi. W (5 ft.)	UNION CORPORATE CENTER	ROLLING HILLS DRIVE, UNION, MO 63084	20
2	FRSMO	110067373005	Lower (575 ft.)	0.001 mi. W (5 ft.)	UNION CORPORATE CENTER	ROLLING HILLS DRIVE, UNION, MO 63084	21
2	ICISNPDES	MORA07762INPDES	Lower (575 ft.)	0.001 mi. W (5 ft.)	UNION CORPORATE CENTER	ROLLING HILLS DRIVE, UNION, MO 63084	22
2	ICISNPDES	MORA09318INPDES	Lower (575 ft.)	0.001 mi. W (5 ft.)	UNION CORPORATE CENTER	ROLLING HILLS DRIVE, UNION, MO 63084	24
2	NPDES	MORA07762	Lower (575 ft.)	0.001 mi. W (5 ft.)	UNION CORPORATE CENTER	ROLLING HILLS DRIVE, UNION, MO 63084	26
2	NPDES	MORA09318	Lower (575 ft.)	0.001 mi. W (5 ft.)	UNION CORPORATE CENTER	ROLLING HILLS DRIVE, UNION, MO 63084	27
3	RCRANGR07	MOR000038372	Higher (616 ft.)	0.097 mi. WSW (512 ft.)	FRICTION TECHNOLOGIES CORP	5 ROLLING HILLS DR, UNION, MO 63084	28

Elevation Summary

Elevations are collected from the USGS 3D Elevation Program 1/3 arc-second (approximately 10 meters) layer hosted at the NGTOC. .

Target Property Elevation: 580 ft.

NOTE: Standard environmental records are displayed in **bold**.

EQUAL/HIGHER ELEVATION

Map ID#	Database Name	Elevation	Site Name	Address	Page #
1	SHWS	581 ft.	UNION CORPORATE CENTER: UNION CORPORATE CENTER - PROPOSED MI	PROGRESS PARKWAY, UNION, MO 63084	16
1	SHWS	581 ft.	UNION CORPORATE CENTER	PROGRESS DRIVE, UNION, MO 63084	17
1	SMARS	581 ft.	UNION CORPORATE CENTER	PROGRESS PARKWAY, UNION, MO 63084	18
1	SMARS	581 ft.	UNION CORPORATE CENTER	PROGRESS DRIVE, UNION, MO 63084	19
3	RCRANGR07	616 ft.	FRICTION TECHNOLOGIES CORP	5 ROLLING HILLS DR, UNION, MO 63084	28

LOWER ELEVATION

Map ID#	Database Name	Elevation	Site Name	Address	Page #
2	ECHOR07	575 ft.	UNION CORPORATE CENTER	ROLLING HILLS DRIVE, UNION, MO 63084	20
2	FRSMO	575 ft.	UNION CORPORATE CENTER	ROLLING HILLS DRIVE, UNION, MO 63084	21
2	ICISNPDES	575 ft.	UNION CORPORATE CENTER	ROLLING HILLS DRIVE, UNION, MO 63084	22
2	ICISNPDES	575 ft.	UNION CORPORATE CENTER	ROLLING HILLS DRIVE, UNION, MO 63084	24
2	NPDES	575 ft.	UNION CORPORATE CENTER	ROLLING HILLS DRIVE, UNION, MO 63084	26
2	NPDES	575 ft.	UNION CORPORATE CENTER	ROLLING HILLS DRIVE, UNION, MO 63084	27

State Hazardous Waste Sites (SHWS)

[MAP ID# 1](#)

Distance from Property: 0 mi. (0 ft.) X
Elevation: 581 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: 2468719882

FEDERAL ID: NOT REPORTED

NAME: UNION CORPORATE CENTER: UNION CORPORATE CENTER - PROPOSED MISSOURI CERTIFIED SITE

SITE ALIAS: NOT REPORTED

ADDRESS: PROGRESS PARKWAY
UNION, MO 63084

COUNTY: FRANKLIN

STATUS: BROWNFIELD ASSESSMENT

CONTAMINANTS: NOT REPORTED

USE LIMITS: NOT REPORTED

SITE HISTORY:

COMPREHENSIVE SITE HISTORY DESCRIPTIONS ARE CURRENTLY UNDER REVIEW. IF ADDITIONAL DATA IS REQUIRED, PLEASE CONTACT THE CUSTODIAN OF RECORDS BY EMAIL AT CUSTODIANOFRECORD@DNR.MO.GOV, BY TELEPHONE AT (573) 522-4293, OR VISIT WWW.DNR.MO.GOV/SUNSHINEREQUESTS.HTM TO SCHEDULE A FILE REVIEW.

CLEANUP SUMMARY:

NOT REPORTED

[Back to Report Summary](#)

State Hazardous Waste Sites (SHWS)

[MAP ID# 1](#)

Distance from Property: 0 mi. (0 ft.) X

Elevation: 581 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: 3697444990

FEDERAL ID: NOT REPORTED

NAME: UNION CORPORATE CENTER

SITE ALIAS: NOT REPORTED

ADDRESS: PROGRESS DRIVE

UNION, MO 63084

COUNTY: FRANKLIN

STATUS: BROWNFIELD ASSESSMENT

CONTAMINANTS: NOT REPORTED

USE LIMITS: NOT REPORTED

SITE HISTORY:

COMPREHENSIVE SITE HISTORY DESCRIPTIONS ARE CURRENTLY UNDER REVIEW. IF ADDITIONAL DATA IS REQUIRED, PLEASE CONTACT THE CUSTODIAN OF RECORDS BY EMAIL AT CUSTODIANOFRECORD@DNR.MO.GOV, BY TELEPHONE AT (573) 522-4293, OR VISIT WWW.DNR.MO.GOV/SUNSHINEREQUESTS.HTM TO SCHEDULE A FILE REVIEW.

CLEANUP SUMMARY:

NOT REPORTED

[Back to Report Summary](#)

Site Management and Reporting System (SMARS)

[MAP ID# 1](#)

Distance from Property: 0 mi. (0 ft.) X
Elevation: 581 ft. (Higher than TP)

FACILITY INFORMATION

GEOSEARCH ID: 1874507308

FACILITY NAME: UNION CORPORATE CENTER

ADDRESS: PROGRESS PARKWAY

UNION, MO 63084

COUNTY: FRANKLIN

FACILITY DETAILS

CERCLIS: NOT REPORTED

NPL DATE: NOT REPORTED

TANK ST NUMBER: NOT REPORTED

TANK REGISTRATION NUMBER: NOT REPORTED

OWNERSHIP: VCP

REGISTRY: FALSE

SUPERFUND: FALSE

VCP SITE: TRUE

FEDERAL FACILITY: FALSE

REGISTRY PROGRAM: FALSE

[Back to Report Summary](#)

Site Management and Reporting System (SMARS)

[MAP ID# 1](#)

Distance from Property: 0 mi. (0 ft.) X
Elevation: 581 ft. (Higher than TP)

FACILITY INFORMATION

GEOSEARCH ID: 3045087432

FACILITY NAME: UNION CORPORATE CENTER

ADDRESS: PROGRESS DRIVE

UNION, MO 63084

COUNTY: FRANKLIN

FACILITY DETAILS

CERCLIS: NOT REPORTED

NPL DATE: NOT REPORTED

TANK ST NUMBER: NOT REPORTED

TANK REGISTRATION NUMBER: NOT REPORTED

OWNERSHIP: VCP

REGISTRY: FALSE

SUPERFUND: FALSE

VCP SITE: TRUE

FEDERAL FACILITY: FALSE

REGISTRY PROGRAM: FALSE

[Back to Report Summary](#)

Enforcement and Compliance History Information (ECHOR07)

MAP ID# 2

Distance from Property: 0.001 mi. (5 ft.) W

Elevation: 575 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 110067373005

REGISTRY ID: 110067373005

NAME: UNION CORPORATE CENTER

ADDRESS: ROLLING HILLS DRIVE

UNION, MO 63084

COUNTY: FRANKLIN COUNTY

FACILITY LINK: [Facility Detail Report](#)

[Back to Report Summary](#)

Facility Registry System (FRSMO)

[MAP ID# 2](#)

Distance from Property: 0.001 mi. (5 ft.) W
Elevation: 575 ft. (Lower than TP)

FACILITY INFORMATION

REGISTRY ID: 110067373005

NAME: UNION CORPORATE CENTER

LOCATION ADDRESS: ROLLING HILLS DRIVE
UNION, MO 63084

COUNTY: FRANKLIN COUNTY

EPA REGION: 07

FEDERAL FACILITY: NOT REPORTED

TRIBAL LAND: NOT REPORTED

ALTERNATIVE NAME/S:

UNION CORPORATE CENTER

PROGRAM/S LISTED FOR THIS FACILITY

NPDES - NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

NO SIC DATA REPORTED

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

NO NAICS DATA REPORTED

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Integrated Compliance Information System National Pollutant Discharge Elimination System (ICISNPDES)

MAP ID# 2

Distance from Property: 0.001 mi. (5 ft.) W
Elevation: 575 ft. (Lower than TP)

FACILITY INFORMATION

GEOSEARCH ID: **MORA07762INPDES**
NPDES ID: **MORA07762** FACILITY #: **110067373005**
NAME: **UNION CORPORATE CENTER**
PHYSICAL ADDRESS: **ROLLING HILLS DRIVE**
UNION MO 63084
COUNTY: **NOT REPORTED**
FACILITY TYPE: **NOT REPORTED**
IMPAIRED WATERS: **NOT REPORTED**

STANDARD INDUSTRIAL CLASSIFICATION

- NOT REPORTED -

PERMITS

FACILITY TYPE INDICATOR: **NON-POTABLE WATER**
PERMIT TYPE: **GENERAL PERMIT COVERED FACILITY**
MAJOR MINOR FACILITY: **MINOR DISCHARGER**
PERMIT STATUS: **EXPIRED**
WATER BODY: **BOURBEUSE R.**
PERMIT NAME: **UDC**
AGENCY TYPE: **STATE**
ORIGINAL ISSUE DATE: **2/3/2016**
ISSUE DATE: **2/3/2016**
ISSUING AGENCY: **MODNR-WATER PROTECTION PROGRAM**
EFFECTIVE DATE: **2/3/2016**
EXPIRATION DATE: **2/7/2017**
RETIREMENT DATE: **NOT REPORTED**
TERMINATION DATE: **NOT REPORTED**
PERMIT COMPLIANCE STATUS: **YES**
PERMIT SUBJECT TO DMR RUN: **NOT REPORTED**
REPORTABLE NONCOMPLIANCE TRACKING IS ON: **YES**

INSPECTIONS

- NO INSPECTIONS REPORTED -

HISTORIC COMPLIANCE

- NO HISTORIC COMPLIANCE REPORTED -

SINGLE EVENT VIOLATIONS

- NO SINGLE EVENT VIOLATIONS REPORTED -

FORMAL ENFORCEMENT ACTIONS

- NO FORMAL ENFORCEMENT ACTIONS REPORTED -

EFFLUENT VIOLATIONS

- NOT REPORTED -

EFFLUENT VIOLATIONS contd..

- NOT REPORTED -

EFFLUENT VIOLATIONS contd..

***Integrated Compliance Information System National Pollutant Discharge
Elimination System (ICISNPDES)***

- NOT REPORTED -

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Integrated Compliance Information System National Pollutant Discharge Elimination System (ICISNPDES)

MAP ID# 2

Distance from Property: 0.001 mi. (5 ft.) W
Elevation: 575 ft. (Lower than TP)

FACILITY INFORMATION

GEOSEARCH ID: **MORA09318INPDES**

NPDES ID: **MORA09318** FACILITY #: **110067373005**

NAME: **UNION CORPORATE CENTER**

PHYSICAL ADDRESS: **ROLLING HILLS DRIVE**
UNION MO 63084

COUNTY: **NOT REPORTED**

FACILITY TYPE: **NOT REPORTED**

IMPAIRED WATERS: **NOT REPORTED**

STANDARD INDUSTRIAL CLASSIFICATION

- NOT REPORTED -

PERMITS

FACILITY TYPE INDICATOR: **NON-POTABLE WATER**

PERMIT TYPE: **GENERAL PERMIT COVERED FACILITY**

MAJOR MINOR FACILITY: **MINOR DISCHARGER**

PERMIT STATUS: **EFFECTIVE**

WATER BODY: **BOURBEUSE R.**

PERMIT NAME: **UDC**

AGENCY TYPE: **STATE**

ORIGINAL ISSUE DATE: **2/8/2017**

ISSUE DATE: **2/8/2017**

ISSUING AGENCY: **MODNR-WATER PROTECTION PROGRAM**

EFFECTIVE DATE: **2/8/2017**

EXPIRATION DATE: **2/7/2022**

RETIREMENT DATE: **NOT REPORTED**

TERMINATION DATE: **NOT REPORTED**

PERMIT COMPLIANCE STATUS: **YES**

PERMIT SUBJECT TO DMR RUN: **NOT REPORTED**

REPORTABLE NONCOMPLIANCE TRACKING IS ON: **YES**

INSPECTIONS

- NO INSPECTIONS REPORTED -

HISTORIC COMPLIANCE

- NO HISTORIC COMPLIANCE REPORTED -

SINGLE EVENT VIOLATIONS

- NO SINGLE EVENT VIOLATIONS REPORTED -

FORMAL ENFORCEMENT ACTIONS

- NO FORMAL ENFORCEMENT ACTIONS REPORTED -

EFFLUENT VIOLATIONS

- NOT REPORTED -

EFFLUENT VIOLATIONS contd..

- NOT REPORTED -

EFFLUENT VIOLATIONS contd..

***Integrated Compliance Information System National Pollutant Discharge
Elimination System (ICISNPDES)***

- NOT REPORTED -

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National Pollutant Discharge Elimination System Permits (NPDES)

MAP ID# 2

Distance from Property: 0.001 mi. (5 ft.) W
Elevation: 575 ft. (Lower than TP)

FACILITY INFORMATION

GEOSEARCH ID: **MORA07762**
PERMIT NUMBER: **MORA07762**
FACILITY NAME: **UNION CORPORATE CENTER**
ADDRESS: **ROLLING HILLS DRIVE**
UNION, MO 63084
COUNTY: **FRANKLIN**
PHONE: **636-583-5900**
OWNER NAME: **UDC**
OWNER ADDRESS: **500 E LOCUST**
UNION, MO 63084
OWNER COUNTRY: **USA**
OWNER PHONE: **636-583-5900**

FACILITY DETAILS

ISSUE DATE: **2/3/2016**
EFFECTIVE DATE: **2/3/2016**
EXPIRATION DATE: **2/7/2017**
SIC CODE: **1629**
SIC DESCRIPTION: **HEAVY CONSTRUCTION**
PERMIT CATEGORY DESCRIPTION: **LAND DISTURBANCE**
TREATMENT TYPE DESCRIPTION: **STORM WATER**
PERMIT STATUS DESCRIPTION: **EXPIRED**

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National Pollutant Discharge Elimination System Permits (NPDES)

[MAP ID# 2](#)

Distance from Property: 0.001 mi. (5 ft.) W
Elevation: 575 ft. (Lower than TP)

FACILITY INFORMATION

GEOSEARCH ID: **MORA09318**
PERMIT NUMBER: **MORA09318**
FACILITY NAME: **UNION CORPORATE CENTER**
ADDRESS: **ROLLING HILLS DRIVE**
UNION, MO 63084
COUNTY: **FRANKLIN**
PHONE: **6365835900**
OWNER NAME: **UDC**
OWNER ADDRESS: **500 E LOCUST**
UNION, MO 63084
OWNER COUNTRY: **USA**
OWNER PHONE: **6365835900**

FACILITY DETAILS

ISSUE DATE: **2/8/2017**
EFFECTIVE DATE: **2/8/2017**
EXPIRATION DATE: **2/7/2022**
SIC CODE: **1629**
SIC DESCRIPTION: **HEAVY CONSTRUCTION**
PERMIT CATEGORY DESCRIPTION: **LAND DISTURBANCE**
TREATMENT TYPE DESCRIPTION: **STORM WATER**
PERMIT STATUS DESCRIPTION: **EFFECTIVE**

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Resource Conservation & Recovery Act - Non-Generator (RCRANGR07)

MAP ID# 3

Distance from Property: 0.097 mi. (512 ft.) WSW
Elevation: 616 ft. (Higher than TP)

FACILITY INFORMATION

EPA ID#: MOR000038372

NAME: FRICTION TECHNOLOGIES CORP

ADDRESS: 5 ROLLING HILLS DR

UNION, MO 63084

CONTACT NAME: RAY GARCIA

CONTACT ADDRESS: 140 INDIAN PRAIRIE LN

UNION MO 63084

CONTACT PHONE: 636-583-8206

NON-NOTIFIER: NOT A NON-NOTIFIER

DATE RECEIVED BY AGENCY: 04/04/2011

OWNER TYPE: PRIVATE

OWNER NAME: A RAY GARCIA JR

OPERATOR TYPE: PRIVATE

OPERATOR NAME: A RAY GARCIA JR

CERTIFICATION

CERTIFICATION NAME:

CERTIFICATION TITLE:

CERTIFICATION SIGNED DATE:

ARNOLD R GARCIA

PRES

01/22/2011

A RAY GARCIA

PRES

11/16/2009

A R GARCIA

PRES

11/16/2009

ROBERT J COX

VICE PRES

10/25/2004

INDUSTRY CLASSIFICATION (NAICS)

33635 - MOTOR VEHICLE TRANSMISSION AND POWER TRAIN PARTS MANUFACTURING

56291 - REMEDIATION SERVICES

CURRENT ACTIVITY INFORMATION

GENERATOR STATUS: **NON-GENERATOR** LAST UPDATED DATE: **04/04/2011**

SUBJECT TO CORRECTIVE ACTION UNIVERSE: **NO**

TDSFs POTENTIALLY SUBJECT TO CORRECTIVE ACTION UNDER 3004 (u)/(v) UNIVERSE: **NO**

TDSFs ONLY SUBJECT TO CORRECTIVE ACTION UNDER DISCRETIONARY AUTHORITIES UNIVERSE: **NO**

NON TDSFs WHERE RCRA CORRECTIVE ACTION HAS BEEN IMPOSED UNIVERSE: **NO**

CORRECTIVE ACTION WORKLOAD UNIVERSE: **NO**

IMPORTER: **NO**

UNDERGROUND INJECTION: **NO**

MIXED WASTE GENERATOR: **NO**

UNIVERSAL WASTE DESTINATION FACILITY: **NO**

RECYCLER: **NO**

TRANSFER FACILITY: **NO**

TRANSPORTER: **NO**

USED OIL FUEL BURNER: **NO**

ONSITE BURNER EXEMPTION: **NO**

USED OIL PROCESSOR: **NO**

FURNACE EXEMPTION: **NO**

USED OIL FUEL MARKETER TO BURNER: **NO**

USED OIL REFINER: **NO**

SPECIFICATION USED OIL MARKETER: **NO**

USED OIL TRANSFER FACILITY: **NO**

USED OIL TRANSPORTER: **NO**

COMPLIANCE, MONITORING AND ENFORCEMENT INFORMATION

EVALUATIONS

03/22/2007

CAV COMPLIANCE ASSISTANCE VISIT

VIOLATIONS - **NO VIOLATIONS REPORTED** -

ENFORCEMENTS - **NO ENFORCEMENTS REPORTED** -

HAZARDOUS WASTE

Resource Conservation & Recovery Act - Non-Generator (RCRANGR07)

D001 IGNITABLE WASTE

UNIVERSAL WASTE - NO UNIVERSAL WASTE REPORTED -

CORRECTIVE ACTION AREA - NO CORRECTIVE ACTION AREA INFORMATION REPORTED -

CORRECTIVE ACTION EVENT

NO CORRECTIVE ACTION EVENT(S) REPORTED

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Unlocated Sites Summary

This list contains sites that could not be mapped due to limited or incomplete address information.

No Records Found

Environmental Records Definitions - FEDERAL

AIRSAFS

Aerometric Information Retrieval System / Air Facility Subsystem

VERSION DATE: 10/20/14

The United States Environmental Protection Agency (EPA) modified the Aerometric Information Retrieval System (AIRS) to a database that exclusively tracks the compliance of stationary sources of air pollution with EPA regulations: the Air Facility Subsystem (AFS). Since this change in 2001, the management of the AIRS/AFS database was assigned to EPA's Office of Enforcement and Compliance Assurance.

BRS

Biennial Reporting System

VERSION DATE: 12/31/11

The United States Environmental Protection Agency (EPA), in cooperation with the States, biennially collects information regarding the generation, management, and final disposition of hazardous wastes regulated under the Resource Conservation and Recovery Act of 1976 (RCRA), as amended. The Biennial Report captures detailed data on the generation of hazardous waste from large quantity generators and data on waste management practices from treatment, storage and disposal facilities. Currently, the EPA states that data collected between 1991 and 1997 was originally a part of the defunct Biennial Reporting System and is now incorporated into the RCRAInfo data system.

CDL

Clandestine Drug Laboratory Locations

VERSION DATE: 07/01/16

The U.S. Department of Justice ("the Department") provides this information as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments. The Department does not establish, implement, enforce, or certify compliance with clean-up or remediation standards for contaminated sites; the public should contact a state or local health department or environmental protection agency for that information.

DOCKETS

EPA Docket Data

VERSION DATE: 12/22/05

The United States Environmental Protection Agency Docket data lists Civil Case Defendants, filing dates as far back as 1971, laws broken including section, violations that occurred, pollutants involved, penalties assessed and superfund awards by facility and location. Please refer to ICIS database as source of current data.

EC

Federal Engineering Institutional Control Sites

VERSION DATE: 08/03/15

This database includes site locations where Engineering and/or Institutional Controls have been identified as part

Environmental Records Definitions - FEDERAL

of a selected remedy for the site as defined by United States Environmental Protection Agency official remedy decision documents. A site listing does not indicate that the institutional and engineering controls are currently in place nor will be in place once the remedy is complete; it only indicates that the decision to include either of them in the remedy is documented as of the completed date of the document. Institutional controls are actions, such as legal controls, that help minimize the potential for human exposure to contamination by ensuring appropriate land or resource use. Engineering controls include caps, barriers, or other device engineering to prevent access, exposure, or continued migration of contamination.

ECHOR07 Enforcement and Compliance History Information

VERSION DATE: 08/26/17

The EPA's Enforcement and Compliance History Online (ECHO) database, provides compliance and enforcement information for facilities nationwide. This database includes facilities regulated as Clean Air Act stationary sources, Clean Water Act direct dischargers, Resource Conservation and Recovery Act hazardous waste handlers, Safe Drinking Water Act public water systems along with other data, such as Toxics Release Inventory releases.

ERNSMO Emergency Response Notification System

VERSION DATE: 04/29/18

This National Response Center database contains data on reported releases of oil, chemical, radiological, biological, and/or etiological discharges into the environment anywhere in the United States and its territories. The data comes from spill reports made to the U.S. Environmental Protection Agency, U.S. Coast Guard, the National Response Center and/or the U.S. Department of Transportation.

FRSMO Facility Registry System

VERSION DATE: 09/06/17

The United States Environmental Protection Agency's Office of Environmental Information (OEI) developed the Facility Registry System (FRS) as the centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. The Facility Registry System replaced the Facility Index System or FINDS database.

HMIRSR07 Hazardous Materials Incident Reporting System

VERSION DATE: 03/27/18

The HMIRS database contains unintentional hazardous materials release information reported to the U.S. Department of Transportation. This database includes permitted facilities located in EPA Region 7. This region includes the following states: Iowa, Kansas, Missouri, and Nebraska.

ICIS Integrated Compliance Information System (formerly DOCKETS)

VERSION DATE: 09/23/17

Environmental Records Definitions - FEDERAL

ICIS is a case activity tracking and management system for civil, judicial, and administrative federal Environmental Protection Agency enforcement cases. ICIS contains information on federal administrative and federal judicial cases under the following environmental statutes: the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the Emergency Planning and Community Right-to-Know Act - Section 313, the Toxic Substances Control Act, the Federal Insecticide, Fungicide, and Rodenticide Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Safe Drinking Water Act, and the Marine Protection, Research, and Sanctuaries Act.

ICISNPDES Integrated Compliance Information System National Pollutant Discharge Elimination System

VERSION DATE: 07/09/17

Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

LUCIS Land Use Control Information System

VERSION DATE: 09/01/06

The LUCIS database is maintained by the U.S. Department of the Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

MLTS Material Licensing Tracking System

VERSION DATE: 06/29/17

MLTS is a list of approximately 8,100 sites which have or use radioactive materials subject to the United States Nuclear Regulatory Commission (NRC) licensing requirements.

NPDES07 National Pollutant Discharge Elimination System

VERSION DATE: 04/01/07

Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The NPDES database was collected from December 2002 until April 2007. Refer to the PCS and/or ICIS-NPDES database as source of current data. This database includes permitted facilities located in EPA Region 7. This region includes the following states: Iowa, Kansas, Missouri, and Nebraska.

PADS PCB Activity Database System

VERSION DATE: 07/18/17

PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Environmental Records Definitions - FEDERAL

PCSR07 Permit Compliance System

VERSION DATE: 08/01/12

The Permit Compliance System is used in tracking enforcement status and permit compliance of facilities controlled by the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act and is maintained by the United States Environmental Protection Agency's Office of Compliance. PCS is designed to support the NPDES program at the state, regional, and national levels. This database includes permitted facilities located in EPA Region 7. This region includes the following states: Iowa, Kansas, Missouri, and Nebraska. PCS has been modernized, and no longer exists. National Pollutant Discharge Elimination System (ICIS-NPDES) data can now be found in Integrated Compliance Information System (ICIS).

RCRASC RCRA Sites with Controls

VERSION DATE: 03/21/18

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with institutional controls in place.

SEMSLIENS SEMS Lien on Property

VERSION DATE: 04/11/18

The U.S. Environmental Protection Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs. This is a listing of SEMS sites with a lien on the property.

SFLIENS CERCLIS Liens

VERSION DATE: 06/08/12

A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which United States Environmental Protection Agency has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties. This database contains those CERCLIS sites where the Lien on Property action is complete.

Environmental Records Definitions - FEDERAL

SSTS Section Seven Tracking System

VERSION DATE: 02/01/17

The United States Environmental Protection Agency tracks information on pesticide establishments through the Section Seven Tracking System (SSTS). SSTS records the registration of new establishments and records pesticide production at each establishment. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) requires that production of pesticides or devices be conducted in a registered pesticide-producing or device-producing establishment. ("Production" includes formulation, packaging, repackaging, and relabeling.)

TRI Toxics Release Inventory

VERSION DATE: 12/31/16

The Toxics Release Inventory, provided by the United States Environmental Protection Agency, includes data on toxic chemical releases and waste management activities from certain industries as well as federal and tribal facilities. This inventory contains information about the types and amounts of toxic chemicals that are released each year to the air, water, and land as well as information on the quantities of toxic chemicals sent to other facilities for further waste management.

TSCA Toxic Substance Control Act Inventory

VERSION DATE: 12/31/12

The Toxic Substances Control Act (TSCA) was enacted in 1976 to ensure that chemicals manufactured, imported, processed, or distributed in commerce, or used or disposed of in the United States do not pose any unreasonable risks to human health or the environment. TSCA section 8(b) provides the United States Environmental Protection Agency authority to "compile, keep current, and publish a list of each chemical substance that is manufactured or processed in the United States." This TSCA Chemical Substance Inventory contains non-confidential information on the production amount of toxic chemicals from each manufacturer and importer site.

RCRAGR07 Resource Conservation & Recovery Act - Generator

VERSION DATE: 03/01/18

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities currently generating hazardous waste. EPA Region 7 includes the following states: Iowa, Kansas, Missouri, and Nebraska.

RCRANGR07 Resource Conservation & Recovery Act - Non-Generator

VERSION DATE: 03/01/18

Environmental Records Definitions - FEDERAL

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities classified as non-generators. Non-Generators do not presently generate hazardous waste. EPA Region 7 includes the following states: Iowa, Kansas, Missouri, and Nebraska.

ALTFUELS

Alternative Fueling Stations

VERSION DATE: 01/22/18

Nationwide list of alternative fueling stations made available by the US Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Biodiesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE).

FEMAUST

FEMA Owned Storage Tanks

VERSION DATE: 12/01/16

This is a listing of FEMA owned underground and aboveground storage tank sites. For security reasons, address information is not released to the public according to the U.S. Department of Homeland Security.

HISTPST

Historical Gas Stations

VERSION DATE: NR

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

ICISCLEANERS

Integrated Compliance Information System Drycleaners

VERSION DATE: 09/23/17

This is a listing of drycleaner facilities from the Integrated Compliance Information System (ICIS). The Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

MRDS

Mineral Resource Data System

VERSION DATE: 03/15/16

MRDS (Mineral Resource Data System) is a collection of reports describing metallic and nonmetallic mineral resources throughout the world. Included are deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references. This database contains the records previously provided in the Mineral Resource Data System (MRDS) of USGS and the Mineral Availability System/Mineral

Environmental Records Definitions - FEDERAL

Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS.

MSHA Mine Safety and Health Administration Master Index File

VERSION DATE: 09/01/17

The Mine dataset lists all Coal and Metal/Non-Metal mines under MSHA's jurisdiction since 1/1/1970. It includes such information as the current status of each mine (Active, Abandoned, NonProducing, etc.), the current owner and operating company, commodity codes and physical attributes of the mine. Mine ID is the unique key for this data. This information is provided by the United States Department of Labor - Mine Safety and Health Administration (MSHA).

BF Brownfields Management System

VERSION DATE: 03/26/18

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. The United States Environmental Protection Agency maintains this database to track activities in the various brown field grant programs including grantee assessment, site cleanup and site redevelopment. This database included tribal brownfield sites.

DNPL Delisted National Priorities List

VERSION DATE: 04/11/18

This database includes sites from the United States Environmental Protection Agency's Final National Priorities List (NPL) where remedies have proven to be satisfactory or sites where the original analyses were inaccurate, and the site is no longer appropriate for inclusion on the NPL, and final publication in the Federal Register has occurred.

NLRRCRAT No Longer Regulated RCRA Non-CORRACTS TSD Facilities

VERSION DATE: 03/01/18

This database includes RCRA Non-Corrective Action TSD facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements. This listing includes facilities that formerly treated, stored or disposed of hazardous waste.

ODI Open Dump Inventory

VERSION DATE: 06/01/85

The open dump inventory was published by the United States Environmental Protection Agency. An "open dump" is defined as a facility or site where solid waste is disposed of which is not a sanitary landfill which meets the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944) and which is not a

Environmental Records Definitions - FEDERAL

facility for disposal of hazardous waste. This inventory has not been updated since June 1985.

RCRAT Resource Conservation & Recovery Act - Non-CORRACTS Treatment, Storage & Disposal Facilities

VERSION DATE: 03/01/18

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities recognized as hazardous waste treatment, storage, and disposal sites (TSD).

SEMS Superfund Enterprise Management System

VERSION DATE: 04/11/18

The U.S. Environmental Protection Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs.

SEMSARCH Superfund Enterprise Management System Archived Site Inventory

VERSION DATE: 04/11/18

The Superfund Enterprise Management System Archive listing (SEMS-ARCHIVE) has replaced the CERCLIS NFRAP reporting system in 2015. This listing reflect sites that have been assessed and no further remediation is planned and is of no further interest under the Superfund program.

SMCRA Surface Mining Control and Reclamation Act Sites

VERSION DATE: 08/25/17

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

USUMTRCA Uranium Mill Tailings Radiation Control Act Sites

VERSION DATE: 03/04/17

Environmental Records Definitions - FEDERAL

The Legacy Management Office of the Department of Energy (DOE) manages radioactive and chemical waste, environmental contamination, and hazardous material at over 100 sites across the U.S. The L.M. Office manages this database of sites registered under the Uranium Mill Tailings Control Act (UMTRCA).

DOD Department of Defense Sites

VERSION DATE: 12/01/14

This information originates from the National Atlas of the United States Federal Lands data, which includes lands owned or administered by the Federal government. Army DOD, Army Corps of Engineers DOD, Air Force DOD, Navy DOD and Marine DOD areas of 640 acres or more are included.

FUDS Formerly Used Defense Sites

VERSION DATE: 06/01/15

The Formerly Used Defense Sites (FUDS) inventory includes properties previously owned by or leased to the United States and under Secretary of Defense Jurisdiction, as well as Munitions Response Areas (MRAs). The remediation of these properties is the responsibility of the Department of Defense. This data is provided by the U.S. Army Corps of Engineers (USACE), the boundaries/polygon data are based on preliminary findings and not all properties currently have polygon data available. **DISCLAIMER:** This data represents the results of data collection/processing for a specific USACE activity and is in no way to be considered comprehensive or to be used in any legal or official capacity as presented on this site. While the USACE has made a reasonable effort to insure the accuracy of the maps and associated data, it should be explicitly noted that USACE makes no warranty, representation or guaranty, either expressed or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. For additional information on Formerly Used Defense Sites please contact the USACE Public Affairs Office at (202) 528-4285.

FUSRAP Formerly Utilized Sites Remedial Action Program

VERSION DATE: 03/04/17

The U.S. DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from the Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations. The DOE Office of Legacy Management (LM) established long-term surveillance and maintenance (LTS&M) requirements for remediated FUSRAP sites. DOE evaluates the final site conditions of a remediated site on the basis of risk for different future uses. DOE then confirms that LTS&M requirements will maintain protectiveness.

NLRRCRAC No Longer Regulated RCRA Corrective Action Facilities

VERSION DATE: 03/01/18

This database includes RCRA Corrective Action facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements.

Environmental Records Definitions - FEDERAL

NMS Former Military Nike Missile Sites

VERSION DATE: 12/01/84

This information was taken from report DRXTH-AS-IA-83A016 (Historical Overview of the Nike Missile System, 12/1984) which was performed by Environmental Science and Engineering, Inc. for the U.S. Army Toxic and Hazardous Materials Agency Assessment Division. The Nike system was deployed between 1954 and the mid-1970's. Among the substances used or stored on Nike sites were liquid missile fuel (JP-4); starter fluids (UDKH, aniline, and furfuryl alcohol); oxidizer (IRFNA); hydrocarbons (motor oil, hydraulic fluid, diesel fuel, gasoline, heating oil); solvents (carbon tetrachloride, trichloroethylene, trichloroethane, stoddard solvent); and battery electrolyte. The quantities of material a disposed of and procedures for disposal are not documented in published reports. Virtually all information concerning the potential for contamination at Nike sites is confined to personnel who were assigned to Nike sites.

During deactivation most hardware was shipped to depot-level supply points. There were reportedly instances where excess materials were disposed of on or near the site itself at closure. There was reportedly no routine site decontamination.

NPL National Priorities List

VERSION DATE: 04/11/18

This database includes United States Environmental Protection Agency (EPA) National Priorities List sites that fall under the EPA's Superfund program, established to fund the cleanup of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action.

PNPL Proposed National Priorities List

VERSION DATE: 04/11/18

This database contains sites proposed to be included on the National Priorities List (NPL) in the Federal Register. The United States Environmental Protection Agency investigates these sites to determine if they may present long-term threats to public health or the environment.

RCRAC Resource Conservation & Recovery Act - Corrective Action Facilities

VERSION DATE: 03/01/18

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with corrective action activity.

Environmental Records Definitions - FEDERAL

RCRASUBC

Resource Conservation & Recovery Act - Subject to Corrective Action Facilities

VERSION DATE: 03/01/18

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities subject to corrective actions.

RODS

Record of Decision System

VERSION DATE: 12/11/17

These decision documents maintained by the United States Environmental Protection Agency describe the chosen remedy for NPL (Superfund) site remediation. They also include site history, site description, site characteristics, community participation, enforcement activities, past and present activities, contaminated media, the contaminants present, and scope and role of response action.

Environmental Records Definitions - STATE (MO)

ICEC

Institutional Engineering Controls Registry

VERSION DATE: 08/14/17

The Missouri Department of Natural Resources (Department) began a long-term stewardship consolidation effort in 2012 to ensure long-term stewardship, or LTS, sites are properly managed. Developers, planners and others can use this information to learn about use restrictions tied to the land and help the department to ensure property is being used safely. Keeping these activity and use limitations in place protects human health and the environment. Traditional LTS tools include: Engineered controls are physical measures that limit direct contact; reduce contamination levels; or control migration of contaminants. Institutional controls, or activity and use limitations, are legal or administrative instruments intended to minimize the potential for human exposure to contamination by limiting land or resource use. No warranty, expressed or implied, is made by the Department as to the accuracy of the data and related materials.

NPDES

National Pollutant Discharge Elimination System Permits

VERSION DATE: 01/05/18

This database of permitted National Pollutant Discharge Elimination System Facilities is provided by the Missouri Department of Natural Resources. Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

SPILLS

Spills Listing

VERSION DATE: 12/29/17

The Environmental Emergency Response Section of the Missouri Department of Natural Resources maintains this list of incidents. Responsibilities of this section include responding to address any chemical, petroleum, or other material spilled on to the land, water, or atmosphere that may impact the public health and safety and the environment.

CLEANERS

Dry Cleaners

VERSION DATE: 11/30/17

This list of dry cleaners is provided by the Hazardous Waste Program of the Missouri Department of Natural Resources. This list includes all sites that are known or thought to have been a dry cleaning facility at one time.

RAST

Registered Aboveground Storage Tanks

VERSION DATE: 04/12/18

This list of aboveground storage tanks is maintained by the Missouri Department of Agriculture.

Environmental Records Definitions - STATE (MO)

RUST Registered Underground Storage Tanks

VERSION DATE: 03/13/18

The underground storage tank database is provided by the Hazardous Waste Program of the Missouri Department of Natural Resources.

DSHWS Delisted State Hazardous Waste Sites

VERSION DATE: 03/26/18

The Missouri Department of Natural Resources provides this list of sites that were removed from the Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites and sites which the action was suspended due to cleanup.

LFSWDS Landfill and Solid Waste Disposal Sites

VERSION DATE: 03/10/16

The Solid Waste Management Program of the Missouri Department of Natural Resources provides this list of permitted solid waste facilities.

LUST Leaking Underground Storage Tanks

VERSION DATE: 12/19/17

The leaking underground storage tank database is provided by the Hazardous Waste Program of the Missouri Department of Natural Resources.

SMARS Site Management and Reporting System

VERSION DATE: 01/04/18

The Site Management and Reporting System (SMARS) database includes Brownfields, Voluntary Cleanup Program, Superfund, and Federal Facility sites.

VCPBF Voluntary Cleanup and Brownfield Sites

VERSION DATE: 03/05/18

According to the Missouri Department of Natural Resources, the Brownfields/Voluntary Cleanup Section (BVCP) addresses and oversees brownfields cleanup and promotes the redevelopment of brownfields for the department. First established by the state legislature in 1994, the Voluntary Cleanup Program is administered by the Hazardous Waste Program's Brownfields/Voluntary Cleanup Section to provide state oversight for voluntary cleanups of properties contaminated with hazardous substances. Many of the sites entering the BVCP are not heavily contaminated, and are contaminated by sources not addressed by any of Department of Natural Resources' regulatory programs such as Emergency Response, Superfund, Resource Conservation and

Environmental Records Definitions - STATE (MO)

Recovery Act or Petroleum Storage Tanks.

SHWS

State Hazardous Waste Sites

VERSION DATE: 04/08/18

This Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites is published annually by the Missouri Department of Natural Resources (The Department). According to the Department, the information in the Registry notifies the public about property on the Registry and its associated hazards. It informs potential buyers about hazards and legal obligations that they may undertake if they purchase such property. As defined in Hazardous Waste Management Law, RSMo 2002 Sections 260.350 to 260.430, the Registry is not intended or legally required to provide a comprehensive inventory of sites where hazardous chemicals and wastes have been disposed in Missouri. Instead, it is developed based on a specific legal mandate, which directs that sites be listed on the Registry if they are contaminated with hazardous substances that: A. Meet the legal definition of hazardous waste under Missouri's Hazardous Waste Management Law and Regulations and subject to RCRA regulations. A waste is considered hazardous under RCRA if it meets either of the following criteria: a. It is specifically listed or identified as a hazardous waste in the Code of Federal Regulations due to its composition and source, or b. It exhibits one or more characteristics of a hazardous waste, which are ignitability, corrosivity, reactivity or toxicity as determined by laboratory analysis. B. Were disposed of before regulation of such waste began in 1980 or disposed of illegally since that time; and C. Are present at concentrations above health-based screening levels.

Environmental Records Definitions - TRIBAL

USTR07 Underground Storage Tanks On Tribal Lands

VERSION DATE: 10/13/17

Underground storage tanks on Tribal lands located in Region 7 include the following states: Iowa, Kansas, Missouri, and Nebraska.

LUSTR07 Leaking Underground Storage Tanks On Tribal Lands

VERSION DATE: 10/13/17

Leaking underground storage tanks on Tribal lands located in Region 7 include the following states: Iowa, Kansas, Missouri, and Nebraska.

ODINDIAN Open Dump Inventory on Tribal Lands

VERSION DATE: 11/08/06

This Indian Health Service database contains information about facilities and sites on tribal lands where solid waste is disposed of, which are not sanitary landfills or hazardous waste disposal facilities, and which meet the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944).

INDIANRES Indian Reservations

VERSION DATE: 01/01/00

The Department of Interior and Bureau of Indian Affairs maintains this database that includes American Indian Reservations, off-reservation trust lands, public domain allotments, Alaska Native Regional Corporations and Recognized State Reservations.

APPENDIX F

QUALIFICATION(S) OF THE ENVIRONMENTAL PROFESSIONAL(S)

SUSAN L. MCCART P.E., P.G.

Education

B.S., Geological Engineering, University of Missouri - Rolla, 1993

Professional Licenses

Professional Engineer

Kansas
Missouri

Professional Geologist

Kansas

Continuing Education

Kansas Risk-Based Corrective Action (KRBCA) and Risk-Based Standards for Kansas (RSK) Training Course, Risk Assessment and Management Group, Inc., 2001.

Construction Quality Control/Construction Quality Assurance of Clay and GCL Liner Installations Training Course, TRI/Environmental, Inc., 2002.

Professional Experience

Ms. McCart has more than 24 years of experience in environmental consulting, and is a strong project and technical manager. Her project management capabilities include developing proposals and work plans, implementing field activities, submitting permits and reports to comply with County, City, and State regulations, developing status, documentation, and technical reports, presenting alternatives for remedial designs and modifications, and site closure activities. Ms. McCart is currently the Contract Administrator for environmental service contracts for the states of Kansas and Missouri. Additionally, Ms. McCart is the primary client manager for several petroleum industrial companies and solid waste facilities. Ms. McCart has excellent project management skills, with a high attention to detail and organization, and has developed many trusted professional relationships with clients and regulators. She has worked on a variety of projects in Kansas, Missouri, Iowa, Nebraska, and Oklahoma.

Ms. McCart has served as project manager for remediation and solid waste projects at sites ranging from former and active gasoline facilities, active and closed landfill facilities, bulk terminal stations, and process plants. On these sites, the contaminants of concern include petroleum hydrocarbons, such as benzene, methyl-tertiary butyl ether (MtBE), and diesel; chlorinated solvents, such as tetrachloroethene (PCE), trichloroethene (TCE), and vinyl chloride; and ethylene dibromide (EDB). Her technical specialties include soil and groundwater remedial field investigations, feasibility studies, risk assessments, remedial design and implementation, remedial system operation, maintenance, and modifications/re-design, construction quality assurance (CQA) certification, landfill alternative cover closure design, and landfill permitting.

Ms. McCart has developed several remedial design plans and specifications, including groundwater recovery and treatment systems with air strippers and granular activated carbon vessels, free product recovery systems, vapor extraction of free phase petroleum from soil and the top of

groundwater, and air sparging. Additionally, Ms. McCart completed the Risk-based Corrective Action (RBCA) training in Kansas and has performed many risk assessments following the Missouri RBCA guidelines for Missouri projects. Ms. McCart has been involved in a variety of landfill projects, including siting, facility design and permitting, plume delineation, CQA certification, gas control and collection system installation, and leachate re circulation system design. She has researched, evaluated, and designed alternative covers for landfill closures in mid west and eastern Kansas and submitted applications for permit modifications to allow the placement of construction and demolition waste disposal areas over former, closed municipal solid waste units.

Example project experience includes:

Solid Waste

Landfill Alternative Cover Demonstration and Design; Kansas: Evaluated several different alternative cover options for two landfills in central and eastern Kansas, including evapotranspiration (ET) using select grasses and/or trees, capillary barriers, and geosynthetic clay liners. Researched and modeled an ET-grass cover, including performing over 100 modeling scenarios with variations in cover thickness, cover material, and vegetative parameters. Designed an equivalent alternative cover to the prescriptive Subtitle D cover for a 75-acre municipal solid waste disposal area, which reduced the cost of installing and maintaining the cover approximately 40 to 50%. Specific projects include:

Johnson County Landfill, Phase 3 and C&D (2002-2003). Modeled, designed, and constructed an ET alternative final cover for a 75-acre municipal solid waste (MSW) disposal area and a 10-acre construction and demolition (C&D) disposal area. The cover consisted of 4.5 feet of shale material underlying 1 foot of clay material and deep-rooted native grasses. Two pan-type lysimeters were constructed under the cover to monitor infiltration of storm water.

Johnson County Landfill, Phase 5 (2009-2011). Following the requirements of the 2004 EPA promulgated Research, Development, and Demonstration Rule (RD&D Rule), designed and constructed an earthen alternative final cover over approximately 50 acres of MSW. The cover consisted of 2.5 feet of shale material underlying 1 foot of clay material and vegetation specific for erosion control and low maintenance. In addition, included vegetation to promote a habitat for the monarch butterfly, as requested by the County. One pan-type lysimeter was constructed under the cover to record infiltration of storm water as part of the demonstration aspect of the RD&D approval.

Landfill Plume Delineation; Kansas: Evaluated groundwater monitoring data and the extent of a 40-acre groundwater plume associated with a closed landfill in southeast Kansas. Recommended site improvements and remediation alternatives, including the injection of a variety of sugar sources to increase the natural biodegradation process and a pilot study of permeable reactive barriers. Recommended revisions to the sampling and analysis plan for assessment monitoring.

Landfill CQA Services; Kansas: Reviewed and evaluated data collected during the construction of landfill cells in northeast and eastern Kansas and construction of final covers over landfill cells in central and western Missouri. Developed certification reports and submitted for regulatory approval. Served as the CQA Engineer for new landfill cell constructions, ranging in size from 4 to 36 acres.

C&D Landfill Compliance Services; Kansas: Reviewed existing plans and site conditions at seven construction and demolition (C&D) landfills in Kansas and prepared plans to bring facilities into compliance with new Kansas regulations. Sites varied from 15 to 50 acres in size, and waste

acceptance ranged from 2,000 to 12,000 tons per year. Developed final contours, storm water drainage plans, waste screening programs, and other various design and operations specifications.

Environmental

Underground Storage Tank Closures: Provided project management and technical review for UST Closures for over 30 projects in Missouri, Kansas, and Oklahoma. Closure options included removal and in-place closure. Corresponded with regulatory agencies; coordinated with state-licensed contractors, provided field observations, prepared sampling plans, performed quality assurance/quality review, and submitted Closure Reports. Provided risk assessments as appropriate to obtain No Further Action determinations.

Phase I and II Environmental Site Assessments: Provided project management and technical review for Phase I and Phase II Environmental Site Assessments for a variety of sites in the midwest. Sites include vacant and active retail facilities, brownfields properties, industrial, commercial, and agricultural land. Reviewed historical documentation and site observation records and determined the presence or absence of recognized environmental concerns.

Limited Site Assessments; Multiple Sites throughout Kansas: Project manager for limited site assessment projects in various locations throughout Kansas. Project requirements include developing field work plans; advancing soil borings for the collection of soil samples from specific depths to evaluate risk exposures and extent of petroleum contamination; collecting soil samples for geotechnical analyses; collecting and evaluating groundwater analytical data; evaluating site historical activities; preparing comprehensive reports; performing quarterly groundwater monitoring; and recommending additional activities such as risk assessments or remediation as appropriate.

Risk-based Corrective Action Evaluations; Multiple Sites throughout Kansas: Managed Kansas limited RBCA projects, located all across the state. Project requirements include developing field work plans; advancing soil borings for the collection of soil samples from specific depths to evaluate risk exposures; collecting soil samples for geotechnical analyses; collecting and evaluating groundwater analytical data; evaluating site historical activities; developing site conceptual exposure models (SCEM) for current and future conditions; preparing comprehensive reports; and recommending site closure as appropriate.

Risk-based Corrective Action; Multiple Sites in Missouri: Performed risk assessments of active and former petroleum storage facilities (generally retail gasoline stations) in accordance with the Missouri RBCA guidelines. Project requirements include determining exposure pathways and evaluating acceptable risks by collecting soil and groundwater samples for chemical analysis, soil samples for geotechnical analysis, evaluated the probability of domestic groundwater usage, and preparing comprehensive reports. Obtained "No Further Action" (NFA) determinations for four facilities in a one-year period for a private client, and NFA determinations for seven facilities in a one-year period that were administered by the Missouri Department of Natural Resources (MDNR) using funds granted under the American Reinvestment Recovery Act (ARRA).

Groundwater Plume Stability Analysis, Multiple Sites in Missouri. Performed statistical analysis of historical groundwater data to evaluate groundwater plume stability. Using the Mann-Kendall/Sen's Slope statistic, linear regression trends, and/or Ricker Method analysis, evaluated four to 12 rounds of groundwater data to demonstrate plume stability in order to obtain NFA determinations for multiple sites.

Groundwater Plume Delineation; Agra, Kansas: Evaluated groundwater monitoring data and the extent of a groundwater plume throughout the city of Agra, Kansas. Primary contaminants of concern included TCE, PCE, EDB, and nitrates. Suspected sources included a grain cooperative facility and agricultural activities within the city limits. Installed shallow and deep groundwater monitoring wells, logged the boreholes, collected soil and groundwater samples, and evaluated the site data.

Public Water Supply Wellhead Treatment Systems; Kansas: Assisted in the design, installation, and/or monitoring of 10,000 and 20,000-pound granular activated carbon vessels for wellhead treatment of impacted public water supply wells in Frankfort, Moscow, Satanta, Park, Manter, Ellis, and Wichita, Kansas. Monitored and maintained a treatment system of three public water supply wells in Hays, Kansas, consisting of an air stripper along with two, 10,000 pound granular activated carbon vessels. Collected and reported monthly and quarterly groundwater samples to fulfill NPDES and regulatory requirements. Developed instruction manuals to train city employees on maintenance and monitoring procedures. Corresponded with city personnel and resolved installation and operational difficulties as needed.

Groundwater Plume Delineation and Containment; Lincoln, Nebraska: Monitored and evaluated the extent of an approximate 10-acre chlorinated hydrocarbon groundwater plume at a former industrial site in Lincoln, Nebraska. In particular, monitored the migration of vinyl chloride in the groundwater toward a downgradient creek. Monitored a groundwater recovery system for containment of the groundwater plume and collected semi-annual samples for compliance with an NPDES permit. Collected semi-annual groundwater samples from approximately 20 monitoring wells and prepared reports in compliance with EPA and NDEQ requirements, including recommendations for additional activities.

Spill Prevention Control and Countermeasure Plans (SPCC): Prepared SPCC plans for a wide range of facilities in Missouri and Kansas. Concurrent with SPCC plan development, at many sites, data were collected for use in developing General and Individual NPDES Storm Water Permit Applications.

Remediation

High Vacuum Multi-Phase Extraction, Kansas City, Missouri. In response to petroleum vapors and odors in the basement of an apartment complex located adjacent to an active retail gasoline station, performed an extended period (30-day) high vacuum multi-phase extraction (HVME) action. Required obtaining a short-term waste water discharge permit from a large municipality, and access from an irritated property owner. Coordinated work with MDNR and PSTIF, provided oversight during the HVME activities, reviewed data daily, and recommended modifications to the HVME efforts.

Multiple Zone Soil Vapor Extraction System with Air Sparging; Colby, Kansas: Based on pilot testing results, designed a soil vapor extraction system to remediate two distinct contaminated zones, located at different depths, at a former retail gasoline station and service shop. Designed an air sparge system to remediate the BTEX-impacted ground water in the source area. Conducted five pilot tests, developed site layout, consulted with city personnel and property owners on equipment buildings, detailed performance and equipment requirements, and completed applicable air discharge and UIC permits.

Ground Water Recovery, Soil Vapor Extraction, and Vapor Treatment; Waverly, Kansas: Project manager for remediation project at an active retail gasoline station with above ground storage tanks for unleaded and diesel fuel. Operated, maintained, and monitored a ground water recovery and

treatment system intended to control the migration of petroleum-impacted ground water toward residential basements near the site. Designed and implemented a remedial system to remove vapor phase hydrocarbons from the unsaturated soil utilizing existing ground water recovery trenches for vapor extraction. Based on expected emissions and odor levels, designed and installed a thermal oxidizer to treat the recovered vapors prior to discharge.

Soil Vapor Extraction and Air Sparge Mobile Remediation Trailer; Salina, Kansas: Designed a soil vapor extraction and air sparge remediation equipment trailer for use at multiple sites in Kansas, including a former gasoline and service station and a former dry cleaning facility in Salina, Kansas. Specified two regenerative blowers and one air compressor to allow for alternate or combined use at a variety of sites with different characteristics. Developed performance curves for the specified equipment to evaluate when determining applications at new sites. Included a header system consisting of six soil vapor extraction lines and eight air sparge lines which have the ability to operate together, alternately, or individually. Designed an appropriate control system and panel to operate the remedial trailer, including timers, motor starters, and hour meters.

Soil Vapor Extraction and Air Sparge System; Cimarron, Kansas: Project manager and design/staff engineer for a remediation project at a former gasoline station and grain cooperative facility, where the petroleum and chlorinated solvent ground water plume extends over two blocks downgradient from the site. Conducted a remedial investigation, including the installation of monitoring and pilot test wells, performed three soil vapor extraction tests, and designed a remedial system consisting of three vapor extraction wells to remove separate and dissolved phase hydrocarbons from the unsaturated zone and water surface. Based on review of the site lithology, designed an air sparge system consisting of eight injection wells to remediate the ground water in the source area. Purchased and installed equipment, implemented construction activities, and operated the system.

Deep Zone Soil Vapor Extraction and Air Sparge System; Marienthal, Kansas: Project manager and design/staff engineer for a remediation project at an active cooperative facility in western Kansas, where the depth to water is 130 feet below grade and soil contamination exists from the ground surface to the top of the water. Developed a field work plan to conduct pilot testing activities and collect soil, ground water, and air samples. Evaluated data and recommended an SVE system consisting of two shallow and two deep extraction wells to remediate impacted soil. Recommended five to seven air sparge injection wells to remediate petroleum (BTEX, MtBE) and chlorinated solvent (PCE, TCE) impacted ground water in the source area. Specified equipment and operational parameters, such as flow rates, applied vacuums, and injection pressures.

Multiple Site Soil Vapor Extraction and Air Sparging System; Hugoton, Kansas: Performed soil vapor extraction and air sparging pilot tests in Hugoton, Kansas to obtain data for the design of a system to remediate a soil and ground water plume covering two city blocks, and extending toward a public water supply well. There were multiple sources for the plume, including a former dry cleaner, a former retail gasoline station, above ground storage tanks for the local power plant, and active gasoline dispensers. Designed a soil vapor extraction system to address the BTEX, MtBE, and PCE soil ground water contamination, consisting of seven deep and three shallow zone extraction wells, and an air sparge system consisting of 26 air sparge wells. Stationed equipment in three separate buildings and operated the systems. After nine months, a 97% plume reduction was achieved and 90% of the ground water concentrations monitored at the site were below cleanup levels.

Excavation and Landfarming Activities; Ellis, Riley, Great Bend, Hugoton, and Atwood, Kansas: Developed and implemented excavation and landfarming plans for multiple sites in Kansas. Submitted landfarm plans and applications to the Kansas Bureau of Waste Management to

landfarm petroleum hydrocarbon contaminated soil without solid waste permits. Excavated 300 to 3,500 cubic yards of contaminated soil and constructed landfarm cells to aerate the soils. Backfilled the excavation basins with permeable material and perforated piping to enable vapor recovery for possible future use with ground water remedial systems (air sparging systems).

Oxygen Release Compound® Injections; Kansas: Implemented three oxygen release compound® studies to evaluate the effectiveness in enhancing the natural attenuation process at petroleum sites. Conducted a two-year oxygen release compound® study using filter socks in monitoring wells in Wichita, Kansas. Injected oxygen release compound® as a slurry into the saturated sand layer in Great Bend, Kansas utilizing a GeoProbe®. Injected oxygen release compound® as a slurry into fractured limestone bedrock in Riley, Kansas. Collected dissolved oxygen measurements, reduction-oxidation potential, and ground water samples and analyzed the effectiveness. Based on the results, re-injected the oxygen in Great Bend, targeting the zone containing the highest petroleum impacts.

Statistical Data Analyses; Kansas: Analyzed data from over 20 projects using a database management system. Created water flow and concentration maps using statistical analyses and kriging techniques. Included historical data in the database to graphically evaluate remediation effectiveness, migration pathways, and concentration changes. Developed graphical comparisons of water level fluctuations verses chemical fluctuations. Estimated volume of contaminants in the soil and ground water. Presented recommendations for further remedial action based on the data analyses.

Spill Prevention Control and Countermeasure (SPCC Plans)

Spill Prevention Control and Countermeasure (SPCC) Plans; Kansas and Missouri: Prepared and certified SPCC plans for a variety of sites, including a meat packing and distribution center, a freight transportation facility, military equipment maintenance facilities, rock quarry sites, landfills, and a materials recycling and distribution center. Inspected sites for compliance with the regulations and made recommendations for improvements.

Meat Packaging and Distribution Center; Junction City, Kansas – Private Client: Reviewed the existing SPCC Plan and site conditions. Recommended modifications, including adding appropriate signs and labels and additional spill kit components. Evaluated surface flow and containment structures. Certified SPCC Plan.

Kansas City, Kansas – ABF Freight Systems, Inc.: Developed and certified an SPCC Plan for a freight transportation refueling and parking facility. Underground and above ground storage tanks and fuel dispensers are present on the site. Evaluated secondary containment structures and potential spill volumes, rates, and direction. The site is located within ½-mile of the Kansas River, a navigable water.

Johnson County Landfill; Shawnee, Kansas: Developed and certified an SPCC Plan for the Johnson County Landfill, which includes maintenance shops and fuel dispensers for the trash hauling services provided by the landfill operator. Evaluated secondary containment for over 40 storage tanks located on site, mobile fueling tanks, and dispensers. The site is located within ½-mile of the Kansas River, a navigable water.

Materials Recycling Facility; Kansas City, Kansas: Developed and certified an SPCC Plan for the Materials Recycling Facility, a sorting and distribution center for recycling paper, plastic, bottles, and

aluminum. Evaluated secondary containment for four storage tanks, ranging in size from 100 to 7,000 gallons, and associated fuel dispensers.

Shawnee, Bonner Springs, and Olathe, Kansas – Shawnee Rock Company: Developed and certified SPCC Plans for three rock quarries in Kansas. The sites consist of rock crushers operating on diesel fuel, large generators, and above ground fuel storage tanks and dispensers to fuel the onsite equipment. Evaluated secondary containment, storage containers, and potential spill volumes, rates, and direction. Recommended materials for spill kits and developed training program for the facility.

Publications and Presentations

S.L. Race and P.M. Goeke, *Study of Natural Bioremediation Projects Using Time Release Oxygen Compounds* (Proceedings of the Fifth International In Situ and On-Site Bioremediation Symposium, Volume 3, San Diego, California, June 1999), pp. 295-300.

Michael S. Kukuk, PG, Nathan A. Hamm, PE, Susan L. McCart, PE, PG, Anastasia J. Welch, PE, and Mark Witt, PE, *Evapotranspiration Final Covers: The Kansas Experience – From Concept To Reality* (Landfill Symposium, June 2007).

Darryl Basham, PE, and Susan McCart, PE, PG, *Construction Issues and CQA Solutions* (Presentation at the Kansas SWANA Solid Waste Management Conference and Operator Training Course, November 10, 2011).

Susan McCart, PE, PG, *Lessons Learned: The Importance of the Site Conceptual Model* (Missouri Waste Control Coalition Conference, July 1, 2013).

Margaret Richards, Lathrop & Gage, and Susan McCart, PE, PG, *Common NPDES Mistakes and the Importance of Good Data* (Midwest Environmental Compliance Conference, May 11, 2016).