ENVIRONMENTAL ASSESSMENT

CHAMOIS – RICH FOUNTAIN 161KV TRANSMISSION LINE
RICH FOUNTAIN – VIENNA 161KV TRANSMISSION LINE
VIENNA – MARIES 161KV TRANSMISSION LINE

OSAGE AND MARIES COUNTIES, MISSOURI
PREPARED BY CENTRAL ELECTRIC POWER COOPERATIVE
PREPARED FOR USDA RURAL UTILITIES SERVICE
MISSOURI 71, MONITEAU
SEPTEMBER 2022

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
AGL	above ground level
APE	Area of Potential Effect
CEQ	Council on Environmental Quality
EA	Environmental Assessment
EMF	electric and magnetic fields
EMR	electric and magnetic radiation
EPRI	Electric Power Research Institute
FIRM	Flood Insurance Rate Maps
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
IEEE	Institute of Electrical and Electronics Engineers
IPAC	Information for Planning and Consultation
MW	megawatts
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
ROW	right-of-way
RUS	Rural Utilities Service
THPOs	Tribal Historic Preservation Officers
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

Introduction

Central Electric Power Cooperative (CEPC) is a not-for-profit cooperative that is owned by and provides power to eight-member electric distribution cooperatives. These eight distribution cooperatives are located in the Central Missouri region and they deliver power to a 22,000 square mile area in 26 counties. Power is delivered to the eight cooperatives by a transmission system consisting of 1,620 miles of high voltage transmission lines and 129 power substations. The electric power delivered to the power substations is delivered by the eight electric distribution cooperatives to more than 180,000 distribution cooperative members.

CEPC has requested long-term financing from the Rural Utilities Service (RUS), an agency within the U.S. Department of Agriculture (USDA), for construction of the proposed Chamois - Maries Rebuild Project. RUS is considering financing the proposed Project through an RUS-guaranteed Federal Financing Bank (FFB) loan, thereby making the proposed Project a Federal action subject to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA implementing regulations (40 CFR Parts 1500-1508), and the RUS's NEPA implementing regulations, Environmental Policies and Procedures (7 CFR Part 1970).

Based on the length of the rebuild project, RUS has determined that it is appropriate to prepare an Environmental Assessment, EA, for the proposed Project in accordance with the requirements of 7 CFR § 1970.

The APE has been designed to avoid resources such as wetlands, surface waters, sensitive habitats, protected species and historic or cultural areas, to the extent possible. As part of its environmental review process, RUS must also consider the effect of the proposed Project on historic properties in accordance with Section 106 of the National Historic Preservation Act (Section 106). Pursuant to 36 CFR § 800.2(d)(3), the agency is using its procedures for public involvement under NEPA to meet its responsibilities to solicit and consider the views of the public during Section 106 review. Accordingly, comments submitted in response to the EA will be considered by agency decision makers for both Section 106 and NEPA.

1. Purpose and Need for the Project

1.1 Project Description

CEPC proposes to rebuild the 161KV transmission lines between the Chamois, Rich Fountain, Vienna and Maries Substations. The subject 161KV lines were built in the early 1950's and have sustained woodpecker damage, split pole tops, wood crossarm degradation and corrosion of the metal components. This cumulative damage has, over 60 years, reduced the structural strength of the transmission lines (See Appendix C photos). CEPC's transmission system has provided reliable electrical service. One reason for this is CEPC's

commitment to repair or replace any system component that could negatively impact reliability. In particular, poles have been repaired in an effort to maximize the life span on the original transmission line structure. Even though pole repair has been successful in extending structure life, it does not change the fact that wood poles or any line component has a finite life. The new transmission structures will not be replaced in place; their location will be selected dependent on engineering and environmental factors including soil conditions, slope, maximum span length between transmission structures, and terrain. CEPC is proposing to replace the existing wood structures with new H-frame wood structures that would be approximately 52 to 88 feet tall with a span between structures of approximately 700 to 800 feet. Angle structures and some tangent structures (non-angle structures) will have down guys and anchors.

The transmission lines will be rebuilt on the existing right-of-way (ROW) located in Osage and Maries Counties in Missouri. A location map, aerial photos and transmission line maps can be found in Appendix A. The length of the transmission lines are as follows:

A. Chamois - Rich Fountain transmission line, 16.44 miles
B. Rich Fountain - Vienna transmission line, 20.62 miles
C. Vienna - Maries transmission line, 11.69 miles

Total Estimated Project Cost: $15,714,983

A. Preliminary Construction Work and ROW Preparation

Initially, CEPC's field crew will traverse the transmission line right-of-way (ROW) to collect and verify obstacle data pertaining to access, roads, gates, other electric lines, waterways, etc. CEPC's ROW is 100' in width. Before the contractor begins work on the ROW, Central's field crew will then traverse the ROW a second time for the purpose of staking the location of the new transmission line structures. The structures in the rebuilt transmission line are constructed of wood poles, crossarms and braces.

The existing ROW will be maintained along with clearing of any underbrush to facilitate construction activities.

B. Show-Up Construction Area

A construction show-up area will be identified and leased near the line rebuild project ROW. The show-up will be used for pole storage, pole framing and various construction tasks throughout the Project. The show-up will be the location for the contractor to conduct meetings, to park vehicles and equipment.

C. Construction Process

During the line rebuild project, the line contractor material crew will haul the wood poles, crossarms, braces and other structure components to each staked structure location. After or during material delivery, the drilling crew will set up an auger rig at each structure

location and auger the required up to 42" diameter holes. Holes that are not immediately set with a pole are covered with a barrier to protect people and animals from fall hazards. The setting crew will follow the drilling crew and set the wood poles in the augured holes. After the poles are set in the augured holes, rock backfill is placed and tamped between the side of the augured hole and pole. Generally, the structures are a two pole H-frame configuration with the poles being spaced 15.5' apart. See Appendix B for a drawing of a typical H-Frame. The H-Frame structures will vary in height from 52' to 88' above the surrounding ground level. Five to seven H-Frames per mile will be constructed for the proposed projects. The framing crew follows the setting crew and will attach the crossarms, braces and other structure components to the wood poles. The framing crew also transfers the existing conductor to the new structures. As the framing crew performs their tasks another crew will dismantle the existing transmission structures, fill holes and haul the retired structure components off the ROW. When the new structures are built and the existing conductor has been transferred then the new conductor is installed. This stringing operation is accomplished by using the existing conductor to pull in the new conductor. With the new conductor installed and sagged, then the new conductor is attached or clipped-in to the insulators on the transmission structures. Once the stringing, sagging and clipping tasks are complete then the contractor crews clean up the ROW and review the engineer's final inspection list for any required final tasks. The Cooperative then takes control of the transmission line.

D. Access Roads and Crew Movement on ROW

The Contractor will limit the movement of its crews and equipment so as to minimize the damage to crops and property along the ROW. The Contractor will be responsible for all damages off and on the ROW. Central will monitor and inspect all damage repair to ensure that fences, driveways, fields and the ROW are left in pre-construction condition. Restoration procedures will be used on the ROW to prevent erosion and to re-establish ground cover. The procedures include cultivating, seeding, mulching and/or fertilizing the disturbed areas as needed to stimulate rapid growth. During construction the vehicle traffic is generally limited to a 15' wide path on the 100' wide ROW and an area of 50' radius at each structure. CEPC utilizes private easements that allow for ingress and egress across the property that the easement encumbers, so that existing roads, field roads, crossings and bridges may be used. Existing creek crossings will be used as they are found, but if none are available, alternative methods will be utilized, usually simply approaching the crossing from access on the opposite side, as the construction process does not require linear movement down the ROW. If no other method is possible and a creek crossing has to be made and/or upgraded, an NWP57 USACE permit would be requested.

E. Post-Construction

After the new transmission line has been constructed and put into service, CEPC's contractor will completely remove the existing transmission line poles and conductors that are no longer required, and recontour and revegetate the disturbed areas to pre-existing

conditions. Existing transmission poles located within wetlands (if any) will be cut off at the groundline so as not to impact surrounding soil or vegetation.

1.2 Purpose and Need

USDA, Rural Development is a mission area that includes three federal agencies – Rural Business-Cooperative Service, Rural Housing Service, and Rural Utilities Service. The agencies have in excess of 50 programs that provide financial assistance and a variety of technical and educational assistance to eligible rural and tribal populations, eligible communities, individuals, cooperatives, and other entities with a goal of improving the quality of life, sustainability, infrastructure, economic opportunity, development, and security in rural America. Financial assistance can include direct loans, guaranteed loans, and grants in order to accomplish program objectives. This project would utilize direct and/or guaranteed loans through the Rural Utilities Service to rebuild these lines in Three Rivers Electric Cooperative service territory in Osage and Maries Counties in Missouri.

Three Rivers Electric Cooperative is a member of CEPC. The majority of Three Rivers Electric Cooperative's members receive power from the substations which are located on the transmission lines that are proposed for rebuilding.

The subject 161KV lines have sustained woodpecker damage, split pole tops, wood crossarm degradation and corrosion of the metal components. This cumulative damage has, over 60 years, reduced the structural strength of the transmission lines (See Appendix C photos). CEPC's transmission system has provided reliable electrical service. One reason for this is CEPC's commitment to repair or replace any system component that could negatively impact reliability. In particular, poles have been repaired in an effort to maximize the life span on the original transmission line structure. Even though pole repair has been successful in extending structure life, it does not change the fact that wood poles or any line component has a finite life.

2. Alternatives Evaluated Including the Proposed Action

2.1 Proposed Action

Under the Proposed Action Alternative, RUS would consider providing financial assistance to CEPC to construct the proposed Project as described in this document.

2.2 Other Alternatives Evaluated

An alternative to the complete redesign, retirement and rebuilding of this transmission line is the piece by piece change out of all the line material that has been identified as rejects. Central has done an extensive study of the maintenance work on line sections across the system. The findings suggest the majority (60-80%) of the poles and crossarms would need to be replaced over the next 10 years. A cost analysis was completed to check the viability of piece by piece maintenance versus reconstruction and it was determined that for a slight premium, CEPC could utilize contract crews to begin replacing transmission lines with a more reliable construction. In addition to more reliable structures, a larger conductor is installed thus affording increased power delivery and reduced voltage drop. This study was submitted to RUS in previous BER submittals and the approved 2012-2016 Construction Work Plan.

A. Information Considered for the Alternative

CEPC has a transmission line inspection and maintenance program which consists of the following processes:

i. CEPC's line crews perform a walking inspection of each transmission line every one to two years.

ii. A contract aviation company performs a flying inspection of the majority of CEPC's transmission lines three to four times per year.

iii. A contract company inspects, tests, and treats each of CEPC's wood pole structures once every ten years. The inspection, testing, and treating procedure focuses on the pole from 1.5' below ground line to approximately 8' above ground line. The procedure used by the contractor follows RUS Bulletin 1730B-121 on pole inspection and maintenance.

iv. A contract company recently flew many of CEPC's transmission lines with a helicopter to document the condition of the crossarms of transmission structures. The helicopter flight photographic data for the Chamois-Crook 69 kV transmission line revealed severe crossarm degradation as detailed in Item vii of Section 2.2B "Supporting Field Data for Rebuilding the Transmission Lines."

v. CEPC recently carried out a land based photographic survey of several lines. This photographic survey documents the physical degradation of the lines and is shown in Appendix C.

During the sixty-year life of these transmission lines, any pole, pole hardware, or crossarm identified as being unreliable has been changed out or repaired. The repair of a pole generally focused on filling woodpecker holes. More recently, a woven wire mesh has also been applied around the pole in an effort to reduce woodpecker activity.

B. Supporting Field Data for Rebuilding the Transmission Lines

An analysis of the data from CEPC's inspection processes has been an aid in documenting the degraded physical condition of the transmission lines. Please reference the photos in Appendix C. These photos are of CEPC structures of the same vintage, but are not necessarily of these particular lines. The specific problems identified are as follows:

i. A large number of woodpecker holes that were repaired many years ago have been enlarged by continued woodpecker activity.

ii. The original woodpecker repair technique of adding solid materials and tar to the woodpecker hole did not impart any material strength to the wood pole.

iii. A check in a wood pole is the lengthwise separation of the wood that extends across the rings of annual growth due to the drying process. A check can be an avenue for decay spores and woodpeckers to enter the pole. Poles with detrimental checks were found.

iv. Knots, knot clusters and other pole defects that passed inspection sixty years ago have become a point of ingress for biological and weather forces which have caused a reduction in pole strength.

v. The pole tops of these lines were not protected with pole caps. The majority of the pole tops in these lines have been severely degraded through woodpecker damage and the weathering action caused by ultraviolet rays, rain and freeze/thaw cycles.

vi. The 7/16" Extra High Strength Steel (EHSS) which was employed as guy wire and overhead ground wire, has lost all of the galvanizing on the outer surface of the wire. The outer surface is heavily corroded with evidence of surface pitting and loss of steel.

vii Crossarm failure becomes a serious problem as the age of any line exceeds fifty years. The problem crossarms have failed due to rot, splits, and elongation of the insulator support bolt hole. On certain crossarms the insulator support bolt eventually passes through the enlarged hole, dropping the conductor. Throughout the lifetime of the lines when icing occurred, conductor galloping (jumping or elliptical motion) was initiated by the prevailing west and northwest winds, causing the north-south lines to experience the most severe galloping problems. The conductor galloping appears to have caused the insulator support bolt hole elongation problem. Crossarm fires have also been caused by electrical tracking on the surface of the deteriorated arm from the insulator support bolt to the pole ground.

C. Analysis of Structures with a Damaged Pole

An analysis to ascertain the amount of strength reduction caused by a woodpecker hole to a wood pole was carried out. The analysis tools used were the software packages PLS-POLE and PLS-CADD LITE from Power Line Systems, Inc.

A structural model of a TS-1 was created in PLS-POLE and then the TS-1 model was placed in a PLS-CADD LITE model. In PLS-CADD LITE the appropriate weather and conductor loading criteria were applied to the TS-1 for the purpose of running structural analysis. The TS-1 model was analyzed in three different scenarios where the woodpecker hole was located near the top crossarm, the lower crossarm and 15' above the ground line. The results of the analysis show the pole failing due to the woodpecker hole. Appendix B contains PLS-POLE drawings and tabulated data of the analysis results.

D. RUS Guidelines for Rejecting and Replacing Poles

RUS Bulletin 1730B-121 provides "RUS borrowers with the information and guidance for establishing or sustaining a continuing program of pole maintenance". The guidance given in this bulletin is helpful in evaluating pole conditions. As stated in section 6.1.2. of this bulletin any pole that has decay, insect or mechanical damage, or severe woodpecker hole damage that "has weakened the pole such that it is considered below NESC requirements" should be classified as a reject. Any pole where "hazardous conditions exist above ground, such as a split top" should be classified as a reject. Rejected poles that are not candidates for rehabilitation should be replaced per section 6.1.3.b. The rejected poles in the lines that were analyzed are severely damaged because of multiple woodpecker holes, split tops, and severe weathering due to age; therefore these rejects are not candidates for rehabilitation.

E. Pole and Crossarm Quantities to be Replaced

Utilizing the data collected during the line inspection process, the PLS structure analysis results and the guidance provided by RUS Bulletin 1730B-121 the percentage of pole rejections, crossarms rejections and replacements ranges between 60% to 80% for Central's transmission lines that were built in the 1950s and 1960s.

F. Conductor

Even though the 556 Dove ACSR conductor superficially appears to be serviceable, the typical asset life for this transmission line component has been exceeded by 15+ years. See Appendix B.

CEPC conducted a study of conductor sag on similar transmission lines. The lines were modeled in PLS-CADD using data from a total station field survey, digitized plan-profiles, exact time of the day line currents and ambient weather conditions. The study showed that in some spans the 60+ year old ACSR had more sag than anticipated. Any location where the conductor clearance is discovered to be not sufficient is addressed by increasing structure heights or changing structure location.

One distinct possibility for the conductor sag being greater than expected is excessive creep due to the conductor having exceeded typical asset life but not yet reaching the life to failure condition.

A reference has been included in Table One, Appendix B, for "Main Causes of Line Component Deterioration and Typical Estimates of Service Life" from the article "Corrosion Evaluation Methods For Power Transmission Lines" by Peter Mayer, P.E. of Ontario Hydro Technologies.

G. Overhead Ground Wire and Guy Wires

As stated in the Field Data section, the outer surface of the 7/16" EHSS wire is heavily corroded. Two results of the corrosion process are a loss of wire strength and a loss of ductility. CEPC has noticed that when 7/16" EHSS wire of this age is moved through a roller during maintenance activities, strands of the 7/16" EHSS break. Samples of the 7/16" EHSS have been field tested by CEPC's line crews. Even though CEPC's field test did not follow ASTM test methods, it was obvious the 7/16" EHSS is near or at the end of life because the strands easily break when flexed by hand several times.

H. Complete Transmission Line Rebuild Compared to Pole and Crossarm Change Out

Completely rebuilding the transmission lines was compared to the alternative of a piece by piece change out of the rejected line materials.

One facet of the comparison was a labor cost analysis of changing out the rejected crossarms and poles versus installing all new H-frame structures. The labor cost analysis shows that installing all new H-frames is similar in cost to changing out only the rejected crossarms and poles.

A second facet of the comparison brings to light the following fact. If only the rejected crossarms and poles are changed out then CEPC will be in possession of a line that still contains 60 plus year old conductor, 60 plus year old corroded overhead ground wires, guys, anchors, and metal components with a large percentage of the remaining crossarms and poles having exceeded typical asset life spans.

A third facet of the comparison is that of time. Due to the schedule of CEPC's other maintenance and construction activities, the time required to change out the crossarms and poles by CEPC's crews would be unacceptable. The increase in the project time line would also increase the cost of the project due to rising labor and material costs.

The alternative of rebuilding the transmission line piece by piece is not acceptable and is therefore eliminated from further consideration.

2.3 No Action

Under the No Action Alternative, the Chamois - Maries transmission line would not be rebuilt; the existing transmission line would remain in service, and its 1950s-era

transmission structures would continue to deteriorate. Failure to rebuild this transmission line would result in continued growing strain on the transmission system, which in turn could result in possible system overloads and increased system outages in both frequency and duration. CEPC would therefore fail to meet its responsibilities to ensure reliable service.

The No Action Alternative would have impacts on environmental and human resources similar to the proposed Chamois - Maries Project because maintenance and outage restoration activities would continue to occur along the existing ROW, including removing vegetation and allowing necessary construction equipment access for repairs. The activities would generate, in particular, temporary effects to vegetation, potential short-term displacement of wildlife, and construction noise. The No Action Alternative, however, would potentially avoid use of temporary access and new construction-related activities at every structure along the ROW, including removal and replacement of new transmission structures in or near wetlands. Depending on the location of transmission structure failure on the existing transmission line, however, these effects may not be avoided in the future.

3. Affected Environment and Environmental Consequences

Impact Summary - Affected Environment

The following presents an overview of potential effects that the proposed Project may have on the human environment. The evaluation considers resources or values that require protection under laws, regulations, executive orders, or agency policies. This section analyzes both beneficial and adverse impacts that would result from implementing the proposed Project. NEPA requires agencies to assess the direct, indirect, and cumulative impacts of a proposed action. Direct impacts are those that are caused by the proposed action and happen at the same location and time. Indirect impacts are those impacts that happen later in time and/or farther removed from the proposed action, but are still reasonably foreseeable. An effect or impact is defined as the "changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives." (CFR, 2022).

3.1 Land Use, Important Farmland and Formally Classified Lands

3.1.1 Land Use – Affected Environment

Decisions concerning land use arise from various societal or governmental needs or goals, including statutory or regulatory objectives. These may include, among others:

- Pursuit of economic growth and development;
- Accommodating increased population growth;

• Assurance of adequate provision of public utility services – potable water, wastewater treatment, electrical power, and telecommunications;
• Providing or improving community services and facilities;
• Discouraging unplanned, uncontrolled, and costly urban/suburban sprawl;
• Discouraging the conversion of agricultural or forest lands from existing uses;
• Objective to minimize wetland losses or encroachment upon or development in floodplains;
• Assurance of appropriate environmental quality; and
• Providing for proper solid waste disposal in rural areas

CEPC contacted the County Commission of Osage and Maries Counties. Osage County did not respond to CEPC's contact letter. Maries County contacted CEPC and had no objections to the project.

CEPC contacted the Meramec Regional Planning Commission concerning the proposed transmission line rebuild projects in Osage and Maries County. Meramec Regional Planning Commission did not respond to CEPC's contact or follow-up letter.

3.1.2 Environmental Consequences

The proposed transmission line rebuild project will be located on CEPC's existing 100' wide transmission line right-of-way. A physical review of the existing and proposed rebuilt transmission lines show that it cross over lands that are primarily agricultural (13%), pasture/hay (48%) and forest (39%) areas along with some rural residential areas. The original right-of-way was acquired, cleared and the transmission lines were built in the 1951 to 1953 timeframe. The impact to the existing right-of-way from the transmission line rebuild project will be minimal.

3.1.3 Mitigation

Impacts to land use include short-term impacts associated with construction. Construction impacts would be minimized with Best Management Practices (BMP)s to control and minimize erosion. After construction is complete, disturbed areas would be stabilized as appropriate and pasture/hay and forest areas revegetated. Overall, the land use following construction would be consistent with the current land use in the area and the impact will be minimal.

3.1.4 Important Farmland Soils– Affected Environment, Environmental Consequences and Mitigation

The Farmland Protection Policy Act (FFPA) and the USDA Departmental Regulation No. 9500-3 (USDA, 1983), Land Use Policy, require agencies within the USDA to assess how their actions may affect important farmland, prime forestland, and prime rangeland.

The USDA-NRCS Soils Scientist from the Palmyra, MO office reviewed Central's Form AD-1006, project area maps and contact letter. Based on the information supplied to NRCS it was the opinion of the NRCS that FFPA did not apply because the site did not contain Prime, Unique, Statewide or Local Important Farmland. The transmission line rebuilding projects will have little or no impact on farmland since they will be built on existing ROW. The project would also qualify for exemption from FPPA since the original easements were obtained in the early 1950's before August 4, 1984 as defined by NRCS.

3.1.5 Formally Classified Lands– Affected Environment, Environmental Consequences and Mitigation

Formally Classified Lands are federal, state, and local lands that have been set aside for specific purposes, including but not limited to: national, state, county, and municipal parks; monuments; battlefields; historic sites; wilderness areas; wildlife refuges; national seashores and lake shores; forests; and grasslands. The proposed transmission line rebuild project does not traverse any known Formally Classified Lands.

3.2 Floodplains and Waters of the U.S.

3.2.1 Affected Environment

Continued encroachments on floodplains decrease the natural flood control capacity of these land areas and creates short or long-term threats to lives and property perpetuating the need for costly structural flood control measures and disaster relief and rehabilitation activities. Compliance with E.O. 11988 (FEMA,1977), Floodplain Management, and E.O. 13690 (CFR, 2015), Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input, require Federal agencies to avoid actions, to the extent practicable, which will result in the location of facilities in floodplains and/or affect floodplain values. Facilities located in a floodplain may be damaged or destroyed by a flood or may change the flood-handling capability of the natural floodplain or the pattern or magnitude of flood flows. In addition, USDA Departmental Regulation 9500-3, Land Use Policy, discourages the unwarranted alteration of floodplains by requiring agencies within the USDA to not assist in actions unless:
1. There is a demonstrated, significant need for the proposal; and
2. There are no practicable alternative actions or sites that would avoid the direct or indirect encroachment on floodplains or, if conversion is unavoidable, reduce the number of acres to be converted or encroached upon.

Executive Order 11988, Floodplain Management, requires federal agencies to avoid actions, to the extent practicable, that will result in the location of facilities in floodplains and/or would affect floodplain values. The Flood Insurance Rate Maps (FIRM) (FEMA, 2022) panels, 29151C0042E, 29151C0050E, 29151C0150E, 29151C0255E, 29151C0250E, 29151C0375E, 2908160050B, 2908160025B, 2908160100B and

2908160175B encompass the Project Study Area. Closeup views of each map with the transmission line centerline marked are provided. There is a cumulative 1.7 miles (approximately 20.7 acres) of total floodplain spread across the entire project area. The Federal Emergency Management Agency (FEMA) data indicates potential flood hazards within the area. The flood zones are considered Zone A and Zone AE. The majority of the flood zone is Zone A located in areas subject to inundation by the 1-percent-annual-chance flood, for which no base flood elevations have been determined and the other is Zone AE which has a base flood elevation. The remainder of the Project is within Areas of Minimal Flood Hazard, Zone X. (The original and marked up FIRM maps are located in Appendix A-3.)

3.2.2 Environmental Consequences

The USACE and CEPC collaborated in the review of the proposed transmission line rebuild projects. Based upon the USACE NWP 57 (USACE, 2021), which regulates Electric Utility Line and Telecommunications Activities, CEPC plans to span over all floodplains and wetlands with the new transmission line and to the extent possible no structures will be placed in these areas. The USACE determined that if the proposed activity does not require the discharge of dredged material or fill in the waters of the U.S then a USACE permit would not be required. If when the final design is made and it is determined that USACE consultation is necessary or a creek crossing has to be made and/or upgraded, an appropriate USACE NWP 57 permit would be requested.

3.2.3 Mitigation

Mitigation measures will be implemented during Project construction and operation to aid in minimizing potential environmental impacts. Potential mitigation measures include:

- Engineering will design placement of new poles outside of the floodplain when possible to maintain flood storage and flow. Should any structure be required in floodplain areas, they will be designed to avoid accumulation of debris that could impede flood flow or lessen water storage. Any direct impacts will be mitigated through the appropriate NWP 57 USACE permits.
- Any material excavated within floodplain areas will be removed to areas outside the floodplain.
- No equipment or material will be stored in floodplains and equipment refueling will occur in the uplands.

3.3 Wetlands

3.3.1 Affected Environment

The purpose of Executive Order 11990 (FEMA, 1977), Protection of Wetlands, is to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. The USDA Departmental Regulation 9500-3,

"Land Use Policy," states that when land use regulations or decisions are inconsistent with USDA policies and procedures for the protection of wetlands, USDA agencies shall not assist in actions that would convert wetlands to other uses or encroach upon them, unless (1) there is a demonstrated, significant need for the project, program, or facility, and (2) there are not practical alternative actions or sites that would avoid the conversion of these lands or, if conversion is unavoidable, reduce the number of acres to be converted to encroached upon directly and indirectly.

Wetlands maps from the U.S. Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI) (USFWS, 2022) utilizing the USFWS Wetlands Mapper tool and maps were examined to determine if the proposed Project has the potential to affect wetlands. The review of the Wetlands Mapper maps shows there are 12 creek, branch and fork crossings (listed below with the Section, Township and Range of the crossing). The Wetlands Mapper tool maps are enclosed (Appendix A-4). Central will design the Project to span the limited number of wetland areas (approximately 2.5 acres) without having any poles inside these areas. No equipment or material will be stored in floodplains or wetlands and equipment refueling will occur in the uplands.

Table 1

Name of Water Crossing	Location (Township-Range-Section)
Greasy Creek	T45N-R7W-S13
Dooling Creek	T45N-R8W-S27
Deer Creek	T45N-R8W-S34
Cedar Creek	T44N-R8W-S20
Linn Creek	T43N-R9W-S1
Bexton Branch	T42N-R9W-S15
Buchler Creek	T42N-R9W-S15
Wansing Branch	T41N-R9W-S30
Maries River	T40N-R10W-S1
Keiser Branch	T40N-R10W-S24
Maries River	T40N-R10W-S26
Mag Creek	T39N-R10W-S3

3.3.2 **Environmental Consequences**

The USACE and CEPC collaborated in the review of the proposed transmission line rebuild projects. Based upon the USACE NWP 57, which regulates Electric Utility Line and Telecommunications Activities, Central plans to span over all floodplains and wetlands

with the new transmission line and to the extent possible no structures will be placed in these areas. The USACE determined that the if the proposed activity does not require the discharge of dredged material or fill in the waters of the U.S then a USACE permit would not be required. If when the final design is made and it is determined that USACE consultation is necessary or a creek crossing has to be made and/or upgraded, an appropriate USACE permit would be requested.

3.3.3 Mitigation

Mitigation measures will be implemented during Project construction and operation to aid in minimizing potential environmental impacts. Potential mitigation measures include:

• Engineering will design placement of new poles outside of the floodplain when possible to maintain flood storage and flow. Should any structure be required in floodplain areas, they will be designed to avoid accumulation of debris that could impede flood flow or lessen water storage. Any direct impacts will be mitigated through the appropriate NWP 57 USACE permits.

• Any material excavated within wetland and/or floodplain areas will be removed to areas outside the floodplain.

• No equipment or material will be stored in floodplains and equipment refueling will occur in the uplands.

3.4 Water Resources

3.4.1 Affected Environment

This section addresses water quantity and quality issues related to: discharges to or appropriations from surface or ground water; ground water protection programs (e.g., sole source aquifers and recharge areas); and water quality degradation from temporary construction activities. Water quantity and quality changes can impact other (and sometimes quite distant) environmental resources such as: groundwater and drinking water supplies; threatened or endangered species; other fish and wildlife species; and wetlands, among others. Permitting requirements (with mostly state agencies) are the applicant's responsibility and the EA needs to address any permit requirements including the description of any mitigation or other compliance measures that may be necessary as a condition of any permits. Applicants are urged to consult with the Agency's engineers and environmental staff, particularly those at the Agency's State Offices as these individuals have knowledge of water quality issues and permitting considerations in their respective states.

In compliance with the Missouri Clean Water Law, (MORS, 2022)), and the Federal Water Pollution Control Act (EPA, 1972) as amended, Central would contact Missouri Department of Natural Resources (MODNR) and obtain a Construction Land Disturbance Missouri State Operating Permit (MO-RA0000) (MODNR, 2022) and develop the necessary SWPPP that goes with it, as directed by MODNR.

3.4.2 **Environmental Consequences**

When it rains (including other forms of precipitation), stormwater washes over the loose soil on a construction site, along with various materials and products being stored outside. As stormwater flows over the site, it can pick up pollutants like sediment, debris and chemicals from that loose soil and transport them to nearby storm sewer systems or directly into rivers, lakes or coastal waters. Central would ensure construction site operators have the proper stormwater controls in place so construction can proceed in a way that protects the Project community's clean water and the surrounding environment.

3.4.3 **Mitigation**

Central's scheduled re-clearance of all transmission line ROW includes mechanically re-clearing with tractor mounted brush hogs. At waterway crossings, the riparian zone is re-cleared so as to promote the growth of native warm weather grasses and low growing shrubs and bushes. The riparian zone thus reduces the potential for erosion and stream sedimentation. The proposed Project crosses multiple forms of waterways in which no fill or no dredge material will be placed thus eliminating the potential for stream sedimentation from fill or dredge materials. Therefore, CEPC's re-clearing methods and non-placement of fill or dredge material in waterways will have no significant adverse effects to local water quality.

General construction and access along the existing ROW during the Project could cause land disturbance activities in the ROW including clearing, grubbing, excavating, grading, filling and other activities that result in the destruction of the root zone and/or land disturbance activity that is reasonably certain to cause mild to moderate erosion. Land disturbance permits from MODNR will be obtained as required for construction disturbance activities of one or more acres.

The primary requirement of a land disturbance permit is the development of a SWPPP that incorporates site-specific BMPs to minimize soil exposure, soil erosion and the discharge of pollutants. The SWPPP ensures the design, implementation, management and maintenance of BMPs in order to prevent sediment and other pollutants from leaving the site.

Once CEPC obtains the necessary MODNR land disturbance permit and has the SWPPP in place, CEPC would ensure construction site operators have the proper stormwater controls in place so construction can proceed in a way that protects the Project community's clean water and the surrounding environment.

3.5 Coastal Resources

3.5.1 Affected Environment

The term "coastal zone" means the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. The zone extends, in Great Lakes waters, to the international boundary between the United States and Canada and, in other areas, seaward to the outer limit of State title and ownership under the Submerged Lands Act (43 U.S.C. 1301 et seq.), the Act of March 2, 1917, (48 U.S.C. 749), the Covenant to Establish a Commonwealth of the Northern Mariana Islands in Political Union with the United States of America, as approved by the Act of March 24, 1976 (48 U.S.C. 1801 et seq.), or section 1 of the Act of November 20, 1963 (48 U.S.C. 1705), as applicable. The zone extends inland from the shorelines only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters, and to control those geographical areas which are likely to be affected by or vulnerable to sea level rise.

3.5.2 Environmental Consequences

The Project is not located in a “coastal zone” and thus will not have an environmental consequence to this type of environment.

3.5.3 Mitigation

Since the Project is not located in a “coastal zone”, no mitigation measures are necessary.

3.6 Biological Resources

3.6.1 Threatened and Endangered Species– Affected Environment

The Endangered Species Act of 1973 (ESA) (USFWS, 1973), as amended, provides federal protection to listed threatened and endangered species. Section 7 of the ESA requires all Federal agencies to consult with the USFWS when a federal action authorized, funded, or carried out by the agency that may affect a listed species or its designated critical habitat or is likely to jeopardize a proposed listed species or adversely modify proposed critical habitat.

The birds, fish, flowering plants and mammals on the USFWS’s list for the proposed Project are shown below. USFWS concurred with CEPC's “no effect” determination for listed species and agreed that the listed species are not likely to be impacted by the proposed Project action due to the facts that the Project ROW is cleared

and waterways will be avoided. The entire USFWS IPaC is listed along with the USFWS correspondence in Appendix D.

Table 2	
AMPHIBIANS	**STATUS**
Eastern Hellbender	Endangered
INSECTS	**STATUS**
Monarch Butterfly	Candidate
CLAMS	**STATUS**
Pink Mucket	Endangered
Scaleshell Mussel	Endangered
Spectaclecase	Endangered
FISHES	**STATUS**
Niangua Darter	Threatened
Pallid Sturgeon	Endangered
MAMMALS	**STATUS**
Gray Bat	Endangered
Indiana Bat	Endangered
Northern Long-Eared Bat	Threatened

Appendix A contains maps for the Project location.

3.6.2 Fish and Wildlife Resources– Affected Environment

CEPC takes into consideration fish and wildlife resources on and along the proposed Project ROW. A significant tool used by CEPC is watching over Contractor operations on all public and private lands where fish and wildlife resources could be negatively impacted by imprudent machinery operation or construction activities. Special attention is given to waterway corridors, riparian areas and foraging habitat areas which support fish and wildlife resources.

The phase to phase and phase to ground spacing of the proposed transmission line structures were reviewed due to the concern of raptor electrocution. Raptors include eagles, falcons, owls, kites, ospreys, and buzzards. Per the Avian Protection Plan (APP) (USFWS, 2005) Guidelines "Avian-safe construction, designed to prevent electrocutions, must provide conductor separation of 60 inches between energized and grounded hardware,

or must cover energized parts and hardware if such spacing is not possible". The H-Frames that will be constructed for the proposed Project meet APP guidelines.

3.6.3 Migratory Bird Treaty Act– Affected Environment

The Migratory Bird Treaty Act (MBTA) (USFWS, 1916) implements four separate treaties (or conventions), between the United States and Great Britain (on behalf of Canada - 1916), Mexico (1936) and Japan (1972), and the former Soviet Union (1978). The Act, and the treaties it implements, focused on regulating the "taking" of migratory birds, and introduced the concept of "take" to federal law. Take (defined at 50 CFR 10.12 as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt" any of the foregoing) can be intentional or unintentional, and occur through several means.

The MBTA applies to individuals as well as agencies and is a strict liability law, thus forbidding the taking of even one migratory bird. E.O. 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (January 10, 2001), directs executive departments and Federal agencies "to take certain actions to further implement the Act." These actions are fostered through the development of Memoranda of Understanding (MOU) with the USFWS. The MOUs are to include a number of protocols and planning/management actions to pursue the goals of the MBTA. The USFWS environmental review process included impacts to migratory birds, and didn't find any specific risks. As described above, our electric transmission line project will utilize APP Guidelines.

3.6.4 Bald Eagle and Golden Eagle Protection Act– Affected Environment

The Bald and Golden Eagle Protection Act of 1940 (USFWS, 1940), as amended, prohibits anyone without a permit issued by the USFWS from "taking" bald or golden eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part,
nest, or egg thereof." The Act defines 'take' as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

Since the ROW is already cleared, it was determined that a bald and/or golden eagle would not be affected by the proposal. USFWS and the Missouri Department of Conservation (MODOC) were consulted and no proposed activities were deemed to cause disturbance since the project is occurring on existing ROW and the APP Guidelines are being followed.

3.6.5 Invasive Species–Affected Environment

E.O. 13112, Invasive Species (CFR, 1999), requires federal agencies to prevent the introduction of invasive species, provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause. In addition, each federal

agency to the extent practicable and permitted by law are required to identify their actions that may affect the status of invasive species, use relevant programs and authorities subject to the availability of appropriations, and within administration budgetary limits and with regard to the Agency to:

• Prevent the introduction of invasive species;
• Detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner;
• Monitor invasive species populations accurately and reliably; and
• Provide for restoration of native species and habitat conditions in ecosystems that have been invaded.

In addition, federal agencies were directed to not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species, unless the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species and that all feasible and prudent measures to minimize the risk of harm will be taken in conjunction with its actions.

CEPC has examined its planned construction activities and determined that these activities should not potentially introduce invasive species to the Project environment. CEPC's contractor will take all necessary prevention precautions to prevent invasive species during construction and shall restore the ROW back to native species and habitat when construction is completed.

3.6.6 Environmental Consequences

The Project Area primarily crosses cultivated crop fields and existing maintained right-of-way. The rebuild Project will not affect potential bat habitat as no additional tree clearing would be required. Since the Project will be built on existing ROW and no additional clearing that may affect potential bat habitat would be necessary, the USFWS concurred with CEPC's "no effect" on federally listed species determination for the Project.

Temporary impacts for general wildlife species as a result of the Project could occur as a result of the increased construction activity and traffic along the ROW. Temporary displacement of species might occur due to vehicle traffic and construction activities. The majority of species affected will be able to safely move away from any impacts and any disruption would be only for a short duration.

3.6.7 Mitigation

USFWS was initially consulted through IPaC and given all the rebuild Project information and later followed up with Project specifics. USFWS concurred with CEPC's "no effect" determination for the Project. The Project will be built on existing ROW and no additional clearing that may affect potential bat habitat would be necessary.

In general, temporary impacts for wildlife species as a result of the Project could occur as a result of the increased construction activity and traffic along the ROW. Temporary displacement might occur due to vehicle traffic and construction activities, but the majority of species affected will be able to safely move away from any impacts and any disruption would be only for a short duration. No long-lasting effects should be encountered and no mitigation is expected.

3.7 Cultural Resources and Historic Properties

3.7.1 Affected Environment

Under state and federal legislation and policies outlined by the Antiquities Act of 1906 (NPS, 1906), the Historic Sites Act of 1935 (NPS, 1935), the National Historic Preservation Act (NHPA) of 1966 (NPS,1966) as amended, the National Environmental Policy Act of 1970 (EPA, 1970), the 2004 amendment of the Protection of Historic Properties (CFR, 2004) and other regulations regarding specific activities such as transmission line construction, it is necessary to inventory archaeological and historical resources located within proposed project areas which may be threatened by federally regulated or funded actions and evaluate any disruptive effects these actions might have on resources that are present. Briefly, the NHPA requires that a federally funded and/or regulated project consider cultural resources which might be impacted by project related actions; the State Historic Preservation Officer (SHPO) and/or federal or Tribal agency involved may request that a cultural resource survey be conducted prior to granting permission to proceed with the proposed project actions. If any cultural resources are identified, they are evaluated in terms of National Register of Historic Places (NRHP) eligibility criteria. Where NRHP eligible sites are found to occupy compliance project areas, consultation is initiated which may include the Advisory Council on Historic Preservation (ACHP), the SHPO, and the governmental agency involved in the project. If an eligible site cannot be avoided, a Memorandum of Agreement may be prepared which would stipulate specific compliance actions to be initiated prior to Project actions. The Project initiator, if not a federal agency, may be requested to concur. The present Project is partially funded or regulated by a federal agency. As a result, cultural resource compliance has been implemented by a federal agency and Missouri SHPO and the present survey has been carried out in order to meet NHPA requirements.

A Phase I Cultural Resource Survey was carried out for approximately 49 miles of transmission line corridor in Osage and Maries Counties, Missouri. The corridor is the location of a proposed electric transmission line rebuild project. The Phase I Survey and associated Shovel Test Logs were supplied to SHPO, the Osage Nation THPO and RUS for review.

3.7.2 Environmental Consequences

The records and literature review determined that there are no listed NRHP properties or sites know to be eligible located within the project boundaries, but there are a small number of previously recorded archaeological sites (none listed) within a one-mile radius of the Project. The initial review by Missouri SHPO confirmed the absence of sites eligible for the NRHP and a determination of "No Historic Properties Affected" was given.

During consultation with the Osage Nation, a Phase I survey was requested. The field investigation identified the presence of 6 previously unrecorded prehistoric archaeological sites within or immediately adjacent to the project corridor and one previously recorded site on the north end that was reported in 2012 during a Phase I survey, but recommended at that time to be not eligible for listing on the NRHP. Missouri SHPO was consulted following the Phase I survey and they reviewed the Phase I survey and the recommendations of avoidance listed in the report for each site.

The findings regarding site significance apply only to the portions of the sites that are within the Project corridor. Areas of the site outside of the Project corridor have not been evaluated in terms of NRHP eligibility. The 6 previously unrecorded sites are present, but the proposal will have no known effect on them since all of the sites can be avoided by the proposed Project actions shown in the Phase I Survey. The remainder of the sites are not considered significant and/or located outside of the Project corridor.

3.7.3 Tribal Consultation

The NHPA and 36 CFR §800 regulations establish that Indian tribes and Native Hawaiian organizations are one of the parties that have a consultative role in the Section 106 process for all agency proposals/undertakings (whether on or off tribal lands). The regulations also specifically address the importance of "properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria", and the requirement of federal agencies to consult with tribes when such properties may be affected by the proposal. These provisions are reinforced and complemented by related federal statutes and regulations and Executive Orders (EO 11593 and 13287). Fundamental to tribal consultation is the fact that tribes are sovereign Nations and thus consultation is on a government-to-government basis. Another important consideration in tribal consultation is that applicants make "reasonable and good faith efforts" (see 36 CFR §800.2(c)(2)(ii)(A)) to identify all tribes that may have an interest in the proposal's APE, even though they may not currently inhabit the area, and may in fact be located quite distant from the area affected by the proposal. Early identification of any and all areas of tribal interest is crucial.

CEPC utilized the Tribal Directory Assessment Information Tool (TDAT) (HUD, 2022) to provide a list of Tribes with interest in Osage and Maries Counties. The TDAT reported that 3 Tribes had potential interest and should be contacted. On December 30, 2021, CEPC

sent letters and Project details to the Apache Tribe of Oklahoma, Miami Tribe of Oklahoma and Osage Nation. All of the Tribes contacted either did not respond or responded that they had no interest in the Project, except the Osage Nation. At the Osage Nation's request for a Phase I survey, CEPC retained ERC to perform an archaeological survey on the ROW corridor. CEPC will design and build the proposed transmission line to avoid all identified cultural resources.

3.7.4 **Mitigation**

CEPC contacted the Apache Tribe of Oklahoma, Miami Tribe of Oklahoma and the Osage Nation. All of the Tribes contacted either did not respond or responded that they had no interest in the Project, except the Osage Nation. At the Osage Nation's request for a Phase I survey, CEPC retained ERC to perform a Phase I archaeological survey on the right-of-way corridor. A copy of the full archaeological report was supplied to the Osage Nation for review. CEPC will design and build the proposed transmission line to preserve all potential cultural resources. If any sites are identified during the construction phase, construction will be halted immediately and RUS, MO SHPO, any interested tribe and any other necessary consulting parties will be notified in order to initiate the procedures outlined in 36 CRF Part 800.

3.8 **Aesthetics**

3.8.1 **Affected Environment**

As development in rural areas increases in scope and complexity, aesthetic or visual impacts may be a concern for the public. In many instances, landscapes that have remained undisturbed are now being considered for development. Rapid suburban or "ex-urban" residential development also can place homes and properties and proposed utility or community facility projects in proximity to each other.

3.8.2 **Environmental Consequences**

Additional consideration should be given to proposals near visually sensitive areas or areas of high scenic value (e.g. designated wilderness areas, parks, recreation areas, historic sites, wild/scenic rivers, etc.; see also Section 4.2, Land Use). If visual impacts are identified and avoidance of the impacted area is not feasible, efforts should be made to design, construct, and operate the proposal in such a way that aesthetic impacts are minimized.

The aesthetics of the area would largely remain the same since the work at these facilities would not significantly alter the visual landscape. The proposed transmission line rebuild Project will be located on Central's existing 100' wide transmission line ROW. The existing and proposed rebuilt transmission lines cross over lands that are primarily agricultural (13%), pasture/hay (48%) and forest (39%) areas along with some rural residential. The original ROW was cleared and the transmission lines were built in the

1951 to 1953 timeframe. The existing and new Project lines are H-frame design with the new line having longer spans and fewer structures, which will create a similar visual appearance with less structures per mile. The aesthetic impact to the existing ROW from the transmission line rebuild Project will be minimal.

3.8.3 Mitigation

While construction will have temporary visual impacts, no long-term aesthetic changes will occur as a result of operations. Mitigation will include revegetating disturbed areas following construction as well as maintaining an organized construction site with implementation of a waste management plan to keep the Project clean and organized.

3.9 Air Quality

3.9.1 Affected Environment

Potential air quality effects can be short-term (construction-related) or long-term (facility emissions, increased traffic). Under the Clean Air Act, USEPA was required to set National Ambient Air Quality Standards (NAAQS) (EPA, July 28, 2022) for "criteria" pollutants (ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide, and lead). The Project area is outside of any designated Air Quality Standard and Pollution Control Regulation Metropolitan Area for Missouri (Kansas City, Saint Louis and/or Springfield-Greene County) (EPA, July 26, 2022. The only Air Quality Standard designated by the EPA and/or Missouri Department of Natural Resources Division 10 – Air Conservation Commission was based upon Incinerators, which our Project will not utilize.

3.9.2 Environmental Consequences

During the 12-18-month construction period for the proposed rebuild of 49 miles of transmission line, there will be emissions from cooperative vehicles, contractor vehicles and equipment on the ROW. Generally, air emissions from construction are low and temporary in nature, fall off rapidly with distance from the construction site, and would not result in long-term impacts. The proposed Project is not expected to be a significant increase of emissions compared to the agricultural use in the area.

There is a potential that the proposed Project could produce fugitive dust during the construction phase. The amount of fugitive dust produced by Project activity is similar to or less than dust produced by surrounding agricultural activity. During sustained high wind warning periods and/or severe drought conditions as determined by the National Weather Service, dust control measures will be implemented as needed during the construction phase. By implementing any needed dust control measures, the proposed Project would not be a significant source of dust emissions.

3.9.3 Mitigation

Air emissions from Project construction activities are expected to be the main effects to air quality. Most of these effects will be within the Project construction areas and be minimal outside of the existing ROW. Air emissions from construction activities will be temporary in nature. Emissions will be from fugitive dust, fuel combustion from construction equipment and increased vehicular traffic. Construction equipment emissions will be controlled by use of properly maintained equipment and minimizing time spent idling. Vehicular emissions will be controlled by minimizing unnecessary trips. Fugitive dust control mitigation measures could include, but are not limited to, the following:

- Application of water as necessary to minimize dust
- Reduction in speed on unpaved roadways
- Removal of construction debris at points of public street access
- Seeding and mulching and use of barrier fencing as necessary

3.10 Socioeconomics and Environmental Justice

The proposed Project ROW traverses Osage and Maries Counties, which are primarily rural with most employment in the agricultural, education, healthcare, manufacturing, retail and construction industries.

3.10.1 Osage County- Socioeconomic Affected Environment

During the 2013-2018 timeframe the U.S. Census Bureau (USCB, 2022) statistics state that 8.5% of Osage County residents were living in poverty as compared to 14.2% for all of Missouri. Minority groups made up approximately 2.6% of the population in 2018 as compared to 20.7% for the State of Missouri.

Executive Order 12898 (EPA, 1994) requires federal agencies "make achieving justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human or environmental effects" to minority or low-income populations. Osage County has a lower percentage of minority population as compared to all of Missouri and a slightly lower percentage of low-income population as compared to all of Missouri. Therefore, the proposed Project will not have a disproportionate effect on minority or low-income populations in Osage County, but the increased revenue generated during the construction phase could have a positive effect.

3.10.2 Maries County- Socioeconomic Affected Environment

During the 2013-2018 timeframe the USCB statistics state that 12.9% of Maries County residents were living in poverty as compared to 14.2% for all of Missouri. Minority groups

made up approximately 5.0% of the population in 2018 as compared to 20.7% for the State of Missouri.

Maries County has a lower percentage of minority population as compared to all of Missouri and a slightly lower percentage of low-income population as compared to all of Missouri. Therefore, the proposed Project will not have a disproportionate effect on minority or low-income populations in Maries County, but the increased revenue generated during the construction phase could have a positive effect.

3.10.3 Environmental Justice

According to the Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations Executive Order 12898, federal agencies must take appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations. For the purpose of this analysis, minority is defined as individuals who identify as a race other than white alone (single race) and/or identify their ethnicity as Hispanic or Latino. Low-income is defined as a household income less than or equal to twice the federal poverty level. Environmental justice issues are identified by first determining whether minority or low-income populations are present. If so, then disproportionate effects on these populations would be considered.

According to guidance from the Council on Environmental Quality, minority populations should be identified when the percentage of minority residents in the affected area exceeds 50 percent or is meaningfully greater than the percentage of minority residents in the general population (CEQ, 1997). If the percentage of minority residents of the population in the county exceeds the state level by more than 10 percent, it is considered to be "meaningfully greater" for the purposes of this analysis. The low-income populations should be identified based on poverty thresholds as reported by the USCB. If the poverty rate for the population of the area county exceeds the state poverty rate by more than 10 percent, it is considered an area of environmental justice concern for the purposes of this analysis. Based on this methodology, the proposed CEPC Project would not be considered to be an area of environmental justice concern. As identified in Socioeconomic Affected Environment of Osage and Maries counties in the Project area above, the percentage of minority residents and families in poverty within the Project area will not have a disproportionate effect on minority or low-income populations for Missouri, but it could have a positive effect as stated above.

3.10.4 Environmental Consequences

The Project would provide a reliable stable electric infrastructure and could produce additional local business and jobs during construction. Labor for construction would typically be provided by contractors outside the immediate area, but local businesses near the Project, such as gas stations, convenience stores, and restaurants, may experience

increases in business during construction due to construction workers being in the local community for an extended period of time.

3.10.5 **Mitigation**

All impacts are expected to be minimal and no mitigation measures are required for socioeconomic and environmental justice impacts.

3.11 **Miscellaneous Issues**

3.11.1 **Noise**

3.11.1.1 **Affected Environment**

The proximity of the proposal's construction activities and operations to other land uses can produce sounds that could create significant noise impacts for proximal sensitive sound receptors, such as schools, hospitals, or residences, etc. Noise is defined as any loud, discordant or disagreeable sound or sounds. More commonly, in an environmental context, noise is defined simply as unwanted sound. Certain activities inherently produce sound levels or sound characteristics that have the potential to create noise. The sound generated by proposed or existing facilities may become noise due to land use surrounding the facility. When lands adjoining a proposed or existing facility contain residential, commercial, institutional, or recreational uses that are proximal to the facility, noise is likely to be a matter of concern to residents or users of adjacent lands or facilities.

3.11.1.2 **Environmental Consequences**

The proposed transmission line rebuild Project will be located on Central's existing 100' wide transmission line right-of-way. Noise from construction is expected to be localized and temporary. The existing and proposed rebuilt transmission lines cross over lands that are primarily agricultural and forest areas along with some rural residential areas (See Land Use 3.1). During the construction of the proposed Project a limited amount of noise will emanate from construction activities on the ROW. The noise will be localized and temporary thus no long-term adverse effects will be created.

3.11.1.3 **Mitigation**

No numerical noise limits were identified during the regulatory review of federal, state and county ordinances; therefore, no operational mitigation options are proposed for the Project. In order to reduce the impact of construction noise on nearby residences, the majority of construction activities will occur during the day, when people are less sensitive to noise. Also, the proposed Project line construction units will include proper bonding and grounding techniques. The proper grounding and bonding of the transmission line

eliminates the creation of unintended electrical spark gaps, therefore the potential to emit radio and television interference (noise) will be eliminated.

3.11.2 **Transportation**

3.11.2.1 **Affected Environment**

Transportation impacts include those from transport to a site, on-site, and from a site, when such activities are reasonably construed as part of the proposal or any alternative. The Project area contains an existing network of paved and gravel roads in rural Osage and Maries counties in Missouri. Other impacts to consider are the transportation of materials (hazardous materials) to or from a proposal's site either during construction or operation of a facility. Also evaluate any possible changes in transportation patterns or intensity, and how they may contribute to noise patterns or present new or additional risks of accidents.

The nearest known airport to any part of the Project is the State Tech Airport, located in Linn, MO approximately 3.5 miles east of the Project area. The Federal Aviation Administration (FAA) Part 77 - Safe, Efficient Use, and Preservation of the Navigable Airspace (CFR, 2010) conducts obstacle evaluation for proposed and existing structures for potential impacts to the navigable airspace of public use airports. The FAA evaluates impacts to airports airspace. Structures greater than 200 feet AGL and that are within 3 nautical miles of an airport are considered an obstruction. The FAA will request that marking and lighting be added to any structure greater than 200 feet AGL to prevent it from being a hazard to flight.

3.11.2.2 **Environmental Consequences**

Central contacted the Missouri Department of Transportation (MoDOT) Central District concerning these proposed transmission line rebuild Projects. MoDOT Central District felt that Central's proposed transmission line rebuild project would not adversely affect the current State Highway System. CEPC will apply and follow any necessary ROW Permits necessary at the time of construction. The proposed Project is located in the Central Missouri area and crosses Missouri State Highways 89, 100, 50, 63 and 42. The proposed Project will not cross or impact any major navigable waterways.

The rebuilt line for this Project will utilize an H-frame construction on wood poles with a typical height around 70ft AGL and a maximum height of approximately 100ft AGL for a transmission line crossing. Since the planned structures are less than 200 feet, the structures themselves will not require FAA filing. The ROW is not located within 3 miles of an airport, but once final design is completed, it will be confirmed that the poles do not exceed the designated 200ft height requirement. Once final pole design, pole locations and construction details are determined, FAA notification will be submitted as needed and any required follow up information required will be provided.

3.11.2.3 **Mitigation**

As construction and operation of the proposed Project will have only temporary impacts on transportation, no mitigation measures are planned. CEPC will apply and follow any highway ROW disturbance and construction signage permits from MoDOT necessary at the time of construction. Any damage to existing roads or road ROW due to construction traffic will be repaired once construction is complete. Notice to the FAA will be provided for all structures (including permanent structures and temporary construction equipment) associated with the Project that exceed the FAA criteria for notification. Based on the distance between the Project and the nearest airports and the existing obstacles present, it is unlikely that the FAA will request a height restriction on any proposed structures. The proposed Project ROW is not located near any airports therefore there will be no impact to aviation traffic.

CEPC contacted the County Commission of Osage and Maries Counties. Osage County did not respond to Central's contact letter. Maries County contacted Central and had no objections to the Project.

CEPC contacted the Meramec Regional Planning Commission concerning the proposed transmission line rebuild projects in Osage and Maries County. Meramec Regional Planning Commissions did not respond to Central's contact or follow-up letter.

3.12 **Human Health and Safety**

3.12.1 **Affected Environment**

It is important to evaluate whether the proposal might result in an adverse effect on public health and safety (this is an indicator of significance per 40 CFR Part 1508.27). This section addresses potential impacts from other media or resources not previously described or disclosed elsewhere in the EA. This Project is located within Osage and Maries Counties in Missouri. The nearest major medical facility is Capital Region Medical Center. It is more centrally located in Jefferson City, Missouri about 21 miles west, but Lake Regional Health Center is closer on the south end of the Project. Hermann Area Hospital in Hermann, Missouri is approximately 25 miles east of the beginning of the Project and Lake Regional Hospital is only approximately 44 miles west. Depending on the portion of the Project, there are several rural fire districts and municipal fire departments within 5 miles of the ROW.

3.12.2 **Electromagnetic Fields and Interference**

While electromagnetic fields (EMF) are associated with any electric device, e.g., power lines, electric wiring, electric equipment, or cell and microwave towers, the focus of this section is for power-frequencies EMF, i.e., EMF associated with the generation, transmission, and use of electric power. For proposed overhead high-voltage electric

transmission lines and substations, the EA should address potential effects or interference due to the EMFs created by charged conductors or transmitters in communication systems. These effects may include interference to radio and television reception, as well as direct effects to humans that may be in the immediate vicinity of a power line. Linkages between EMFs and human health are generally considered weak, but the current state of the science on potential effects should be summarized in an effort to acknowledge the issue, and to describe the specific ameliorating factors (e.g., topography, proximity to potential receptors, or design characteristics) associated with a given proposal.

The following overview of EMF has been obtained from the National Institute of Environmental Health Sciences (NIEHS) manual *Electric and Magnetic Fields Associated with the Use of Electric Power* (NIEHS,2002).

EMF is a type of energy associated with electric power that includes two fields: the electric field and the magnetic field. The electric field is produced by the voltage of the power source and increases as voltage increases. Magnetic fields are produced from the current flowing through the conductor and increase as the current increases. Both electric and magnetic fields decrease as distance from the source increases. EMF, as it pertains to power lines is considered extremely low frequency electric and magnetic fields. Power frequency is in the range of 50-60 hertz (Hz) for transmission line facilities.

EMF associated with transmission lines is emitted from a variety of equipment including the transmission lines coming into the substation, transformers, reactors, and capacitor banks. As such, EMF is strongest around substation facilities and decreases rapidly with distance from the source.

The primary concern related to transmission lines and other electrical equipment is the potential negative health effects from exposure to EMF, in particular an increase in cancer, leukemia, and other diseases. Over the last several decades, several epidemiological studies have been conducted to assess potential impacts of EMF as it relates to cancer and other diseases. In 1998, Congress asked NIEHS to complete a study of the possible health effects associated with EMF. The following is an excerpt from that report:

> The NIEHS believes that the probability that EMF exposure is truly a health hazard is currently small. The weak epidemiological associations and lack of any laboratory support for these associations provide only marginal, scientific support that exposure to this agent is causing any degree of harm. The scientific evidence suggesting that extremely low frequency EMF exposures pose any health risk is weak. The strongest evidence for health effects comes from associations observed in human populations with two forms of cancer: childhood leukemia and chronic lymphocytic leukemia in occupationally exposed adults. While the support from individual studies is weak, the epidemiological studies demonstrate, for some methods of measuring exposure, a fairly consistent pattern of a small, increased risk with increasing exposure that is somewhat weaker for chronic lymphocytic leukemia than for childhood leukemia. In contrast, the mechanistic studies and the

> animal toxicology literature fail to demonstrate any consistent pattern across studies, although sporadic findings of biological effects (including increased cancers in animals) have been reported. No indication of increased leukemia in experimental animals has been observed.

Additional organizations have also completed their own analysis. The findings from some of these studies are captured below.

USEPA:

> Many people are concerned about potential adverse health effects. Much of the research about power lines and potential health effects is inconclusive. Despite more than two decades of research to determine whether elevated EMF exposure, principally to magnetic fields, is related to an increased risk of childhood leukemia, there is still no definitive answer. The general scientific consensus is that, thus far, the evidence available is weak and is not sufficient to establish a *definitive* cause-effect relationship (EPA, 2022).

National Research Council:

An earlier National Research Council assessment of the available body of information on biologic effects of power-frequency magnetic fields (NRC,1997) led to the conclusion:

> …that the current body of evidence does not show that exposure to these fields presents a human health hazard. Specifically, no conclusive and consistent evidence shows that exposures to residential electric and magnetic fields produce cancer, adverse neurobehavioral effects, or reproductive and developmental effects. The new, largely unpublished contributions of the EMF-RAPID program are consistent with that conclusion. We conclude that no finding from the EMF-RAPID program alters the conclusions of the previous NRC review on the Possible Effects of Electromagnetic Fields on Biologic Systems.

In 1999, the National Research Council followed up by stating:

> In view of the negative outcomes of EMF-RAPID replication studies, it now appears even less likely that EMFs in the normal domestic or occupational environment produce important health effects, including cancer (Possible Health Effects of Exposure to Residential Electric and Magnetic Fields - National Research Council 1997).

The proposed Project line construction units will include proper bonding and grounding techniques. The proper grounding and bonding of the transmission line eliminates the creation of unintended electrical spark gaps, therefore the potential to emit radio and television interference (noise) will be eliminated.

3.12.3 **Environmental Consequences**

There are a number of risks to human health and safety possible for construction personnel on Project construction through the operation of heavy equipment, the use of tools during construction, and working in an active construction site. Additionally, hazardous substances or wastes may be released, generated, or required for construction and operation in the Project Area. These hazards will be mitigated by compliance with all applicable federal and state occupational safety and health standards, National Electric Safety Code (NESC) (IEEE, 1997) regulations, Occupational Health and Safety Administration (OSHA) guidelines, and utility design and safety standards. Local emergency and health services will be called upon to provide first aid and assistance in the event of an accident or emergency.

3.12.4 **Mitigation**

Mitigation measures include compliance with all applicable federal and state occupational safety and health standards, National Electric Safety Code (NESC) regulations (NESC 2017), Occupational Health and Safety Administration (OSHA) guidelines, and utility design and safety standards. Additionally, our construction contractors are required to create and utilize a Health and Safety Plan to address public and worker safety during the construction and operation of the Project. All construction sites will be managed to reduce risks to the public and workers in the area. The general public will not be allowed in any active construction sites. Facilities will be designed and constructed to limit exposure of the public to EMF/EMR.

3.13 **Corridor Analysis**

Linear infrastructure such as electric transmission or distribution lines, telecommunication cables, or water or waste water pipelines present unique considerations for impact assessments and thus require more specialized assessment techniques. Issues may arise that are not typically encountered, including:

- The proposal's area of effect can be more extensive;
- For overhead lines, visual impacts could become more important;
- The availability of existing, acceptable utility corridors is decreasing while infrastructure needs are increasing;
- There may be a greater need for land acquisition; and
- The need to include a larger number of stakeholders in the siting and decision-making processes.
- If substantial changes are necessary to the Project or if new relevant environmental information is discovered after the issuance of an EA or FONSI, supplementing an EA may be necessary. Depending on the nature of the changes, the EA will be supplemented by revising the applicable section(s) or by appending the information to address potential impacts not previously considered. If an EA is supplemented, public notification will be required in accordance with § 1970.102(b)(7) and (8).

Fundamentally, routing of linear infrastructure is an optimization process; areas of opportunity (most desirable for routing) and constraint (least desirable) are identified and then typically a computer or GIS-based algorithm finds a route that maximizes the opportunities and minimizes the constraints. Several variables representing important environmental/social, engineering, cost or other criteria are used to define the areas of opportunity and constraint. The degree of complexity for evaluation techniques should correspond to the complexity or controversy of the proposal. A relatively simple proposal may require only a qualitative assessment and "expert judgment", using gross or high-level data particularly if, for example, water or waste water distribution or collection networks are designed to serve existing populations. As the proposal's scope or complexity increases: data needs increase; the evaluation criteria may require weighting and/or ranking to better represent stakeholder views; several increasingly detailed/smaller-scale levels of analysis may be required; and quantitative assessment is used to make the analysis more robust and defensible. The analysis should be kept as simple as is necessary and this will often suffice for EA-level proposals. In this situation, the route following the existing transmission line corridor provides the least impact based upon the current land use and visual aesthetics.

As development in rural areas increases in scope and complexity, aesthetic or visual impacts may be a concern for the public. In many instances, landscapes that have remained undisturbed are now being considered for development. Additional consideration should be given to proposals near visually sensitive areas or areas of high scenic value (e.g. designated wilderness areas, parks, recreation areas, historic sites, wild/scenic rivers, etc.; see also Section 4.2, Land Use). If visual impacts are identified and avoidance of the impacted area is not feasible, efforts should be made to design, construct, and operate the proposal in such a way that aesthetic impacts are minimized.

The proposed transmission line rebuild Project routing was examined and it was determined that it will be located on CEPC's existing 100' wide transmission line ROW to minimize landowner impact. The existing and proposed rebuilt transmission lines cross over lands that are primarily agricultural and forest areas along with some rural residential areas. The original ROW was cleared and the transmission lines were built in the 1951 to 1953 timeframe. The impact to the existing ROW from the transmission line rebuild Project will be minimal.

4. Cumulative Effects

4.1 Cumulative Impacts by Resource

This section examines the past, present, and reasonably foreseeable future actions in the Project Study Area that may affect the resources analyzed in this EA. An assessment of past, present, and reasonably foreseeable future actions and cumulative effects for each

resource of the Project is provided. There are no further modifications or encroachments planned.

The following Table 3 is a summary of Cumulative Impacts proposed for the Project by resource.

Cumulative Impacts Table 3

Project Category	Present	Reasonably Foreseeable Trends and Actions	Project Name	Project Location	Project Description	Anticipated Project Schedule
Agriculture	X	X	Private agriculture activities	Osage and Maries County, Missouri	Predominant land use is agriculture, pasture/hay and timber/hunting, which would continue in the future.	N/A
Transmission Infrastructure	X		Ameren UE Enhancements	Osage and Maries County, Missouri	There is an Ameren 345kV transmission line that runs parallel to the Project for approximately 41 miles. No further enhancements or construction is planned.	N/A
	X	X	CEPC Enhancements	Osage and Maries County, Missouri	CEPC plans to rebuild the Chamois-Big Springs 161kV transmission line that runs north of the Project. No further enhancements or construction is planned.	2023-2025

Cumulative Impacts Table 3

Project Category	Present	Reasonably Foreseeable Trends and Actions	Project Name	Project Location	Project Description	Anticipated Project Schedule
Transportation	X	X	MODOT STIP	Osage County, Missouri	MODOT is scoping for a future corridor improvement on Hwy 63 from the Hwy 50 interchange south to Westphalia (approx 6 miles from Project) as part of their 2022-2026 Statewide Transportation Improvement Plan.	2022-2026
	X		Union Pacific Railroad	Osage County, Missouri	No known major track renewal projects are anticipated for the railroad. Freight traffic and Amtrak trains run east-west from Jefferson City-Saint Louis,Missouri on a set of tracks crossing perpendicular to the Project just south of Chamois.	N/A

5. Summary of Mitigation and Monitoring

CEPC has traditionally hired outside contractors to build transmission lines. A full-time inspector from CEPC will be on the Project site to inspect and monitor all aspects of the construction process. A Project manager is also assigned to the Project to monitor and coordinate all line construction activities.

Restoration procedures will be used on the right-of-way to prevent erosion and to reestablish ground cover. The procedures include cultivating, seeding, and fertilizing the disturbed areas to stimulate rapid growth.

Post construction maintenance on the transmission line right-of-way will be accomplished by selected hand cutting, rotary mowing and application of approved herbicides. All applications of herbicides are performed by licensed applicators.

Should cultural resources be encountered during conservation, all activity in the affected area will be halted and the State Historic Preservation officer and RUS immediately notified. Construction practices will conform to USDA guidelines. The measures recommended by the agencies contacted during the notification phase, to mitigate potential environmental threats, will be incorporated during the construction of the Project.

The following Table 4 is a summary of mitigation proposed for the Project by resource.

Resource	Potential Environmental Consequences	Mitigation Measures Required	Residual Effects
Land Use	**The proposed transmission line rebuild Project will be located on Central's existing 100' wide transmission line right-of-way. The existing and proposed rebuilt transmission lines cross over lands that are primarily agricultural (13%), pasture/hay (48%) and forest (39%) areas along with some rural residential areas**	**No mitigation measures are anticipated**	**Minimal**
Floodplain	**There are approximately 20.7 acres of floodplains present within rebuild portions of the ROW.**	**The Project will be designed so that placement of the poles will be outside of the floodplain when possible. Any direct impacts will be mitigated through the appropriate permits. Any material excavated within floodplain areas will be removed to areas outside the floodplain. Additionally, equipment and material will be staged outside of the floodplain and equipment refueling will occur in the uplands**	**Minimal**
Wetlands	**There are 12 creek, branch and/or fork crossings and 2.5 acres of wetlands present within the Project footprint**	**Central plans to span over all floodplains and wetlands with the new transmission line and to the extent possible no structures will be placed in these areas. The USACE determined that the if the proposed activity does not require the discharge of dredged material or fill in the waters of the U.S then a Department of the Army permit would not be required**	**Minimal**

Resource	Potential Environmental Consequences	Mitigation Measures Required	Residual Effects
Historic and Cultural Resources	**The Project does not cross any known historic properties, or resources eligible for or listed on the NRHP**	**CEPC will avoid all cultural resources.**	**None**
Tribal Consultation	**The NHPA and Section 106 regulations establish that Indian tribes and Native Hawaiian organizations are one of the parties that have a consultative role in the Section 106 process for all Agency proposals/undertakings**	**CEPC will avoid all cultural resources.**	**None**

Resource	Potential Environmental Consequences	Mitigation Measures Required	Residual Effects
Aesthetics	While there may be slight visual changes from the new Project facilities, the overall nature of the proposed Project will remain consistent and compatible with the existing views in the area	No mitigation measures are anticipated	Minimal
Air Quality	Air emissions from construction are low and temporary in nature, fall off rapidly with distance from the construction site, and will not result in any long-term impacts	There is a potential that the proposed Project could produce fugitive dust during the construction phase. The amount of fugitive dust produced by Project activity is similar to or less than dust produced by surrounding agricultural activity. If needed, dust control measures will be implemented during the construction phase. By implementing any needed dust control measures, the proposed Project will not be a significant source of dust emissions.	Minimal
Socioeconomics and Environmental Justice	Project is not anticipated to negatively impact the economy of the local area or disproportionally affect the livelihood of low-income families and minorities.	No mitigation measures are anticipated	None
Noise	Noise will be produced from the construction equipment and activities. Actual noise levels generated by construction will vary depending on the activity that is occurring, and the types and number of pieces of equipment that are operating	Noise from construction is expected to be localized and temporary. Any excessive construction noise should be of short duration and have minimal adverse long-term effects on land uses or activities associated with the Project Study Area. All construction activity will be limited to standard daytime weekday working hours.	Minimal

Resource	Potential Environmental Consequences	Mitigation Measures Required	Residual Effects
Transportation	**Damage to existing roads during construction**	**Roadway damage caused by construction activities will be repaired as necessary.**	**Minimal**
Human Health and Safety	**EMF associated with transmission lines is emitted from a variety of equipment including the transmission lines coming into the substation, transformers, reactors, and capacitor banks. As such, EMF is strongest around substation facilities and decreases rapidly with distance from the source**	**No mitigation necessary**	**None**
Human Health and Safety	**There are a number of risks to human health and safety possible for construction personnel on Project construction through the operation of heavy equipment, the use of tools during construction, and working in an active construction site. Additionally, hazardous substances or wastes may be released, generated, or required for construction and operation in the Project Area**	**No mitigation measures are anticipated**	**Minimal**

Resource	Potential Environmental Consequences	Mitigation Measures Required	Residual Effects
Biological Resources	**The Endangered Species Act of 1973 (ESA), as amended, provides federal protection to listed candidate, threatened and endangered species. USFWS's list for the proposed Project are Eastern Hellbender, Monarch Butterfly, Pink Mucket, Scaleshell Mussel, Spectaclecase, Niangua Darter, Pallid Sturgeon, Gray Bat, Indiana Bat and the Northern Long-Eared Bat**	**No mitigation measures are anticipated**	**Minimal**
Water Resources	**Soil erosion and stormwater runoff into nearby streams and rivers may impact waterways during construction.**	**No mitigation measures are anticipated**	**Minimal**

6. Coordination, Consultation and Correspondence

Coordination, consultation and correspondence with appropriate environmental regulatory or natural resource agencies (at the federal, state, and local levels) is necessary for information gathering, to support impact assessment conclusions, and in some cases to meet statutory requirements. While web-based resources are important in this regard, project-specific data or regulatory concurrence must be obtained and, in some cases, documented in writing. Agencies are typically given 30 days to respond to a written request for comments, with reasonable time extensions if necessary. If no written response is received within the requested time period, the applicant should re-contact the agency by phone/e-mail regarding its intention to comment. If time is of the essence, it may be prudent to confirm the agency's receipt of the initial request. If necessary, contact Agency environmental staff for assistance

Due to the fact that the transmission line will be rebuilt on an existing transmission line right-of-way, there will be no change in land use.

Appendix D contains correspondence with the agencies contacted during environmental review and notification process.

i. The Missouri Department of Conservation (MDC) was contacted concerning the proposed Project. MDC responded to CEPC with detailed information and comments in a Natural Heritage Review Report. See Appendix D-5. The report identifies public lands and sensitive resources known to have been located close to and/or potentially affected by the proposed Project. Central will adhere to the recommendations in the Natural Heritage Review Report.

ii. CEPC contacted and collaborated with the MODNR Historic Preservation Office to identify and protect cultural resources that might be identified on or near CEPC's proposed Project ROW. MODNR determined "Adequate documentation has been provided as outlined in 36 CFR Section 800.11. After review of the initial submission, the Project area has a low potential for the occurrence of cultural resources. We concur with a determination of No Historic Properties Affected". After consultation with Osage Nation in the Tribal Consultation listed in vii below, a Phase I survey was conducted and SHPO was provided a copy in July 2022 for further review. Any further Project actions that may be necessary and any recommendations provided will be adhered to.

iii. CEPC contacted the MoDOT Central District concerning these proposed transmission line rebuild Project. MoDOT Central District felt that CEPC's proposed transmission line rebuild Project would not adversely affect the current State Highway System. CEPC will apply and follow any ROW Permits necessary at the time of construction.

iv. CEPC contacted the Palmyra, MO office of the NRCS concerning the proposed transmission line rebuild projects. The NRCS response is listed in Appendix D-6. The NRCS indicated that since the proposed rebuild project will take place on existing ROW, the FPPA does not apply.

v. CEPC contacted the USFWS concerning the proposed transmission line rebuild Project. USFWS reviewed the information which CEPC provided and stated that they concurred with Central's determination of "No Effect" to federally listed species by the proposed Project action. The full comments from USFWS are listed in Appendix D-2.

vi. CEPC contacted and collaborated with the USACE, Kansas City District, concerning the proposed transmission line rebuild Project. The Corp reviewed all the submitted information and "Should any future construction plans associated with the Project require the discharge of dredged or fill material in any waters of the United States, including wetlands, a Department of the Army (DA) permit may be required." and that "if the proposed plans do not require the discharge of dredged or fill material in any waters of the United States, including wetlands, a DA permit will not be required.". Appendix D-7 contains the correspondence between CEPC and the USACE.

vii. CEPC utilized the Tribal Directory Assessment Information Tool (TDAT) to provide a list of Tribes with interest in Osage and Maries Counties. The TDAT reported that 8 Tribes had potential interest and should be contacted. Central sent letters and Project details to the Apache Tribe of Oklahoma, Miami Tribe of Oklahoma and Osage Nation. All of the Tribes contacted either did not respond or responded that they had no interest in the Project, except the Osage Nation. At the Osage Nation's request CEPC retained ERC to perform an archaeological survey on the ROW corridor. A copy of the full archaeological report was submitted for review. CEPC will design and build the proposed transmission line so to preserve all potential cultural resources. The TDAT report is listed in Appendix D-1 and all Section 106 Communications are in Appendix D-10.

viii. CEPC contacted the County Commission of Osage and Maries counties. Osage County did not respond to Central's contact letter. Maries County contacted Central and had no objections to the Project.

ix. CEPC contacted the Meramec Regional Planning Commission concerning the proposed transmission line rebuild projects in Osage and Maries counties. Meramec Regional Planning Commission did not respond to Central's contact or follow-up letter.

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8. List of Preparers

The EA for the Project was prepared by Central Electric Power Cooperative in coordination with United States Department of Agriculture-Rural Utility Service (RUS). The following is a list of preparers of this document.

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RUS

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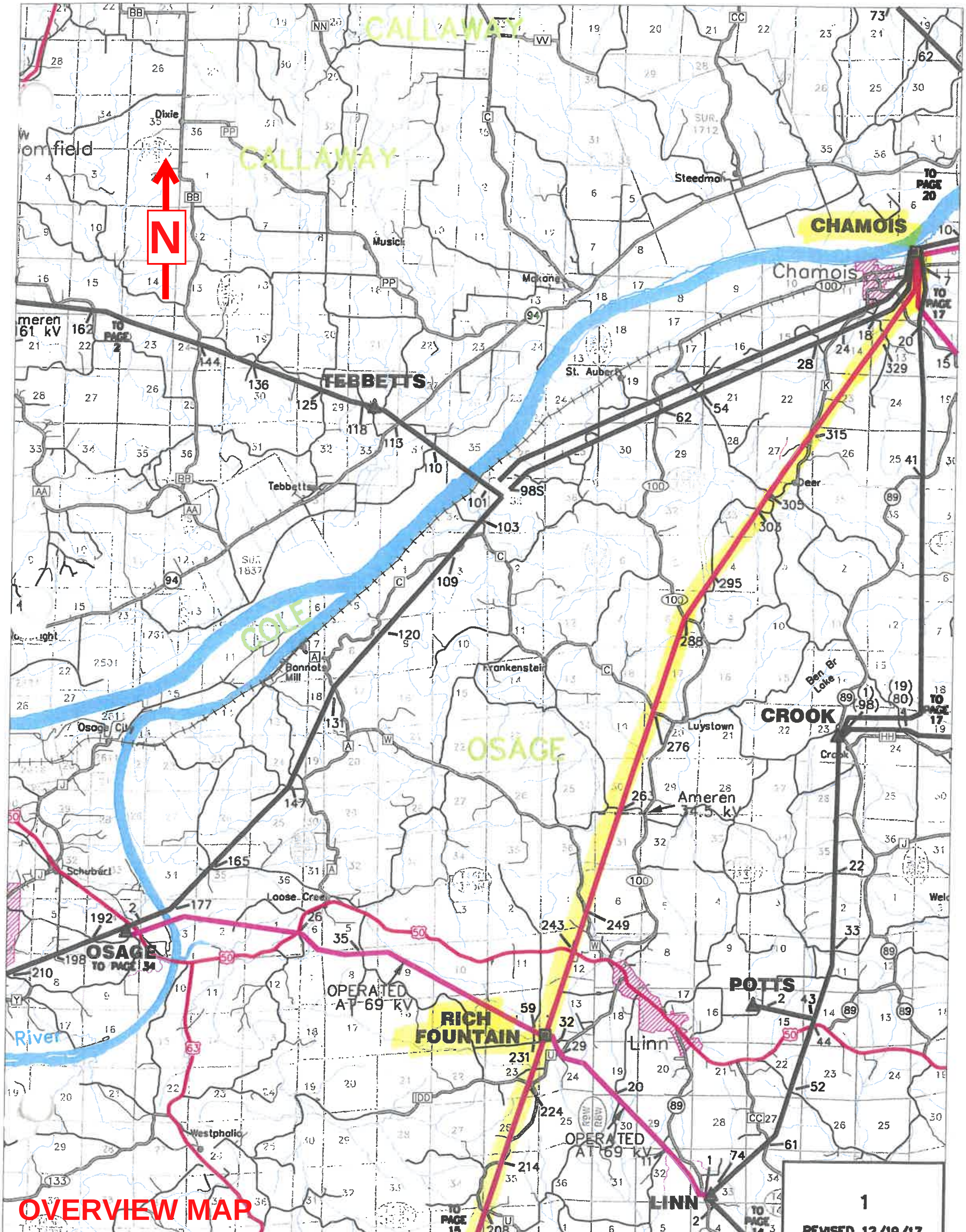
- Terry E. Czerwien, Environmental Protection Specialist, Engineering and Environmental Staff, Water and Environmental Programs
- Greg Korosec, PhD, RPA, Archaeologist, Rural Utilities Service, Rural Development, USDA



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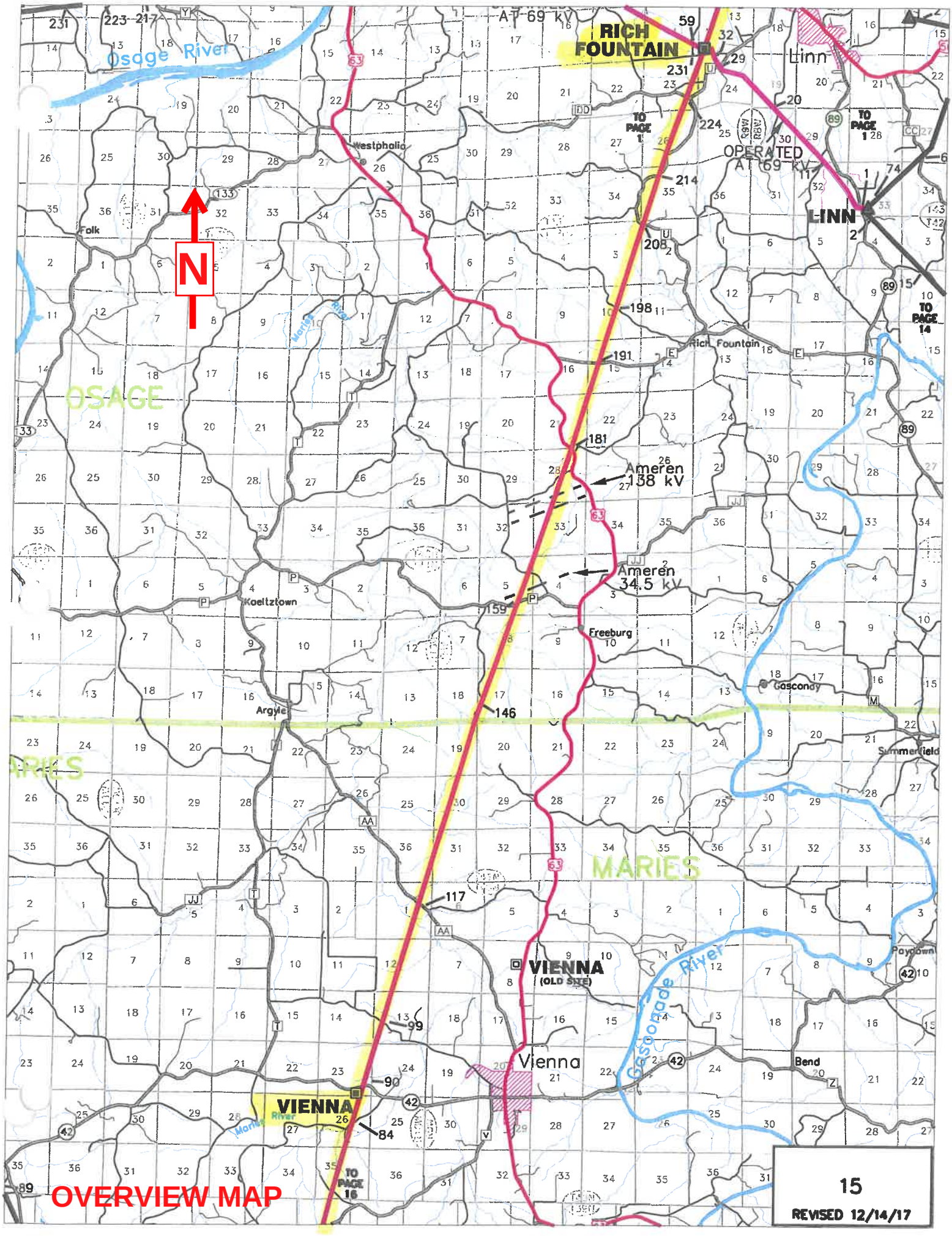
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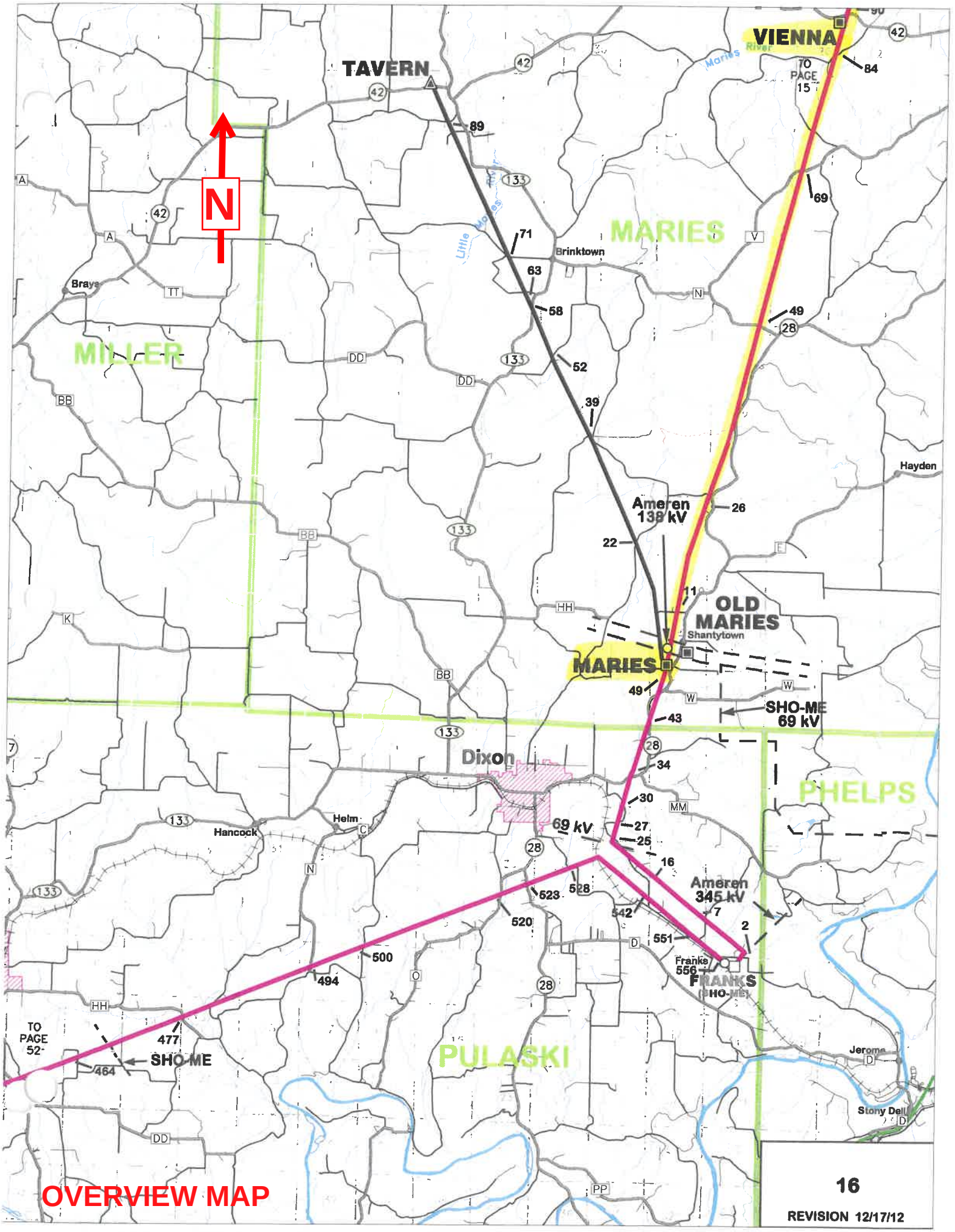
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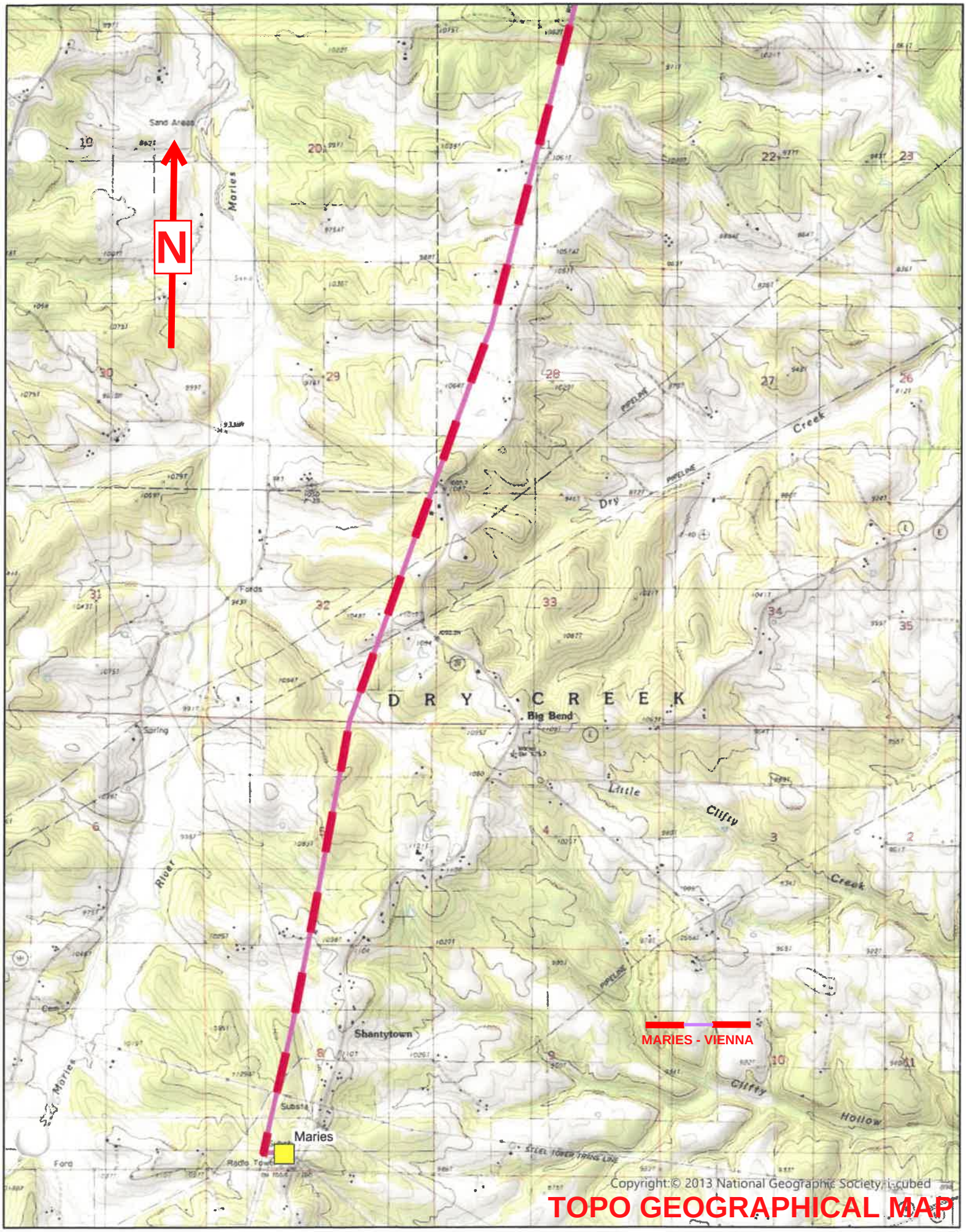
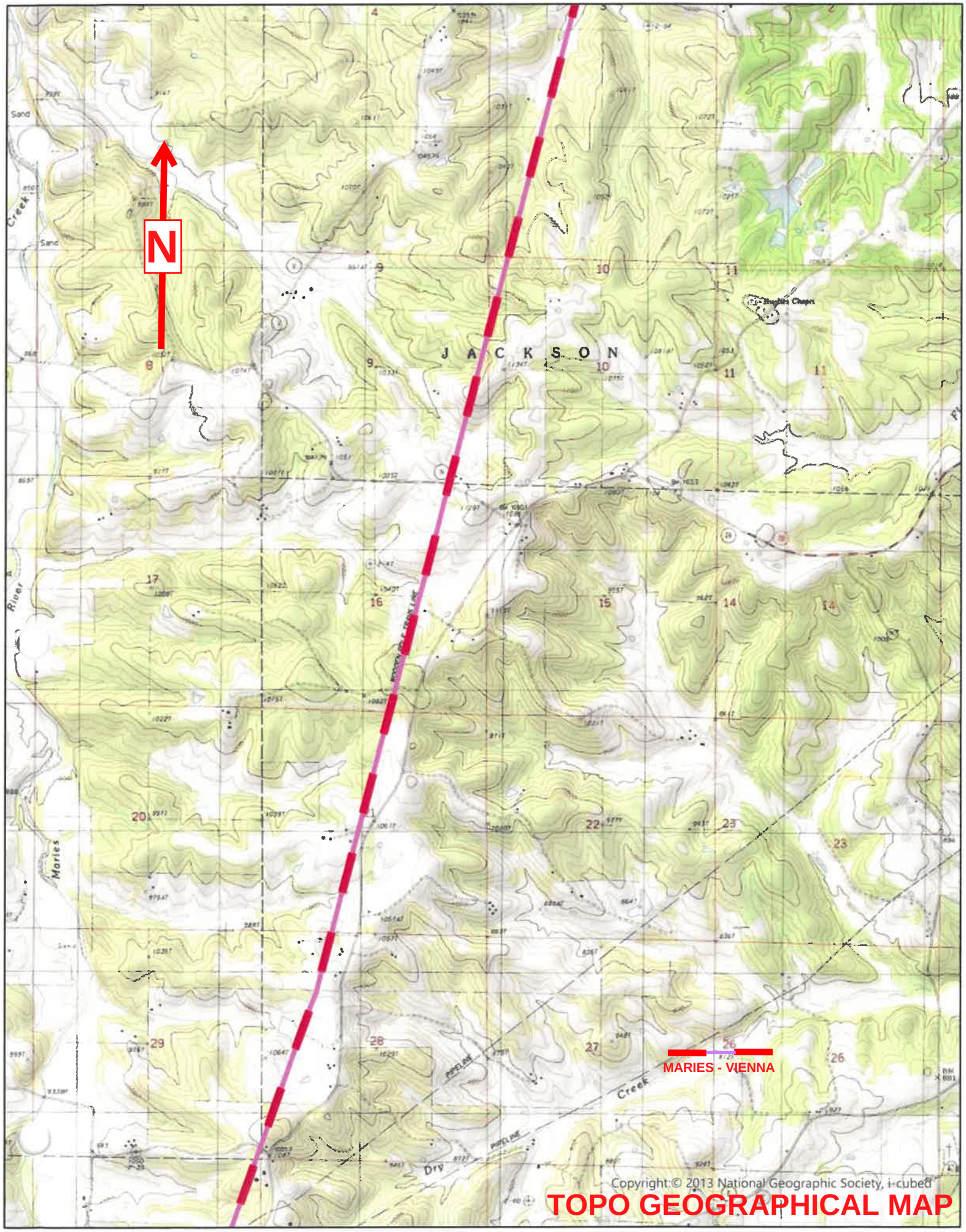


TOPO GEOGRAPHICAL MAP

BIG BEND, MO

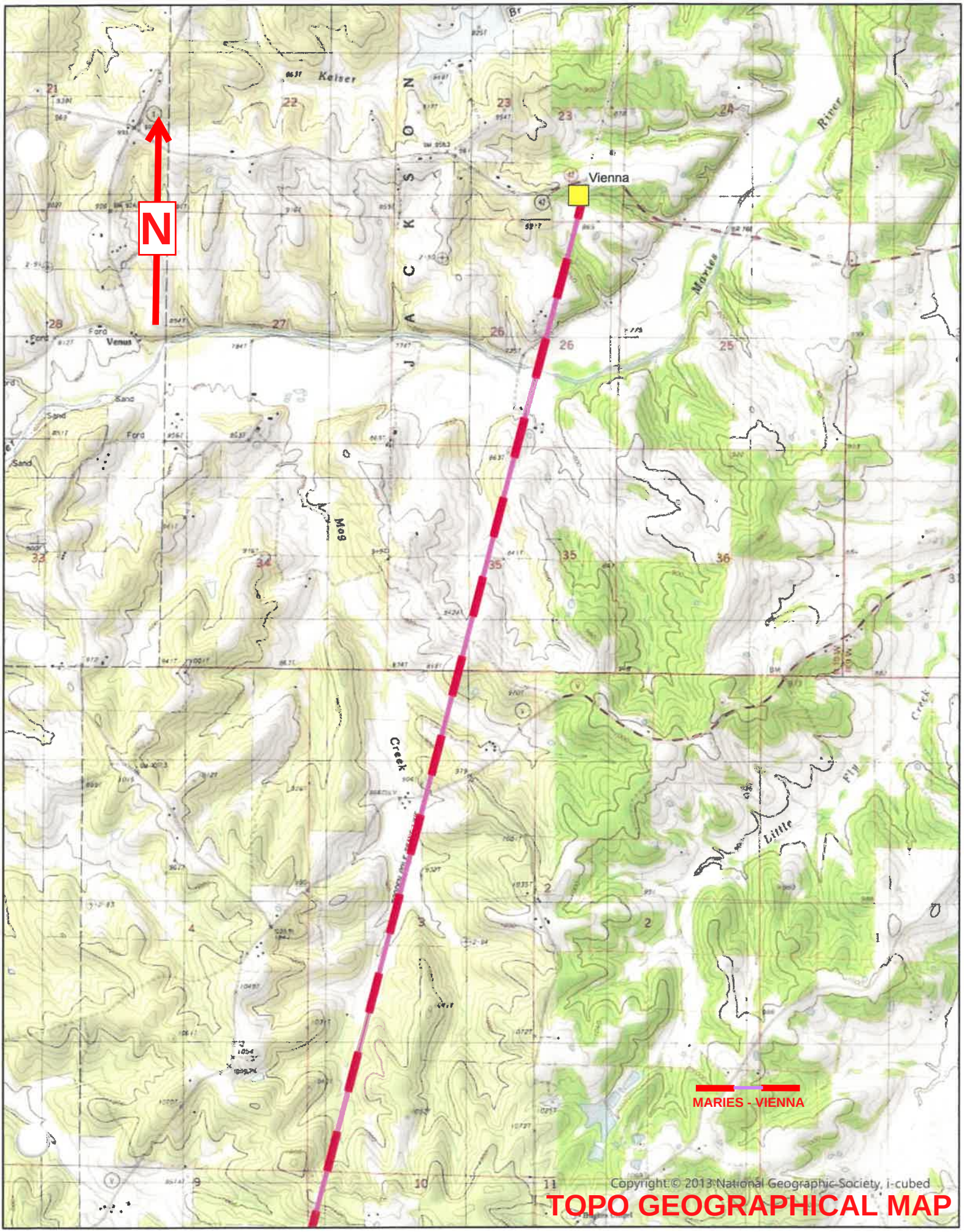
MARIES COUNTY



TOPO GEOGRAPHICAL MAP

BIG BEND AND BRINKTOWN, MO

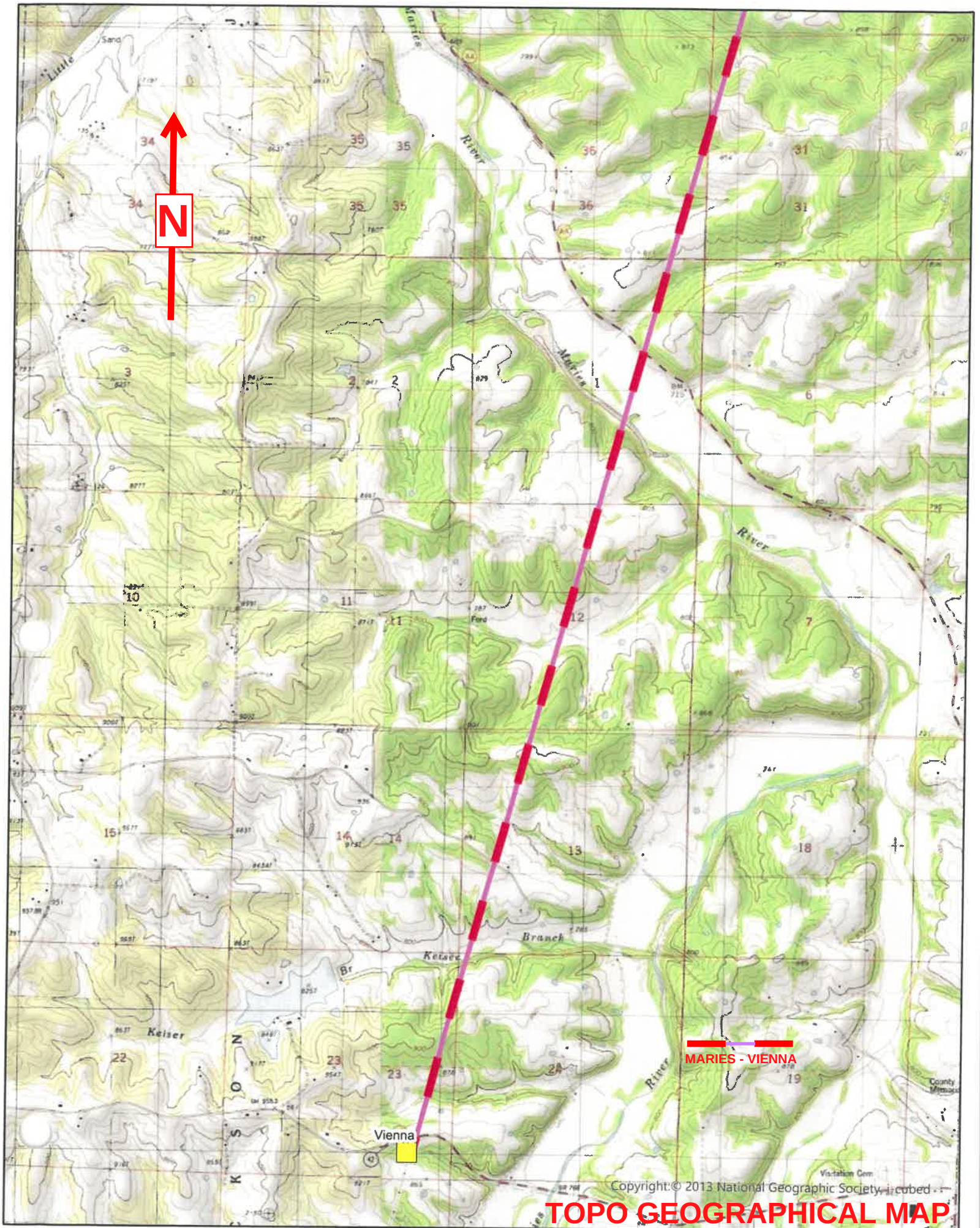
MARIES COUNTY



TOPO GEOGRAPHICAL MAP

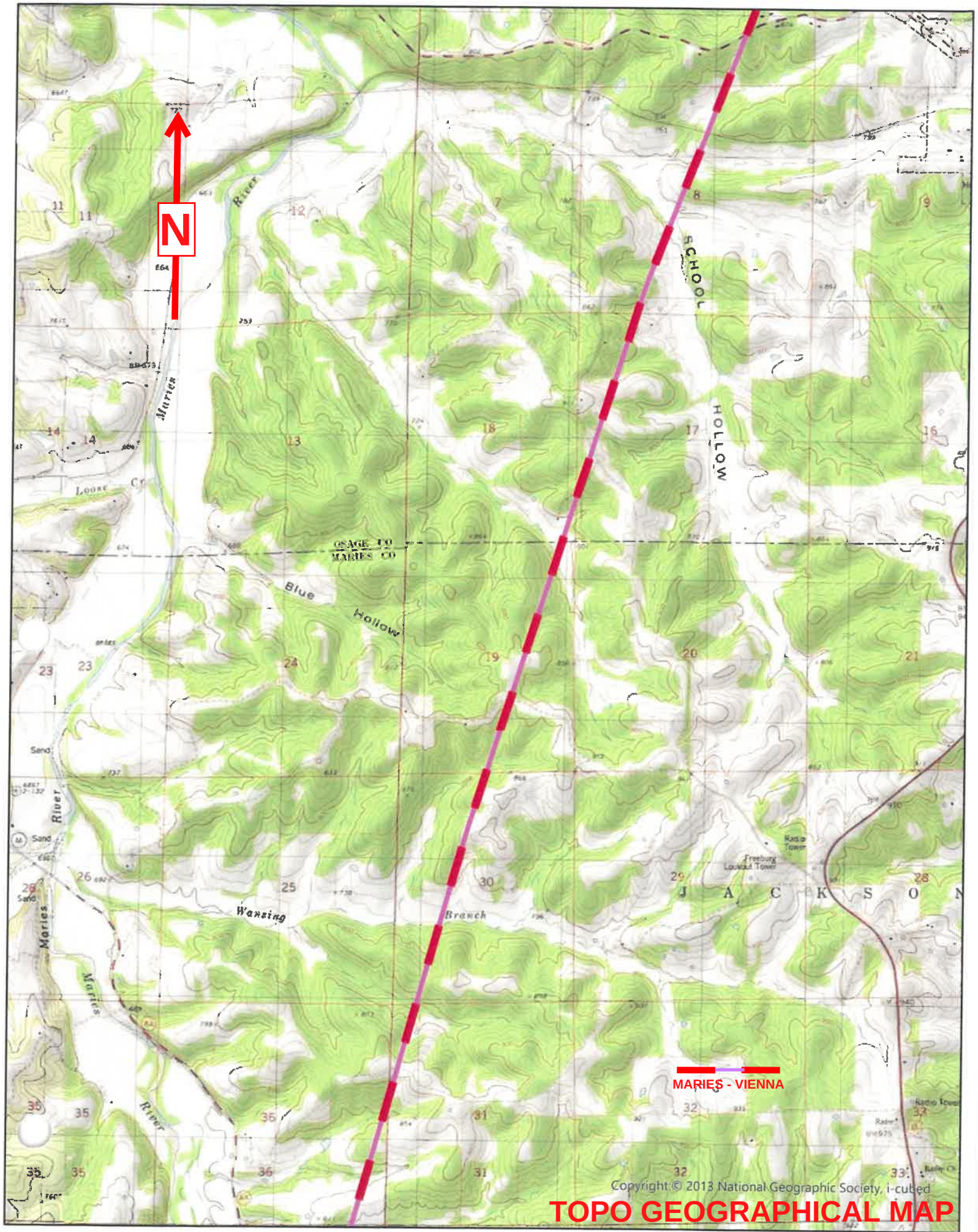
BRINKTOWN & VIENNA, MO

MARIES COUNTY



BRINKTOWN & VIENNA, MO

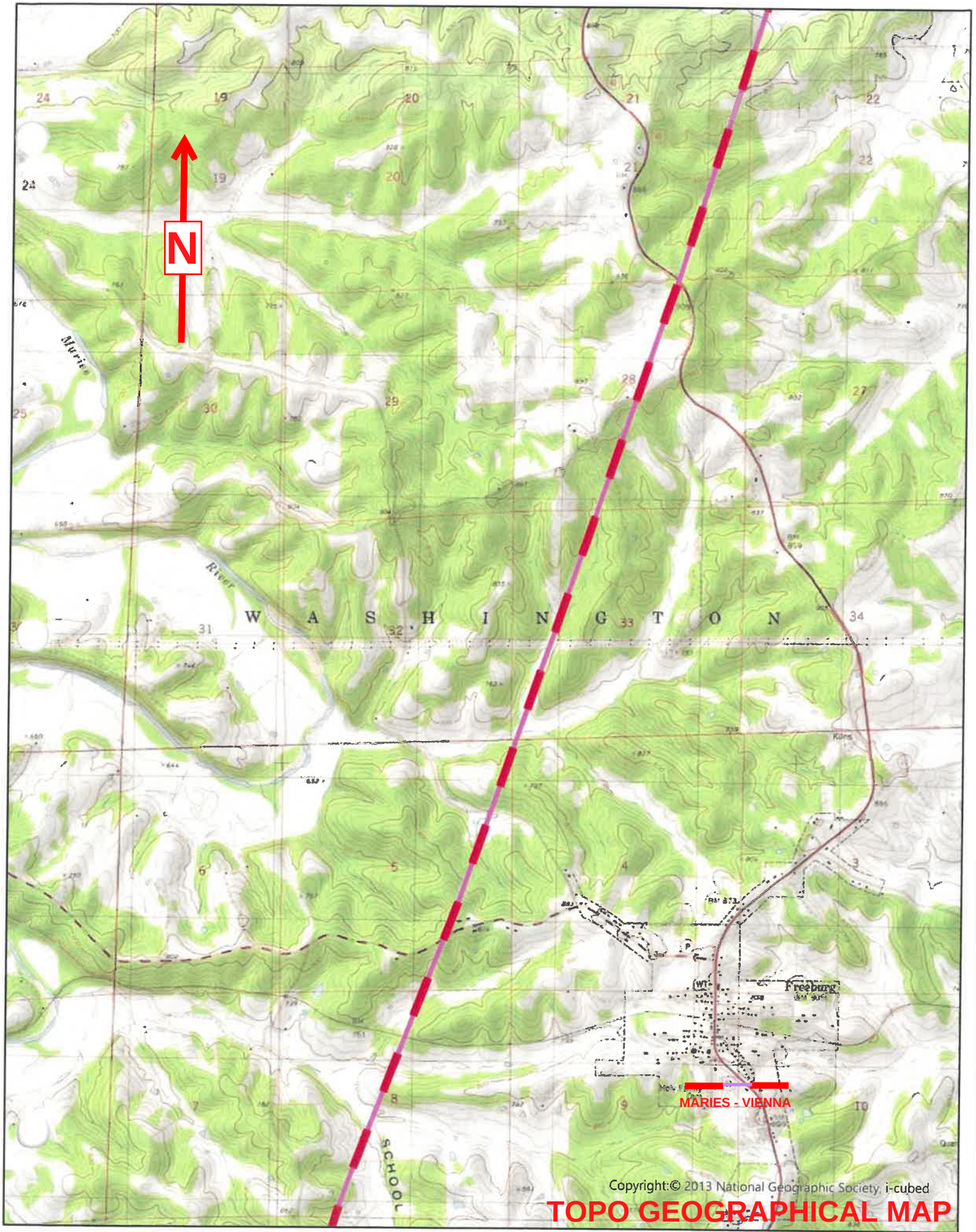
MARIES COUNTY



TOPO GEOGRAPHICAL MAP

VIENNA & FREEBURG, MO

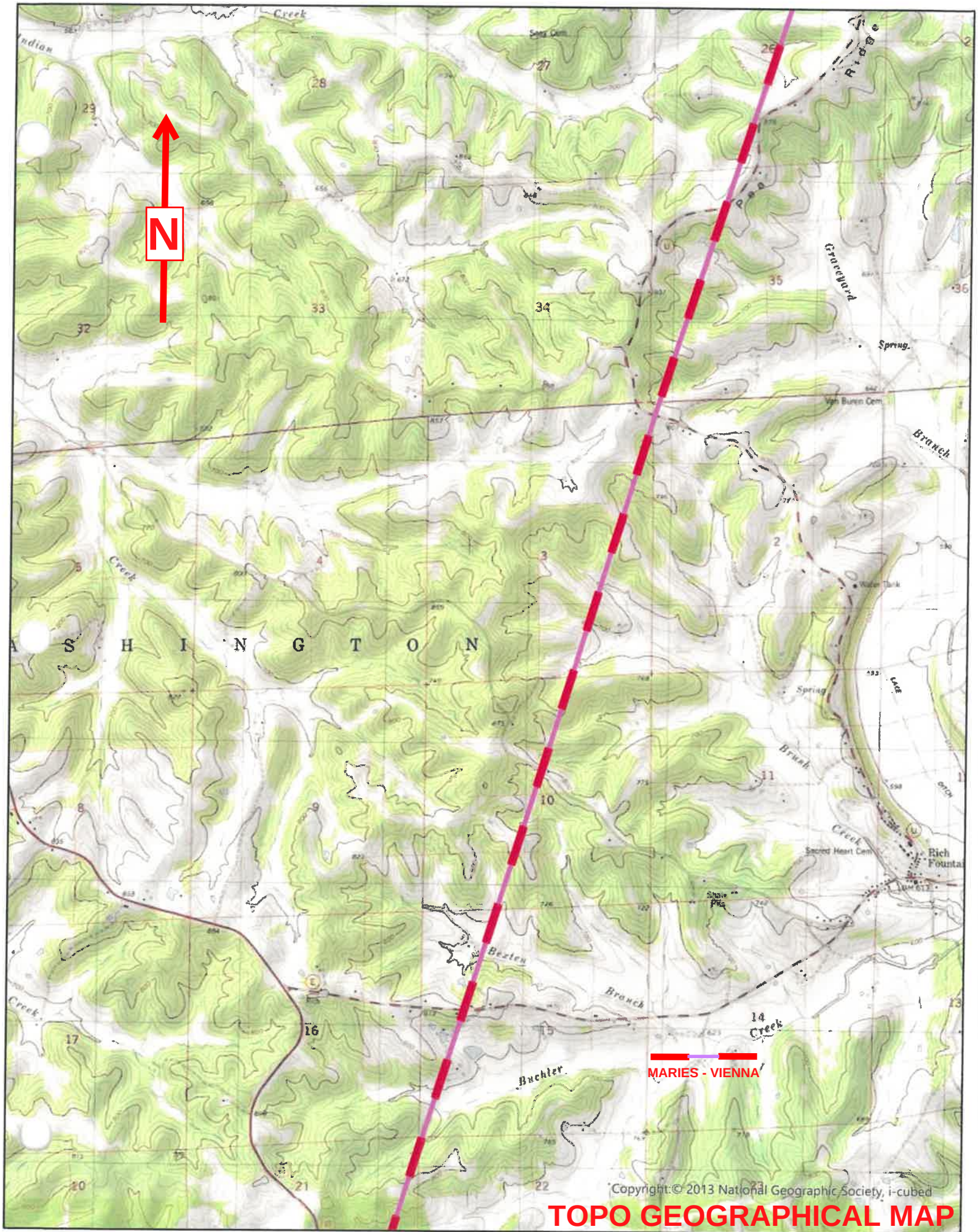
MARIES & OSAGE COUNTIES



TOPO GEOGRAPHICAL MAP

FREEBURG, MO

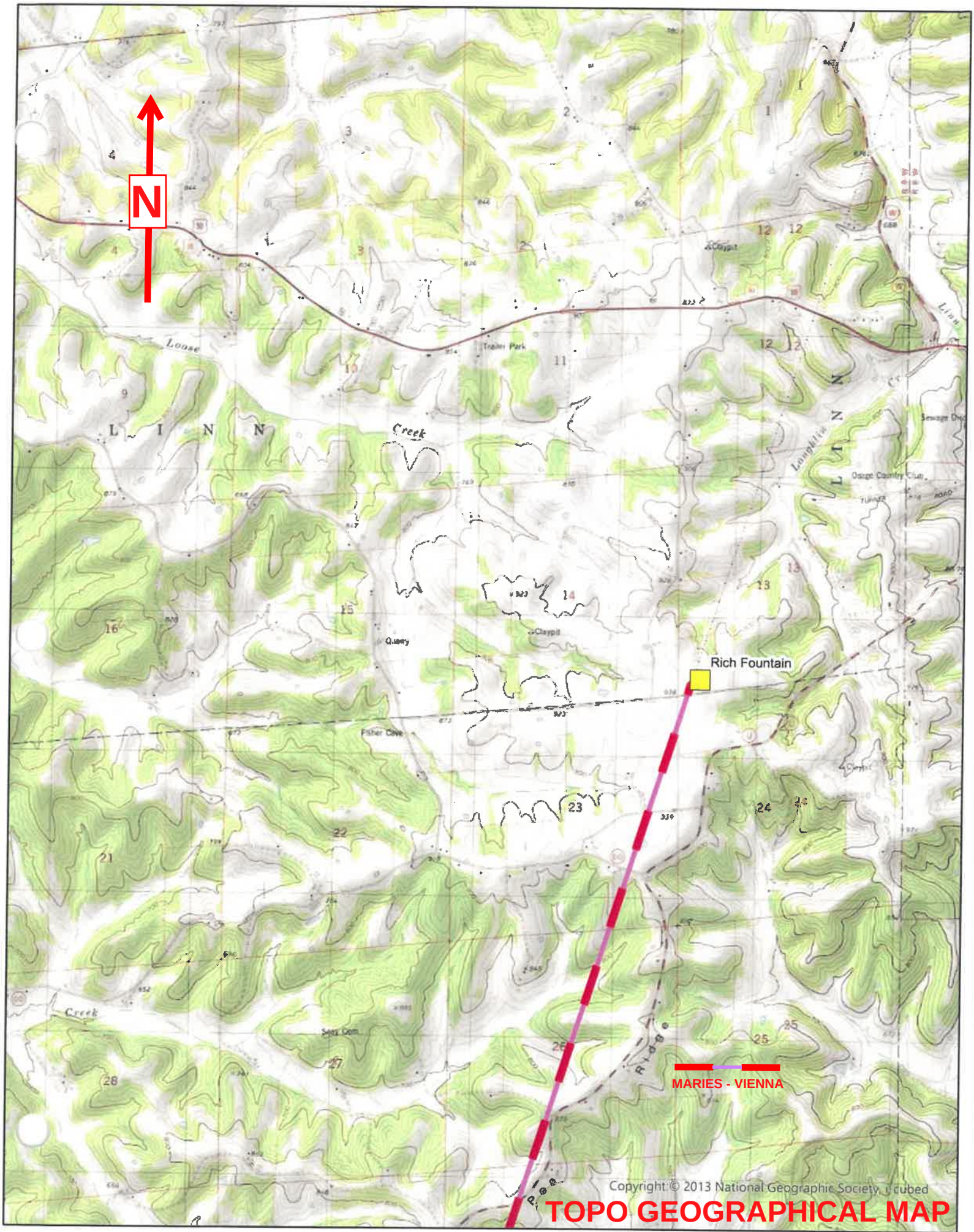
OSAGE COUNTY



TOPO GEOGRAPHICAL MAP

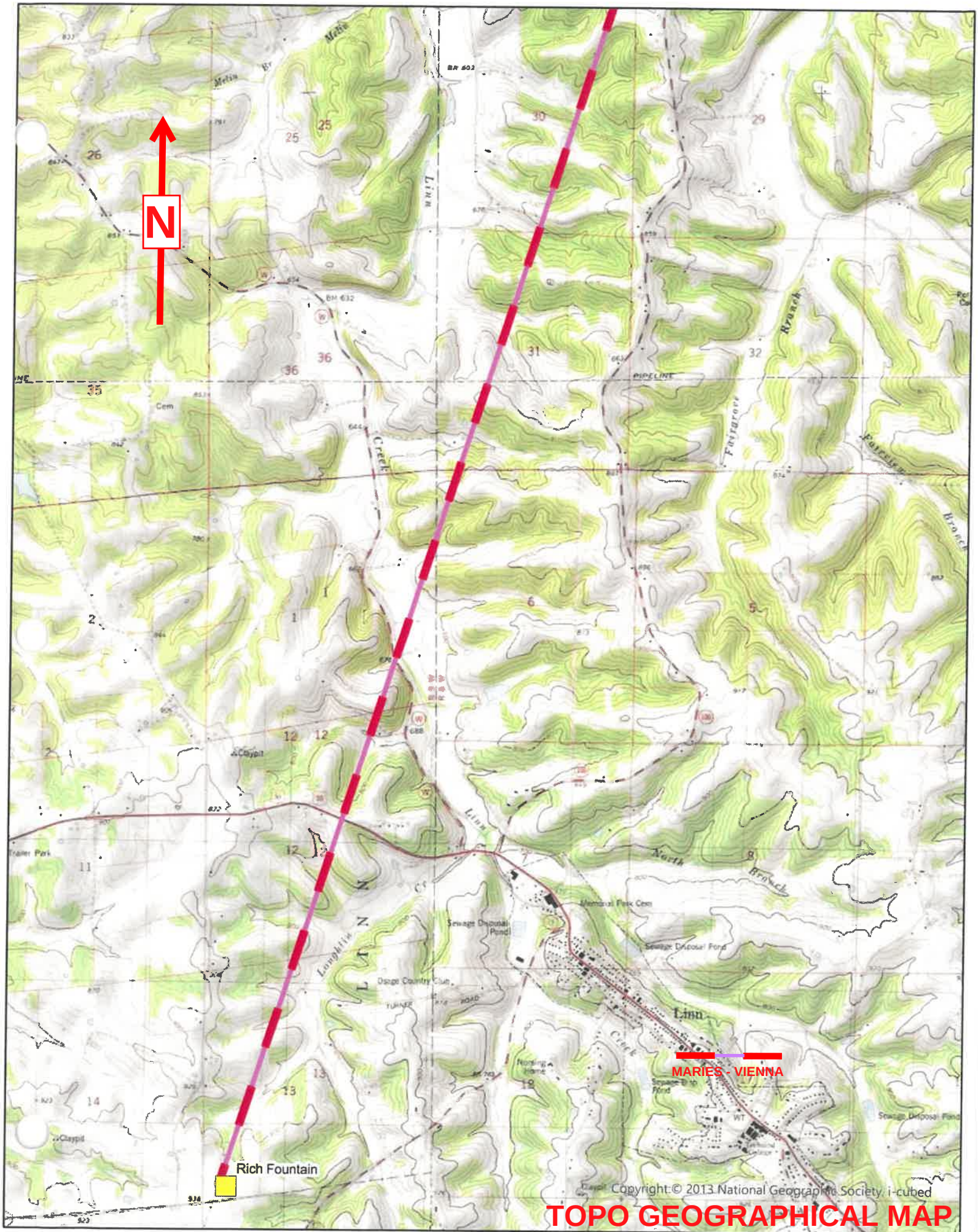
WESTPHALIA EAST, MO

OSAGE COUNTY



WESTPHALIA EAST & LINN, MO

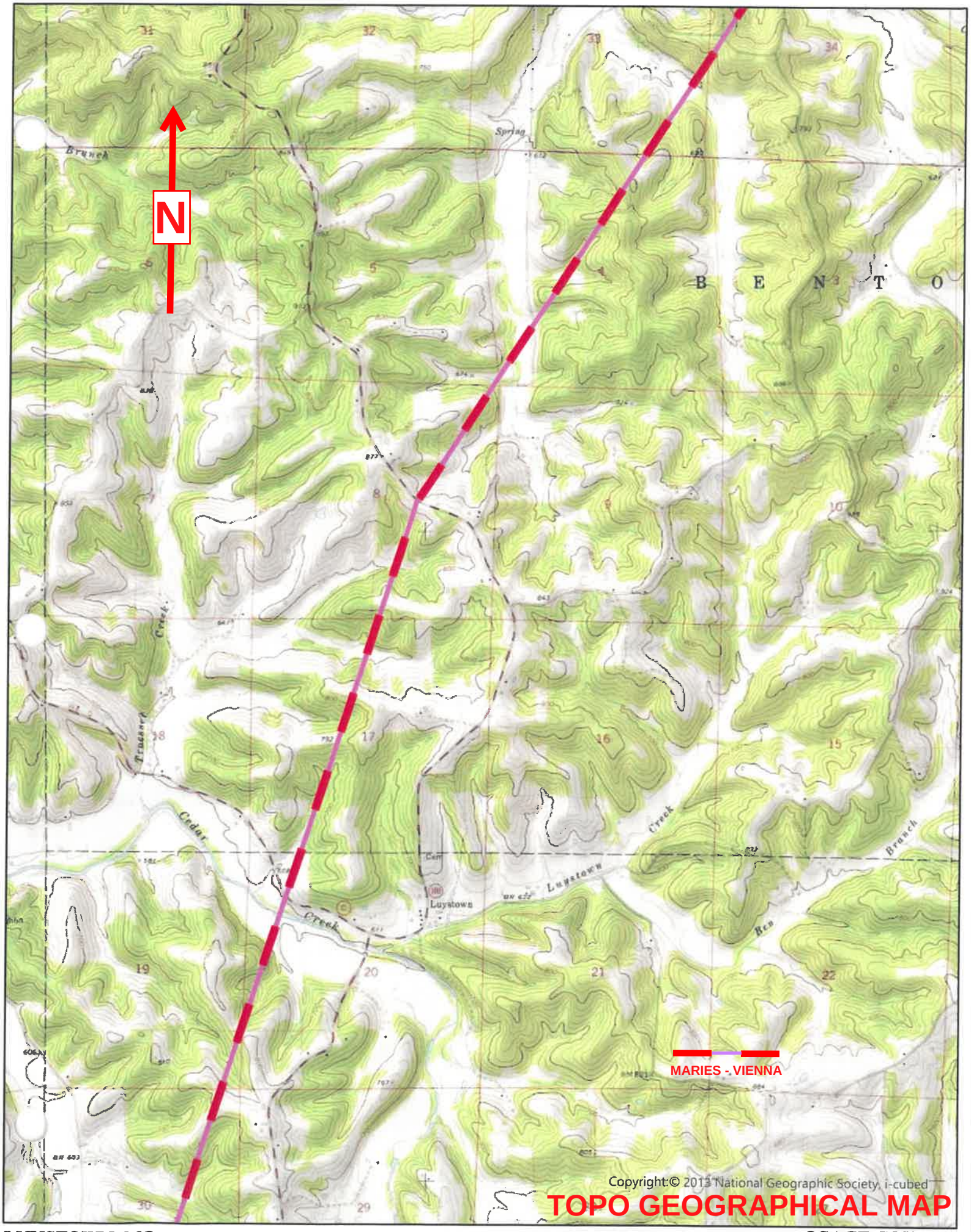
OSAGE COUNTY



TOPO GEOGRAPHICAL MAP

WESTPHALIA EAST, LINN & LUYSTOWN, MO

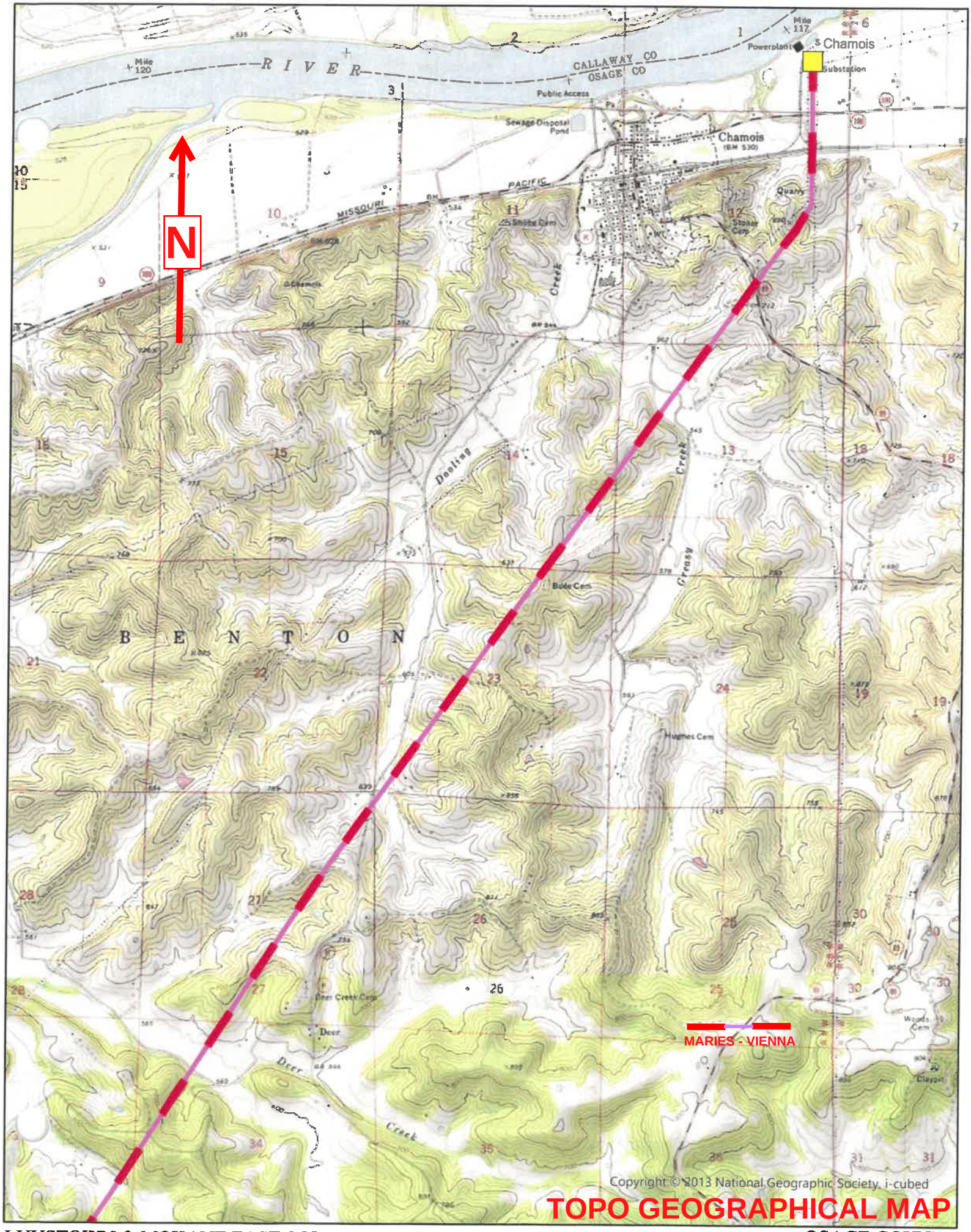
OSAGE COUNTY



TOPO GEOGRAPHICAL MAP

LUYSTOWN, MO

OSAGE COUNTY



TOPO GEOGRAPHICAL MAP

LUYSTOWN & MOKANE EAST, MO

OSAGE COUNTY

NOTES TO USERS

map is for use in administering the National Flood Insurance Program. It does necessarily identify all areas subject to flooding, particularly from local age sources of small size. The community map repository should be lted for possible updated or additional flood hazard information.

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rojection used in the preparation of this map was NAD 1983 State Plane uri Central, zone 2402. The horizontal datum was NAD 83, GRS80 oid. Differences in datum, spheroid, or projection used in the production of for adjacent jurisdictions may result in slight positional differences in map es across jurisdiction boundaries. These differences do not affect the acy of this FIRM.

elevations on this map are referenced to the North American Vertical Datum 88. These flood elevations must be compared to structure and ground ions referenced to the same vertical datum. For information regarding rsion between the National Geodetic Vertical Datum of 1929 and the North can Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following ss:

Information Services
, NNGS12
al Geodetic Survey
, #9202
East-West Highway
Spring, Maryland 20910-3282
713-3242

tain current elevation, description, and/or location information for bench shown on this map, please contact the Information Services Branch of the al Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov/.

map information shown on this FIRM was provided in digital format by the Farm Service Agency, National Agriculture Imagery Program (NAIP). ed in 2010 at a scale of 1:12000.

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rofile base lines" depicted on this map represent the hydraulic modeling es that match the flood profiles in the FIS report. As a result of improved aphic data the "profile base line," in some cases, may deviate significantly e channel centerline or appear outside the SFHA.

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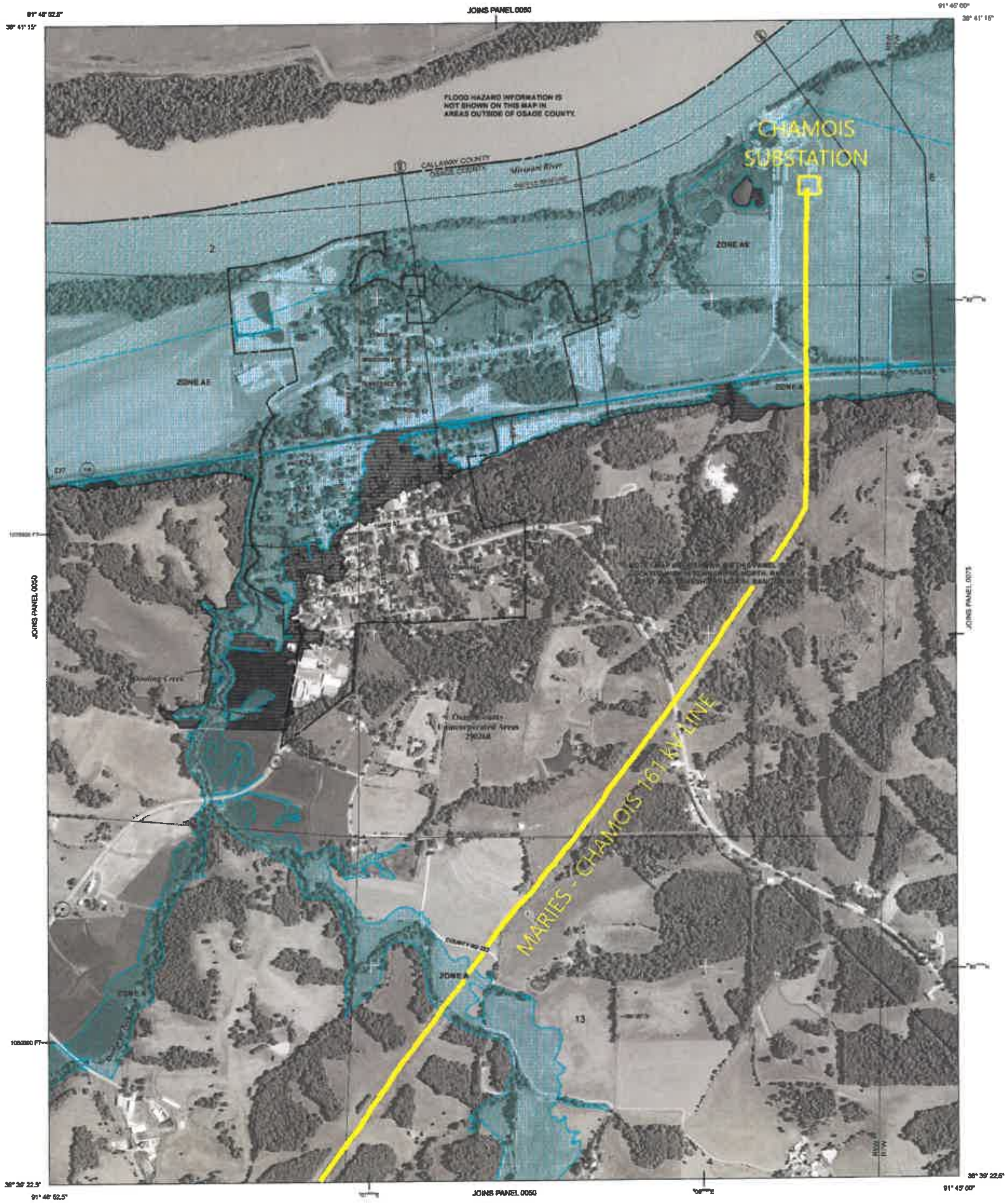
ave questions about this map or questions concerning the National Flood ce Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or e FEMA website at http://www.fema.gov/business/nfip/.

STATE OF MISSOURI FIRM PANEL LOCATOR DIAGRAM



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 1000-meter Universal Transverse Mercator grid values, zone 15
- 600000 FT — 5000-foot grid ticks: Missouri State Plane coordinate system, central zone (FIPS 2402), Transverse Mercator projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile
- Road or Railroad Bridge

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 2, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 19, 2012 - to reflect updated topographic information

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0042E

FIRM
FLOOD INSURANCE RATE MAP

OSAGE COUNTY, MISSOURI
AND INCORPORATED AREAS

PANEL 42 OF 425
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL
CHAMOIS, CITY OF	290275	0042
OSAGE COUNTY	290268	0042

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
29151C0

MAP REVISED
SEPTEMBER 19,

Federal Emergency Management Agency

NOTES TO USE

map is for use in administering the National Flood ... ogram. It does necessarily identify all areas subject to flooding, ...ainty from local ge sources of small size. The community map repository should be ded for possible updated or additional flood hazard information.

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projection used in the preparation of this map was NAD 1983 State Plane ouri Central, zone 2402. The Horizontal datum was NAD 83, GRS80 oid. Differences in datum, spheroid, or projection used in the production of s for adjacent jurisdictions may result in slight positional differences in map es across jurisdiction boundaries. These differences do not affect the racy of this FIRM.

elevations on this map are referenced to the North American Vertical Datum 88. These flood elevations must be compared to structure and ground tions referenced to the same vertical datum. For information regarding sion between the National Geodetic Vertical Datum of 1929 and the North ican Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following ss:

Information Services
, NGS2512
nal Geodetic Survey
-3, 8820
East-West Highway
Spring, Maryland 20910-3282
715-3242

ain current elevation, description, and/or location information for bench s shown on this map, please contact the Information Services Branch of the nal Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov/.

map information shown on this FIRM was provided in digital format by the Farm Service Agency, National Agricultural Imagery Program (NAIP), ed in 2010 at a scale of 1:12000.

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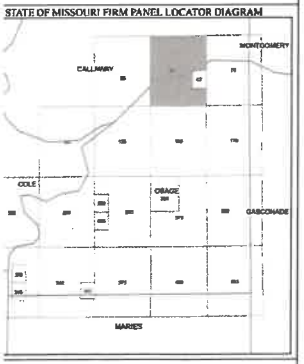
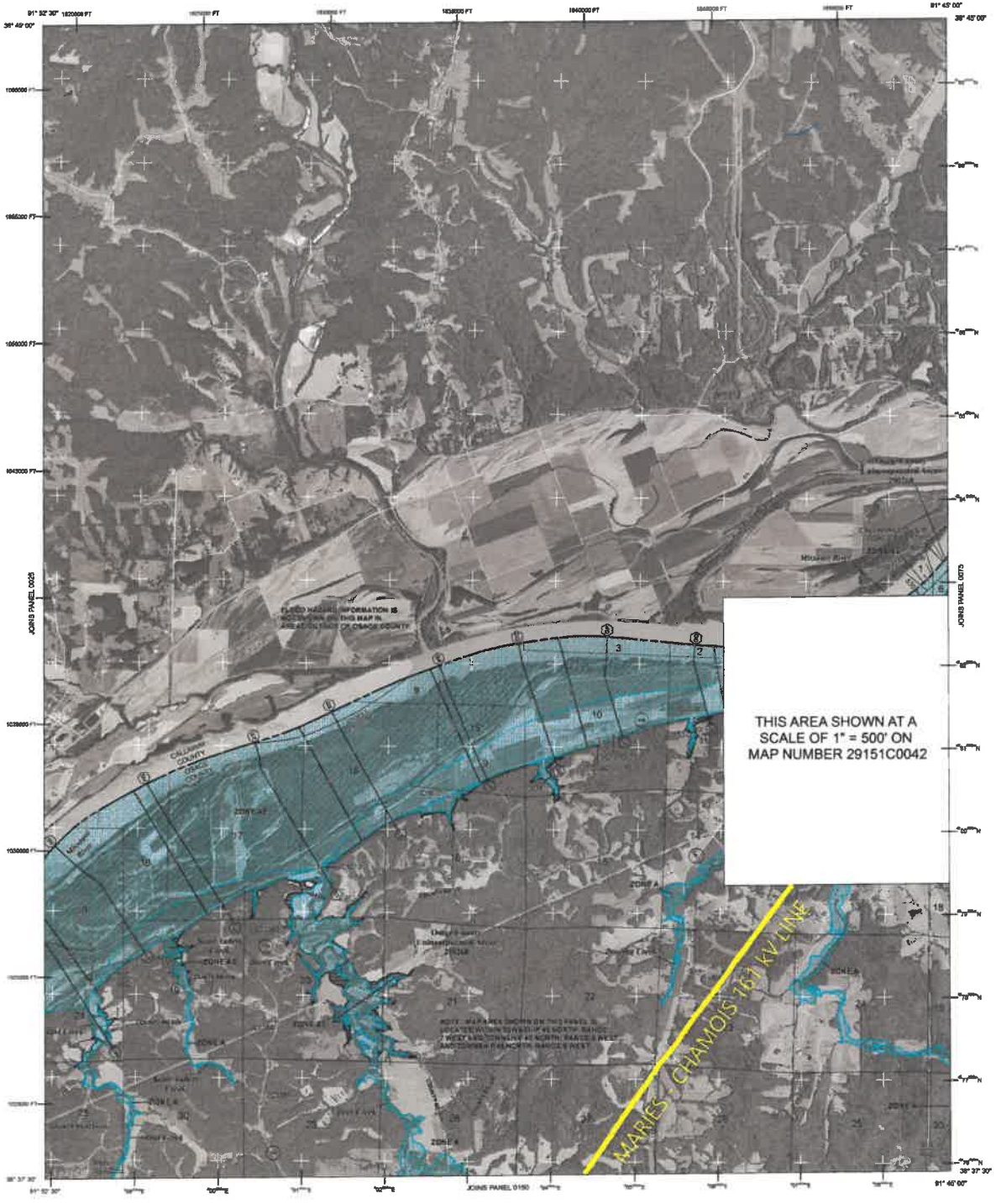
STATE OF MISSOURI FIRM PANEL LOCATOR DIAGRAM





LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJEC
INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flo has a 1% chance of being equaled or exceeded in any given year. The Special Flood Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation water-surface elevation of the 1% annual chance flood.

- ZONE A — No Base Flood Elevations determined.
- ZONE AE — Base Flood Elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); depths determined. For areas of alluvial fan flooding, velocities determined.
- ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual flood by a flood control system that was subsequently decertified. Z indicates that the former flood control system is being restored to protection from the 1% annual chance or greater flood.
- ZONE A99 — Area to be protected from 1% annual chance flood by a Federa protection system under construction; no Base Flood Elev determined.
- ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Elevations determined.
- ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be k of encroachment so that the 1% annual chance flood can be carried without substantial in in flood heights.

OTHER FLOOD AREAS

- ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flo average depths of less than 1 foot or with drainage areas less square mile; and areas protected by levees from 1% annual chance f

OTHER AREAS

- ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Area

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL. 987) — Base Flood Elevation value where uniform within zone; el in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- B — B — Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American of 1983 (NAD 83)
- 87°07'45" E — 1000-meter Universal Transverse Mercator grid values, zone
- 600000 FT — 5000-foot grid ticks: Missouri State Plane coordinat system, central zone (FIPS 2402), Transverse Mercator projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this panel)
- M1.5 — River mile
- Road or Railroad Bridge

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 2, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 19, 2012 - to reflect updated topographic information.

For community map revision history prior to countywide mapping, refer to the Commun History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
300 0 600 1200 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0050E

FIRM
FLOOD INSURANCE RATE MA

OSAGE COUNTY, MISSOURI AND INCORPORATED AREA

PANEL 50 OF 425
(SEE LOCATOR DIAGRAM OR MAP INDE FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL
OSAGE COUNTY		

Notice to User: The Map Number shown below sh used when placing map orders; the Community N shown above should be used on insurance applica the indicated communities.

MAP NUM
29151C0

MAP REVI
SEPTEMBER 19,

Federal Emergency Management A

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Information Services
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-3, #9202
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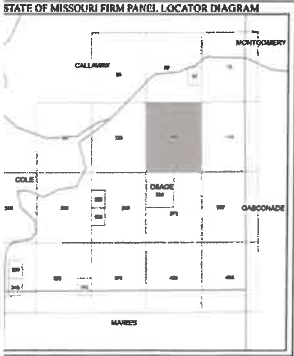
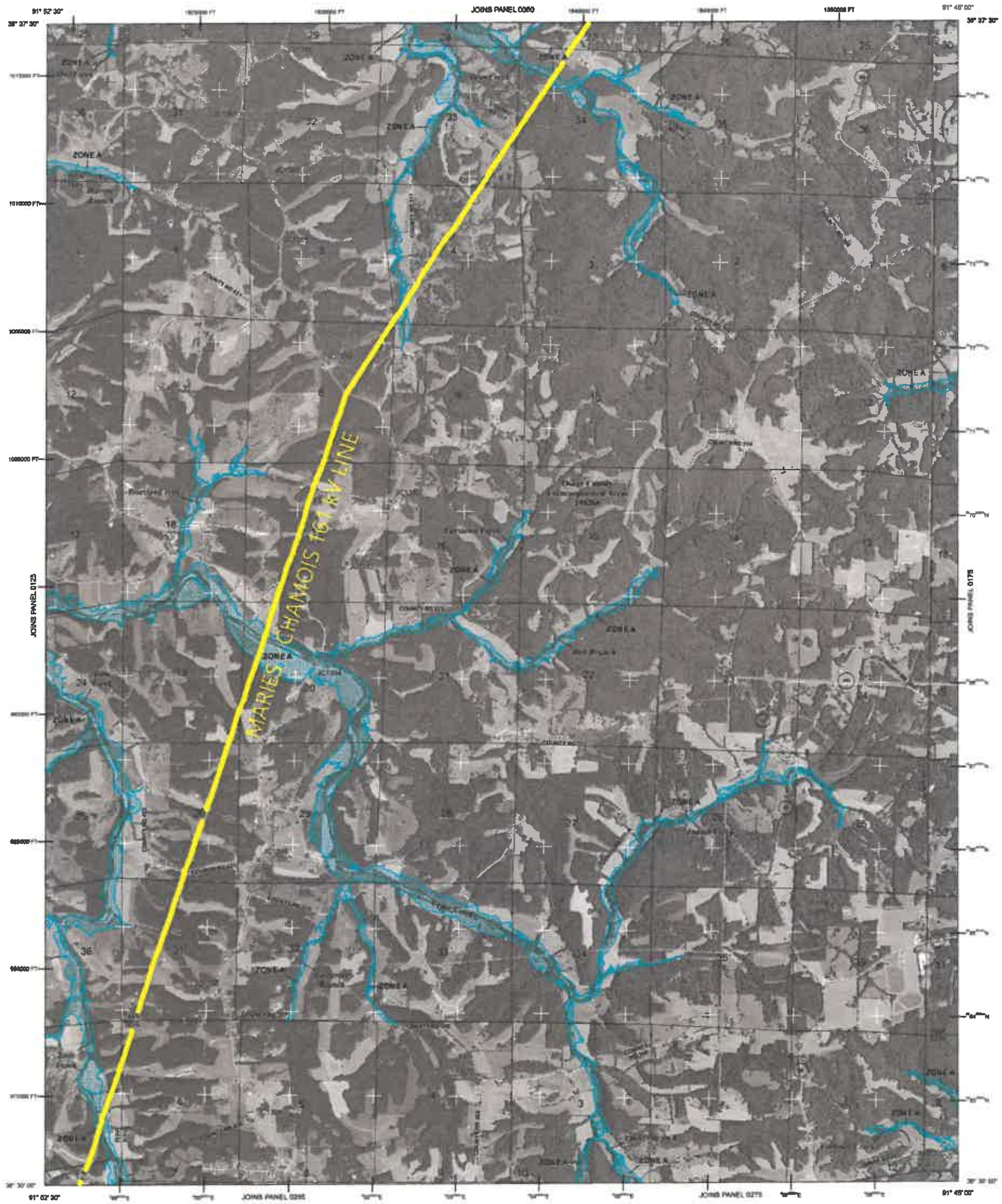
STATE OF MISSOURI FIRM PANEL LOCATOR DIAGRAM





LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)—(A)	Cross section line
(23)—(23)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276000mE	1000-meter Universal Transverse Mercator grid values, zone
600000 FT	5000-foot grid ticks: Missouri State Plane coordinate system, central zone (FIPS 2402), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile
	Road or Railroad Bridge

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
September 2, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 19, 2012 - to reflect updated topographic information.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
600 0 600 1200 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0150E

FIRM
FLOOD INSURANCE RATE MA

OSAGE COUNTY, MISSOURI
AND INCORPORATED AREA

PANEL 150 OF 425
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL
OSAGE COUNTY	[illegible]	0150

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUM
29151C0

MAP REVI
SEPTEMBER 19, 2

Federal Emergency Management A

NOTES TO USER

map is for use in administering the National Flood ... ogram. It does necessarily identify all areas subject to flooding, ... arly from local age sources of small size. The community map repository should be sted for possible updated or additional flood hazard information.

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in areas not in Special Flood Hazard Areas may be protected by flood ol structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood ance Study report for information on flood control structures for this iction.

projection used in the preparation of this map was NAD 1983 State Plane uri Central, zone 2402. The Horizontal datum was NAD 83, GRS80 oid. Differences in datum, spheroid, or projection used in the production of s for adjacent jurisdictions may result in slight positional differences in map es across jurisdiction boundaries. These differences do not affect the acy of this FIRM.

elevations on this map are referenced to the North American Vertical Datum 88. These flood elevations must be compared to structure and ground tions referenced to the same vertical datum. For information regarding rsion between the National Geodetic Vertical Datum of 1929 and the North ican Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following es:

Information Services
, N/NGS12
al Geodetic Survey
-3, #9202
East-West Highway
Spring, Maryland 20910-3282
713-3242

tain current elevation, description, and/or location information for bench shown on this map, please contact the Information Services Branch of the al Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov/.

map information shown on this FIRM was provided in digital format by the Farm Service Agency, National Agricultural Imagery Program (NAIP), ed in 2010 at a scale of 1:12000.

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profile base lines" depicted on this map represent the hydraulic modeling es that match the flood profiles in the FIS report. As a result of improved aphic data the "profile base line," in some cases, may deviate significantly e channel centerline or appear outside the SFHA.

rate limits shown on this map are based on the best data available at the f publication. Because changes due to annexations or de-annexations may occurred after this map was published, map users should contact appropriate unity officials to verify current corporate limit locations.

refer to the separately printed Map Index for an overview map of the showing the layout of map panels; community map repository addresses; Listing of Communities table containing National Flood Insurance Program for each community as well as a listing of the panels on which each unity is located.

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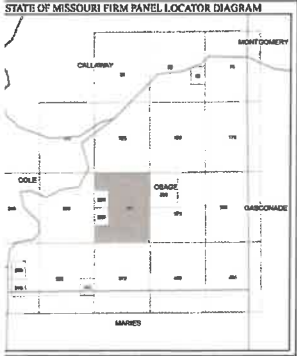
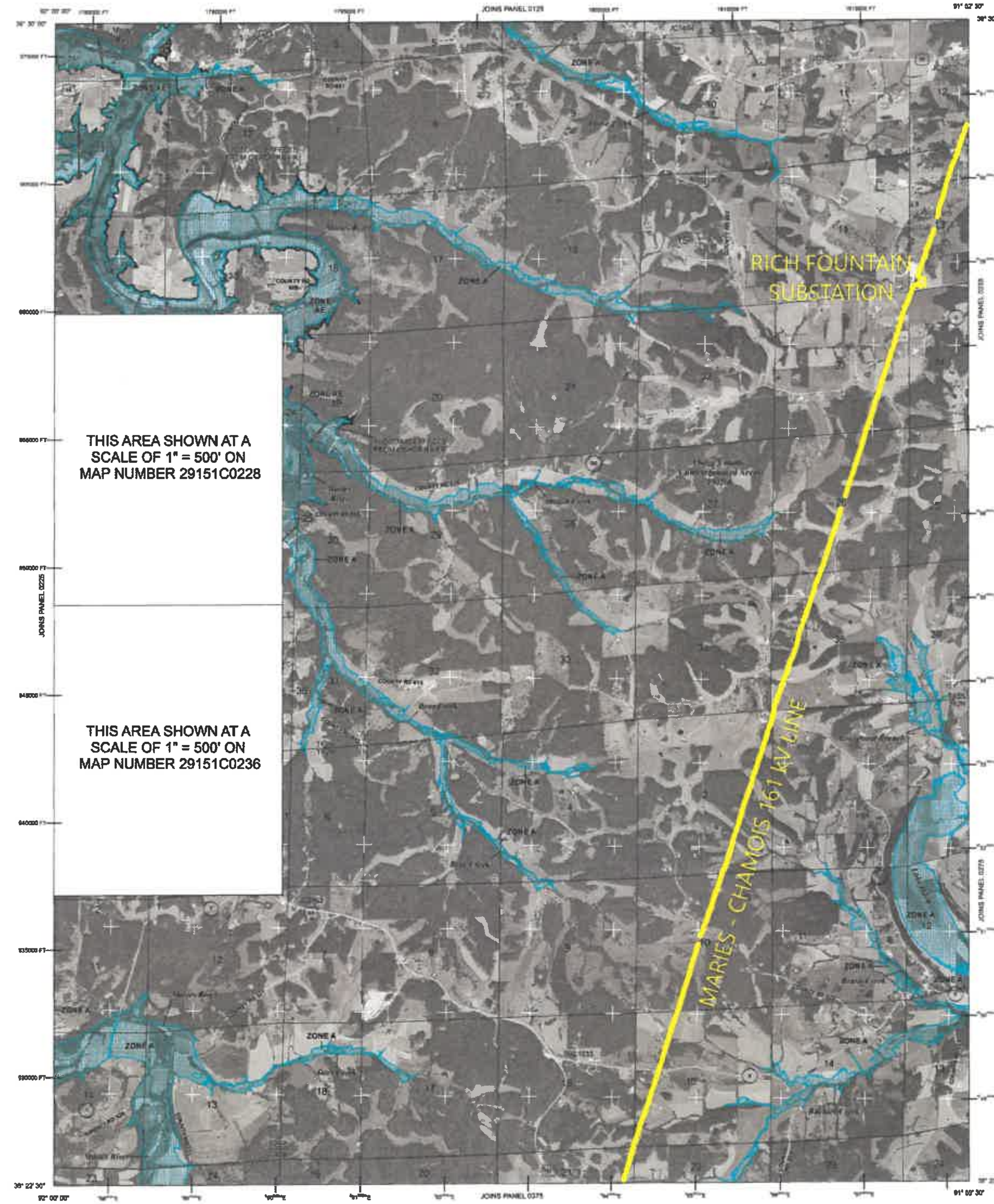
have questions about this map or questions concerning the National Flood nce Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or e FEMA website at http://www.fema.gov/business/nfip/.

STATE OF MISSOURI FIRM PANEL LOCATOR DIAGRAM





LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJEC INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the floo has a 1% chance of being equaled or exceeded in any given year. The Special Flood H Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); a depths determined. For areas of alluvial fan flooding, velocitie determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual flood by a flood control system that was subsequently decertified. Z indicates that the former flood control system is being restored to p protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federa protection system under construction; no Base Flood Elev determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be ke of encroachment so that the 1% annual chance flood can be carried without substantial inc in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance floo average depths of less than 1 foot or with drainage areas less t square mile; and areas protected by levees from 1% annual chance f

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Area

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of differen Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; ele in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American of 1983 (NAD 83)
76 E	1000-meter Universal Transverse Mercator grid values, zone
600000 FT	5000-foot grid ticks: Missouri State Plane coordinat system, central zone (FIPS 2402), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section FIRM panel)
• M1.5	River Mile
	Road or Railroad Bridge

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
September 2, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 19, 2012 - to reflect updated topographic information

For community map revision history prior to countywide mapping, refer to the Communi History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

600 0 600 1200 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0250E

FIRM
FLOOD INSURANCE RATE MA

OSAGE COUNTY, MISSOURI
AND INCORPORATED AREA

PANEL 250 OF 425
(SEE LOCATOR DIAGRAM OR MAP INDI FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL
OSAGE COUNTY	[illegible]	[illegible]

Notice to User: The Map Number shown below sh used when placing map orders; the Community N shown above should be used on insurance applicat the subject community.

MAP NUM
29151C0

MAP REVI
SEPTEMBER 19, 2

Federal Emergency Management Ag

NOTES TO USER

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rojection used in the preparation of this map was NAD 1983 State Plane uri Central, zone 2402. The Horizontal datum was NAD 83, GRS80 oid. Differences in datum, spheroid, or projection used in the production of s for adjacent jurisdictions may result in slight positional differences in map es across jurisdiction boundaries. These differences do not affect the acy of this FIRM.

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nformation Services
, N/NGS12
al Geodetic Survey
-3, #9202
East-West Highway
Spring, Maryland 20910-3282
713-3242

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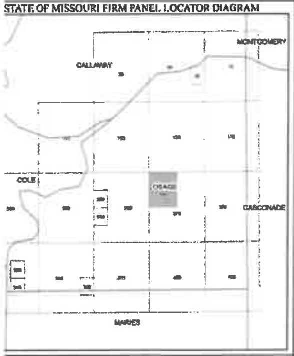
STATE OF MISSOURI FIRM PANEL LOCATOR DIAGRAM



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJEC[T TO] INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the floo[d that] has a 1% chance of being equaled or exceeded in any given year. The Special Flood H[azard] Area is the area subject to flooding by the 1% annual chance flood. Areas of Special [Flood] Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation [is the] water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); a depths determined. For areas of alluvial fan flooding, velocitie determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual flood by a flood control system that was subsequently decertified. Z indicates that the former flood control system is being restored to p protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federa protection system under construction; no Base Flood Elev determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be ke[pt free] of encroachment so that the 1% annual chance flood can be carried without substantial in[creases] in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance floo average depths of less than 1 foot or with drainage areas less t square mile; and areas protected by levees from 1% annual chance f

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Area[s].

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of differen Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; ele in feet*

* Referenced to the North American Vertical Datum of 1988

(A)—(A)	Cross section line
(B)—(B)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American of 1983 (NAD 83)
4276000mE	1000-meter Universal Transverse Mercator grid values, zone
600000 FT	5000-foot grid ticks: Missouri State Plane coordinat system, central zone (FIPS 2402), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section FIRM panel)
• M1.5	River Mile
	Road or Railroad Bridge

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
September 2, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 18, 2012 - to reflect updated topographic information

For community map revision history prior to countywide mapping, refer to the Communi[ty] History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent [or] the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0255E

FIRM
FLOOD INSURANCE RATE MA[P]

OSAGE COUNTY, MISSOURI
AND INCORPORATED AREA[S]

PANEL 255 OF 425
(SEE LOCATOR DIAGRAM OR MAP INDE[X FOR] FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL
LINN, CITY OF	[illegible]	[illegible]
OSAGE COUNTY	[illegible]	[illegible]

Notice to User: The Map Number shown below sh[ould be] used when placing map orders; the Community N[umber] shown above should be used on insurance applica[tions for] the subject community.

MAP NUM[BER]
29151C0[255E]

MAP REVI[SED]
SEPTEMBER 18, [2012]

Federal Emergency Management A[gency]

NOTES TO USER

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nformation Services
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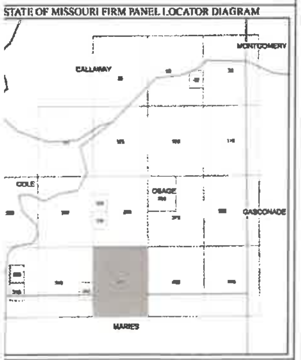
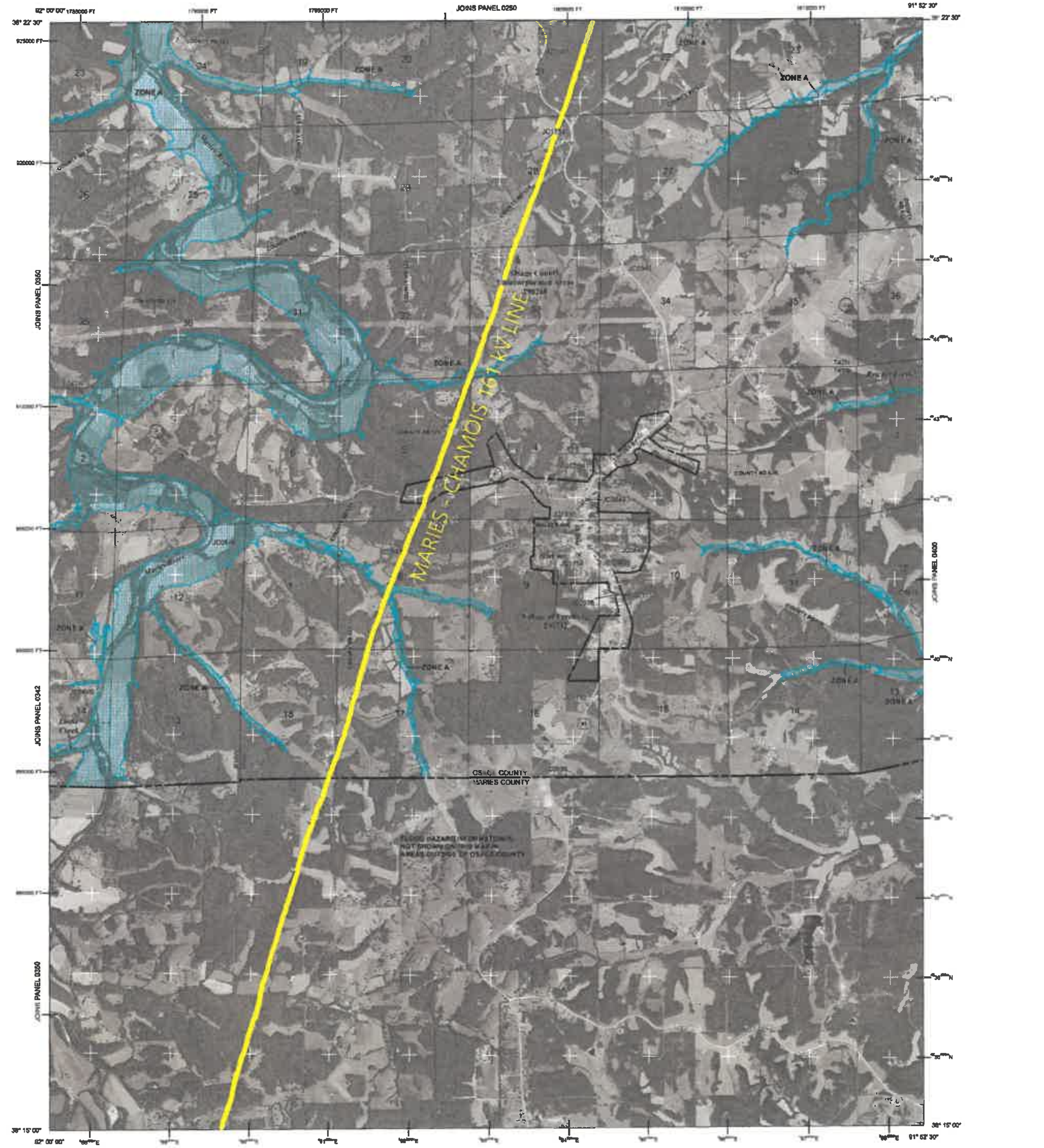
STATE OF MISSOURI FIRM PANEL LOCATOR DIAGRAM





LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJEC... INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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ZONE A	No Base Flood Elevations determined.
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ZONE A99	Area to be protected from 1% annual chance flood by a Federa... protection system under construction; no Base Flood Elev... determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be ke... of encroachment so that the 1% annual chance flood can be carried without substantial in... in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance floo... average depths of less than 1 foot or with drainage areas less t... square mile; and areas protected by levees from 1% annual chance f...

OTHER AREAS

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ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Area...

	1% annual chance floodplain boundary
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DX5510 ×	Bench mark (see explanation in Notes to Users section ... FIRM panel)
• M1.5	River Mile
	Road or Railroad Bridge

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
September 2, 2006

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 19, 2012 - to reflect updated topographic information

For community map revision history prior to countywide mapping, refer to the Communi... History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent... the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

600 0 600 1200 METERS

NFIP

PANEL 0375E

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MA...

OSAGE COUNTY, MISSOURI
AND INCORPORATED AREA...

PANEL 375 OF 425
(SEE LOCATOR DIAGRAM OR MAP INDE... FIRM PANEL LAYOUT)

CONTAINS:

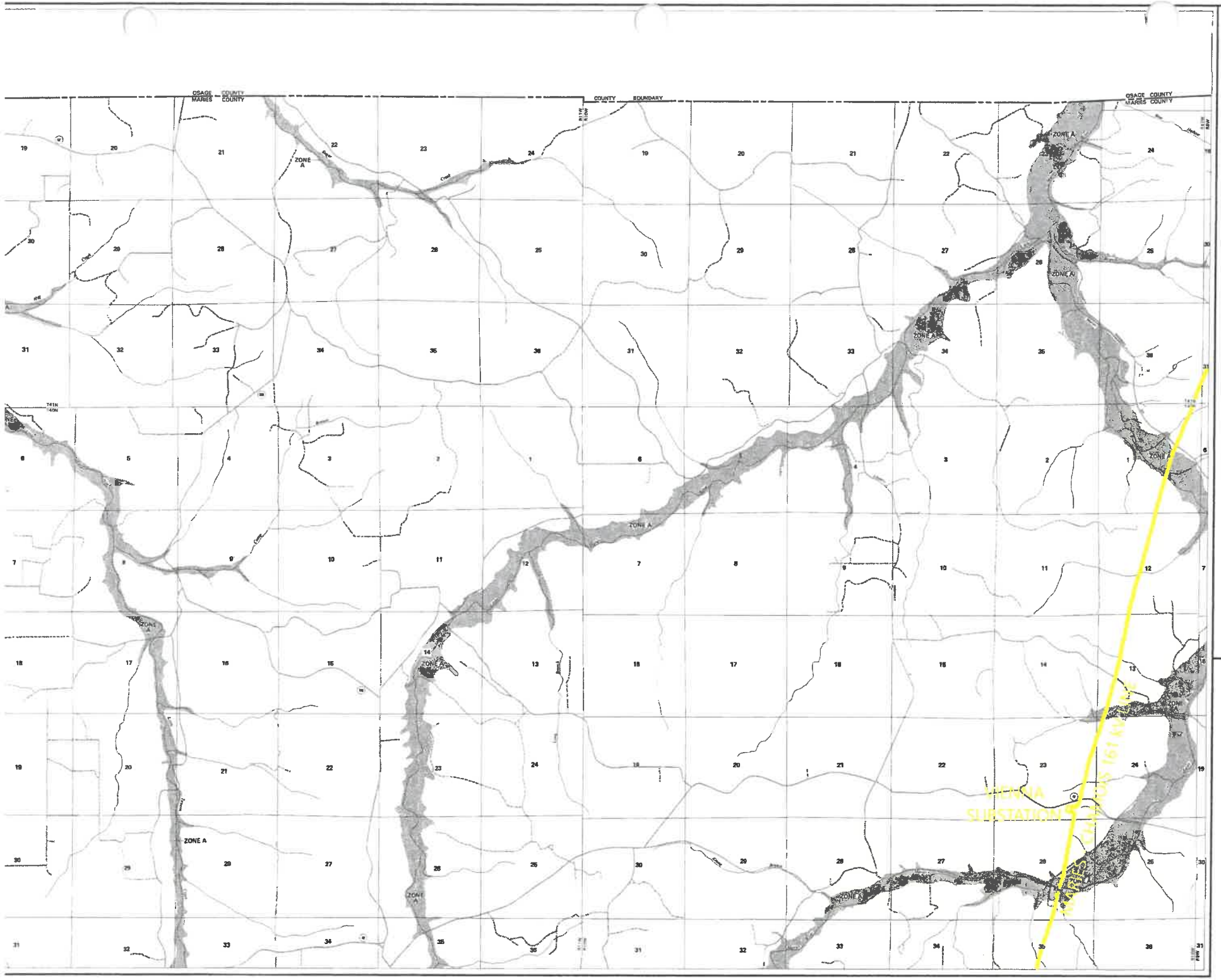
COMMUNITY	NUMBER	PANEL
FREEBURG, VILLAGE OF	290722	0375
OSAGE COUNTY	290280	0375

Notice to User: The Map Number shown below sh... used when placing map orders; the Community N... shown above should be used on insurance applicat... the subject community.

MAP NUM...
29151C0...

MAP REVI...
SEPTEMBER 19, ...

Federal Emergency Management A...



KEY TO

SPECIAL FLOOD HAZARD AREA

Note: These maps may not incl
Areas in the community. After
Special Flood Hazard Areas sho
modified, and other areas added.

To determine if flood insurance is
contact your insurance agent,
Insurance Program, at (800) 638

INITIAL IDENTIFIC
FEBRUARY 1,

APPROXIMAT
2000

NATIONAL FL

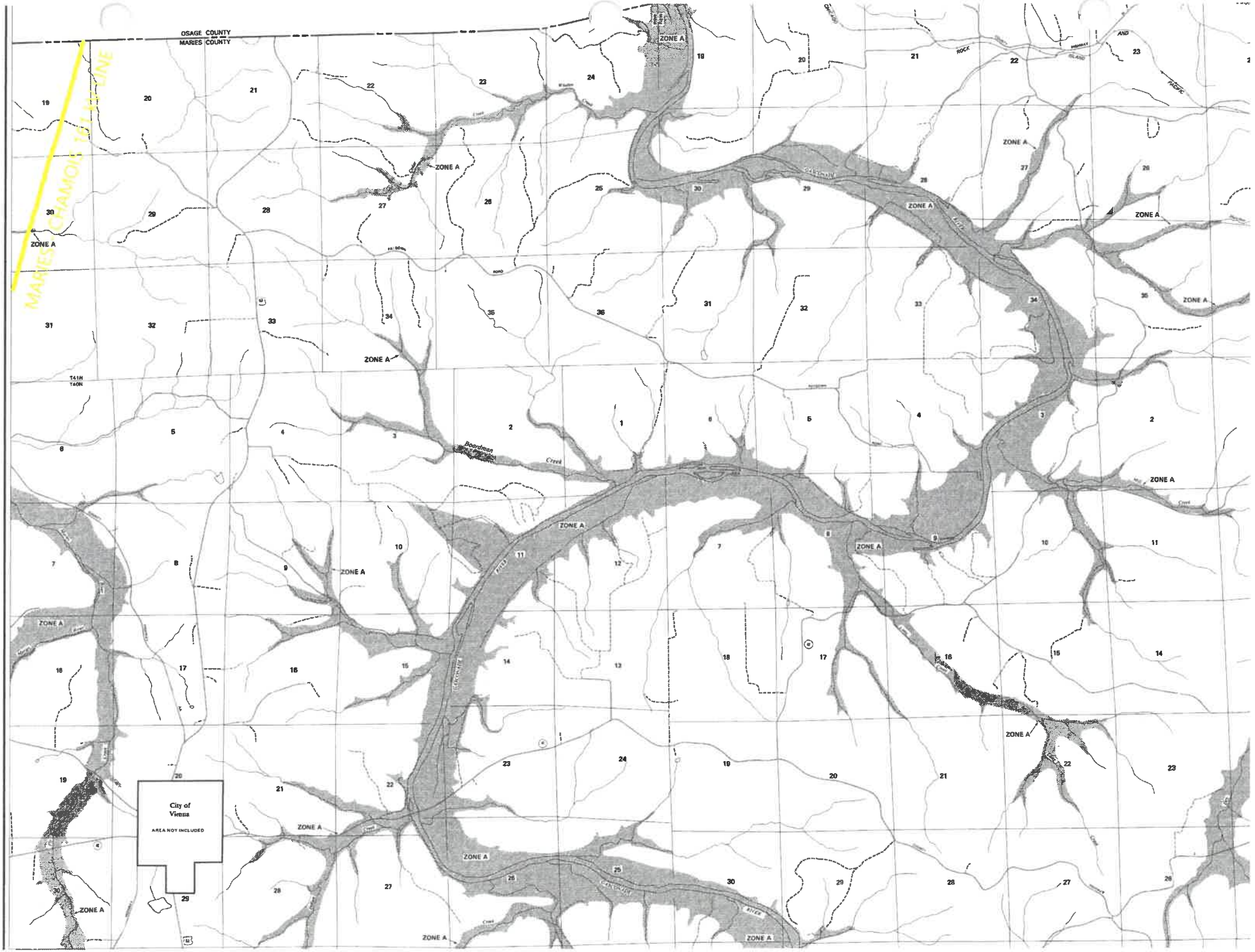
FHBM
FLOOD HA

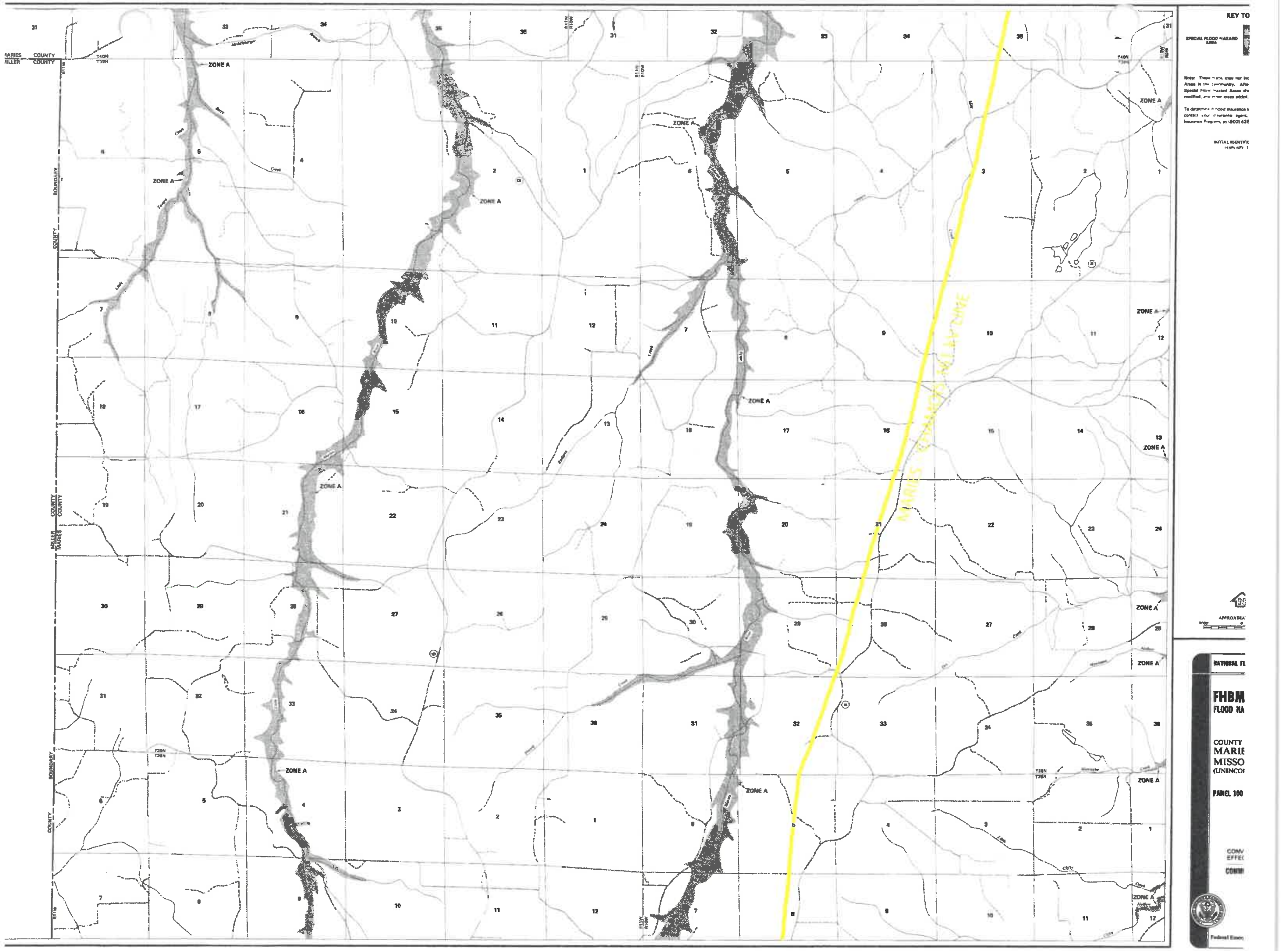
COUNTY
MARIE
MISSO
(UNINCOR

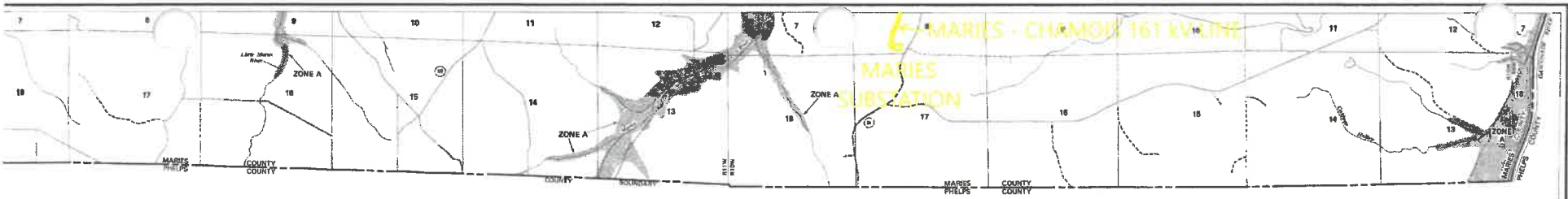
PANEL 25

CONVE
EFFEC
COMM

Federal Emerg


OSAGE COUNTY
MARIES COUNTY
MARIES-CHAMOIS 161 KV LINE
ZONE A
Boardman Creek
City of Vienna
AREA NOT INCLUDED
T41N
T40N


KEY TO
SPECIAL FLOOD HAZARD AREA
MARIES COUNTY
MILLER COUNTY
MILLER COUNTY BOUNDARY
MARIES COUNTY
T40N
T39N
T38N
R11W
R10W
ZONE A
MARIES COUNTY LINE
NATIONAL FL
FHBM
FLOOD HA
COUNTY
MARIE
MISSO
(UNINCO
PANEL 100
CONV
EFFE
COMM
Federal Emer



KEY TO

SPECIAL FLOOD HAZARD AREA

Note: These maps may not incl
Areas in the community. After
Special Flood Hazard Areas sho
modified, and other areas added.

To determine if flood insurance is
contact your insurance agent,
Insurance Program, at (800) 638-

INITIAL IDENTIFIC
JANUARY 1

APPROXIMAT
2000 0

NATIONAL FL

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FLOOD HA

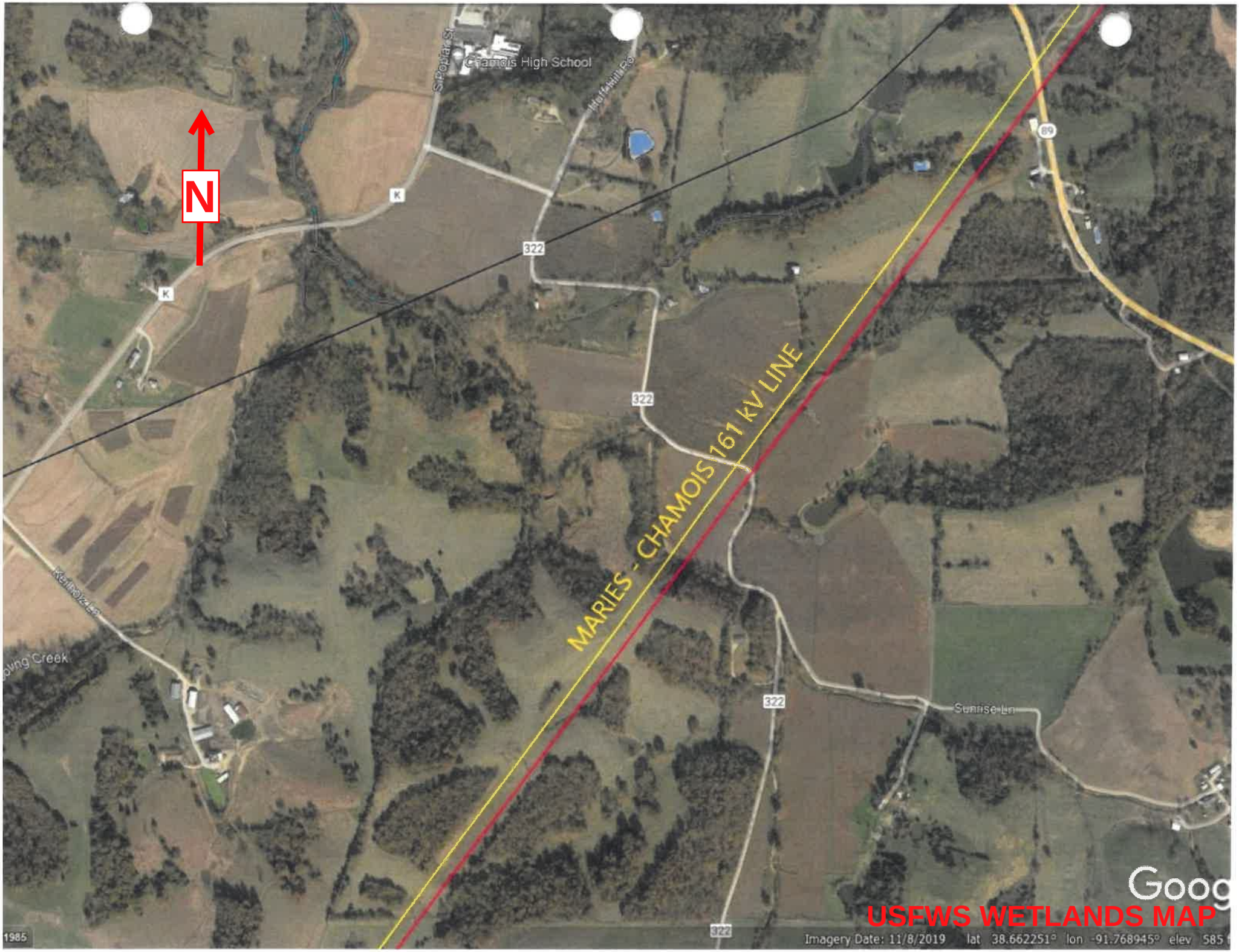
COUNTY
MARIE
MISSO
(UNINCOR

PANEL 175

CONVE
EFFEC
COMBI

Federal Emerg

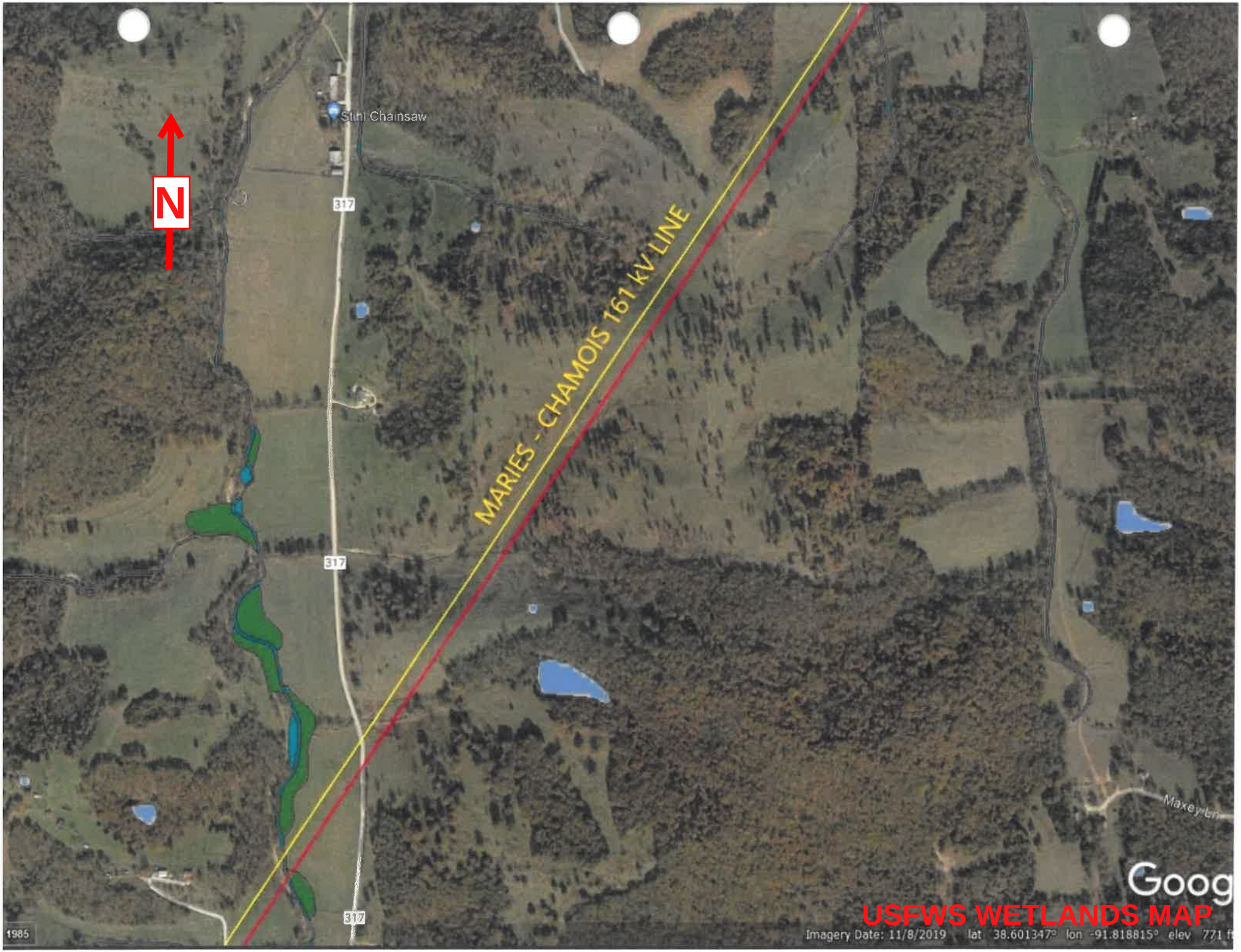

R2UBH
N
CHAMOIS
SUBSTATION
PUBGx
PUBGx
PFO1C
Chamois Access
E Missouri Ave
Halfway 2 Heaven
Hog Pen Rd
Hog Pen Rd
Jerry's Stop & Go
Chamois
S Market St
First Baptist Church
Old School on the Hill Bed & Breakfast
Chamois High School
S Poplar St
MARIES - CHAMOIS 161 kV LINE
USFWS WETLANDS MAP
Imagery Date: 11/8/2019 lat 38.677027° lon -91.761402° elev 534 f
1985


N
Chamois High School
MARIES - CHAMOIS 161 KV LINE
322
K
89
Sunrise Ln
1985
Imagery Date: 11/8/2019 lat 38.662251° lon -91.768945° elev 585
USFWS WETLANDS MAP


N
MARIES - CHAMOIS 161 kV LINE
K
K
322
322
322
Mitchemore
Mitchemore
1985
Imagery Date: 11/8/2019
lat 38.647342° lon -91.778145° elev 717
USFWS WETLANDS MAP

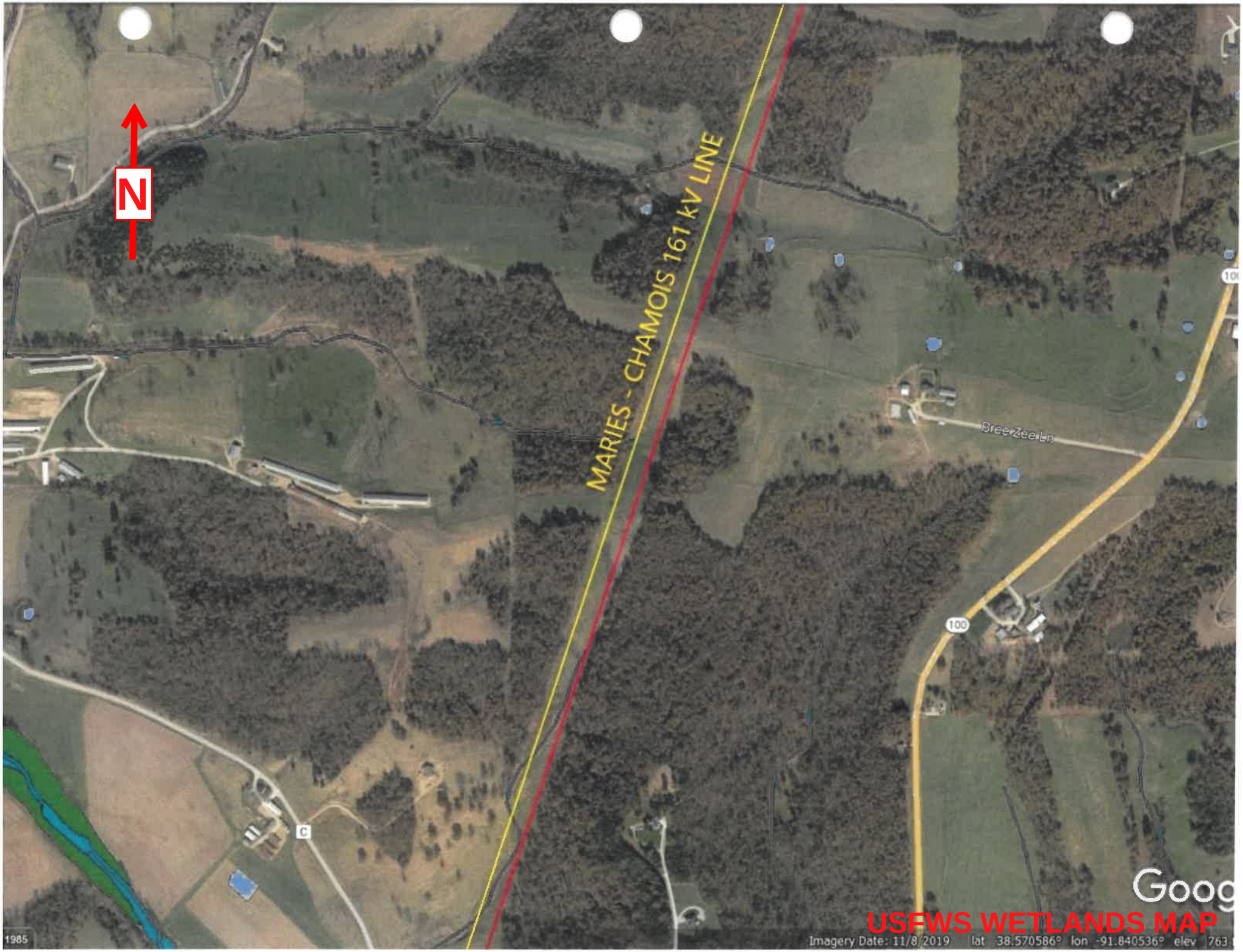

N
MARIES - CHAMOIS 161 KV LINE
K
Hwy K
Waters Ln
Waters Ln
Deer Creek Cemetery
1985
Imagery Date: 11/8/2019 lat 38.631789° lon -91.794431° elev 755
USFWS WETLANDS MAP

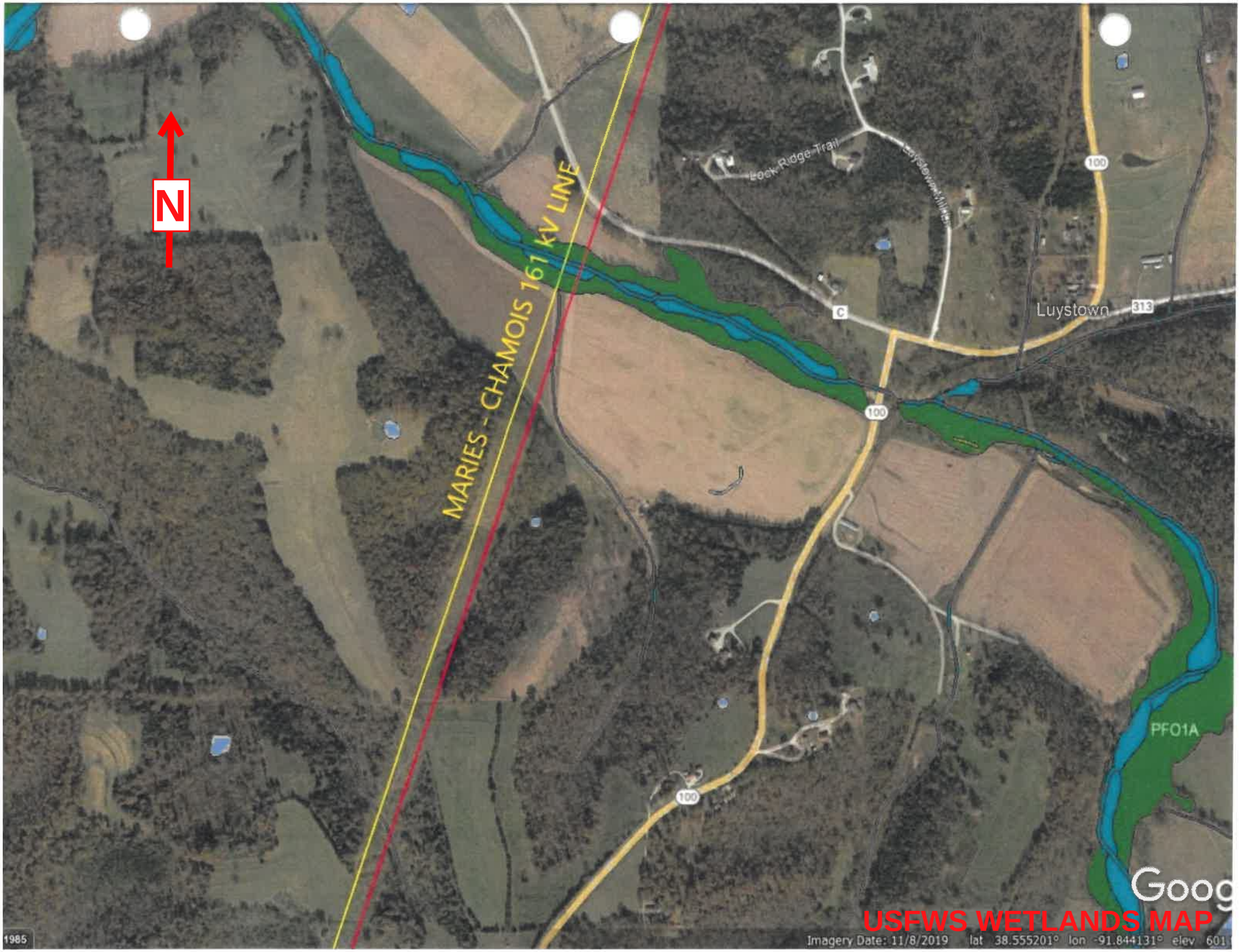

PFO1A
N
MARIES - CHAMOIS 161 kV LINE
319
317
316
315
K
Duderhoeffer Ln
Deer Creek Cemetery
1985
Imagery Date: 11/8/2019 lat 38.616610° lon -91.806285° elev 596 f
USFWS WETLANDS MAP



USFWS WETLANDS MAP

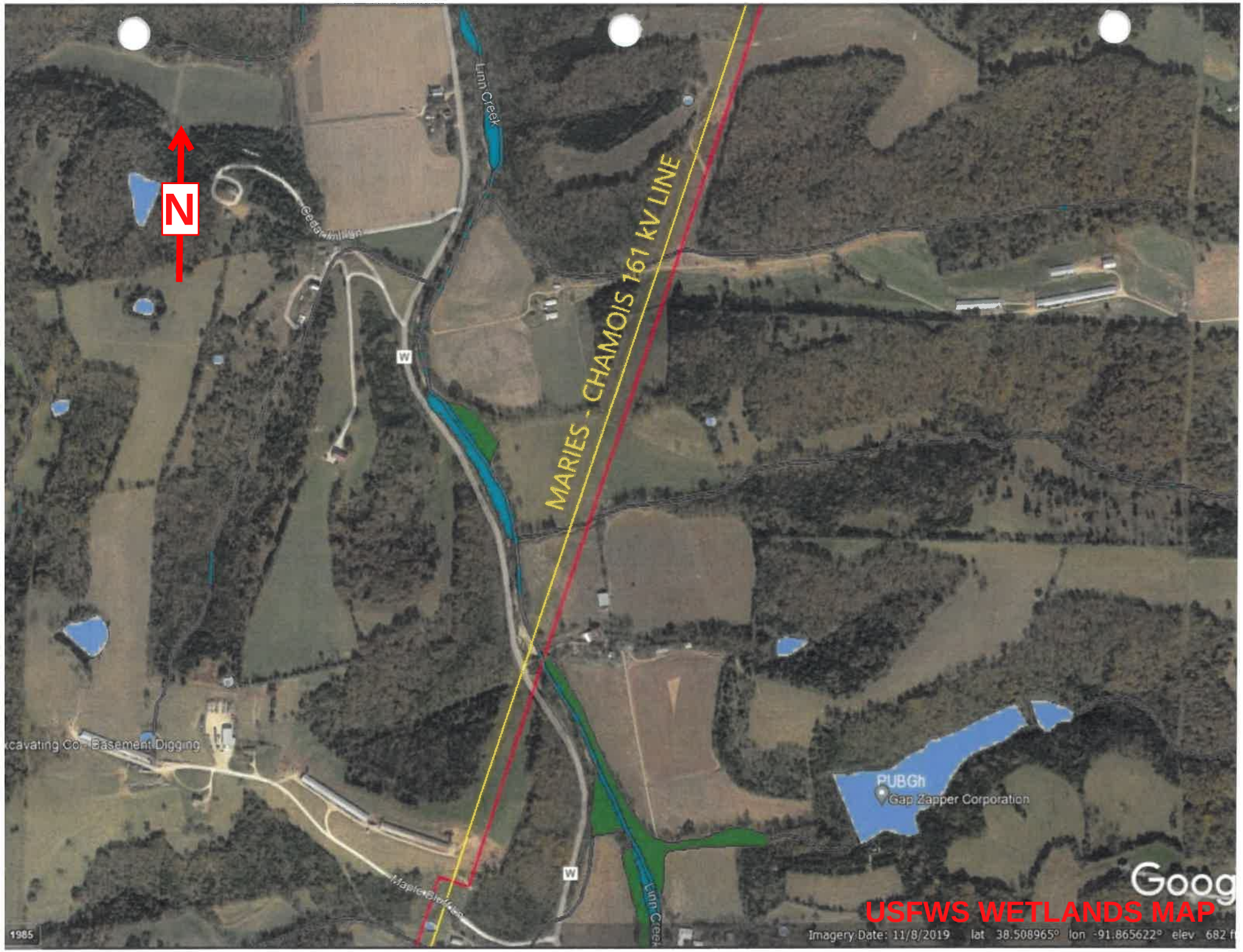

N
MARIES - CHAMOIS 161 KV LINE
100
317
Brandt Chain Saw
314
1985
Imagery Date: 11/8/2019 lat 38.585968° lon -91.832851° elev 790
USFWS WETLANDS MAP

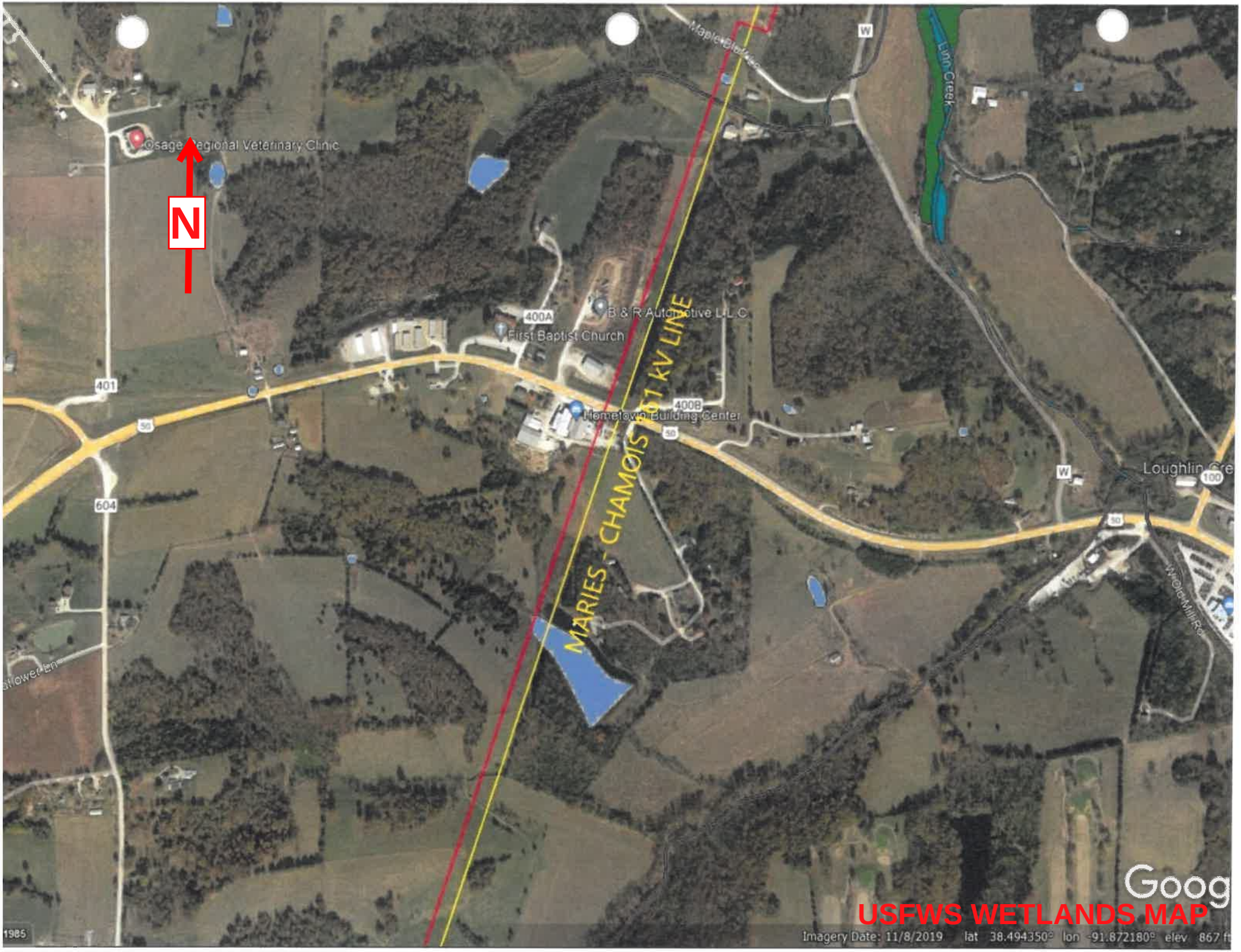

N
MARIES - CHAMOIS 161 kV LINE
Breezee Ln
100
C
1985
Imagery Date: 11/8/2019 lat 38.570586° lon -91.840536° elev 763
USFWS WETLANDS MAP


N
MARIES - CHAMOIS 161 kV LINE
Rock Ridge Trail
Luystown
313
100
C
PFO1A
1985
Imagery Date: 11/8/2019 lat 38.555201° lon -91.844131° elev 601
USFWS WETLANDS MAP


N
MARIES - CHAMOIS 161 kV LINE
423
423
423
421
421
100
100
Memory Ln
Briarcliff Rd
1985
Imagery Date: 11/8/2019 lat 38.539893° lon -91.851623° elev 661 f
USFWS WETLANDS MAP

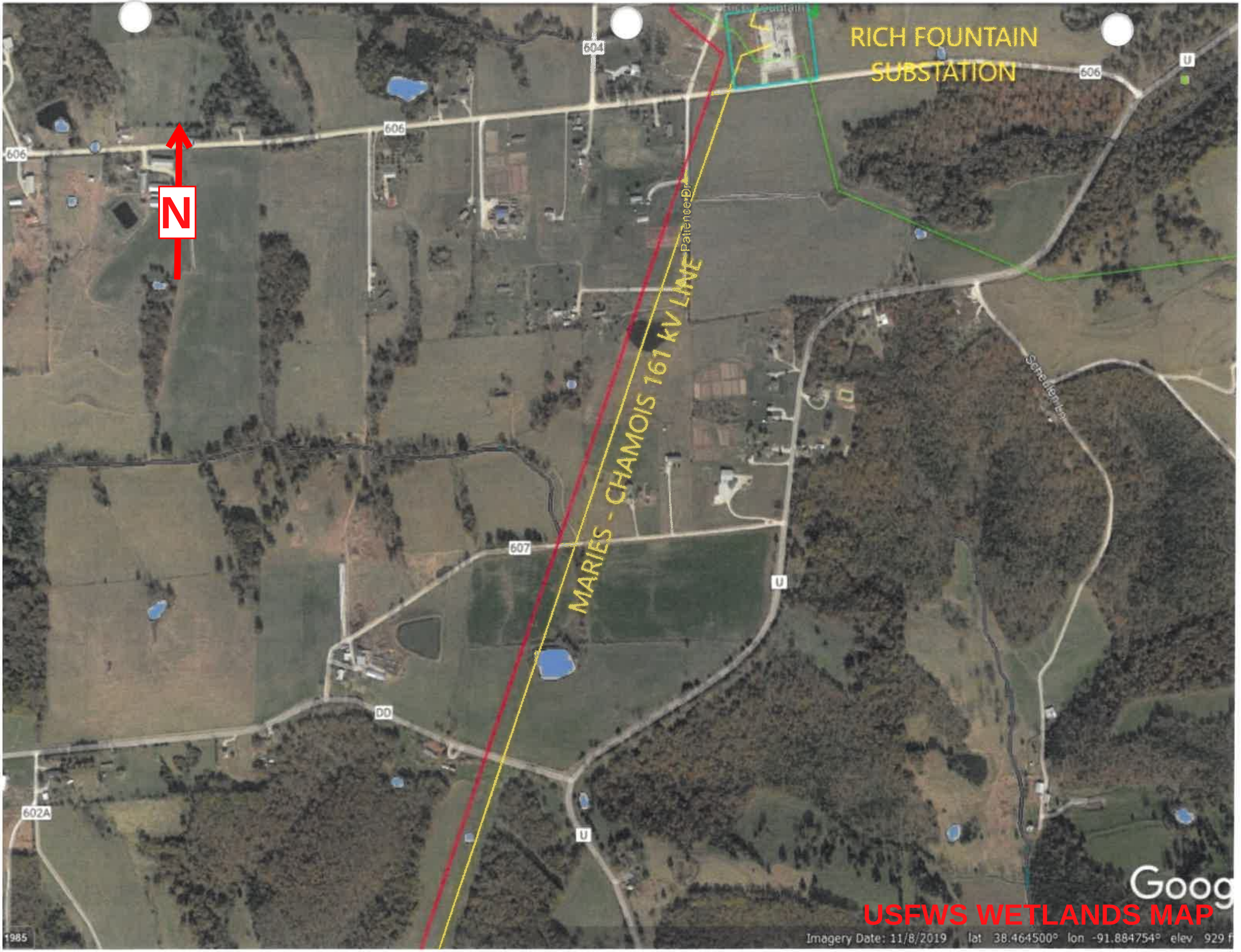

N
421
MARIES - CHAMOIS 161 kV LINE
310
100
100
W
307
Imagery Date: 11/8/2019 lat 38.524317° lon -91.859477° elev 733
USFWS WETLANDS MAP


N
Linn Creek
MARIES - CHAMOIS 161 kV LINE
W
W
Linn Creek
PUBGh
Gap Zapper Corporation
1985
Imagery Date: 11/8/2019 lat 38.508965° lon -91.865622° elev 682 f
USFWS WETLANDS MAP

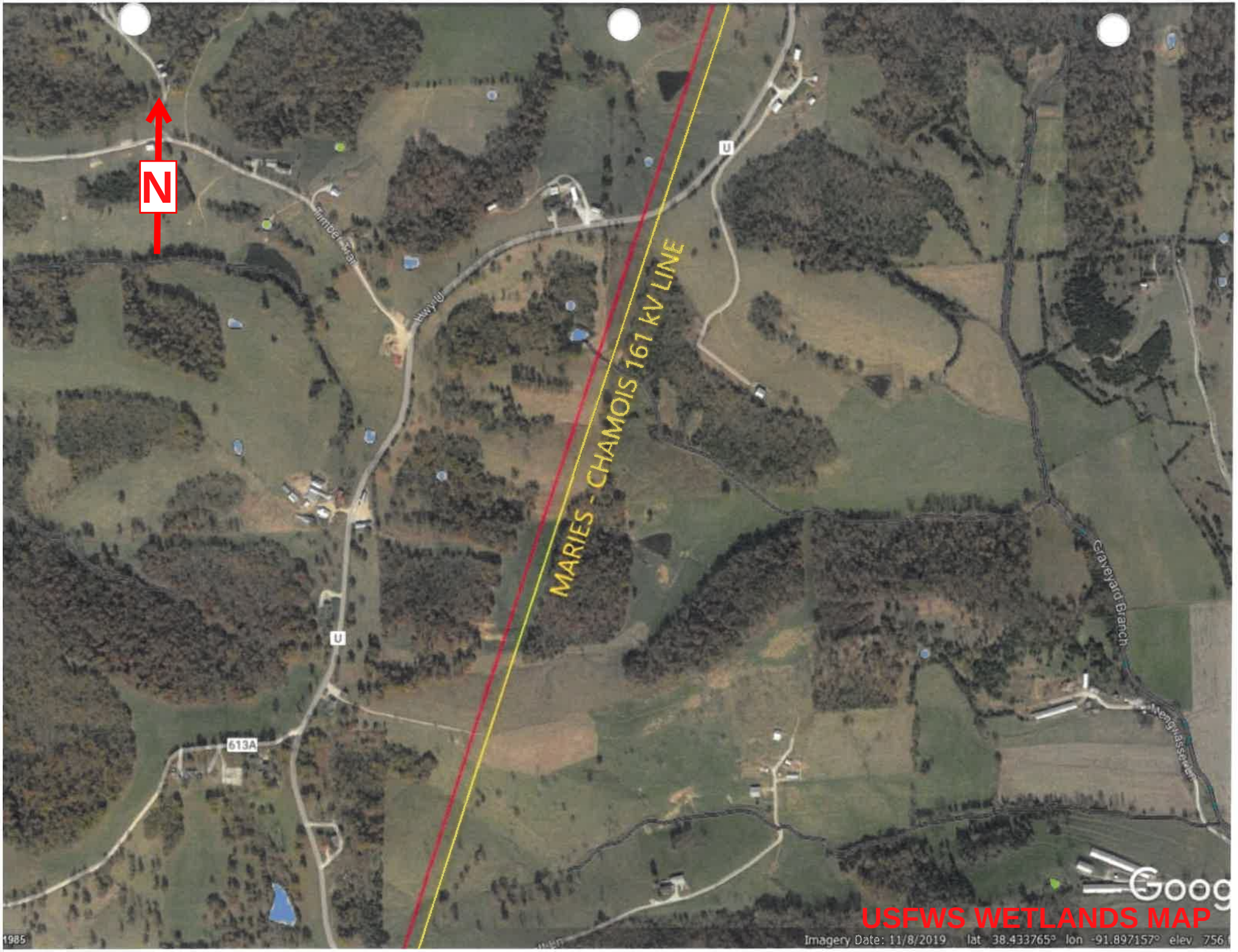


USFWS WETLANDS MAP

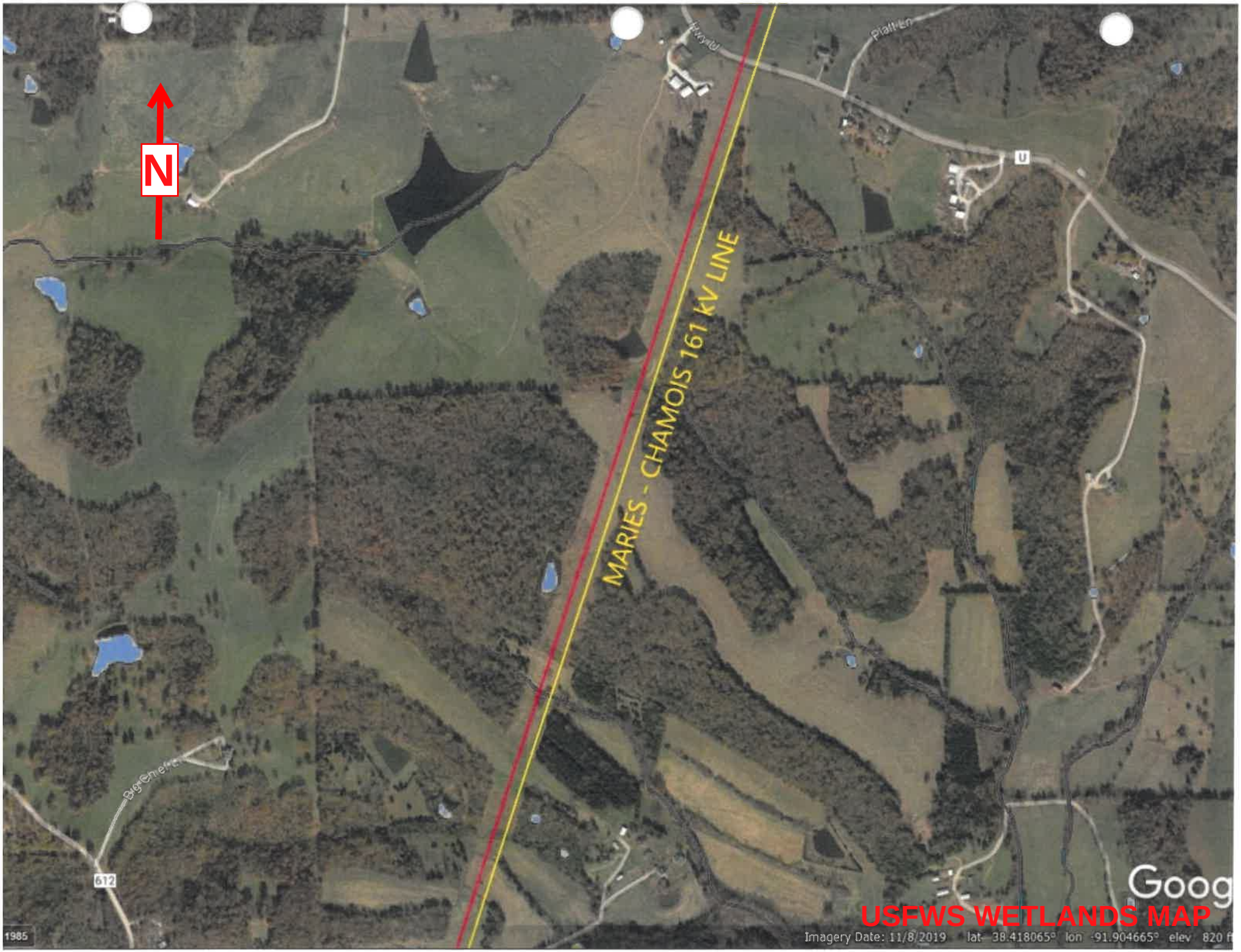

N
604
605
605
Richard Moffat Auction Center
MARIES - CHAMOIS 161 kV LINE
604
604
RICH FOUNTAIN
SUBSTATION
606
USFWS WETLANDS MAP
1985
Imagery Date: 11/8/2019 lat 38.478776° lon -91.878966° elev 826 ft


RICH FOUNTAIN
SUBSTATION
MARIES - CHAMOIS 161 kV LINE
N
606
604
607
U
DD
602A
Patience Dr
Schedlen Ln
Imagery Date: 11/8/2019 lat 38.464500° lon -91.884754° elev 929 f
1985
USFWS WETLANDS MAP

USFWS WETLANDS MAP

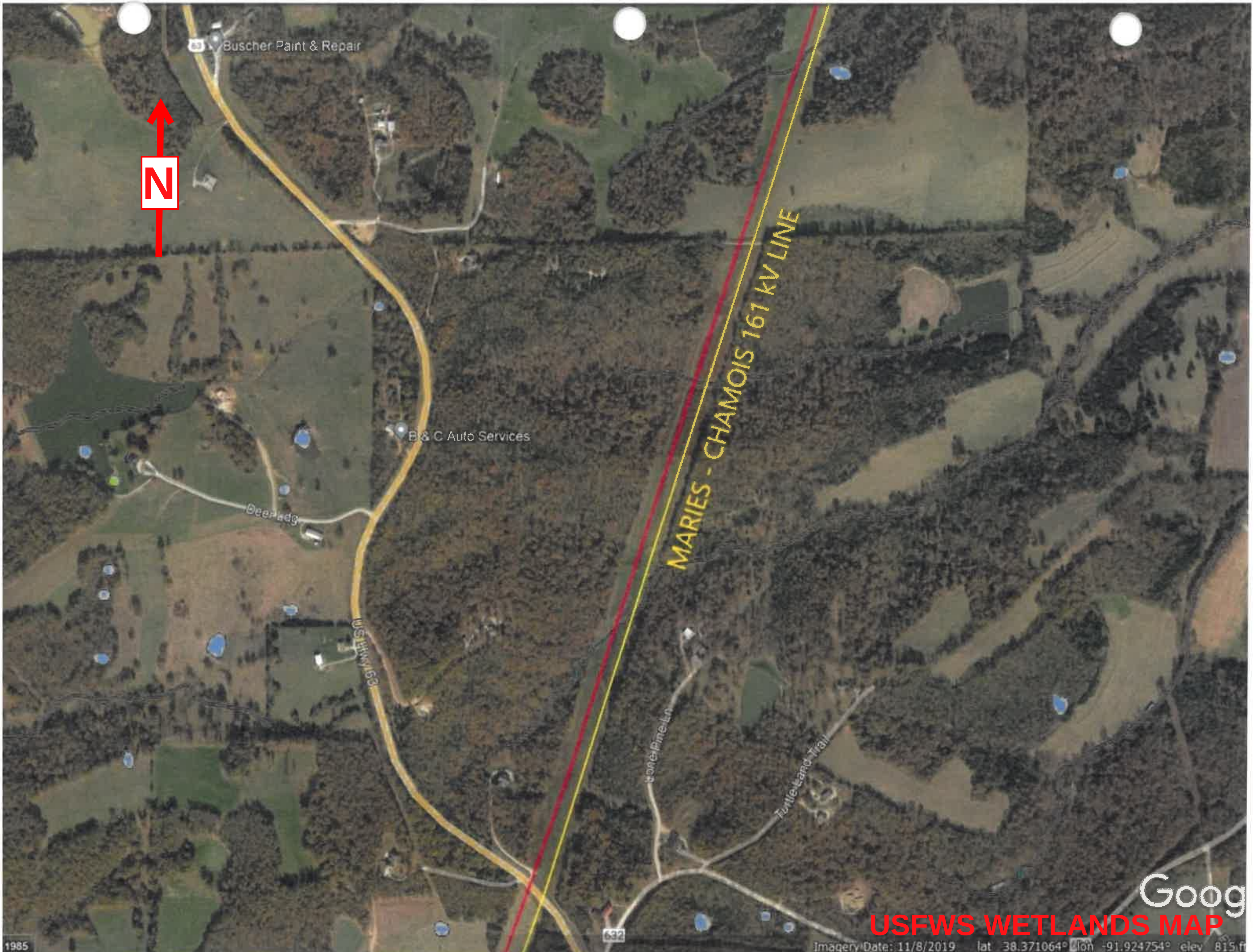


USFWS WETLANDS MAP

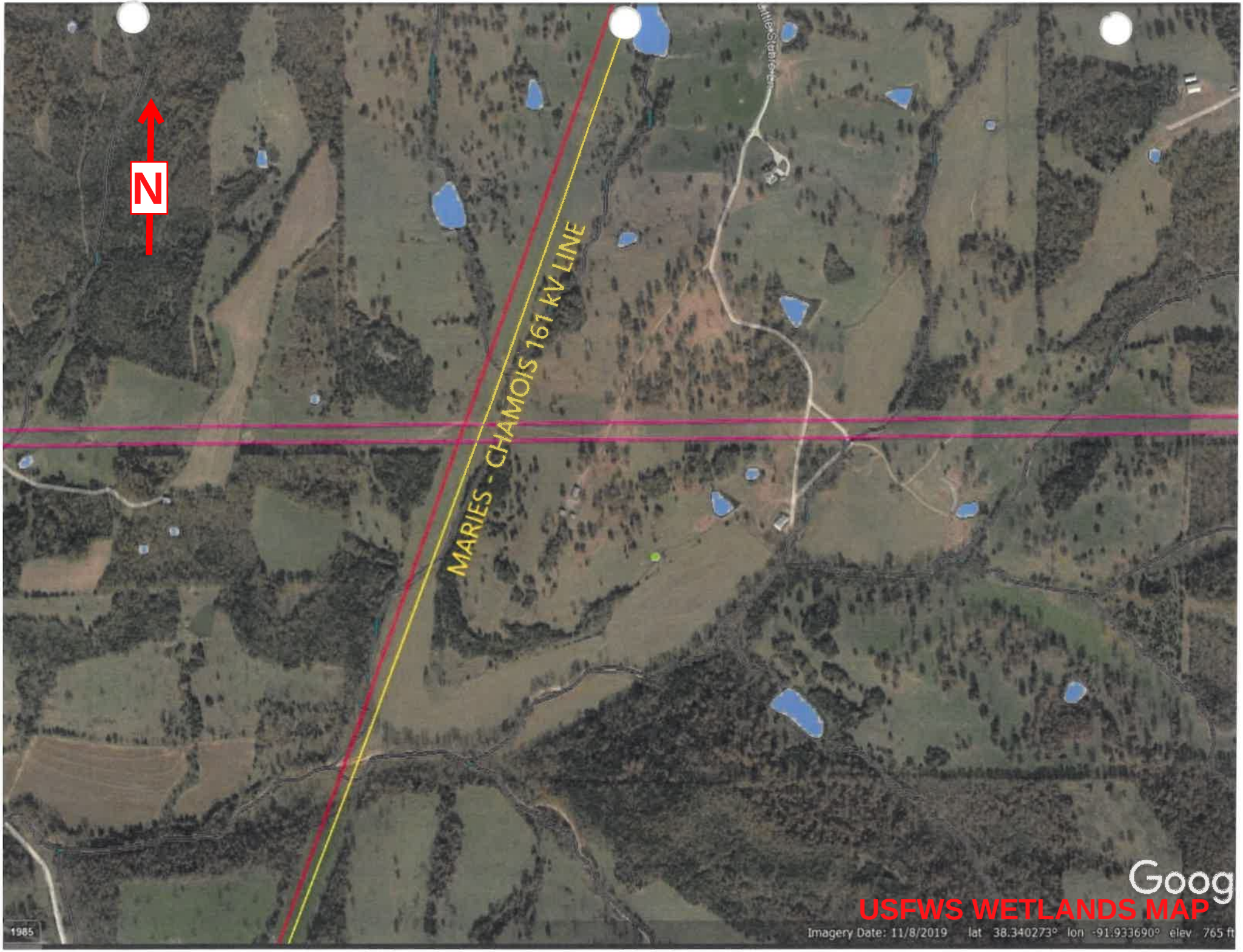

N
MARIES - CHAMOIS 161 kV LINE
612
1985
Imagery Date: 11/8/2019 lat 38.418065° lon -91.904665° elev 820 f
USFWS WETLANDS MAP

USFWS WETLANDS MAP

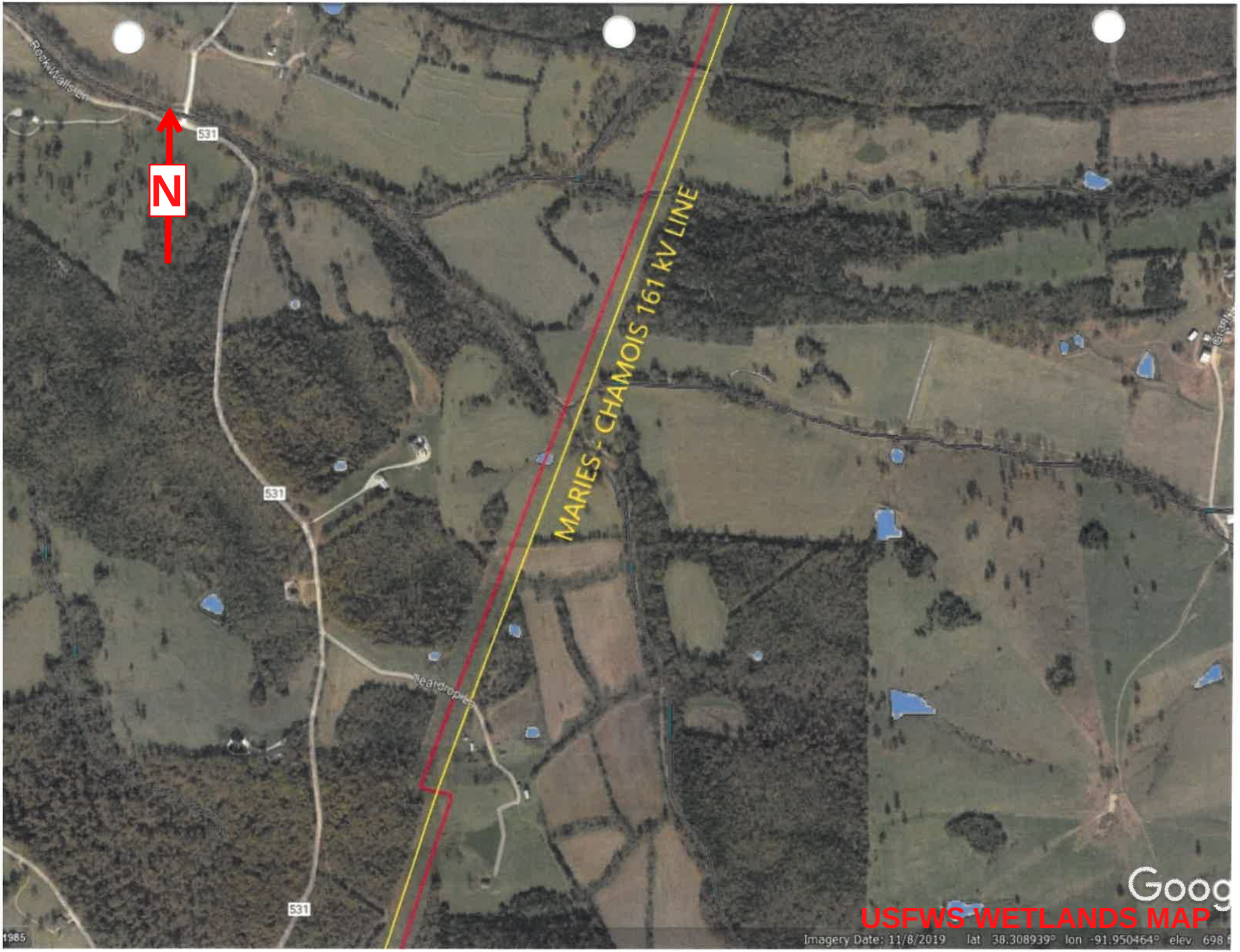
USFWS WETLANDS MAP


Buscher Paint & Repair
63
N
B & C Auto Services
Deer Ldg
US Hwy 63
MARIES - CHAMOIS 161 kV LINE
Lone Pine Ln
Turtle Land Trail
632
1985
USFWS WETLANDS MAP
Imagery Date: 11/8/2019 lat 38.371064° lon -91.924754° elev 815 ft

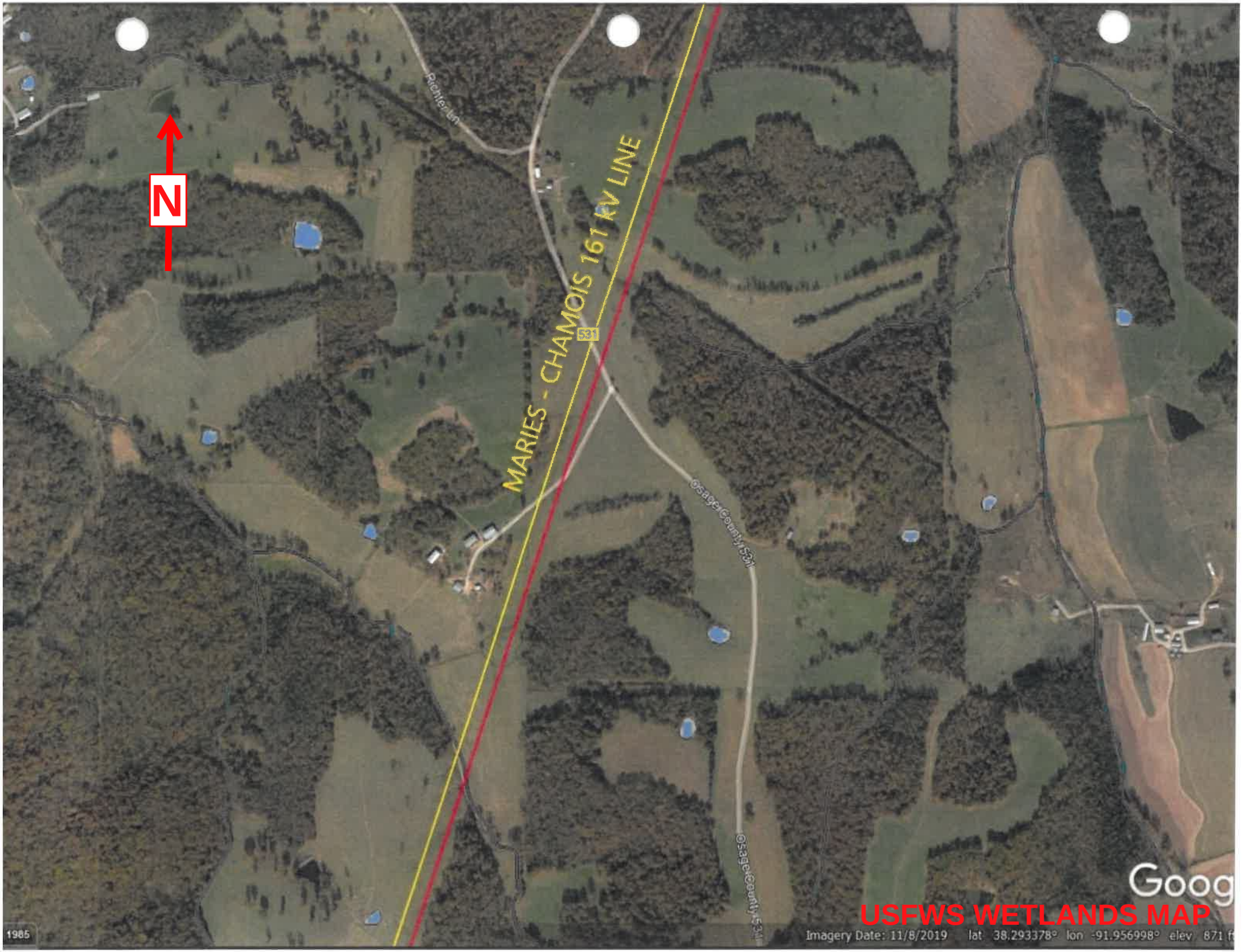

N
MARIES - CHAMOIS 161 kV LINE
USFWS WETLANDS MAP
Commute Parking lot
632
524
63
Cedar Patch Ln
Imagery Date: 11/8/2019 lat 38.355727° lon -91.927869° elev 873 f
1985


N
MARIES - CHAMOIS 161 KV LINE
USFWS WETLANDS MAP
Imagery Date: 11/8/2019 lat 38.340273° lon -91.933690° elev 765 ft
1985


N
Weideland Ln
Red Barn Butchering
522
MARIES - CHAMOIS161 kV LINE
522
Stratman Rd
P
P
P
P
1985
Imagery Date: 11/8/2019 lat 38.324653° lon -91.942419° elev 815 ft
USFWS WETLANDS MAP



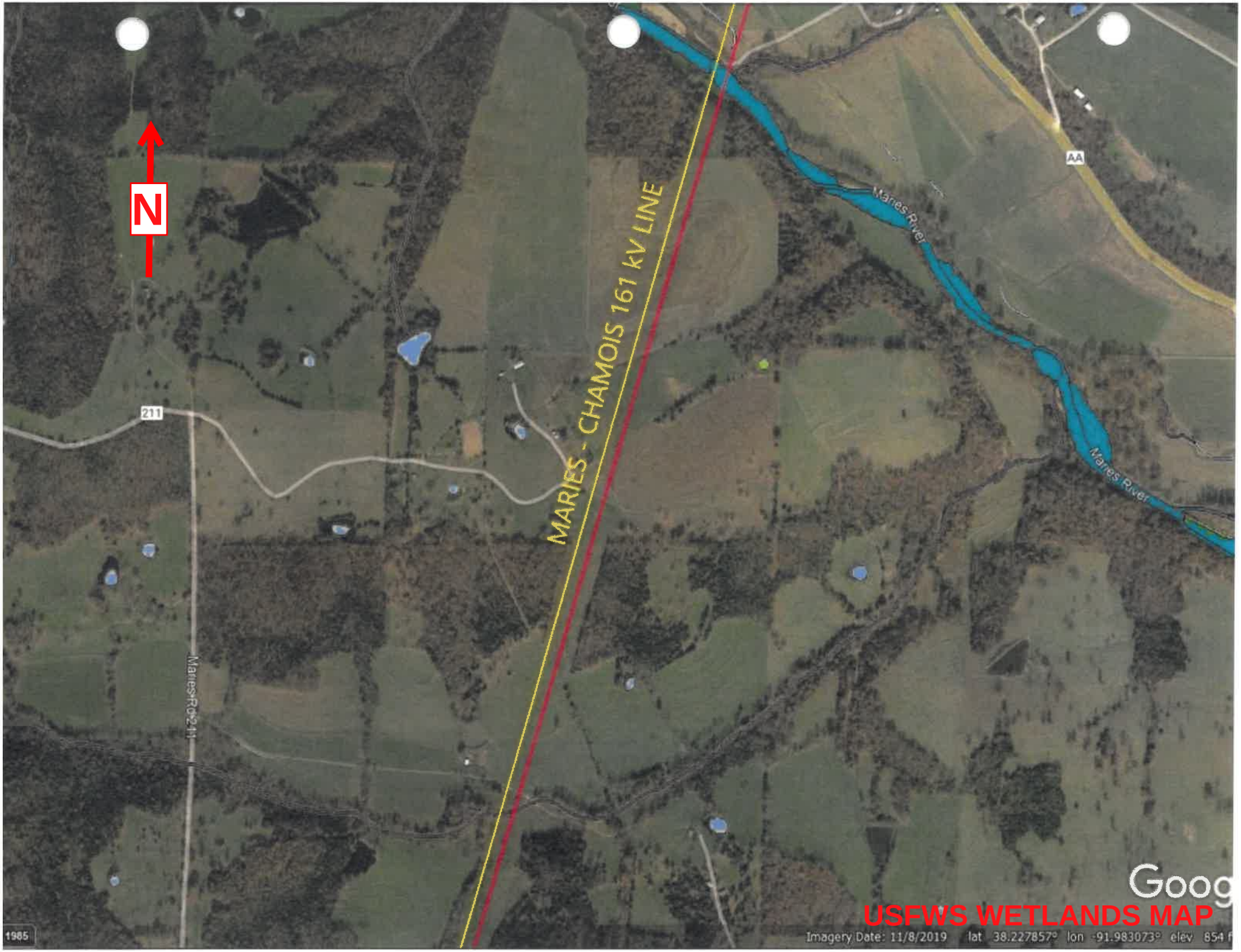
USFWS WETLANDS MAP


N
MARIES - CHAMOIS 161 KV LINE
531
Osage County 531
Osage County 531
1985
Imagery Date: 11/8/2019 lat 38.293378° lon -91.956998° elev 871 ft
USFWS WETLANDS MAP


N
MARIES - CHAMOIS 161 KV LINE
209
1985
Imagery Date: 11/8/2019 lat 38.277902° lon -91.964822° elev 877
USFWS WETLANDS MAP


N
MARIES - CHAMOIS 161 kV LINE
1985
Imagery Date: 11/8/2019 lat 38.261992° lon -91.971305° elev 861 f
USFWS WETLANDS MAP

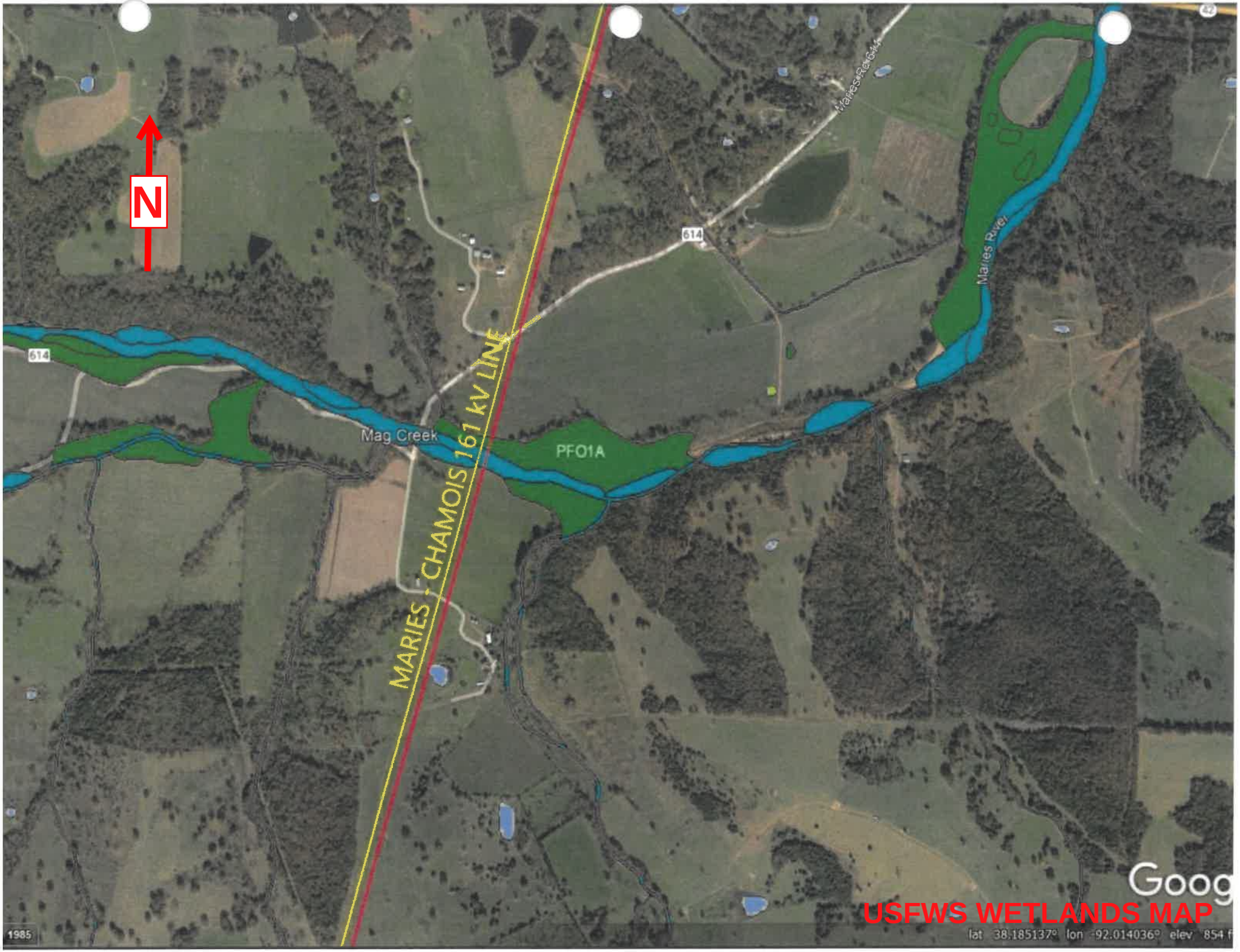
USFWS WETLANDS MAP

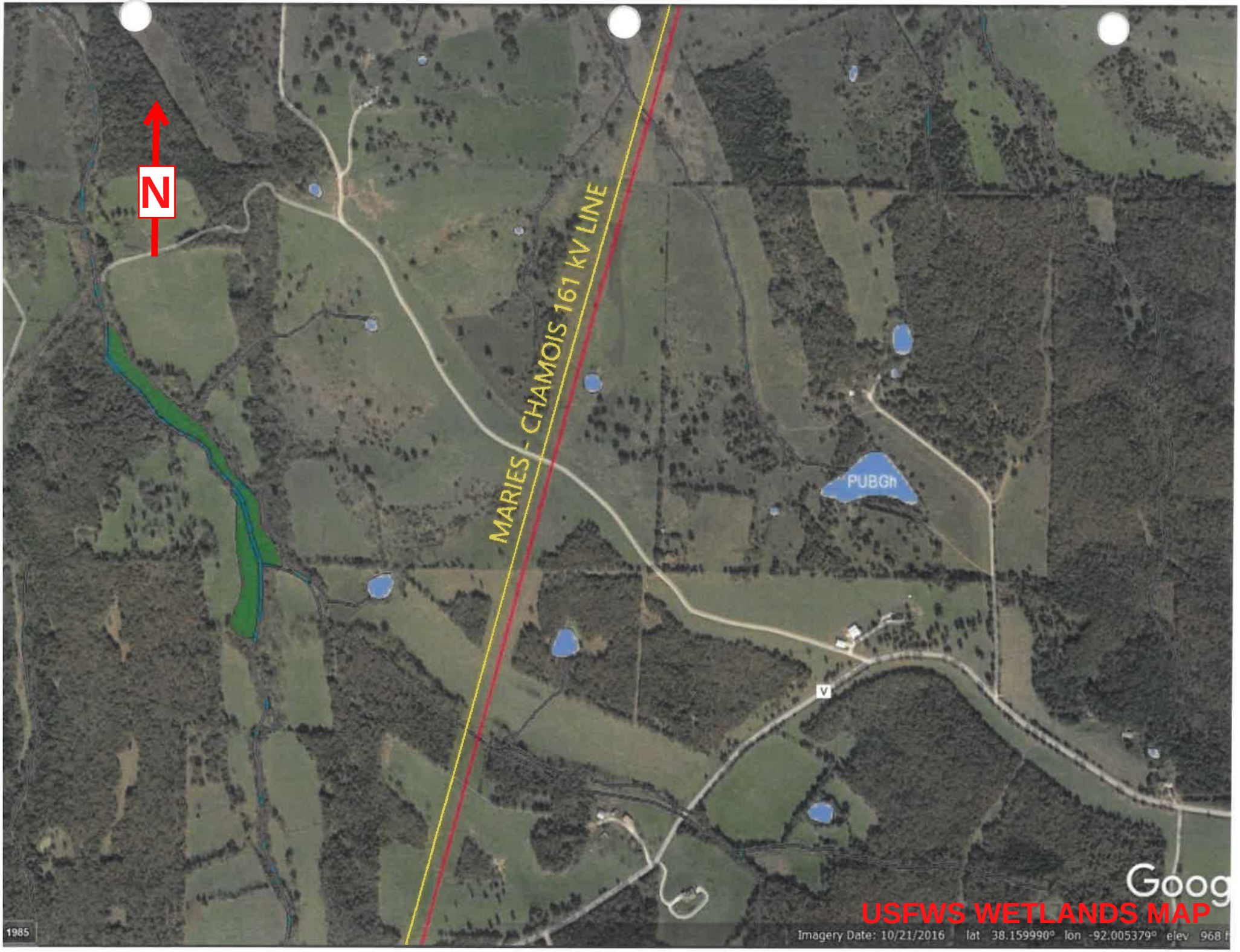


USFWS WETLANDS MAP

USFWS WETLANDS MAP

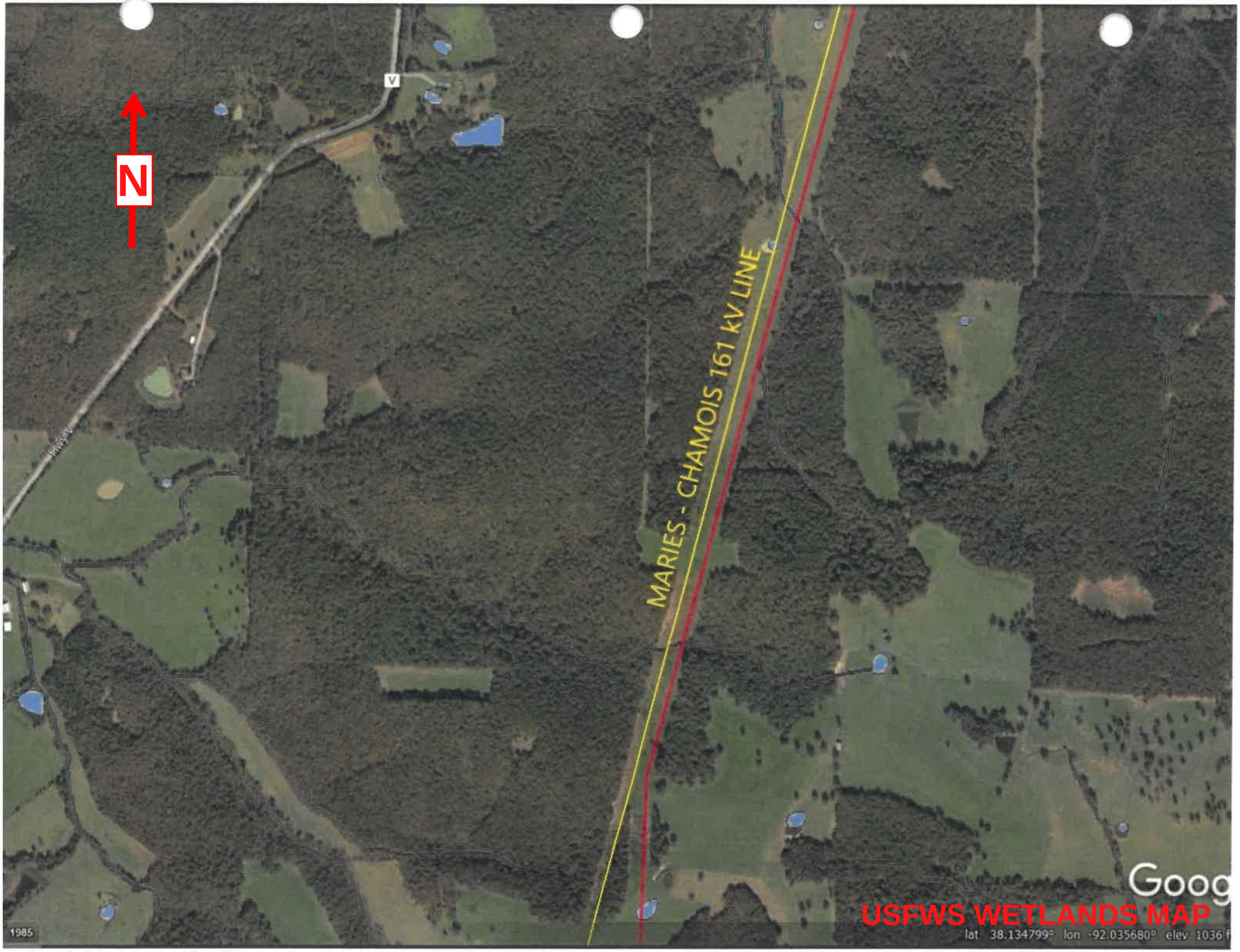

N
Keiser Branch
Keiser Branch
MARIES - CHAMOIS 161 kV LINE
VIENNA
SUBSTATION
42
42
Vienna
USFWS WETLANDS MAP
Imagery Date: 11/8/2019 lat 38.193935° lon -91.993484° elev 843ft
1985

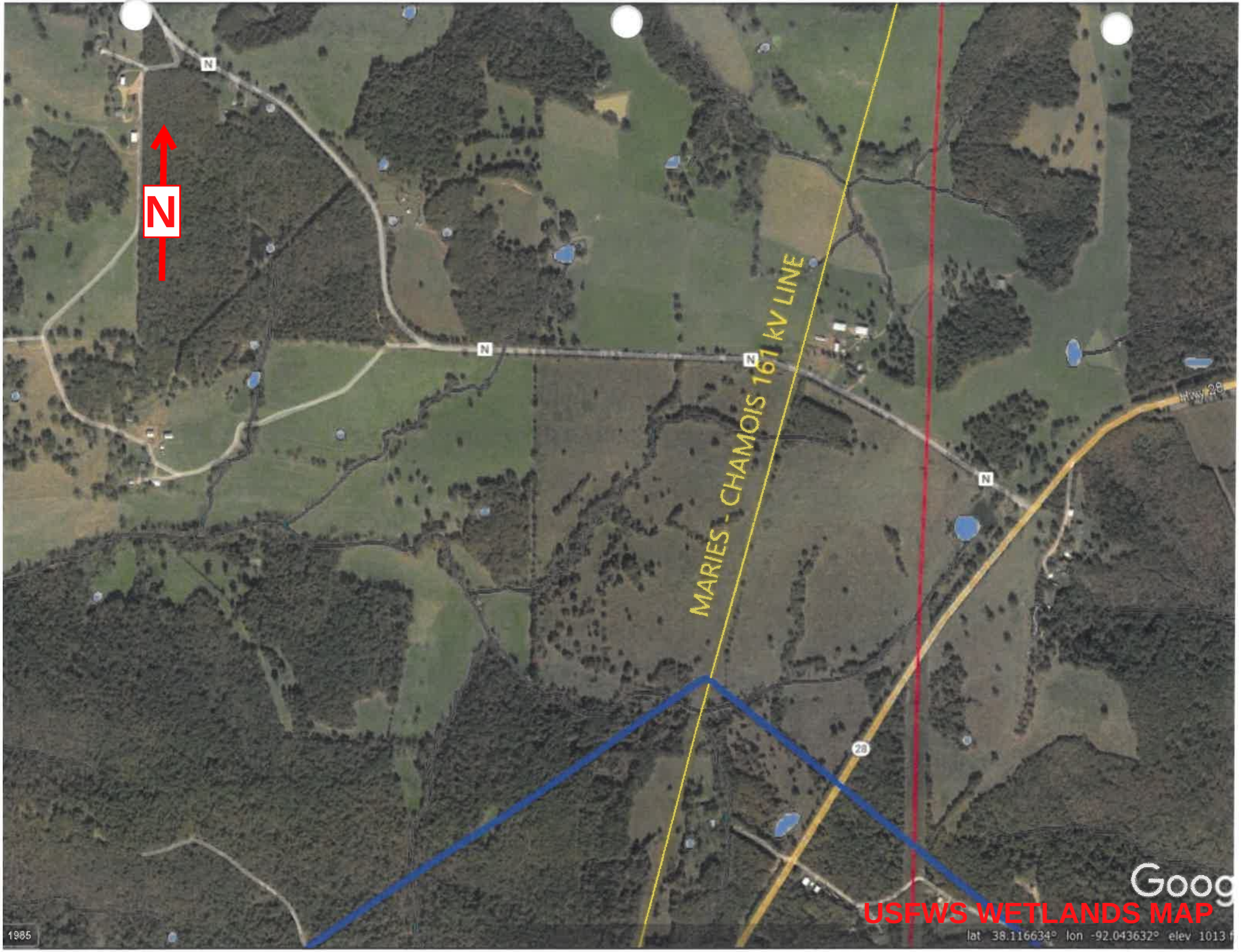

N
614
614
Mag Creek
PFO1A
MARIES - CHAMOIS 161 kV LINE
Maries River
1985
USFWS WETLANDS MAP



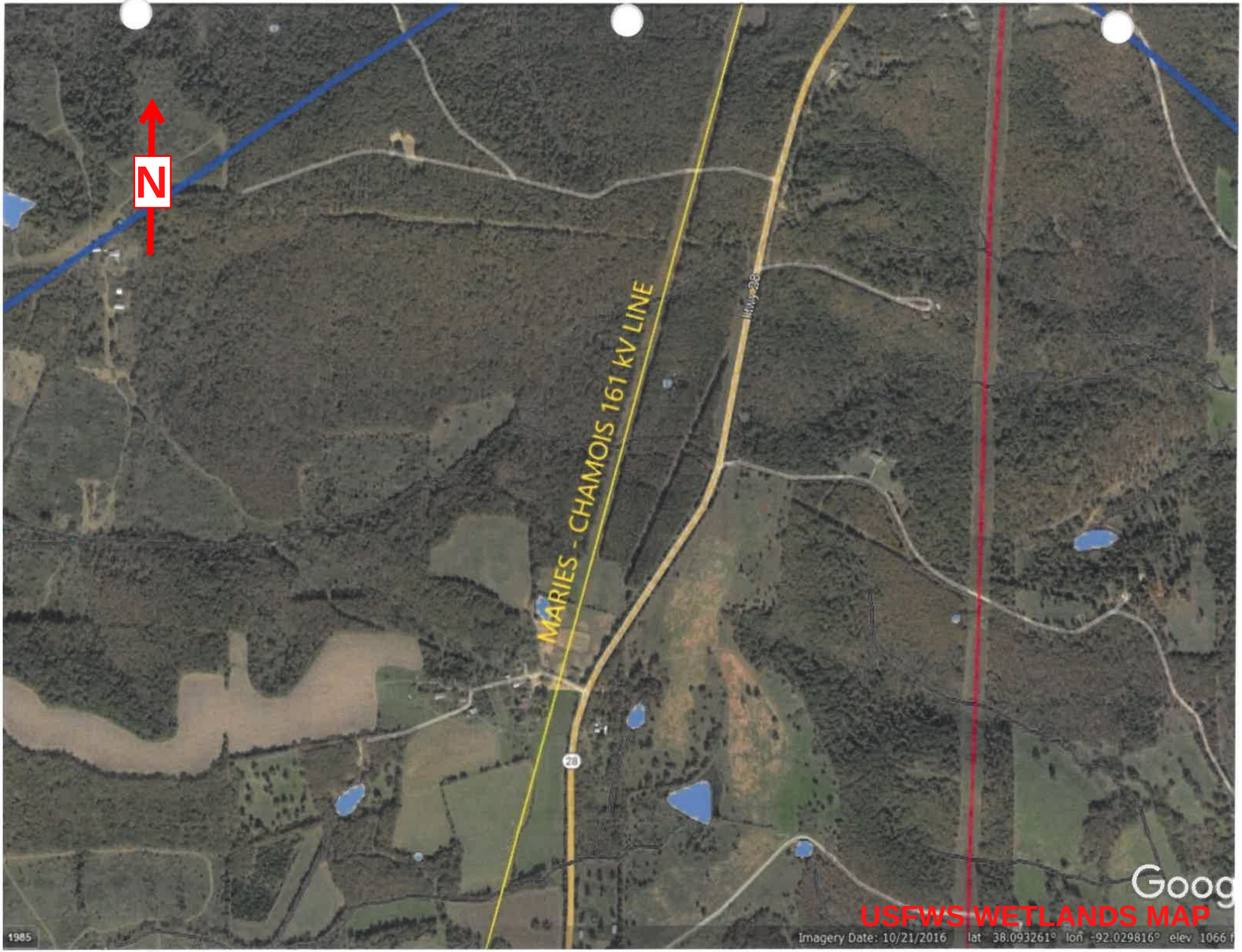
USFWS WETLANDS MAP


N
MARIES - CHAMOIS 161 kV LINE
617
V
614
617
617
USFWS WETLANDS MAP
1985
lat 38.150638° lon -92.027597° elev 1003


N
MARIES - CHAMOIS 161 kV LINE
USFWS WETLANDS MAP
1985
lat 38.134799° lon -92.035680° elev 1036 f



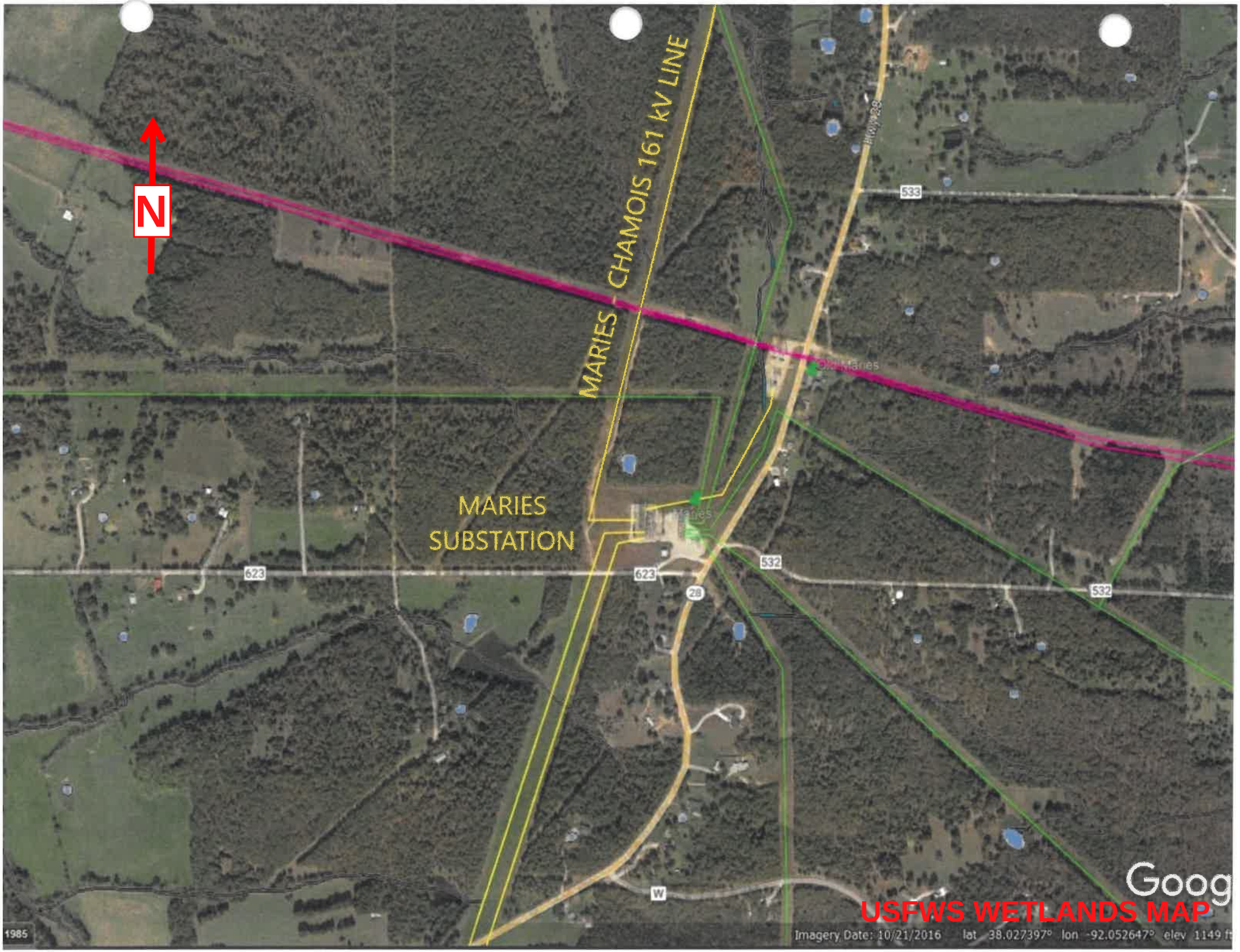
USFWS WETLANDS MAP


N
MARIES - CHAMOIS 161 kV LINE
Hwy 28
28
1985
Imagery Date: 10/21/2016
lat 38.093261° lon -92.029816° elev 1066 f
USFWS WETLANDS MAP


N
Hwy 28
PUBGH
MARIES - CHAMOIS 161 kV LINE
28
622
1985
Imagery Date: 10/21/2016 lat 38.076611° lon -92.034424° elev 1037 f
USFWS WETLANDS MAP

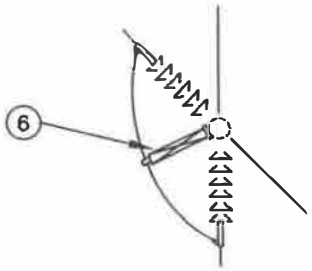
USFWS WETLANDS MAP


Maries River
N
MARIES - CHAMOIS 161 kV LINE
641
641
28
Imperial Oaks Dr
Hwy 28
USFWS WETLANDS MAP
1985
Imagery Date: 10/21/2016 lat 38.043749° lon -92.049087° elev 1072 f

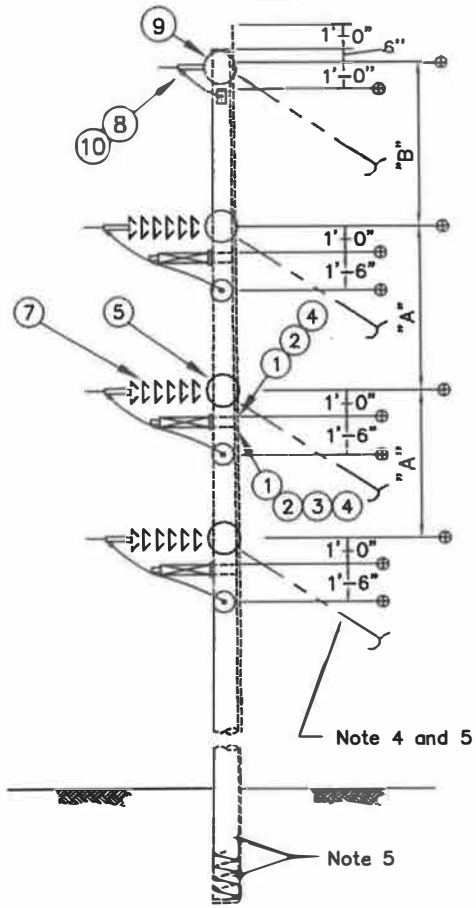

N
MARIES - CHAMOIS 161 kV LINE
MARIES
SUBSTATION
623
623
28
532
532
533
W
1985
Imagery Date: 10/21/2016 lat 38.027397° lon -92.052647° elev 1149 ft
USFWS WETLANDS MAP

Name of Water Crossing	Location (Township-Range-Section)
Greasy Creek	T45N-R7W-S13
Dooling Creek	T45N-R8W-S27
Deer Creek	T45N-R8W-S34
Cedar Creek	T44N-R8W-S20
Linn Creek	T43N-R9W-S1
Bexton Branch	T42N-R9W-S15
Buchler Creek	T42N-R9W-S15
Wansing Branch	T41N-R9W-S30
Maries River	T40N-R10W-S1
Keiser Branch	T40N-R10W-S24
Maries River	T40N-R10W-S26
Mag Creek	T39N-R10W-S3

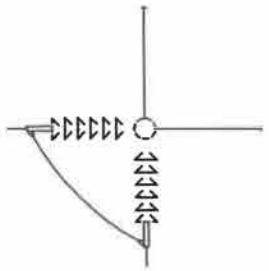
INDEX OF DRAWINGS



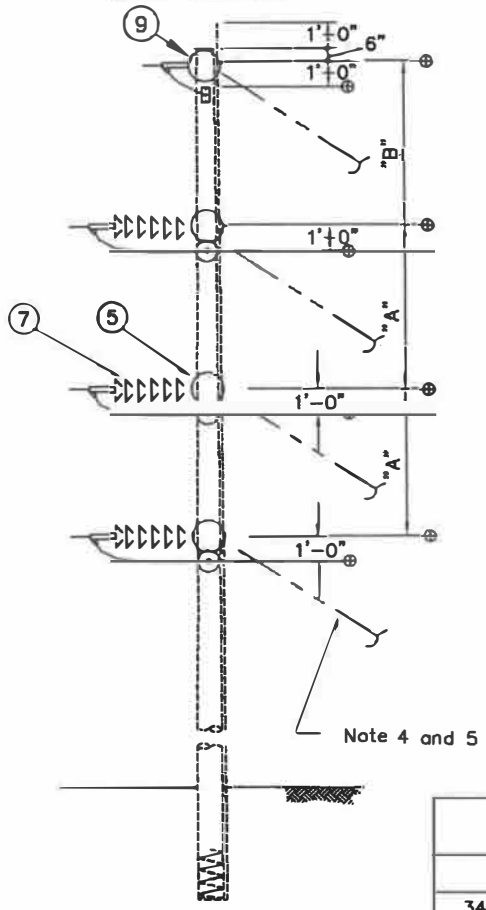
PLAN VIEW



TS-5GA



PLAN VIEW



TS-5G

DWG. REF.	TS- 5a	5	DESCRIPTION	ITEM	DET.	CODE No.
1	6	–	7/8" Bolt, Machine, by req'd length	c		
2	6	–	Washer, Curved,4"sq x1/4",15/16" hole	d		
3	3	–	Washer, Spring, 15/16" hole	aw		
4	6	–	7/8" Locknut, MF Type	ek		
5	6	6	GUY ATTACHMENT, MEDIUM DUTY	–	TG-25D	
6	3	–	INSULATOR,HORIZONTAL POST, W/CLAMP	–	TM-3B	
7	6	6	INSULATOR ASSEMBLY, DEADEND	–	TM-2D	
8	2	2	OHGW ASSEMBLY, DEADEND	–	TM-4G	
9	2	2	EYE BOLT GUY ATTACH, MED DUTY	–	TG-25C-3/4E	
10	2	2	OPGW ASSEMBLY, DEADEND	–	TM-4G-OP	

LIST OF MATERIALS

NOTES:

1. Metal shims should be used to adjust post insulators when brackets are located on uneven pole surfaces.
2. Minimum line angle for TS-5GA is 50 degrees. Maximum line angle for TS-5G is 90 degrees.
3. Drawing TE-1 gives guidence to subassembly alternatives.
4. For guying arrangements, see drawing TMG-2G.
5. The following materials are to be specified on plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLY, GUYING ASSEMBLIES, ANCHORS, AND ANY ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

DIMENSIONS A & B		
VOLTAGE	A	B
34kv & 46kv	6'-0"	6'-0"
69 kv	7'-0"	7'-0"

TRANSMISSION LINE STRUCTURE

VERTICAL DOUBLE DEADEND

(69kv MAXIMUM)

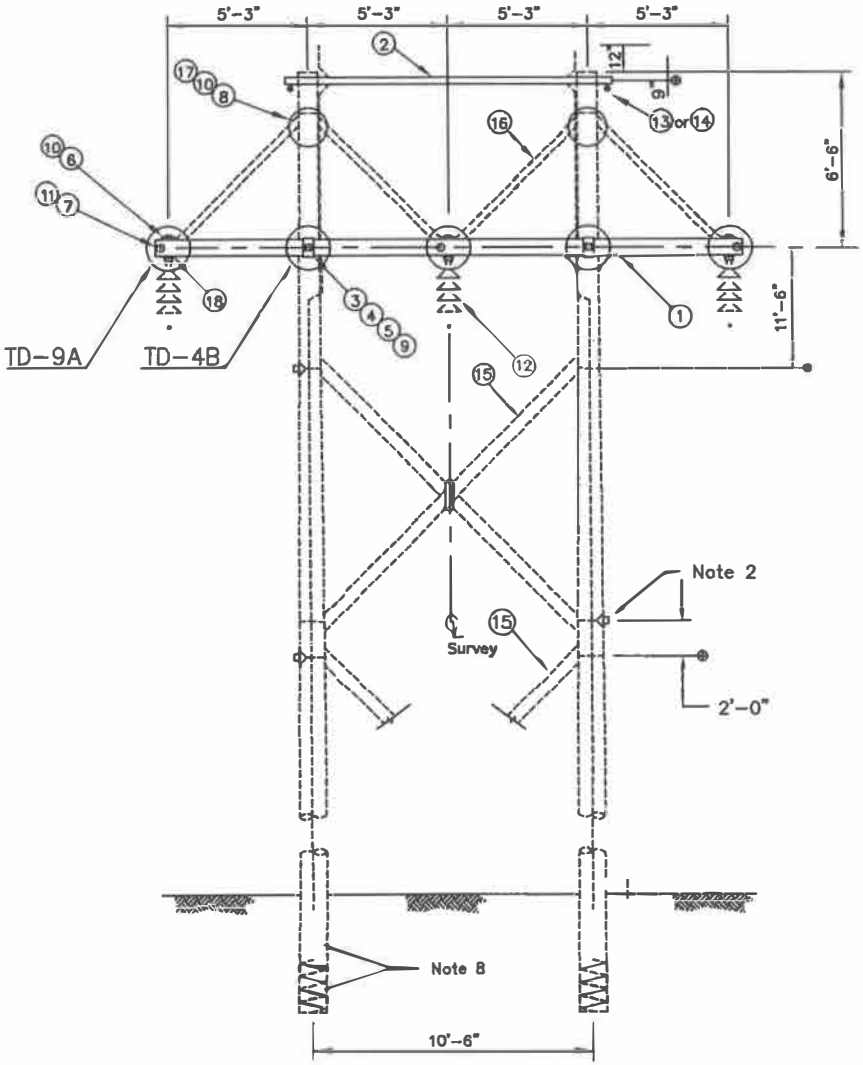
NO.	REVISION	DATE
1	REVISED	10/4/13

Aug., 1986

TS-5G,5GA

Reissued 03/98

1



TH-1G

	TH-1G			X-BRACE		LIST OF MATERIALS			
DWG. REF.	V0	V1	V4	X	XX	DESCRIPTION	ITEM	DET.	CODE No.
1			1	–	–	X-Arm, 5-5/8"X7-3/8"X22'-0", #41		TCD-20	
2			1	–	–	OHGW Support Assembly, double bolt	–	TM-7C	
3			2	–	–	Plate, X-Arm Reinforcing	eg		
4			2	–	–	7/8" Bolt, Machine, by req'd length	c		
5			2	–	–	Washer, Curved,4"sq x1/4",15/16" hole	d		
6			3	–	–	3/4" Bolt, Shoulder Eye, by req'd l.	o		
7			3	–	–	1/2" Bolt, Washer Head, w/Washer Nut	c		
8			2	–	–	Washer, Curved,4"sq x1/4",13/16" hole	d		
9			2	–	–	7/8" Locknut, MF Type	ek		
10			5	–	–	3/4" Locknut, MF Type	ek		
11			3	–	–	1/2" Locknut, MF Type	ek		
12			3	–	–	Insulator Assembly, Tangent	–	TM-2A	
13			1	–	–	OHGW Assembly, Tangent	–	TM-4A	
14			1	–	–	OPGW Assembly, Tangent	–	TM-4B-OP	
15			–	1	2	X-Brace Assembly	vx	TM-110A	
16			4	–	–	Brace, X-Arm,3-3/8"x5-3/8"x req'd l.			
17			2	–	–	3/4" Bolt, Machine, by req'd length	c		
18			3	–	–	Washer, Sq 4"x3/16", 13/16" Hole	d		

NOTES:

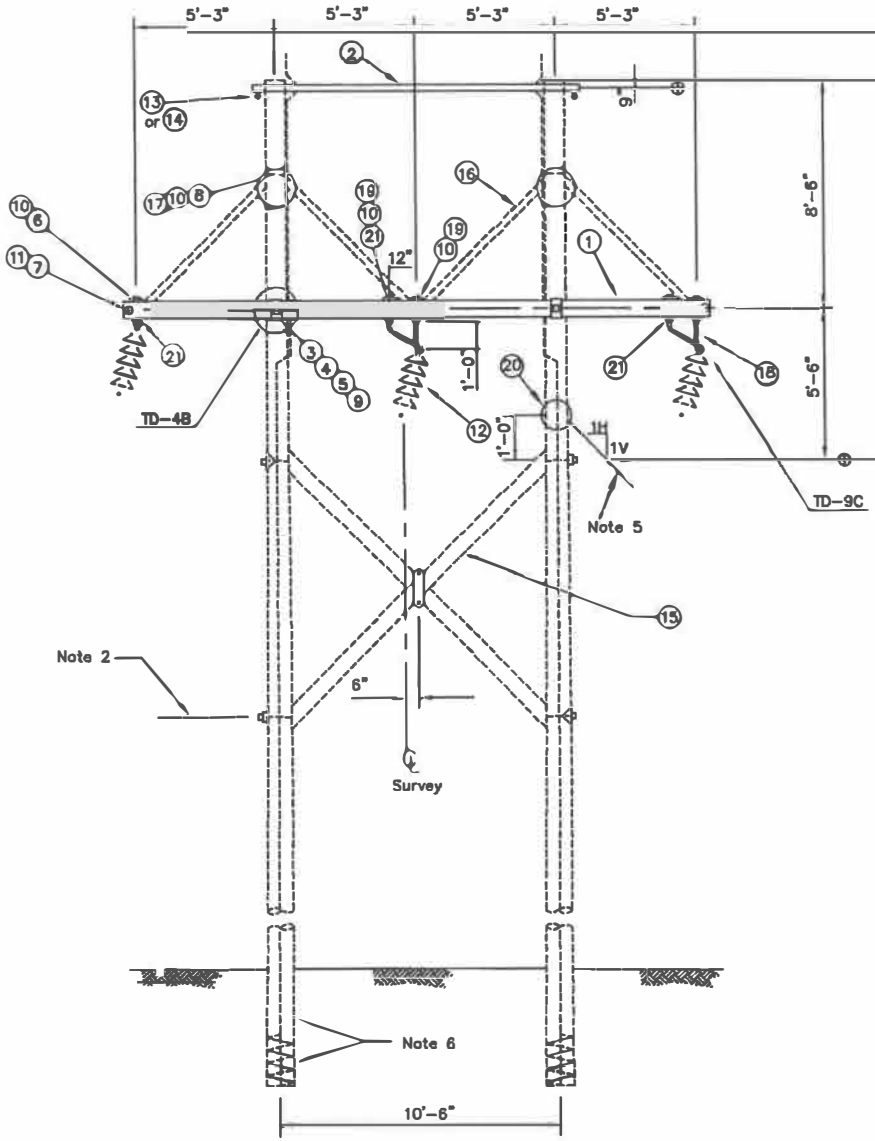
1. Description and materials for structures are as follows:
   TH-1G – – – no braces
   TH-1GX– – – same as TH-1G w/one X-Brace
   TH-1GV0 – – two outside X-Arm braces
   TH-1GV0X– – same as TH-1GV0 w/one X-Brace
   TH-1GV1 – – two inside X-Arm braces
   TH-1GV1X – – same as TH-1GV1 w/one X-Brace
   TH-1GV4 – – four X-Arm braces
   TH-1GV4X– – same as TH-1GV4 w/one X-Brace
   (For two X-Braces, structure designation to use "XX" suffices.)
2. Field drilled holes shall be thoroughly treated.
3. See the TPF-5 drawing for pole framing guide.
4. Drawings TE-1 and TE-2 give guidence to subassembly alternatives.
5. The following materials are to be specified on plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLIES, AND ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

TRANSMISSION LINE STRUCTURE

TANGENT H-FRAME
(69 kv MAXIMUM)

NO.	REVISION	DATE
		LB 3/18/21

TH-1G SERIES



TH-1CG

DWG. REF.	TH-1G VO	TH-1G V1	TH-1G V4	X-BRACE X	X-BRACE XX	DESCRIPTION	ITEM	DET.	CODE No.
1			1	–	–	X–Arm, 5–5/8"X7–3/8"X22'–0", #41		TCD–20	
2			1	–	–	OHGW Support Assembly, double bolt	–	TM–7C	
3			2	–	–	Plate, X–Arm Reinforcing	eg		
4			2	–	–	7/8" Bolt, Machine, by req'd length	c		
5			2	–	–	Washer, Curved,4"sq x1/4",15/16" hole	d		
6			1	–	–	3/4" Bolt, Shoulder Eye, by req'd l.	o		
7			3	–	–	1/2" Bolt, Washer Head, w/Washer Nut	c		
8			2	–	–	Washer, Curved,4"sq x1/4",13/16" hole	d		
9			2	–	–	7/8" Locknut, MF Type	ek		
10			7	–	–	3/4" Locknut, MF Type	ek		
11			3	–	–	1/2" Locknut, MF Type	ek		
12			3	–	–	Insulator Assembly, Tangent	–	TM–2A	
13			1	–	–	OHGW Assembly, Tangent	–	TM–4A	
14			1	–	–	OPGW Assembly, Tangent	–	TM–4B–OP	
15			–	1	2	X–Brace Assembly	vx	TM–110A	
16			4	–	–	Brace, X–Arm,3–3/8"x5–3/8"x req'd l.			
17			2	–	–	3/4" Bolt, Machine, by req'd length	c		
18			2	–	–	Bracket, Swinging Angle, 3/4" bar	cr		
19			4	–	–	3/4" Bolt, Clevis, by req'd length	ef		
20			1	–	–	Guy Attachment, Med Duty	–	TG–25C	
21			7	–	–	Washer, Flat,4"sq x 3/16",13/16" hole	d		

NOTES:

1. Description and materials for structures are as follows:
   TH–1CG – – – no braces
   TH–1CGX – – same as TH–1CG w/one X–Brace
   TH–1CGVO– – two outside X–Arm braces
   TH–1CGVOX – same as TH–1CGVO w/one X–Brace
   TH–1CGVI – – two inside X–Arm braces
   TH–1CGVIX – same as TH–1CGVI w/one X–Brace
   TH–1CGV4– – four X–Arm braces
   TH–1CGV4X – same as TH–1CGV4 w/one X–Brace
   (For two X–Braces, structure designation to use "XX" suffices.)
2. Field drilled holes shall be thoroughly treated.
4. Drawings TE–1 and TE–2 give guidence to subassembly alternatives.
5. The following materials are to be specified on plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLIES, AND ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

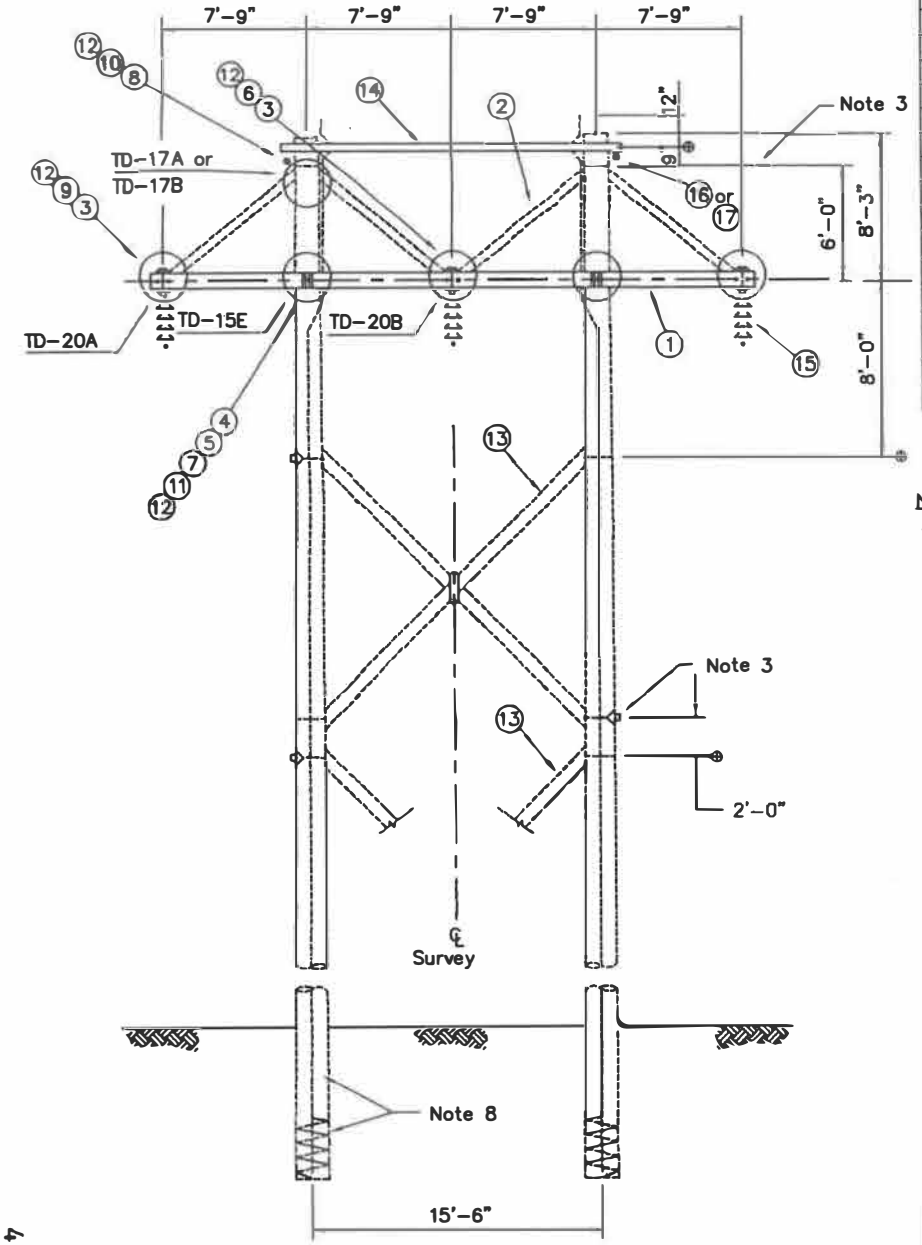
TRANSMISSION LINE STRUCTURE

SMALL ANGLE H–FRAME

(69kv MAXIMUM)

NO.	REVISION	DATE
		LB 3/18/21

TH–1CG SERIES



DWG. REF.	TH-10	X-BRACE					LIST OF MATERIALS			
		V0	V1	V4	X	XX	DESCRIPTION	ITEM	DET.	CODE No.
1	2	2	2	2	–	–	X-Arm, 3-5/8"x9-3/8"x32'-0", #71		TCD-32	
2	–	2	2	4	–	–	Brace, X-Arm, 3-3/8"x5-3/8"x req'd			
3	3	3	3	3	–	–	Spacer Assembly,see construction spec		TM-111B	
4	4	4	4	4	–	–	Plate, Gain, 3"x9-1/2"x1/4"			
5	4	4	4	4	–	–	Plate, Ribbed Tie, 3"x9-1/2"x1/4"			
6	–	–	1	1	–	–	7/8" D.E Bolt, Bent w/2 recessed nuts	gy		
7	2	2	2	2	–	–	7/8" Threaded Rod, w/2 nuts			
8	–	2	2	2	–	–	7/8" Bolt, Machine, by req'd length			
9	–	2	–	2	–	–	7/8" Bolt, Bent w/ recessed nut			
10	–	2	2	–	–	–	Washer Curved, 4"sq x1/4",15/16" hole			
11	2	2	2	2	–	–	Washer, Spring, 15/16" hole			
12	4	8	8	10	–	–	7/8" Locknut, MF Type			
13	–	–	–	–	1	2	X-Brace Assembly	vx	TM-110B	
14	1	1	1	1	–	–	OHGW SUPPORT ASSEMBLY	–	TM-7C	
15	3	3	3	3	–	–	INSULATOR ASSEMBLY, TANGENT	–	TM-2A	
16	1	1	1	1	–	–	OHGW ASSEMBLY, TANGENT	–	TM-4A	
17	1	1	1	1	–	–	OPGW ASSEMBLY, TANGENT	–	TM-4B-OP	

NOTES:

1. Description and materials for structures are as follows:
   TH-10 – – – no braces
   TH-10X– – – same as TH-10 w/one X-Brace
   TH-10V0 – – two outside X-Arm braces
   TH-10V0X– – same as TH-10V0 w/one X-Brace
   TH-10V1 – – two inside X-Arm braces
   TH-10V1X – – same as TH-10V1 w/one X-Brace
   TH-10V4 – – four X-Arm braces
   TH-10V4X– – same as TH-10V4 w/one X-Brace
   (For two X-Braces, structure designation to use "XX" suffices.)
2. Double X-Arms shall be shipped with factory assembled hardware.
3. Field drilled holes shall be thoroughly treated.
4. Reference the pole framing drawing for additional dimensions.
5. For other requirements, refer to REA specification T-7.
6. For strength limitations of OHGW support assembly, see TM-7B or TM-7C.
7. Drawing TE-2 gives guidence to subassembly alternatives.
8. The following materials ore to be specified on plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLIES, AND ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

FOR 69KV CONSTRUCTION

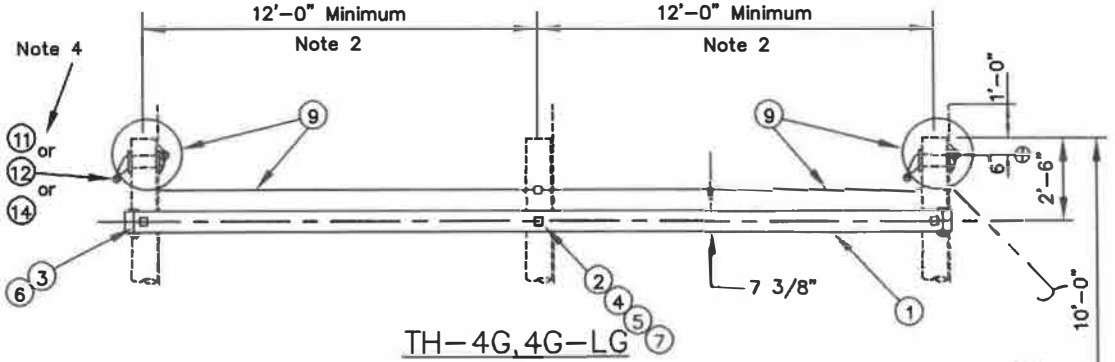
TRANSMISSION LINE SRUCTURE

TANGENT H-FRAME

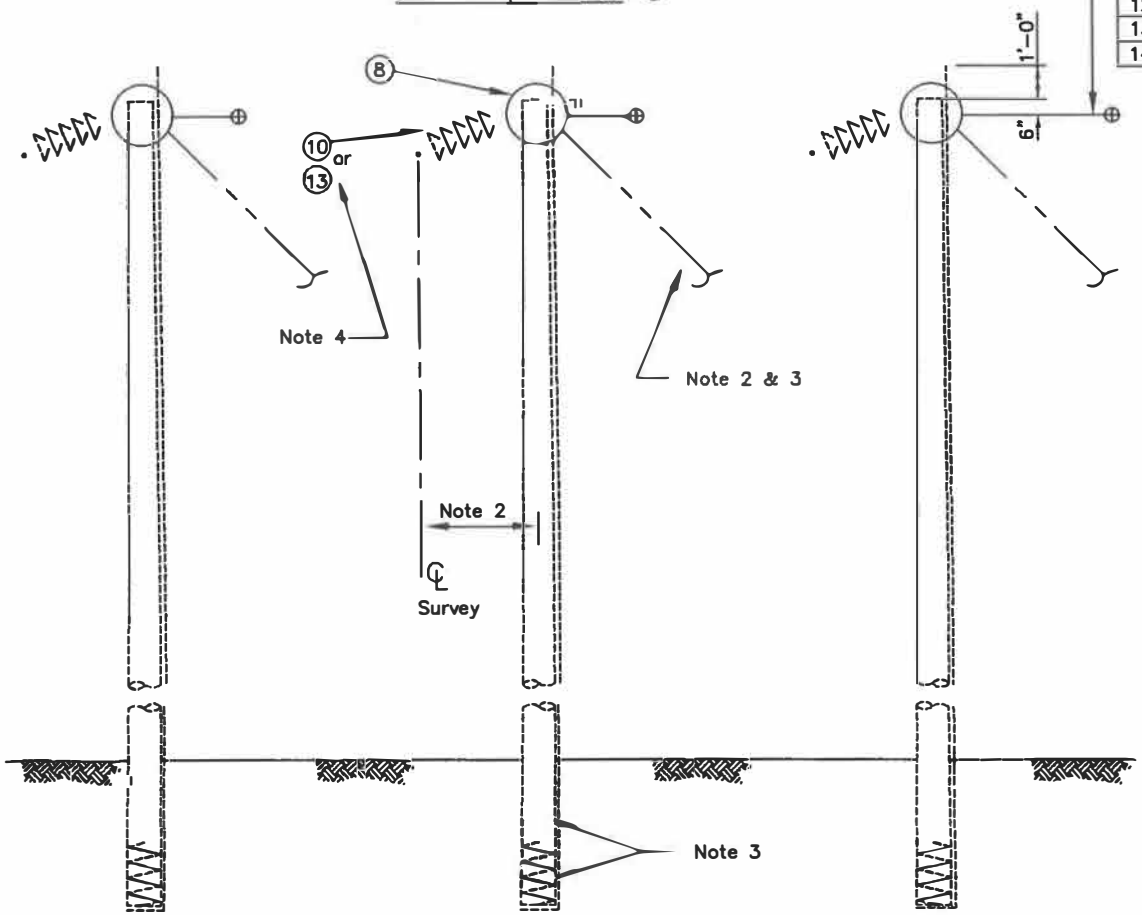
(161kv MAXIMUM)

NO.	REVISION	DATE	L. BARTLETT 5/17/19		TH-10 SERIES

4



TH-4G,4G-LG



TH-4

DWG. REF.	TH- 4	TH- 4G	DESCRIPTION	ITEM	DET.	CODE No.
1	–	1	X-Am, 5-5/8"x7-3/8"x req'd l. #86		TCD-91	
2	–	3	3/4" Bolt, Machine, by req'd length	c		
3	–	2	1/2" Bolt, Washer Head, w/Washer Nut	c		
4	–	3	Washer, Curved,4"sq x1/4",13/16" hole	d		
5	–	3	Washer, Flat,4"sq x3/16",13/16" hole	d		
6	–	3	3/4" Locknut, MF Type	ek		
7	–	2	1/2" Locknut, MF Type	ek		
8	3	3	GUY ATTACHMENT, MEDIUM DUTY	–	TG-25D	
9	–	1	POLE TIE, ANGLE MEDIUM DUTY	–	TG-54A	
10	3	3	INSULATOR ASSEMBLY, ANGLE	–	TM-2C	
11	–	1	OHGW ASSEMBLY, ANGLE	–	TM-4A	
12	–	1	OPGW ASSEMBLY, ANGLE	–	TM-4B-OP	
13	3	3	INSULATOR ASSEMBLY, LARGE ANGLE	–	TM-1C-336/70	
14	–	2	OPGW ASSEMBLY, DEADEND	–	TM-4G-OP	

NOTES:

1. Drawing TE-1 gives guidence to subassembly alternatives.
2. For guying arrangements and offset table, see drawing TMG-4 or TMG-4G. Pole spacing shall conform to minimum dimensions unless otherwise indicated. X-Arm drilling shall be coordinated with pole spacing.
3. The following materials are to be specified on the plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLY, GUYING ASSEMBLIES, ANCHORS, AND ANY ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.
4. For all structures with angles 30° or larger, structure will be a TH-4G-LG. Item 13, Insulator Assembly for Large Angles will be used in place of Item 10. Also, Item 14 will be used in place of Item 12.

TRANSMISSION STRUCTURE

LARGE ANGLE

(69kv MAXIMUM)

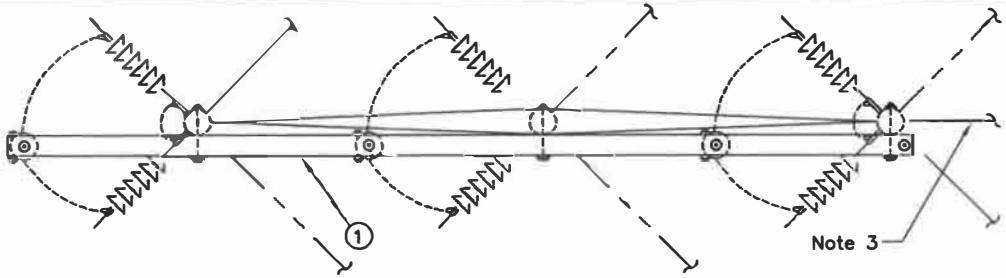
NO.	REVISION	DATE

Reissued 03/98

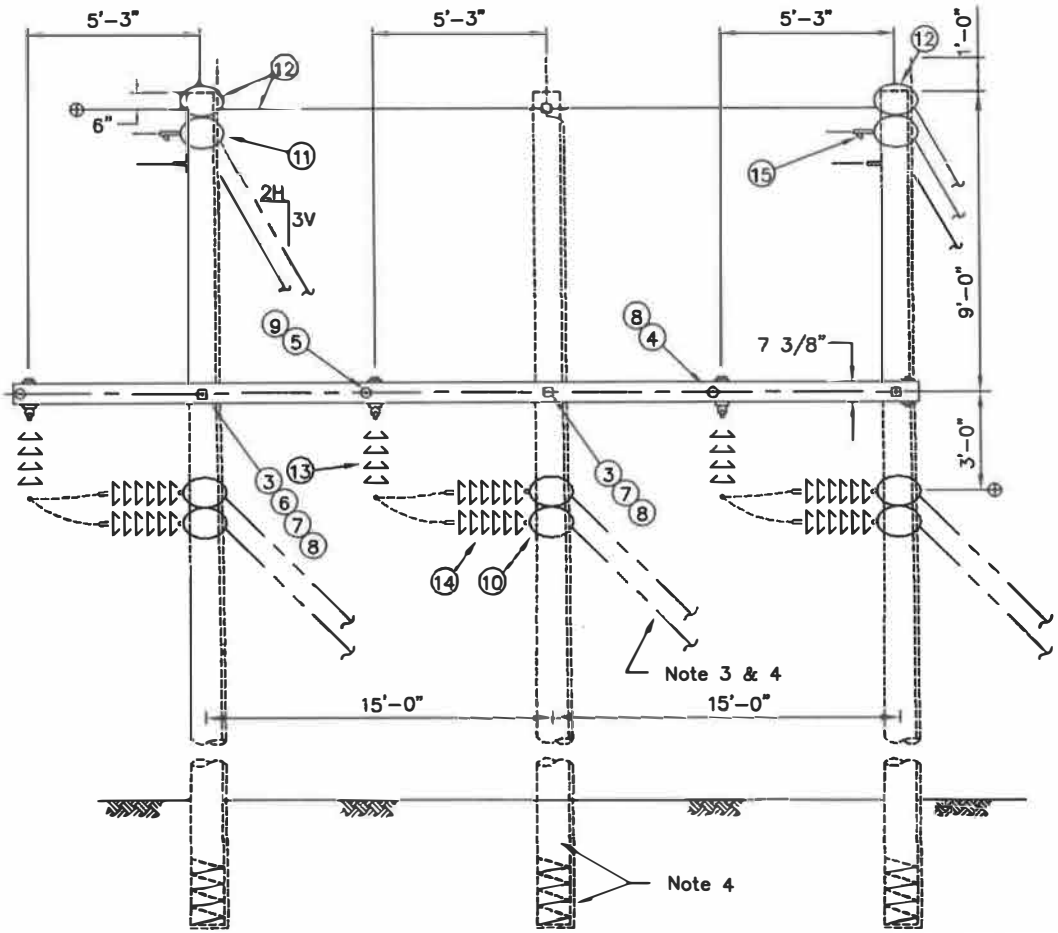
L.BARTLETT

5/2/16

TH-4,4G,4G-LG



PLAN VIEW



LIST OF MATERIALS

DWG. REF.	QTY.	DESCRIPTION	ITEM	DET.	CODE No.
1	1	X-Arm, 5-5/8"x7-3/8"x req'd l., #87	g	TCD-91	
3	3	3/4" Bolt, Machine, by req'd length	c		
4	3	3/4" Bolt, Shoulder Eye w/Washer Nut	o		
5	4	1/2" Bolt, Washer Head, w/Washer Nut	c		
6	3	Washer, Curved,4"sq x1/4"x13/16" hole	d		
7	3	Washer, Flat,4"sq x3/16",13/16" hole	d		
8	6	3/4" Locknut, MF Type	ek		
9	4	1/2" Locknut, MF Type	ek		
10	6	GUY ATTACHMENT, MED DUTY	–	TG-25D	
11	4	GUY ATTACHMENT, MED DUTY	–	TG-25D	
12	1	POLE TIE. GUYING, MED DUTY	–	TG-54B	
13	3	INSULATOR ASSEMBLY, TANGENT	–	TM-1A	
14	6	INSULATOR ASSEMBLY, DEADEND	–	TM-2D	
15	2	OHGW ASSEMBLY, DEADEND	–	TM-4G	
16	2	OPGW ASSEMBLY, DEADEND	–	TM-4G-OP	

NOTES:

2. Drawing TE-1 gives guidance to subassembly alternatives.
3. For guying arrangements, see drawing TMG-5G. A bisector guy is recommended for line angles less than 60 degrees.
4. The following materials are to be specified on the plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLY, GUYING ASSEMBLIES, ANCHORS, AND ANY ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

TRANSMISSION LINE STRUCTURE

LARGE ANGLE DOUBLE DEADEND

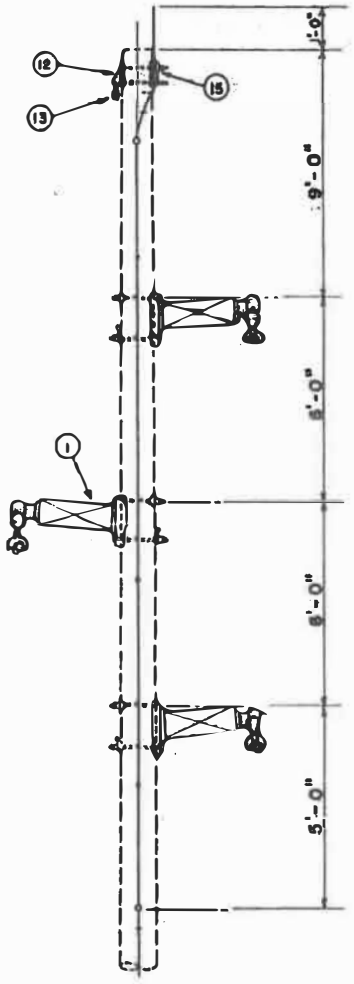
(69kv MAXIMUM)

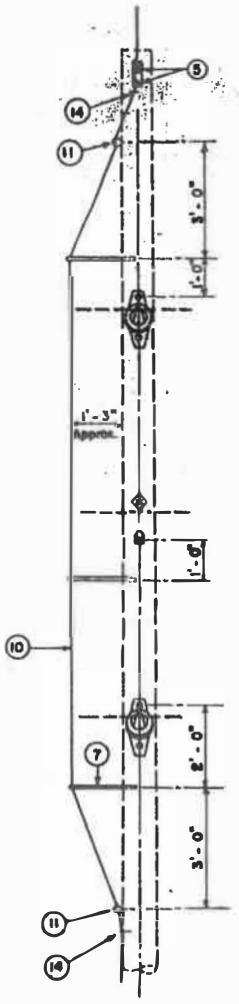
NO.	REVISION	DATE

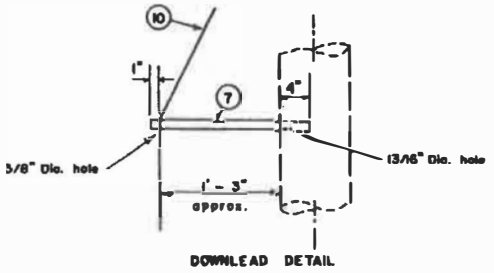
L. BARTLETT

3/18/21

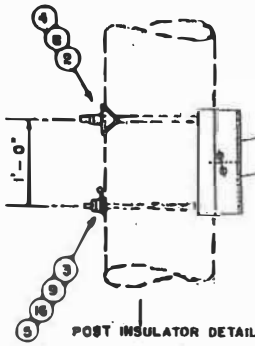
TH-5G





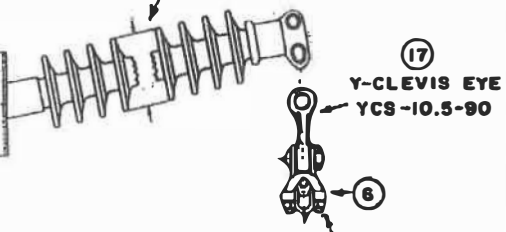


DOWNLEAD DETAIL



POST INSULATOR DETAIL

OB522005-1002



Y-CLEVIS EYE
YCS-10.5-90

SUSPENSION CLAMP
AL. AND. HAS 118-N

NOTE:

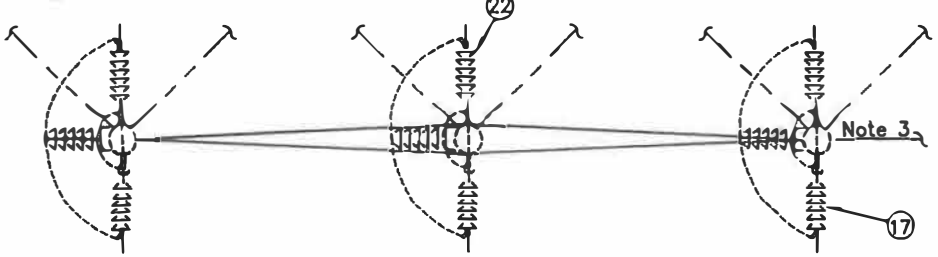
1. Staples on downlead shall be 2 feet apart except for a distance of 8 feet above ground, and 2 feet from top of pole where they shall be 6 inches apart.
2. Metal shims should be used to adjust insulators when brackets are located on uneven pole surfaces.

LIST OF MATERIALS

ORG REF.	REQ.	DESCRIPTION	ITEM
1	3	Horizontal Post Insulator (OB 522005-1002)	ee
2	3	3/4" Machine Bolt x Required Length	c
3	3	5/8" Machine Bolt x Required Length	c
4	3	3/4" Lockwt	eh
5	5	5/8" Lockwt	eh
6	3	Suspension Clamp	
7	3	Fiberglass Bracket, Tapped For Downlead	
8	3	Washer, Curved, 4"x 4" x 1/4" with 13/16" Hole	d
9	3	Washer, Square, Galv., 2 1/4" x 2 1/4" x 3/16", 11/16" Hole	d
10	ft	Steel Wire, 3-Strand, 5/16" Dia., "C" Galv.	cj
11	2	Ground Wire Holder, (Ilsco Gren-Edison DW 2L2 or Equal)	
12	1	Ground Wire Cable Support	ed
13	1	Ground Wire Suspension Clamp	m
14	ea	2"x 1/2" Open Galvanized Staples	ei
15	ft	Ground Wire Clamp	dp
16	3	Spring Washer, 11/16" Hole	
17	3	Y-Clevis Eye	

TRANSMISSION LINE TANGENT STRUCTURE
__KV. HORIZONTAL LINE POST
(69 KV. MAXIMUM)

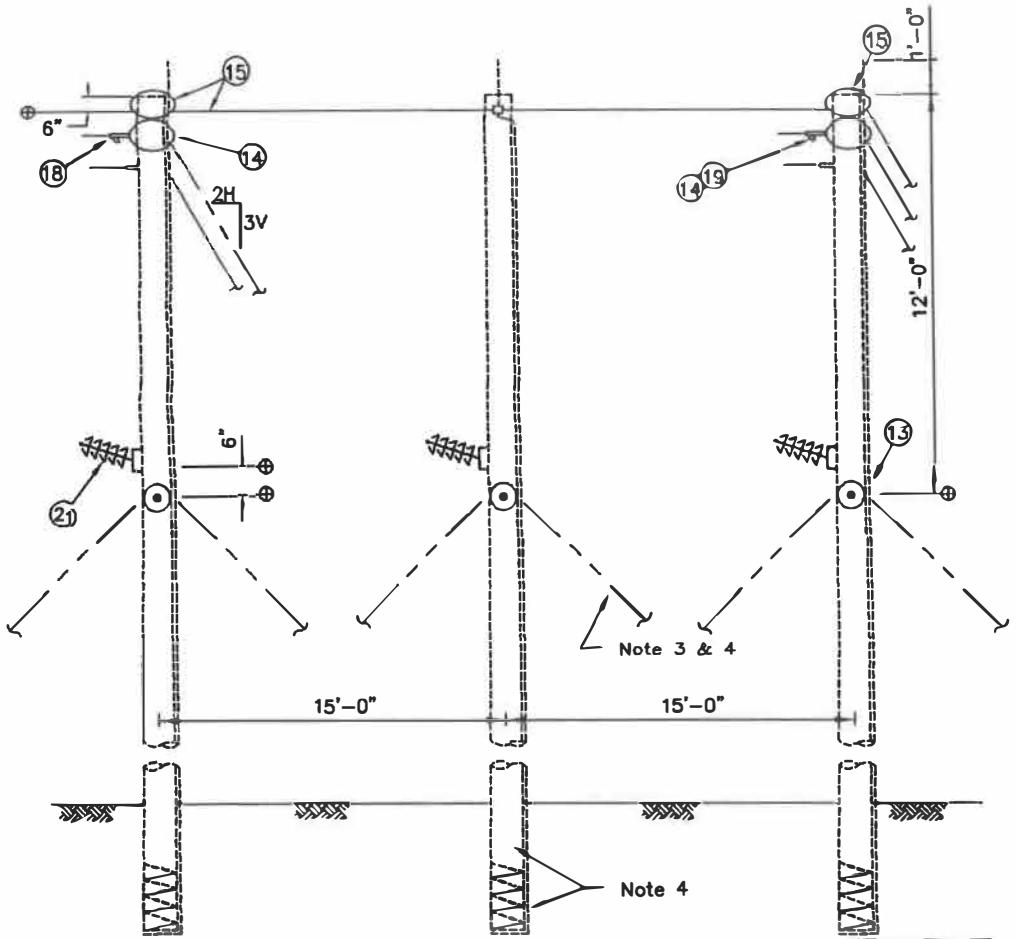
REV. JULY 1972 | JAN. 1968 | TP-69C



LIST OF MATERIALS

DWG. REF.	QTY.	DESCRIPTION	ITEM	DET.	CODE No.
13	3	GUY ATTACHMENT, HEAVY DUTY	–	TG-25E-HEAVY	
14	2	GUY ATTACHMENT, MEDIUM DUTY	–	TG-25E	
15	1	POLE TIE, GUYING, MEDIUM DUTY	–	TG-54B-7/16	
17	3	INSULATOR ASSEMBLY, DEADEND	–	TM-1D-336	
18	2	OHGW ASSEMBLY, DEADEND	–	TM-4G	
19	2	OPGW ASSEMBLY, DEADEND	–	TM-4G-OP	
21	3	HORIZONTAL LINE POST ASSY.	–	TM-3B-336	
22	3	INSULATOR ASSY, DEADEND	–	TM-1D-4/0	

PLAN VIEW



NOTES:

2. Drawing TE–1 gives guidance to subassembly alternatives.
3. For guying arrangements, see drawing TMG–5G. A bisector guy is recommended for line angles less than 60 degrees.
4. The following materials are to be specified on the plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLY, GUYING ASSEMBLIES, ANCHORS, AND ANY ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

SALT RIVER – MEXICO

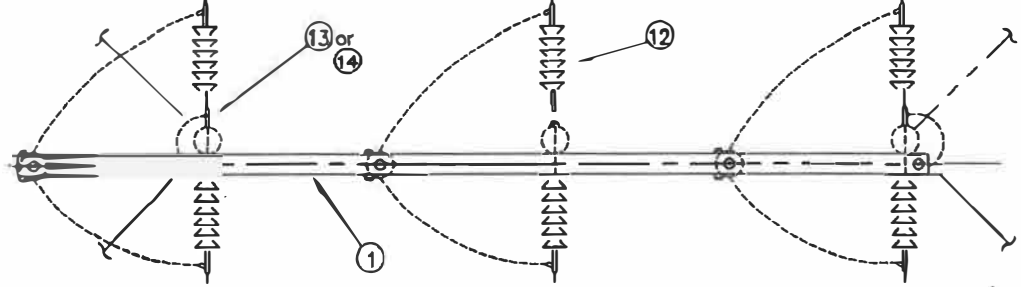
TRANSMISSION LINE STRUCTURE

LARGE ANGLE DOUBLE DEADEND

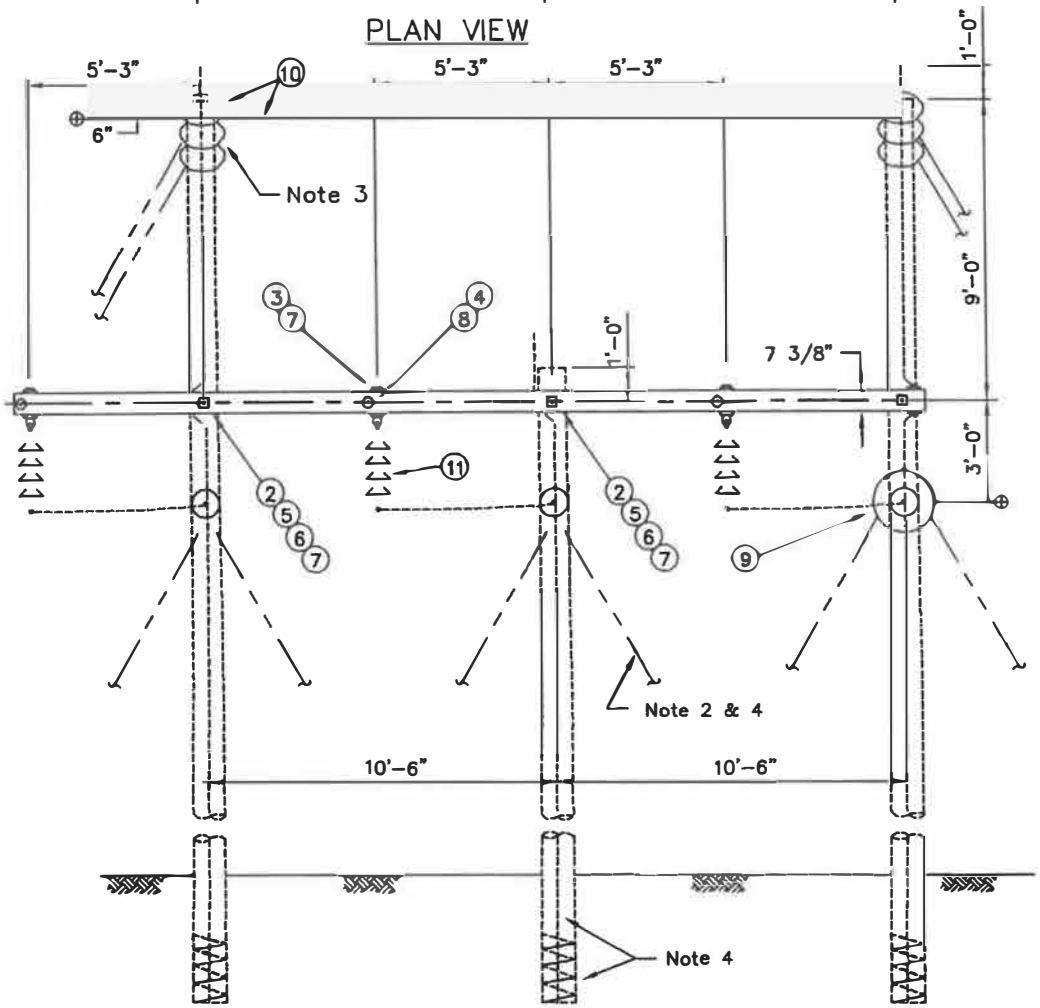
SPECIAL STRUCTURE (69kv MAXIMUM)

NO.	REVISION	DATE	J.COLVIN		TH-5G-SP3
			3/18/21		

7



PLAN VIEW



LIST OF MATERIALS

DWG. REF.	QTY.	DESCRIPTION	ITEM	DET.	CODE No.
1	1	X-Arm, 5-5/8"x7-3/8"x req'd l., #60		TCD-26	
2	3	3/4" Bolt, Machine, by req'd length	c		
3	3	3/4" Bolt, Shoulder Eye w/Washer Nut	o		
4	4	1/2" Bolt, Washer Head, w/Washer Nut	c		
5	3	Washer, Curved,4"sq x1/4"x13/16" hole	d		
6	3	Washer, Flat,4"sq x3/16",13/16" hole	d		
7	6	3/4" Locknut, MF Type	ek		
8	4	1/2" Locknut, MF Type	ek		
9	3	GUY ATTACHMENT,MED DUTY		TG-25E-HEAVY	
10	1	POLE TIE ASSY, DEADEND, MED DUTY		TG-54F	
11	3	INSULATOR ASSEMBLY, TANGENT	–	TM-1A	
12	6	INSULATOR ASSEMBLY, DEADEND	–	TM-1D	
13	2	OHGW ASSEMBLY, DEADEND	–	TM-4G	
14	2	OPGW ASSEMBLY, DEADEND	–	TM-4G-OP	

NOTES:

1. Drawing TE-1 gives guidance to subassembly alternatives.
2. For guying arrangements, see drawing TMG-5GD.
3. Angled guying attachments below th OHGW deadend may be needed. If necessary, the engineer should modify the material list by adding these guy attachments.
4. The following materials are to be specified on the plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLY, GUYING ASSEMBLIES, ANCHORS, AND ANY ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

TRANSMISSION LINE STRUCTURE

TANGENT DOUBLE DEADEND

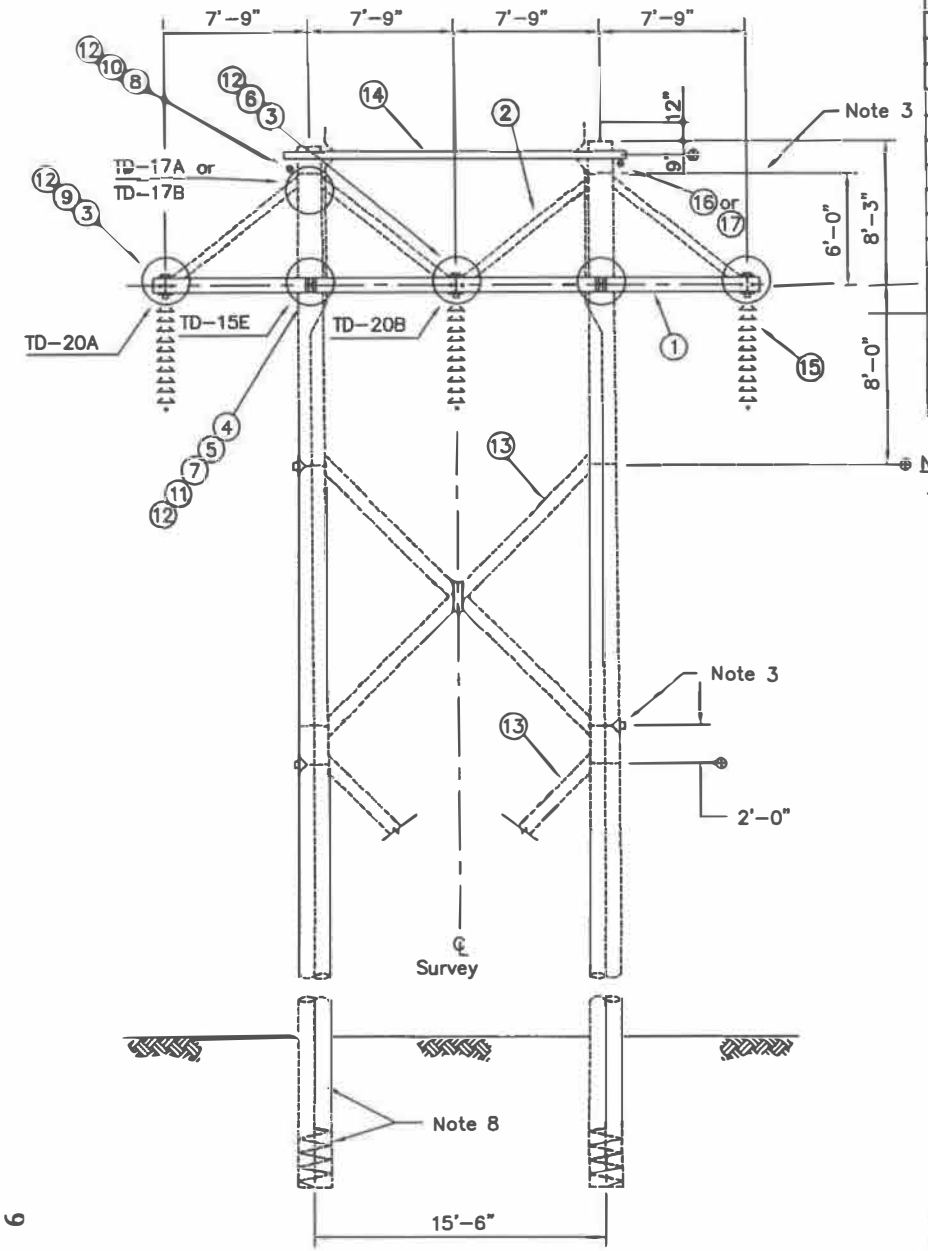
(69kv MAXIMUM)

NO.	REVISION	DATE

L. BARTLETT

1/21/16

TH-5GD



LIST OF MATERIALS

DWG. REF.	TH-10	V0	V1	V4	X-BRACE X	XX	DESCRIPTION	ITEM	DET.	CODE No.
1	2	2	2	2	–	–	X-Arm, 3-5/8"x9-3/8"x32'-0", #71		TCD-32	
2	–	2	2	4	–	–	Brace, X-Arm, 3-3/8"x5-3/8"x req'd			
3	3	3	3	3	–	–	Spacer Assembly,see construction spec		TM-111B	
4	4	4	4	4	–	–	Plate, Gain, 3"x9-1/2"x1/4"			
5	4	4	4	4	–	–	Plate, Ribbed, 3"x9-1/2"x1/4"			
6	6	–	–	1	1	–	–	7/8" D.E Bolt, Bent w/2 recessed nuts	gy		
7	2	2	2	2	–	–	7/8" Threaded Rod, w/2 nuts			
8	–	2	2	2	–	–	7/8" Bolt, Machine, by req'd length			
9	–	2	–	2	–	–	7/8" Bolt, Bent w/ recessed nut			
10	–	2	2	–	–	–	Washer Curved, 4"sq x1/4",15/16" hole			
11	2	2	2	2	–	–	Washer, Spring, 15/16" hole			
12	4	8	8	10	–	–	7/8" Locknut, MF Type			
13	–	–	–	–	1	2	X-Brace Assembly	vx	TM-110B	
14	1	1	1	1	–	–	OHGW SUPPORT ASSEMBLY	–	TM-7C	
15	3	3	3	3	–	–	INSULATOR ASSEMBLY, TANGENT	–	TM-2A	
16	1	1	1	1	–	–	OHGW ASSEMBLY, TANGENT	–	TM-4A	
17	1	1	1	1	–	–	OPGW ASSEMBLY, TANGENT	–	TM-4B-OP	

NOTES:

1. Description and materials for structures are as follows:
   TH-10 – – – no braces
   TH-10X– – – same as TH-10 w/one X-Brace
   TH-10V0 – – two outside X-Arm braces
   TH-10V0X– – same as TH-10V0 w/one X-Brace
   TH-10V1 – – two inside X-Arm braces
   TH-10V1X – – same as TH-10V1 w/one X-Brace
   TH-10V4 – – four X-Arm braces
   TH-10V4X– – same as TH-10V4 w/one X-Brace
   (For two X-Braces, structure designation to use "XX" suffices.)

   The "–F" in the structure name designates that X-Braces shall be fiberglass not wood

2. Double X-Arms shall be shipped with factory assembled hardware.
3. Field drilled holes shall be thoroughly treated.
4. Reference the pole framing drawing for additional dimensions.
5. For other requirements, refer to REA specification T-7.
6. For strength limitations of OHGW support assembly, see TM-7B or TM-7C.
7. Drawing TE-2 gives guidence to subassembly alternatives.
8. The following materials are to be specified on plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLIES, AND ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

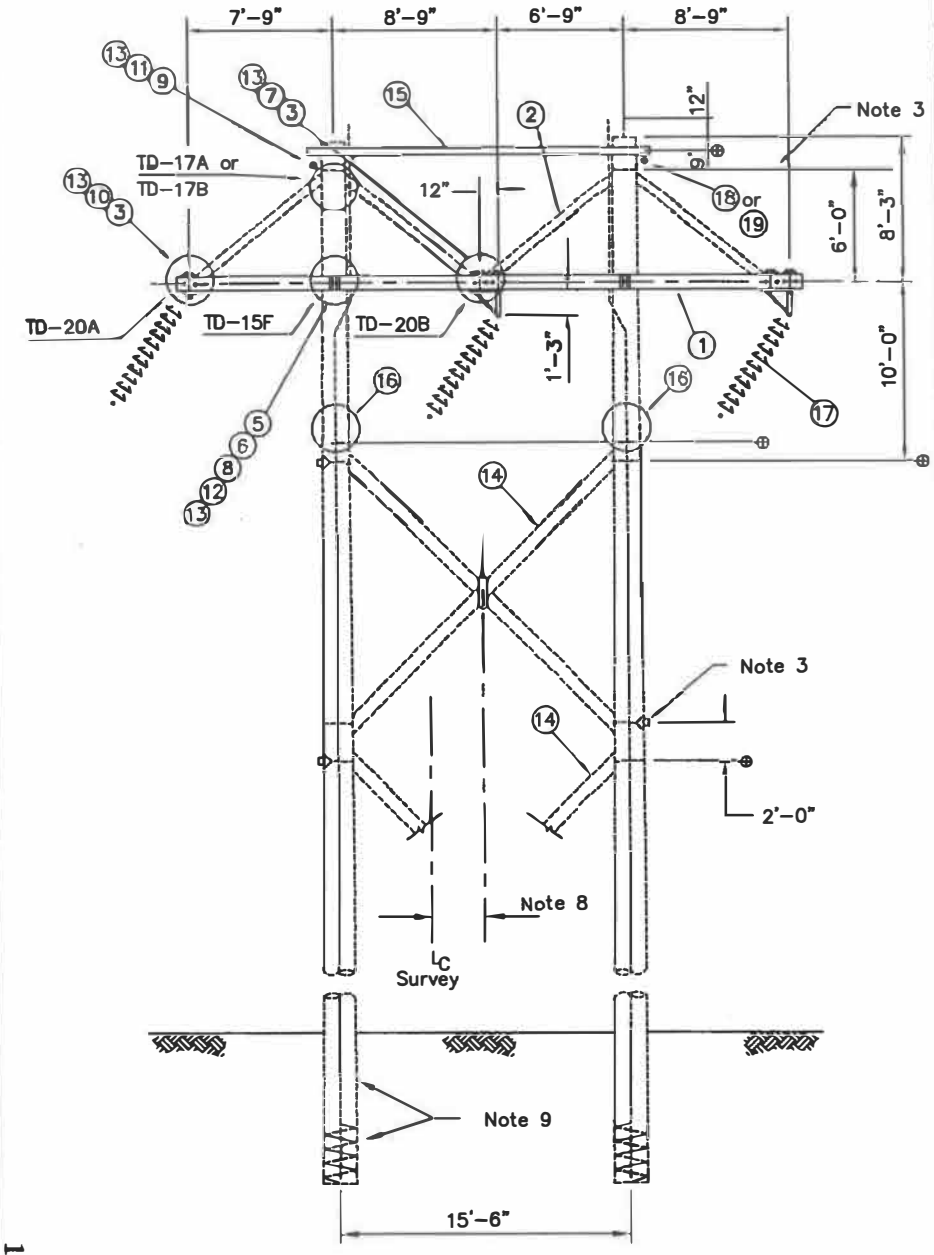
TRANSMISSION LINE SRUCTURE

TANGENT H-FRAME
(161kv MAXIMUM)

NO.	REVISION	DATE

L. BARTLETT
3/18/21

TH-10 SERIES



DWG. REF.	TH-11				X-BRACE		LIST OF MATERIALS DESCRIPTION	ITEM	DET.	CODE No.
		V0	V1	V4	X	XX				
1	2	2	2	2	–	–	X–Arm, 3–5/8"x9–3/8"x33'–0", #72		TCD–32	
2	–	2	2	4	–	–	Brace, X–Arm,3–3/8"x5–3/8"x req'd l.			
3	5	5	5	5	–	–	Spacer Assembly,see construction spec		TM–111	
4	2	2	2	2	–	–	Bracket, Swinging Angle, Assembly		TM–112B	
5	4	4	4	4	–	–	Grid Gain, 4–1/2"x9", 15/16" hole			
6	4	4	4	4	–	–	Plate, Ribbed Tie, 3"x9–1/2"x1/4"			
7	–	–	1	1	–	–	7/8" D.E Bolt, Bent w/2 recessed nuts	gw		
8	2	2	2	2	–	–	7/8" Threaded Rod, w/2 nuts			
9	–	2	2	2	–	–	7/8" Bolt, Machine, by req'd length			
10	–	2	–	2	–	–	7/8" Bolt, Bent w/ recessed nut			
11	–	2	2	–	–	–	Washer Curved, 4"sq x1/4",15/16" hole			
12	2	2	2	2	–	–	Washer, Spring, 15/16" hole			
13	4	8	8	10	–	–	7/8" Locknut, MF Type			
14	–	–	–	–	1	2	X–Brace Assembly	vx	TM–110B	
15	1	1	1	1	–	–	OHGW SUPPORT ASSEMBLY	–	TM–7C	
16	2	2	2	2	–	–	GUY ATTACHMENT, MEDIUM DUTY	–	TG–25C	
17	3	3	3	3	–	–	INSULATOR ASSEMBLY, ANGLE	–	TM–2C	
18	1	1	1	1	–	–	OHGW ASSEMBLY, TANGENT	–	TM–4A	
19	1	1	1	1	–	–	OPGW ASSEMBLY, TANGENT	–	TM–4B–OP	

NOTES:

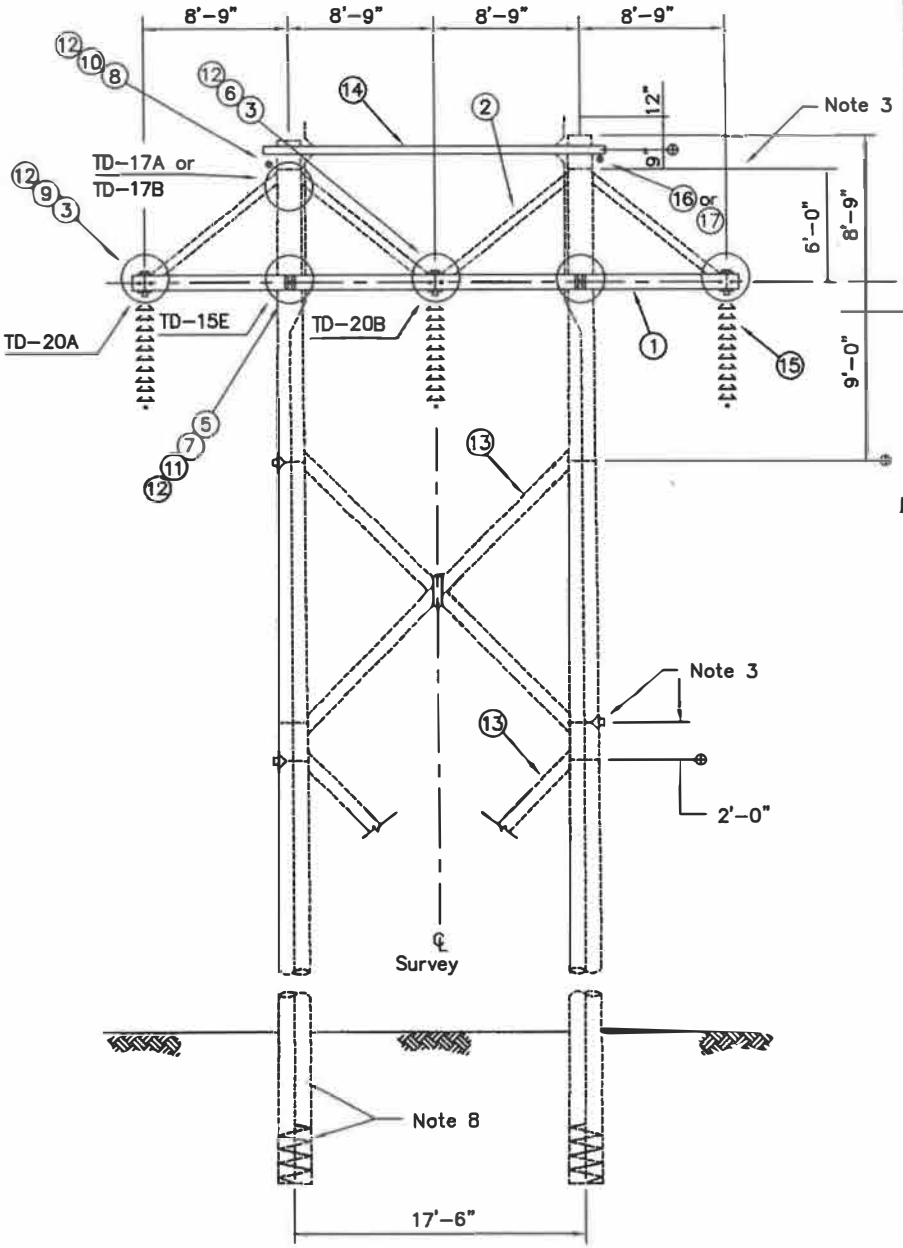
1. Description and materials for structures ore similar to TH–10 series.
2. Double X–Arms shall be shipped with factory assembled hardware.
3. Field drilled holes shall be thoroughly treated.
5. For other requirements, refer to REA specification T–7.
6. For strength limitations of OHGW support assembly, see TM–7B or TM–7C.
7. Drawing TE–2 gives guidence to subassembly alternatives.
8. For guying arrangements and offset table, see drawing TMG–11.
9. The following materials are to be specified on plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLY, GUYING ASSEMBLIES, ANCHOR, AND ANY ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

TRANSMISSION LINE SRUCTURE

SMALL ANGLE H–FRAME

(161kv MAXIMUM)

NO.	REVISION	DATE	L.BARTLETT 5/17/19	TH–11 SERIES



DWG. REF.	TH-17	V0	V1	V4	X-BRACE X	XX	LIST OF MATERIALS DESCRIPTION	ITEM	DET.	CODE No.
1	2	2	2	2	–	–	X-Arm, 3-5/8"x9-1/2"x36'-0"			
2	–	2	2	4	–	–	Brace, X-Arm, 3-1/2" x 4-1/2" x 10'			
3	3	3	3	3	–	–	Spacer Assembly,see construction spec		TM-111B	
5	4	4	4	4	–	–	Pole Gain Fitting			
6	–	–	1	1	–	–	7/8" D.E Bolt, Bent w/2 recessed nuts	gy		
7	2	2	2	2	–		7/8" [illegible]			
8	–	2	2	2	–	–	7/8" Bolt, Machine, by req'd length			
9	–	2	–	2	–	–	7/8" Bolt, Bent w/ recessed nut			
10	–	2	2	–	–	–	Washer Curved, 4"sq x1/4",15/16" hole			
11	2	2	2	2	–	–	Washer, Spring, 15/16" hole			
12	4	8	8	10	–	–	7/8" Locknut, MF Type			
13	–	–	–	–	1	2	X-Brace Assembly	vx	TM-110E	
14	1	1	1	1	–	–	OHGW SUPPORT ASSEMBLY	–	TM-7C	
15	3	3	3	3	–	–	INSULATOR ASSEMBLY, TANGENT	–	TM-2A	
16	1	1	1	1	–	–	OHGW ASSEMBLY, TANGENT	–	TM-4A	
17	1	1	1	1	–	–	OPGW ASSEMBLY, TANGENT	–	TM-4B-OP	

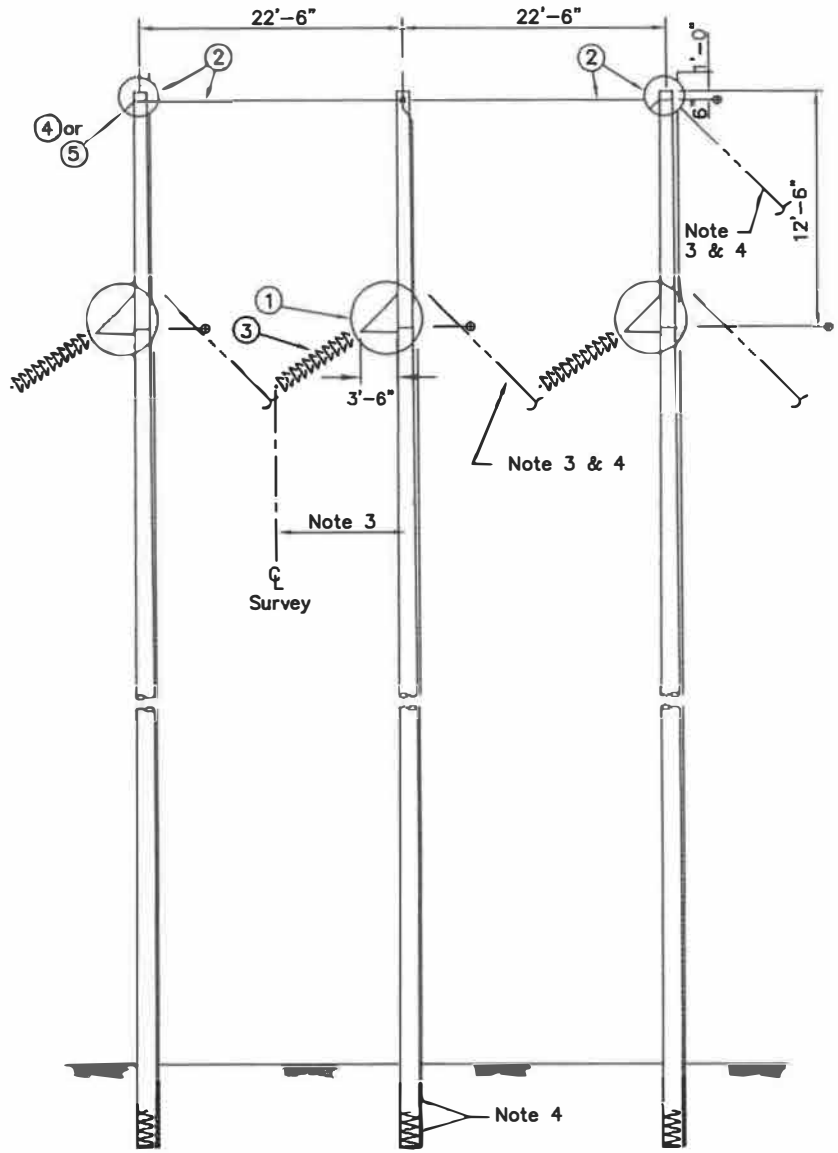
NOTES:

1. Description and materials for structures are as follows:
   TH-17 – – – no braces
   TH-17X– – – same as TH-17 w/one X-Brace
   TH-17V0 – – two outside X-Arm braces
   TH-17V0X– – same as TH-17V0 w/one X-Brace
   TH-17V1 – – two inside X-Arm braces
   TH-17V1X – – same as TH-17V1 w/one X-Brace
   TH-17V4 – – four X-Arm braces
   TH-17V4X– – same as TH-17V4 w/one X-Brace
   (For two X-Braces, structure designation to use "XX" suffices.)
2. Double X-Arms shall be shipped with factory assembled hardware.
3. Field drilled holes shall be thoroughly treated.
4. Dimensions "A" shall be as shown on the pole framing drawing.
5. For other requirements, refer to REA specification T-7.
6. For strength limitations of OHGW support assembly, see TM-7B or TM-7C.
7. Drawing TE-2 gives guidence to subassembly alternatives.
8. The following materials are to be specified on plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLIES, AND ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

TRANSMISSION LINE SRUCTURE

TANGENT H-FRAME
(161kv MAXIMUM)

NO.	REVISION	DATE		
2	REV. ASSEMBLIES	8/29/16	L. BARTLETT	
1	REV. SPACING	5/2/16	3/19/14	TH-17 SERIES



LIST OF MATERIALS

DWG. REF.	QTY.	DESCRIPTION	ITEM	DET.	CODE No.
1	3	BRACKET & GUY ATTACH.,MEDIUM DUTY	–	TG–29D	
2	1	POLE TIE, LARGE ANGLE, MEDIUM DUTY	–	TG–54A–7/16	
3	3	INSULATOR ASSEMBLY, ANGLE	–	TM–2C	
4	1	OHGW ASSEMBLY, ANGLE	–	TM–4A	
5	1	OPGW ASSEMBLY	–	TM–4B–OP	

NOTES:

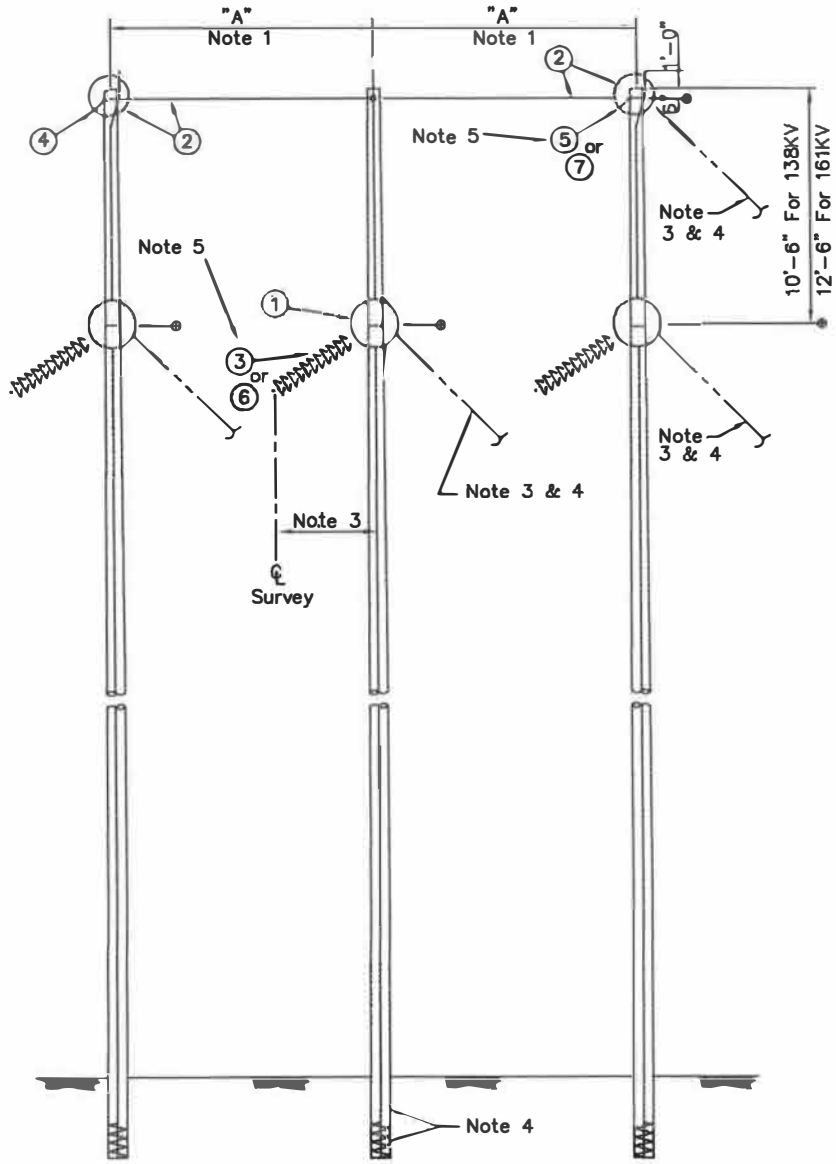
2. Drawing TE–2 gives guidence to subassembly alternatives.
3. For guying arrangements and offset table, see drawing TMG–13. Pole spacing shall conform to minimum dimensions unless otherwise indicated.
4. The following materials are to be specified on plan and profile drawinds and staking sheets: POLES, POLE GROUNDING ASSEMBLY, GUYING ASSEMBLIES, ANCHORS, AND ANY ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

TRANSMISSION LINE STRUCTURE

MEDIUM ANGLE

NO.	REVISION	DATE
		6–25–09

TH–13A



LIST OF MATERIALS

DWG. REF.	QTY.	DESCRIPTION	ITEM	DET.	CODE No.
1	3	GUY ATTACHMENT, MEDIUM DUTY	–	TG–25D	
2	1	POLE TIE, LARGE ANGLE, MEDIUM DUTY	–	TG–54A–	7/16
3	3	INSULATOR ASSEMBLY, ANGLE	–	TM–2C	
4	1	OHGW ASSEMBLY, ANGLE	–	TM–4A	
5	1	OPGW ASSEMBLY, TANGENT	–	TM–4B–C	P
6	3	INSULATOR ASSEMBLY, LARGE ANGLE	–	TM–1C–	95/70
7	2	OPGW ASSEMBLY, DEADEND	–	TM–4G–C	P

NOTES:

1. For 1V:1H guy slopes, the minimum pole spacing, dimension "A" are:

Structure	138 kv	161 kv
TH–14	17'–6"	20'–0"

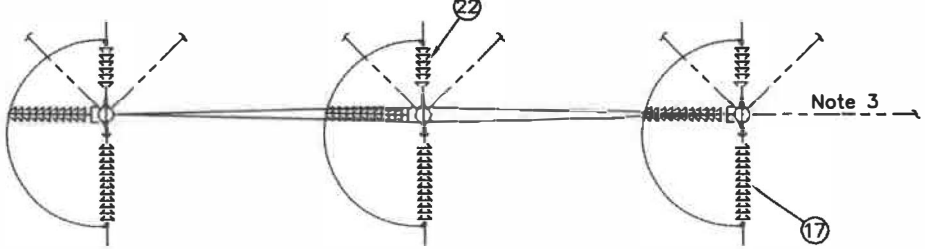
2. Drawing TE–2 gives guidence to subassembly alternatives.
3. For guying arrangements and offset table, see drawing TMG–13. Pole spacing shall conform to minimum dimensions unless otherwise indicated.
4. The following materials are to be specified on plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLY, GUYING ASSEMBLIES, ANCHORS, AND ANY ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.
5. For all structures with angles 30° or larger, structure will be a TH–14–LG. Item 6, Insulator Assembly for Large Angles will be used in place of Item 3. Also, Item 7 will be used in place of Item 5.

TRANSMISSION LINE STRUCTURE

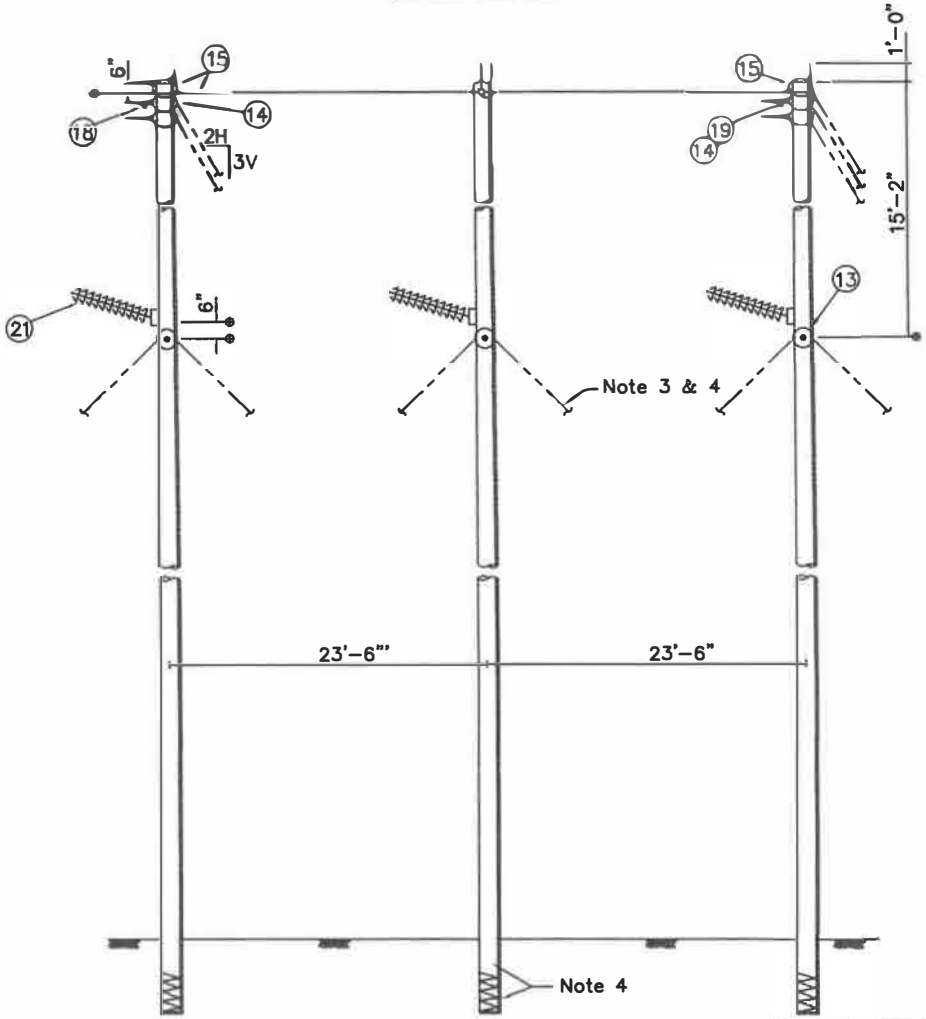
LARGE ANGLE

(161kv MAXIMUM)

NO.	REVISION	DATE	L.BARTLETT 6/21/16		TH–14,14–LG



PLAN VIEW



LIST OF MATERIALS

DWG. REF.	QTY.	DESCRIPTION	ITEM	DET.	CODE No.
13	3	GUY ATTACHMENT, HEAVY DUTY	–	TG–25E–	HEAVY
14	2	GUY ATTACHMENT, MEDIUM DUTY	–	TG–25E	
15	1	POLE TIE, GUYING, MEDIUM DUTY	–	TG–54B–	7/16
17	3	INSULATOR ASSEMBLY, DEADEND	–	TM–1D–	795
18	2	OHGW ASSEMBLY, DEADEND	–	TM–4G	
19	2	OPGW ASSEMBLY, DEADEND	–	TM–4G–	OP
21	3	HORIZONTAL LINE POST ASSY.	–	TM–3B–	795–TRUN
22	3	INSULATOR ASSY, DEADEND	–	TM–1D–	4/0

NOTES:

2. Drawing TE–2 gives guidance to subassembly alternatives.
3. For guying arrangements, see drawing TMG–15. A bisector guy is recommended for angles less than 60 degrees.
4. The following materials are to be specified on the plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLY, GUYING ASSEMBLIES, ANCHORS, AND ANY ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

AUXVASSE – SALT RIVER

TRANSMISSION LINE STRUCTURE

LARGE ANGLE DOUBLE DEADEND

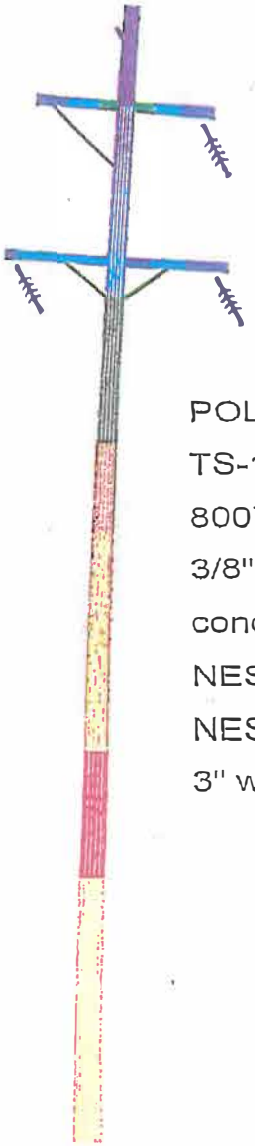
SPECIAL STRUCTURE (161kv MAXIMUM)

NO.	REVISION	DATE

J.C. 3/17/21

TH–15–SP3

POLE Ver 12.01, 11:20:21 AM Thursday, March 22, 2012
aying geometry for load case: 1 RUS OCF 4 Wood NA+,I NA+



POLE FAILURE location shown in red

TS-1, 60` class 1 pole

800` RS, foward and back span = 500`

3/8" HSSS OHGW and 4/0 ACSR conductor

conductor design tension = 50% ultimate

NESC Heavy Loading District

NESC/RUS load and strength factors applied

3" woodpecker hole 15` above groundline

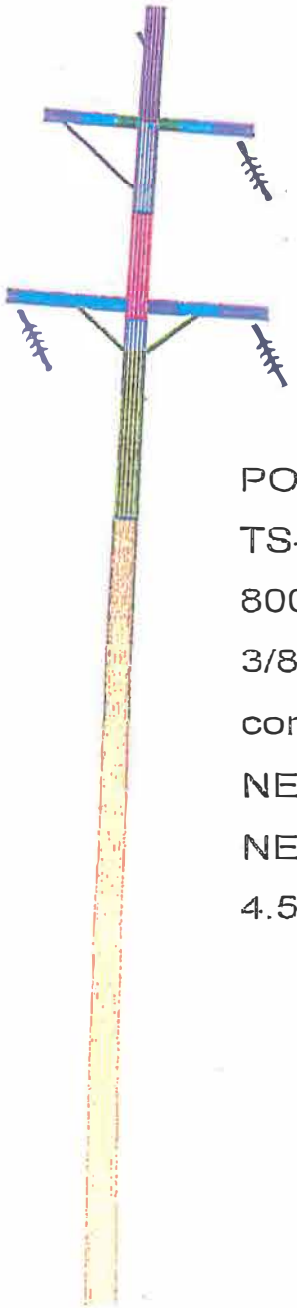
% Usage Legend
0 <= % < 25
25 <= % < 50
50 <= % < 75
75 <= % < 100

Missouri - 71 - Monlteau, Central Electric Power Cooperative

wood pole useage with woodpecker damage

Load Case	Maximum Usage %	Element Label	Element Type
RUS OCF 4 Wood NA+,I NA+	149.11	pole	Wood Pole
RUS OCF 4 Wood NA-,I NA-	133.83	pole	Wood Pole
RUS 250B NA+,I NA+	138.97	pole	Wood Pole
RUS 250B NA-,I NA-	130.64	pole	Wood Pole
RULE 250B Uplift NA+,I NA+	137.21	pole	Wood Pole
RULE 250B Uplift NA-,I NA-	131.65	pole	Wood Pole
RUS 250C NA+,I NA+	84.48	pole	Wood Pole
RUS 250C NA-,I NA-	82.52	pole	Wood Pole
RULE 250D NA+,I NA+	83.13	pole	Wood Pole
RULE 250D NA-,I NA-	72.62	pole	Wood Pole
RULE 277 Insulators NA+,I NA+	0	pole	Wood Pole
RULE 277 Insulators NA-,I NA-	0	pole	Wood Pole
Extreme Ice NA+,I NA+	35.14	txm	X-Arm
Extreme Ice NA-,I NA-	35.14	txm	X-Arm
Uplift,I NA+	6.55	txm	X-Arm
Notes			
TS-1 , 60', class 1 pole			
800' Ruling Span, forward and back span = 500'			
3/8" HSS OHGW and 4/0 ASR conductor			
conductor design tension = 50% ultimate			
NESC Heavy Load District			
3" woodpecker hole 15' above groundline			
useage data from PLS-POLE analysis			

ving geometry for load case: `1 RUS OCF 4 Wood NA+,I NA+



POLE FAILURE location shown in red

TS-1, 60` class 1 pole

800` RS, foward and back span = 500`

3/8" HSSS OHGW and 4/0 ACSR conductor

conductor design tension = 50% ultimate

NESC Heavy Loading District

NESC/RUS load and strength factors applied

4.5" woodpecker hole near lower cross arm

% Usage Legend
0 <= % < 25
25 <= % < 50
50 <= % < 75
75 <= % < 100
100 <= %

Missouri - 71 - Moniteau, Central Electric Power Cooperative

wood pole useage with woodpecker damage

Load Case	Maximum Usage %	Element Label	Element Type
RUS OCF 4 Wood NA+,I NA+	155.51	pole	Wood Pole
RUS OCF 4 Wood NA-,I NA-	88.03	pole	Wood Pole
RUS 250B NA+,I NA+	130.45	pole	Wood Pole
RUS 250B NA-,I NA-	85.06	pole	Wood Pole
RULE 250B Uplift NA+,I NA+	122.19	pole	Wood Pole
RULE 250B Uplift NA-,I NA-	90.62	pole	Wood Pole
RUS 250C NA+,I NA+	64.42	pole	Wood Pole
RUS 250C NA-,I NA-	56.57	pole	Wood Pole
RULE 250D NA+,I NA+	93.44	pole	Wood Pole
RULE 250D NA-,I NA-	49.22	txm	X-Arm
RULE 277 Insulators NA+,I NA+	0	pole	Wood Pole
RULE 277 Insulators NA-,I NA-	0	pole	Wood Pole
Extreme Ice NA+,I NA+	35.14	txm	X-Arm
Extreme Ice NA-,I NA-	35.14	txm	X-Arm
Uplift,I NA+	6.55	txm	X-Arm
Notes			
TS-1 , 60', class 1 pole			
800' Ruling Span, forward and back span = 500'			
3/8" HSS OHGW and 4/0 ASR conductor			
conductor design tension = 50% ultimate			
NESC Heavy Load District			
4.5 " woodpecker hole near lower cross arm			
useage data from PLS-POLE analysis			

DLE Ver: 12.01; 10:41:03 AM Thursday, March 22, 2012
ing geometry for load case: 2 RUS OCF 4 Wood NA-,I NA-

POLE FAILURE location shown in red

TS-1, 60` class 1 pole

800` RS, foward and back span = 500`

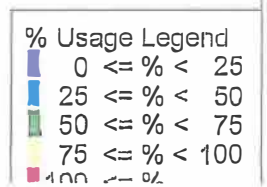
3/8" HSS OHGW and 4/0 ACSR conductor

conductor design tension = 50% ultimate

NESC Heavy Loading District

NESC/RUS load and strength factors applied

5.1" woodpecker hole near upper cross arm



Missouri - 71 - Moniteau, Central Electric Power Cooperative

wood pole useage with woodpecker damage

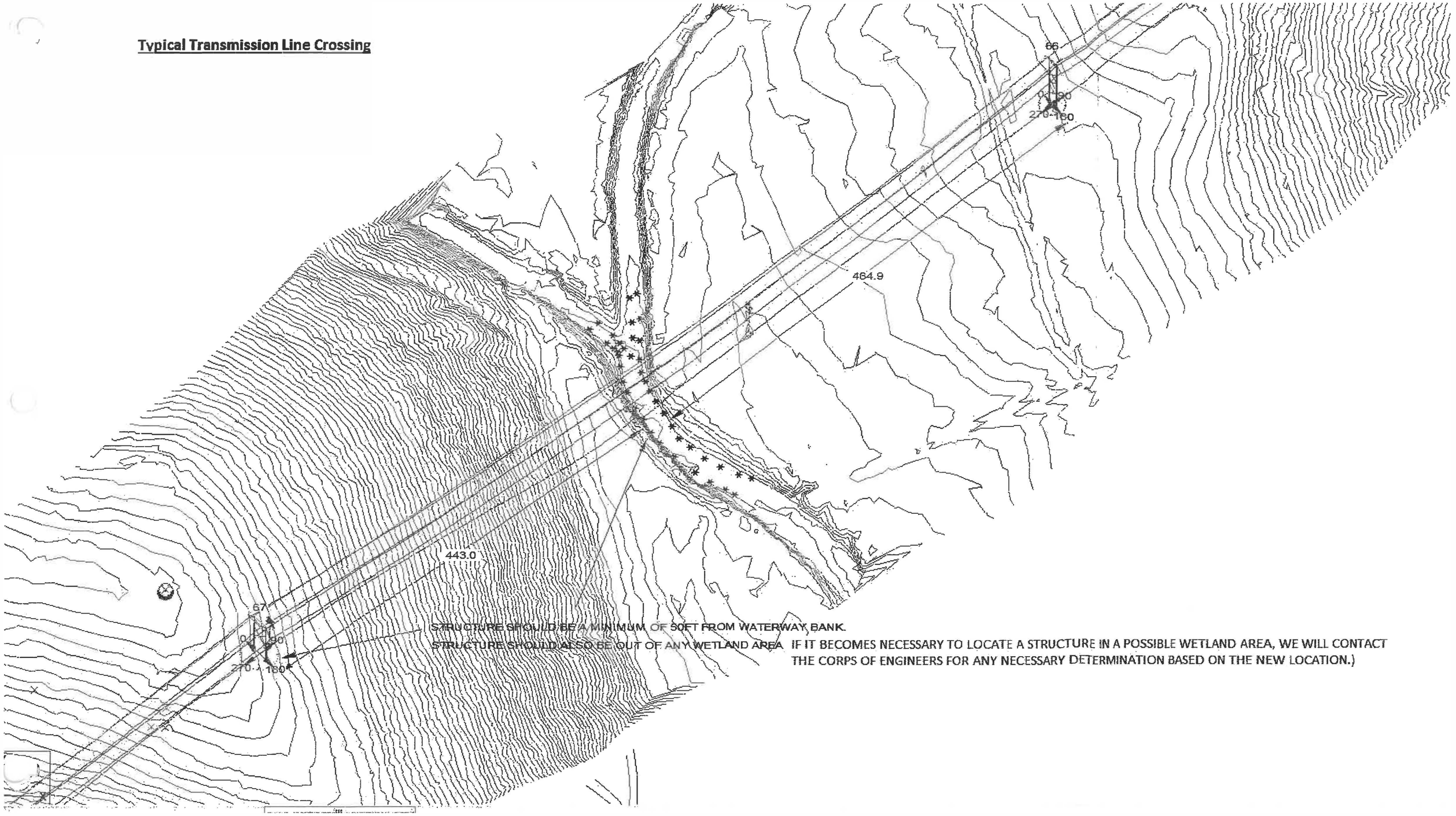
Load Case	Maximum Usage %	Element Label	Element Type
RUS OCF 4 Wood NA+,I NA+	94.39	pole	Wood Pole
RUS OCF 4 Wood NA-,I NA-	164.25	pole	Wood Pole
RUS 250B NA+,I NA+	98.23	pole	Wood Pole
RUS 250B NA-,I NA-	141.27	pole	Wood Pole
RULE 250B Uplift NA+,I NA+	104.52	pole	Wood Pole
RULE 250B Uplift NA-,I NA-	133.27	pole	Wood Pole
RUS 250C NA+,I NA+	57.35	pole	Wood Pole
RUS 250C NA-,I NA-	61.61	pole	Wood Pole
RULE 250D NA+,I NA+	51.94	pole	Wood Pole
RULE 250D NA-,I NA-	104.16	pole	Wood Pole
RULE 277 Insulators NA+,I NA+	0	pole	Wood Pole
RULE 277 Insulators NA-,I NA-	0	pole	Wood Pole
Extreme Ice NA+,I NA+	35.14	txm	X-Arm
Extreme Ice NA-,I NA-	35.14	txm	X-Arm
Uplift,I NA+	6.55	txm	X-Arm
Notes			
TS-1 , 60', class 1 pole			
800' Ruling Span, forward and back span = 500'			
3/8" HSS OHGW and 4/0 ASR conductor			
conductor design tension = 50% ultimate			
NESC Heavy Load District			
5.1 " woodpecker hole near top cross arm			
useage data from PLS-POLE analysis			

Table One
Main Causes of Line Deterioration and Typical Estimates of Service Life

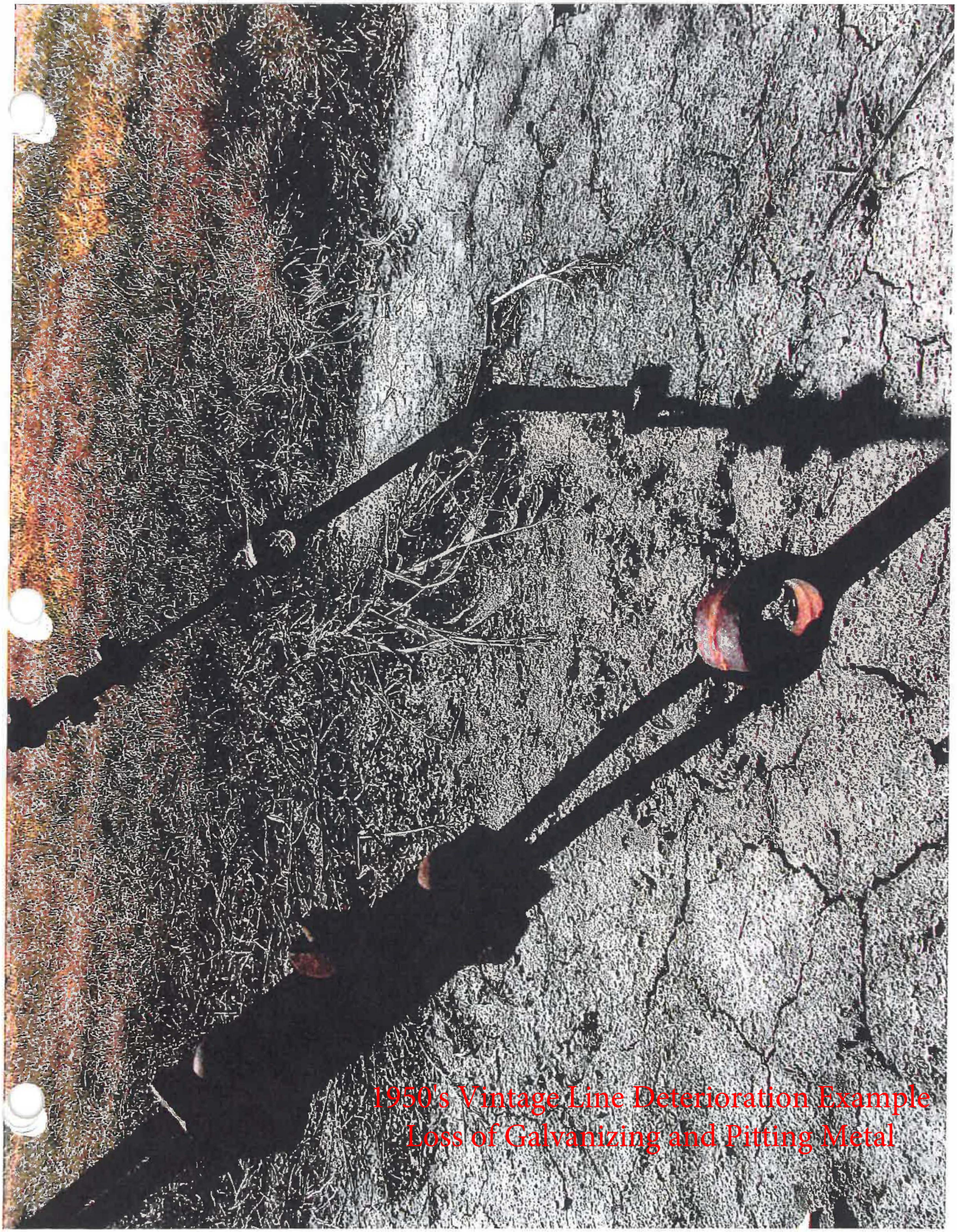
Component	Cause of Deterioration	Life to Failure (yrs)	Typical Asset Life (yrs)
Conductor (ACSR)	Corrosion, Creek Mechanical Fatigue	60-80	50
Overhead Ground Wire -Galvanized Steel	Corrosion Mechanical Fatigue	30-40	45
Structures -Steel -Wood Pole	Corrosion, Rot, Woodpeckers, Ants	100+ 30-40	55
Foundations -Grillage -Concrete -Insulators	 Corrosion Spalling Cracking Cement Growth Lightning Vandalism Corrosion	 100+ 100+ 40-80	 55 55
Hardware	Corrosion Mechanical Fatigue	40-80	40

The above data was taken from the article "Corrosion Evaluation Methods For Power Transmission Lines" by Peter Mayer, P.E., of Hydro Ontario Technologies.

Typical Transmission Line Crossing



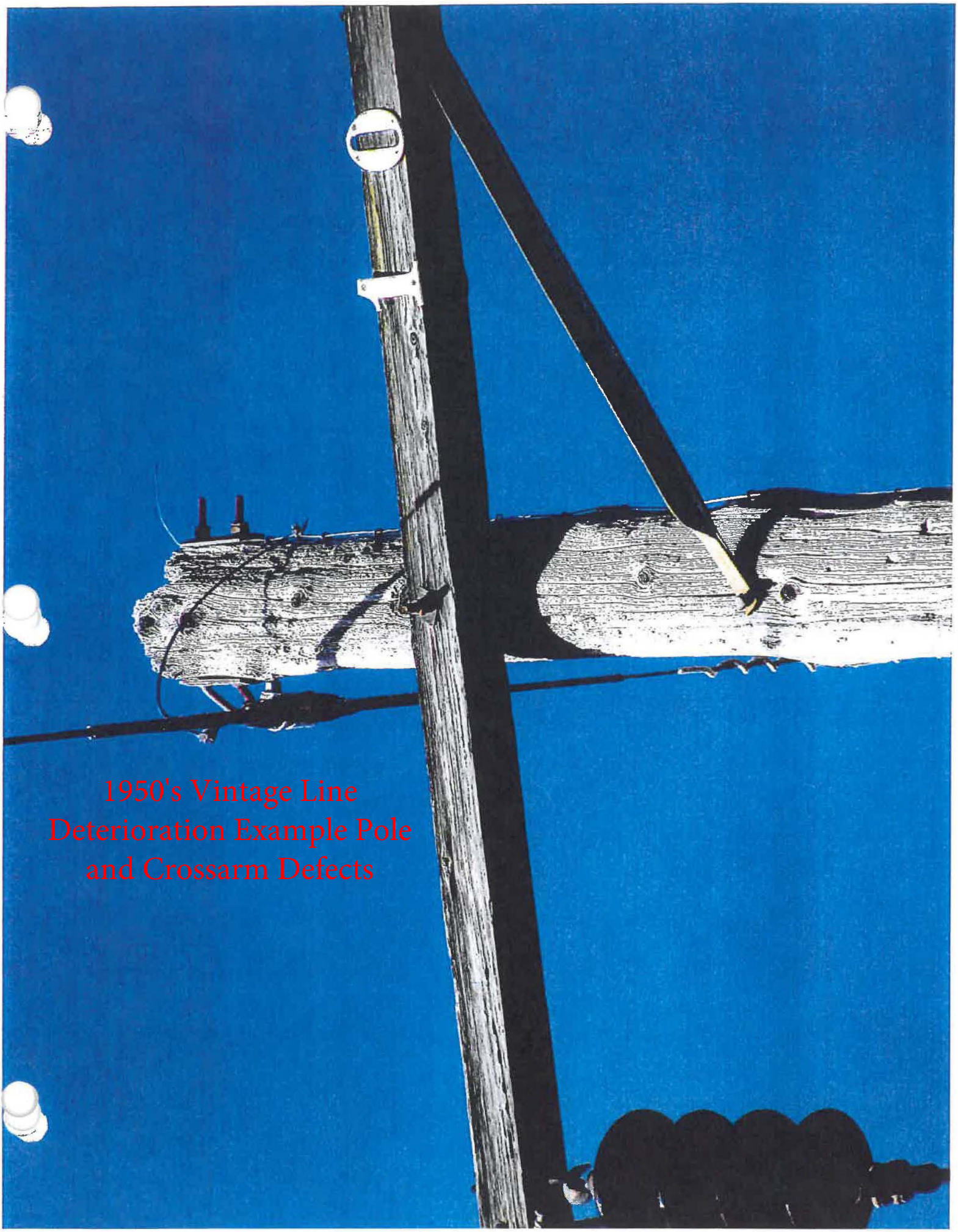
STRUCTURE SHOULD BE A MINIMUM OF 50FT FROM WATERWAY BANK.
STRUCTURE SHOULD ALSO BE OUT OF ANY WETLAND AREA. IF IT BECOMES NECESSARY TO LOCATE A STRUCTURE IN A POSSIBLE WETLAND AREA, WE WILL CONTACT THE CORPS OF ENGINEERS FOR ANY NECESSARY DETERMINATION BASED ON THE NEW LOCATION.)

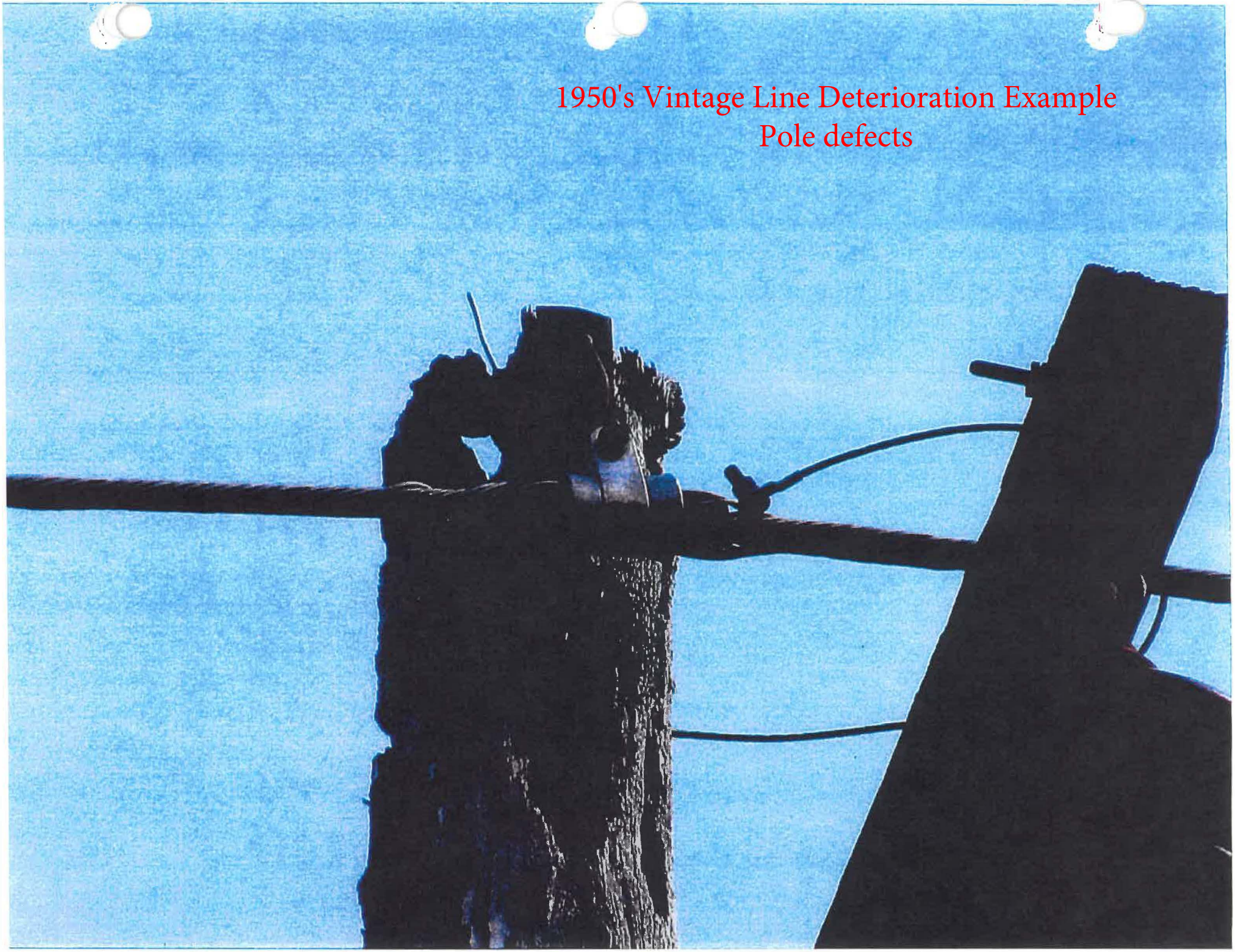

1950's Vintage Line Deterioration Example
Loss of Galvanizing and Pitting Metal

1950's Vintage Line Deterioration Example
Loss of Galvanizing and Pitting Metal

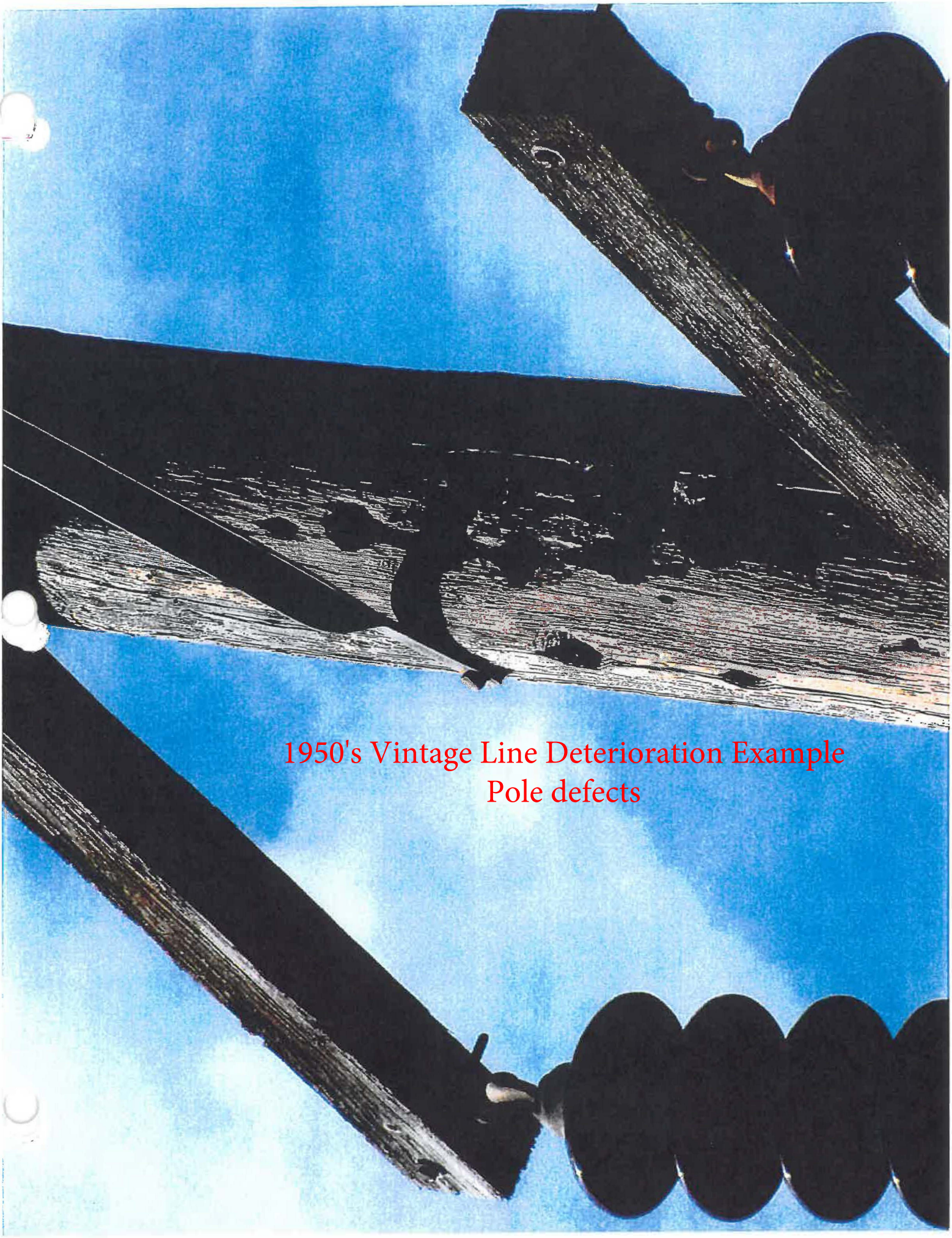

1950's Vintage Line Deterioration Example
Pole defects

1950's Vintage Line Deterioration Example
Pole defects

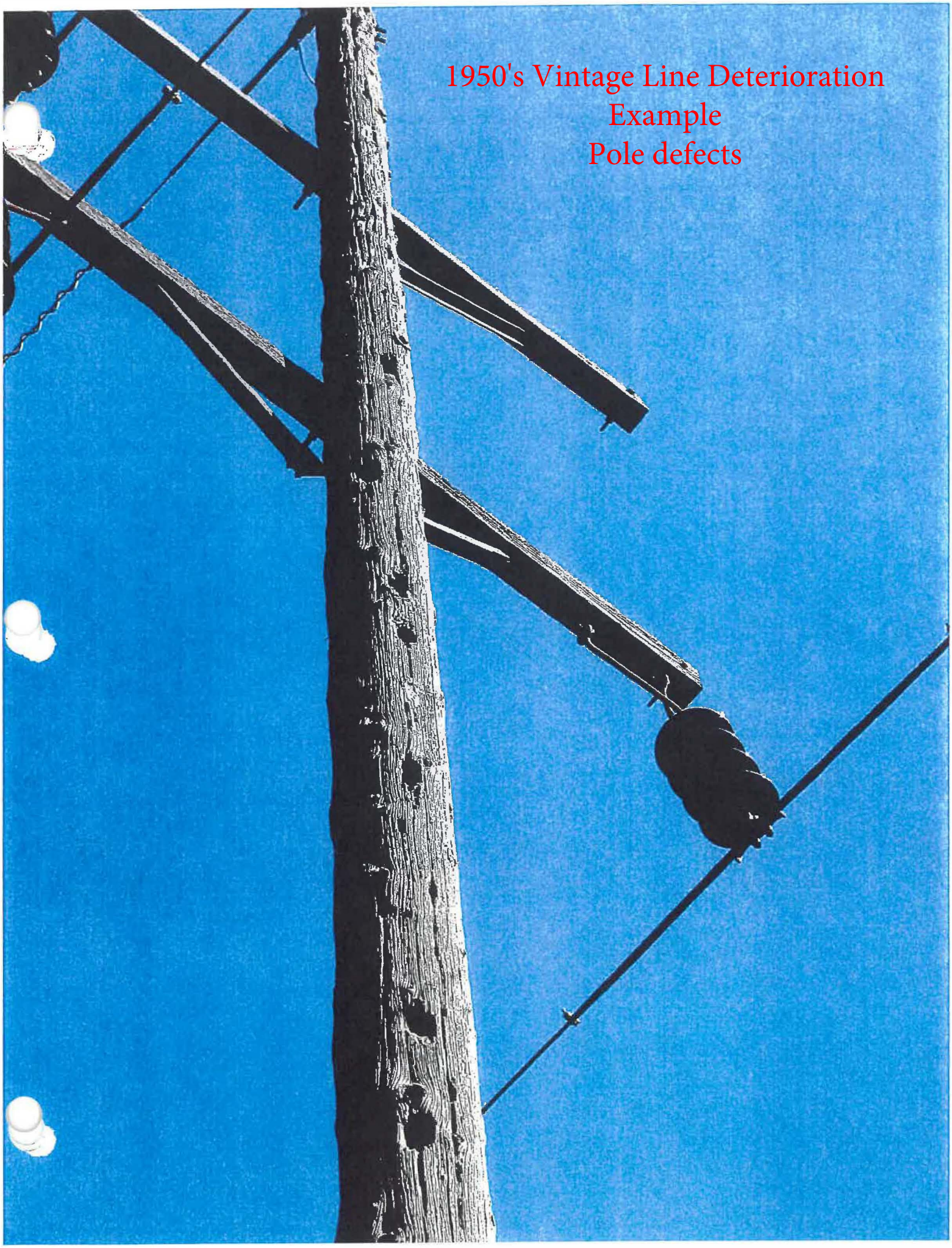

1950's Vintage Line
Deterioration Example Pole
and Crossarm Defects


1950's Vintage Line Deterioration Example
Pole defects

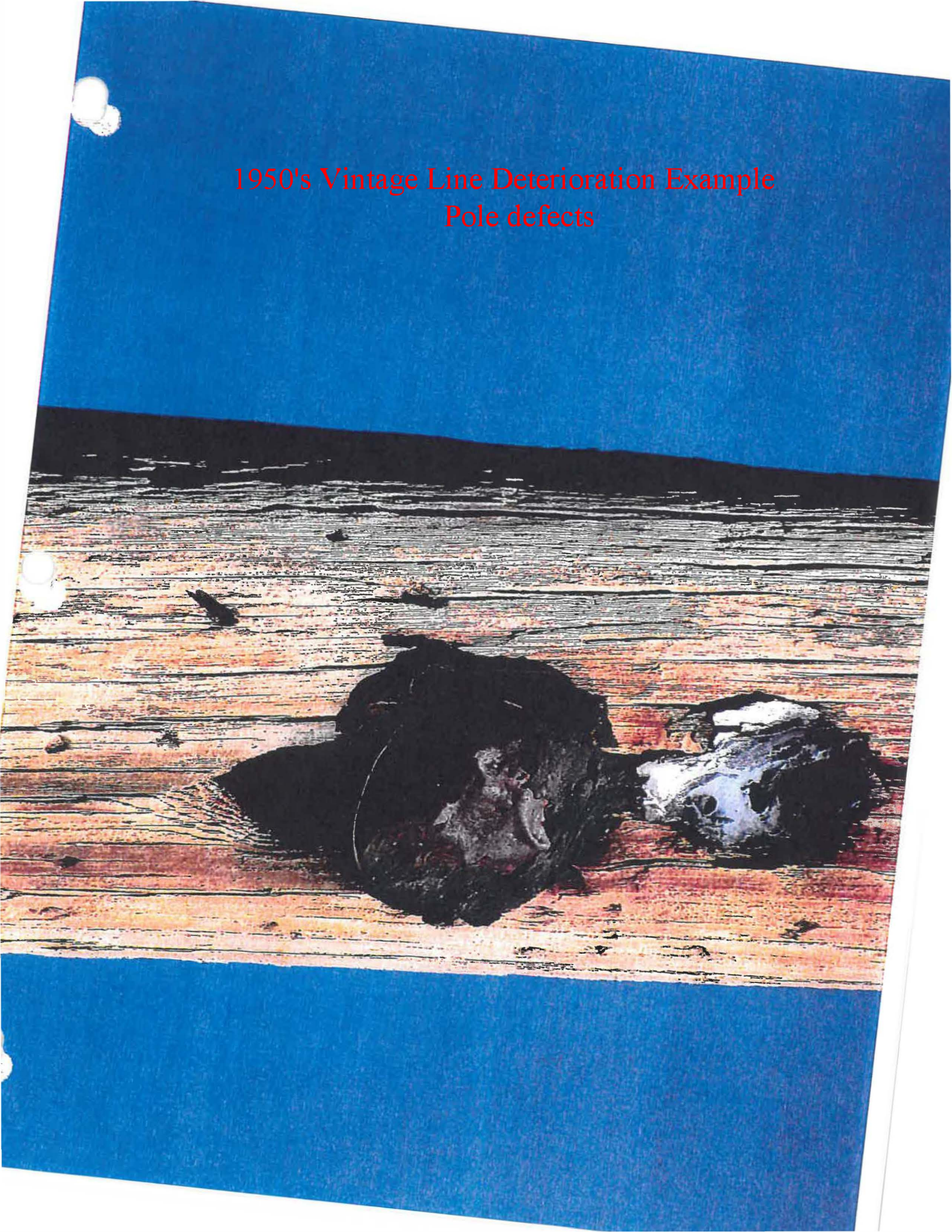

1950's Vintage Line Deterioration Example
Loss of Galvanizing and Pitting Metal

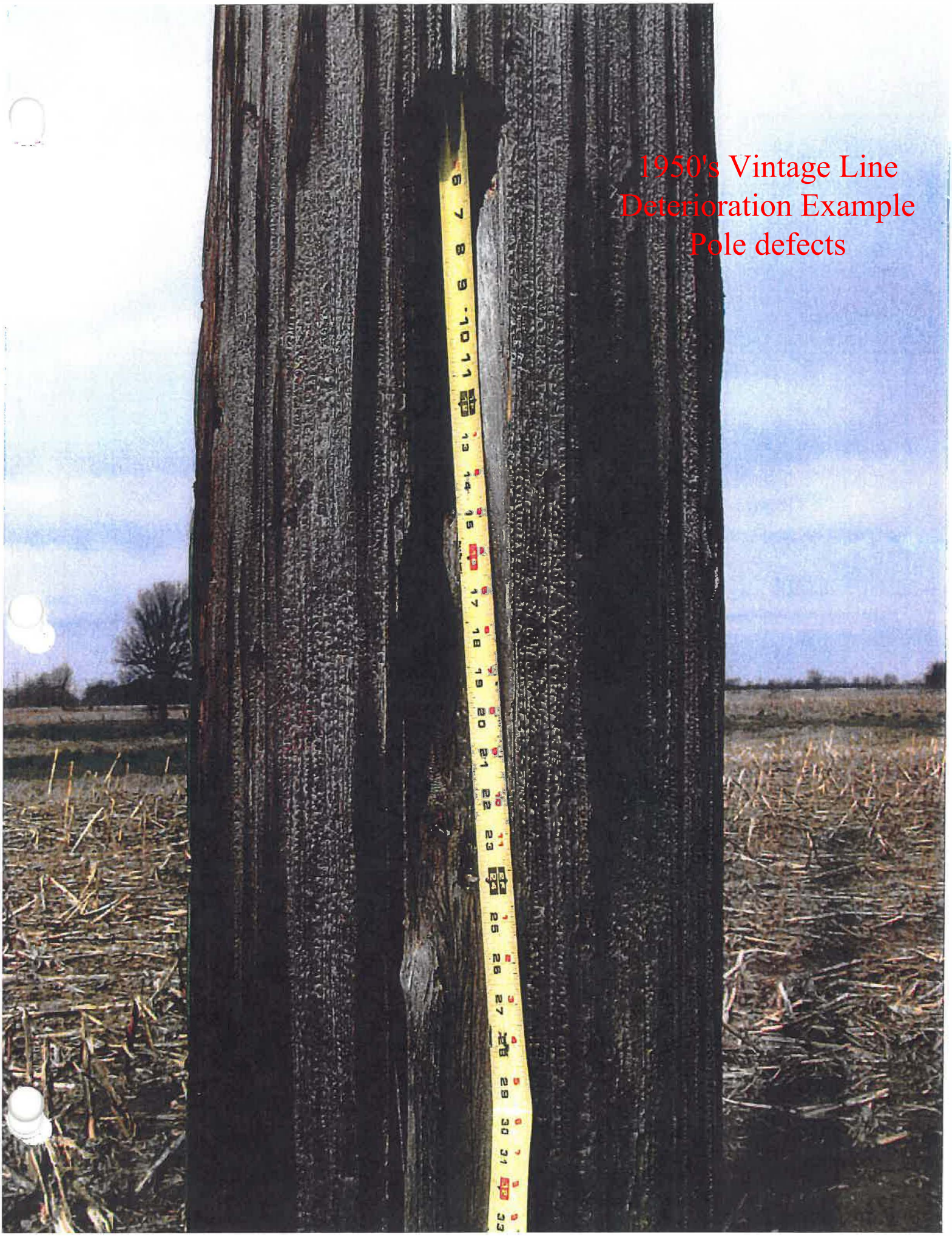


1950's Vintage Line Deterioration Example
Pole defects

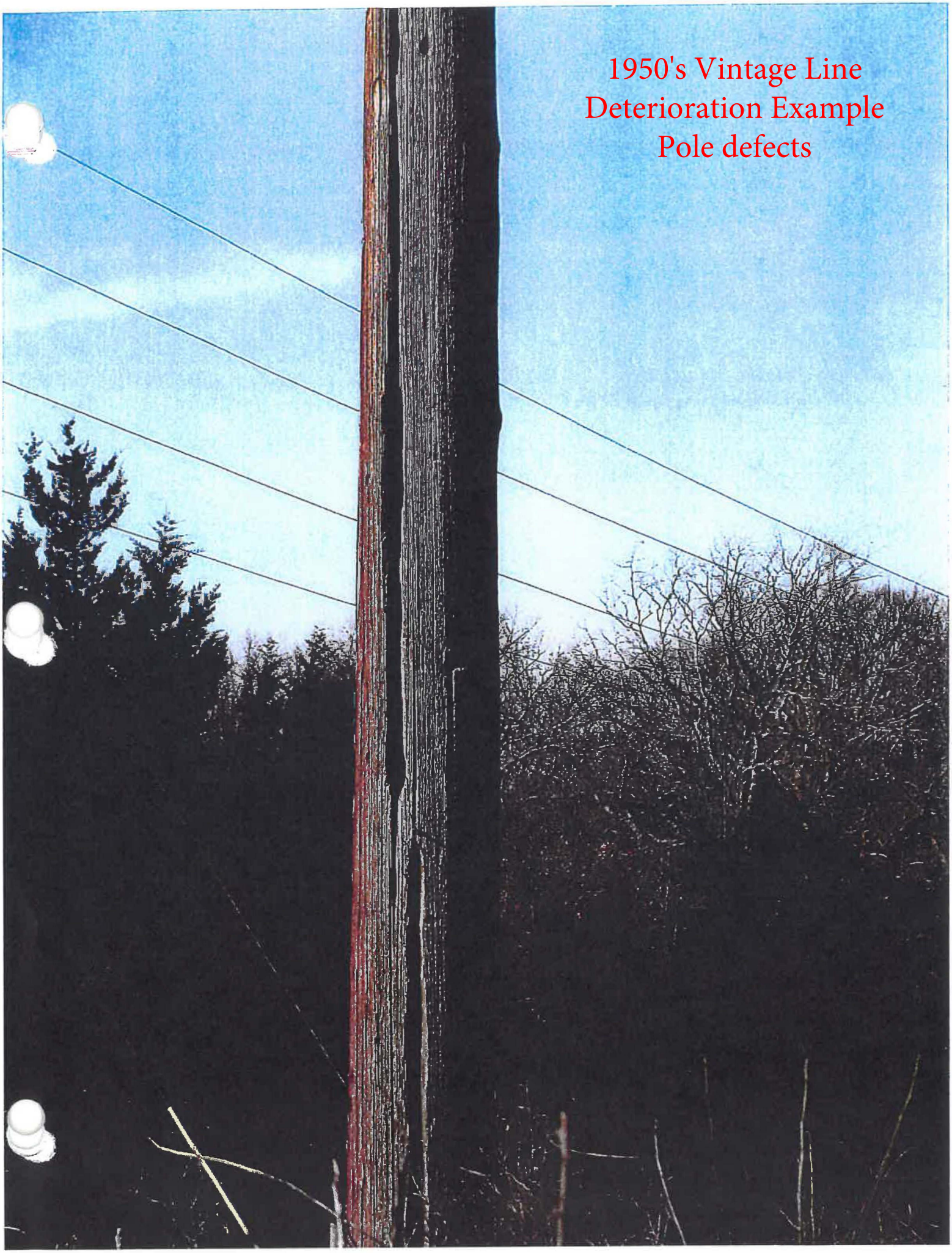

1950's Vintage Line Deterioration
Example
Pole defects

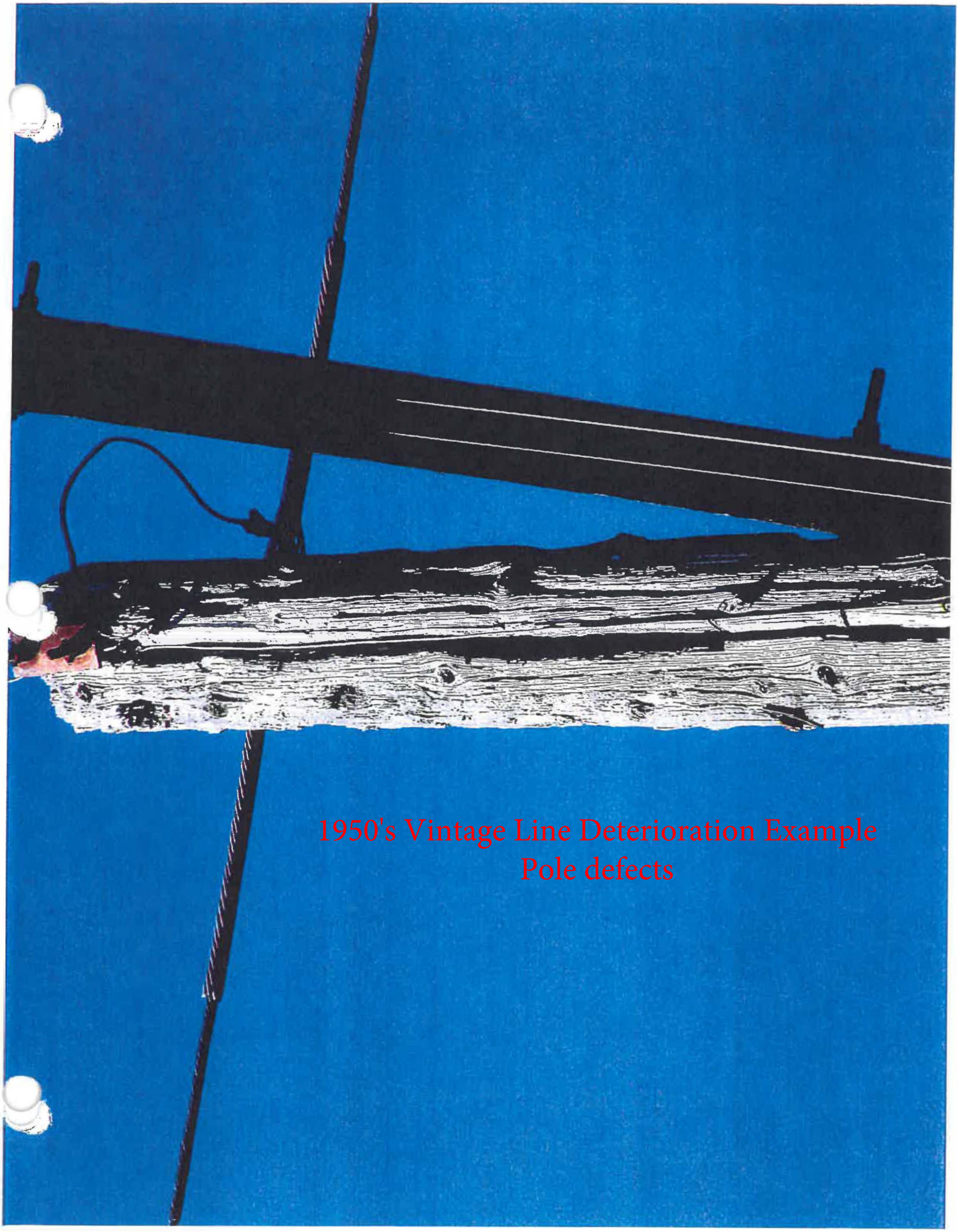
1950's Vintage Line Deterioration Example
Pole defects




1950's Vintage Line
Deterioration Example
Pole defects


1950's Vintage Line Deterioration Example
Pole defects


1950's Vintage Line
Deterioration Example
Pole defects



1950's Vintage Line Deterioration Example
Pole defects

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Ms. Toni Prawl
Missouri Department of Natural Resources
State Historic Preservation Office
Attn: Section 106 Review
P.O. Box 176
Jefferson City, MO 65102-0176

Mr. Scott Larsen
Area Resource Soil Scientist
USDA-NRCS
6465 Highway 168, Suite C
Palmyra, MO 63461

Natural Heritage Review Coordinator
Missouri Department of Conservation
Resource Science Division
P.O. Box 180
Jefferson City, MO 65102

Department of the Army
Corps of Engineers
Kansas City District
MO State Regulatory Office
515 E. High Street, Suite 102
Jefferson City, MO 65101-3261

Mr. Darryl Griffin, Presiding Commissioner
Osage County Commission
205 E Main St
Linn, MO 65051

Mr. Victor Stratman, Presiding Commissioner
Maries County Commission
PO Box 205
Vienna, MO 65582

Ms. Bonnie Prigge
Meramec Regional Planning Commission
4 Industrial Dr
Saint James, MO 65559

Tribal Directory Assessment Information

Contact Information for Tribes with Interests in Maries, Osage counties, Missouri

Tribal Name **County Name**

- Apache Tribe of Oklahoma

Contact Name	Title	Mailing Address	Work Phone
Bobby Komardley	Chairman	PO Box 1330 Anadarko, OK 73005	(405) 247-949

- Apache Tribe of Oklahoma

Contact Name	Title	Mailing Address	Work Phone
Bobby Komardley	Chairman	PO Box 1330 Anadarko, OK 73005	(405) 247-949

- Miami Tribe of Oklahoma

Contact Name	Title	Mailing Address	Work Phone
Douglas Lankford	Chief	PO Box 1326 Miami, OK 74355	(918) 542-144
Diane Hunter	THPO	PO Box 1326 Miami, OK 74355	(260) 639-060

- Osage Nation

Contact Name	Title	Mailing Address	Work Phone
Geoffrey Standing Bear	Principal Chief	PO Box 779 Pawhuska, OK 74056	(918) 287-555
Andrea A. Hunter	Director and THPO	627 Grandview Avenue Pawhuska, OK 74056	(918) 287-532

- Osage Nation

Contact Name	Title	Mailing Address	Work Phone
Geoffrey Standing Bear	Principal Chief	PO Box 779 Pawhuska, OK 74056	(918) 287-555
Andrea A. Hunter	Director and THPO	627 Grandview Avenue Pawhuska, OK 74056	(918) 287-532

1 - 5 of 5 results

« ‹ 1 › » 10

Tribal Directory Assessment Information

Contact Information for Tribes with Interests in Maries, Osage counties, Missouri

Tribal Name	County Name
Apache Tribe of Oklahoma	
Apache Tribe of Oklahoma	
Miami Tribe of Oklahoma	
Osage Nation	
Osage Nation	

1 - 5 of 5 results

« ‹ 1 › » 10

Central Electric Power Cooperative

2106 Jefferson Street, PO Box 269
Jefferson City, Missouri 65102
Telephone: (573) 634-2454
Fax: (573) 634-3892

November 18, 2020

Ms. Machelle Watkins, District Engineer
Missouri Department of Transportation
Central District
1511 Missouri Blvd.
Jefferson City, MO 65109

Subject: Maries - Chamois 161kV Transmission Line

Dear Ms. Watkins:

Central Electric Power Cooperative (CEPC) is proposing to redesign, retire, and rebuild the Maries – Chamois 161kV line located in Osage and Maries County, Missouri. The rebuild will be constructed on existing transmission line right-of-way.

In compliance with RUS environmental guidelines, CEPC is corresponding with the following agencies:

Missouri Department of Conservation
Missouri Department of Natural Resources
Missouri Department of Transportation – Central District
Natural Resources Conservation Service
Regional Planning Agencies
Dept. of the Army, Corps of Engineers – Kansas City District
United States Fish and Wildlife Service
Osage County Commissioner
Maries County Commissioner

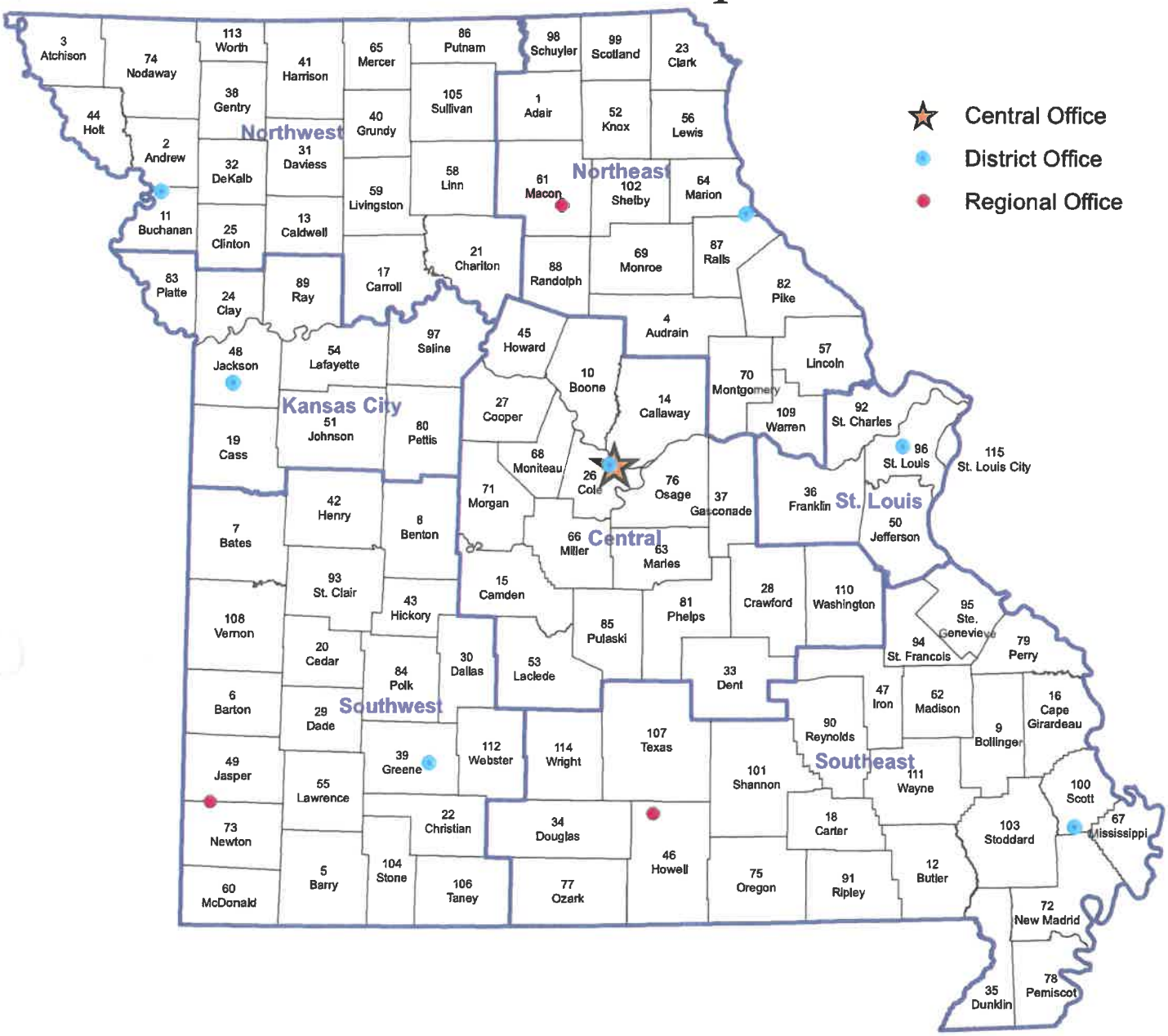
A topographic and location map for the proposed site is enclosed. Please review and comment regarding the construction of the facility as it relates to your organization. We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 573-761-2857.

Respectfully,

CENTRAL ELECTRIC POWER COOPERATIVE

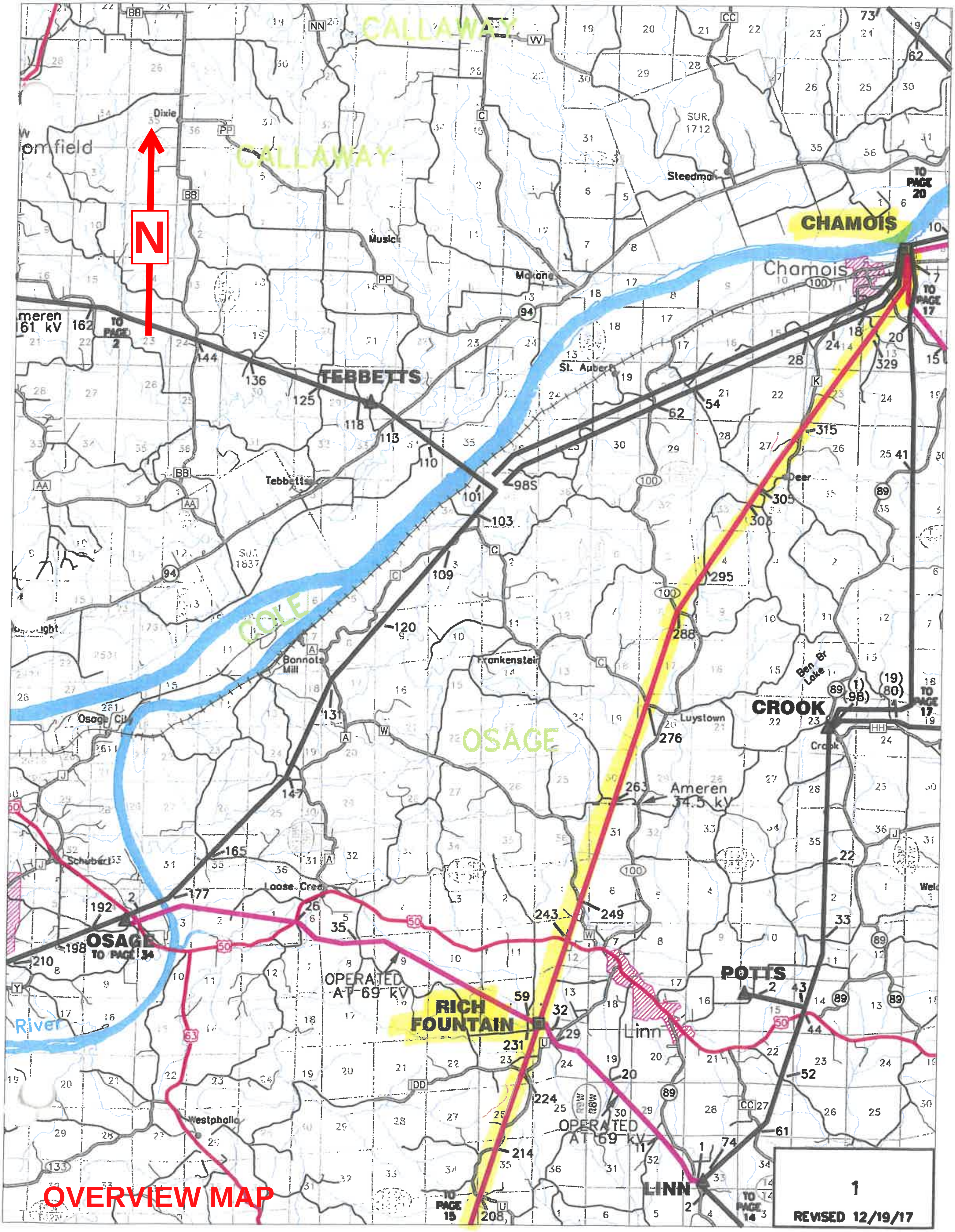
Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Enclosures

Missouri Department of Transportation
District Map



County	No.	Dist.	County	No.	Dist.	County	No.	Dist.	County	No.	Dist.	County	No.	Dist.	County	No.	Dist.
Adair	1	NE	Chariton	21	NW	Harrison	41	NW	Macon	61	NE	Phelps	81	C	Shannon	101	SE
Andrew	2	NW	Christian	22	SW	Henry	42	SW	Madison	62	SE	Pike	82	NE	Shelby	102	NE
Atchison	3	NW	Clark	23	NE	Hickory	43	SW	Maries	63	C	Platte	83	KC	Stoddard	103	SE
Audrian	4	NE	Clay	24	KC	Holt	44	NW	Marion	64	NE	Polk	84	SW	Stone	104	SW
Barry	5	SW	Clinton	25	NW	Howard	45	C	Mercer	65	NW	Pulaski	85	C	Sullivan	105	NW
Barton	6	SW	Cole	26	C	Howell	46	SE	Miller	66	C	Putnam	86	NW	Taney	106	SW
Bates	7	SW	Cooper	27	C	Iron	47	SE	Mississippi	67	SE	Ralls	87	NE	Texas	107	SE
Benton	8	SW	Crawford	28	C	Jackson	48	KC	Moniteau	68	C	Randolph	88	NE	Vernon	108	SW
Bollinger	9	SE	Dade	29	SW	Jasper	49	SW	Monroe	69	NE	Ray	89	KC	Warren	109	NE
Boone	10	C	Dallas	30	SW	Jefferson	50	SL	Montgomery	70	NE	Reynolds	90	SE	Washington	110	C
Buchanan	11	NW	Daviess	31	NW	Johnson	51	KC	Morgan	71	C	Ripley	91	SE	Wayne	111	SE
Butler	12	SE	Dekalb	32	NW	Knox	52	NE	New Madrid	72	SE	St. Charles	92	SL	Webster	112	SW
[illegible]dwell	13	NW	Dent	33	C	Laclede	53	C	Newton	73	SW	St. Clair	93	SW	Worth	113	NW
[illegible]way	14	C	Douglas	34	SE	Lafayette	54	KC	Nodaway	74	NW	St. Francois	94	SE	Wright	114	SE
[illegible]nden	15	C	Dunklin	35	SE	Lawrence	55	SW	Oregon	75	SE	Ste. Genevieve	95	SE	St. Louis City	115	SL
Cape Girardeau	16	SE	Franklin	36	SL	Lewis	56	NE	Osage	76	C	St. Louis	96	SL			
Carroll	17	NW	Gasconade	37	C	Lincoln	57	NE	Ozark	77	SE	Saline	97	KC			
Carter	18	SE	Gentry	38	NW	Linn	58	NW	Pemiscot	78	SE	Schuyler	98	NE			
Cass	19	KC	Greene	39	SW	Livingston	59	NW	Perry	79	SE	Scotland	99	NE			
Cedar	20	SW	Grundy	40	NW	McDonald	60	SW	Pettis	80	KC	Scott	100	SE			

6/27/2011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Musick
Dixie
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St. Aubert
Bonnots Mill
Osage City
Frankenstein
Luystown
CROOK
Crook
Ben Br Lake
Ameren 34.5 kV
Loose Creek
Schubert
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OPERATED AT 69 kV
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Westphalia
River
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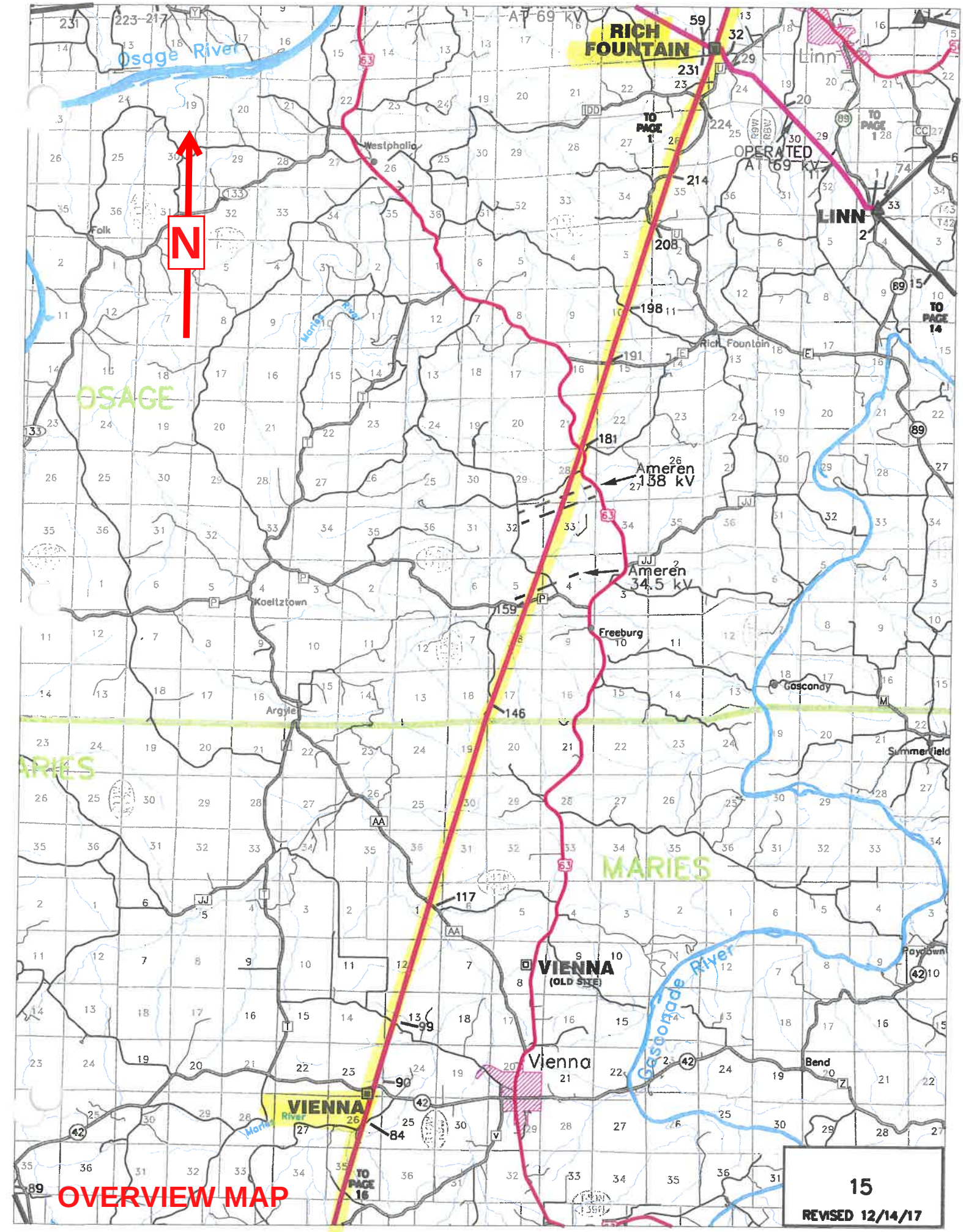
RICH FOUNTAIN
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Rich Fountain
Ameren 138 kV
Ameren 34.5 kV
Koeltztown
Freeburg
Gascondy
Argyle
Summerfield
MARIES
VIENNA (OLD SITE)
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Vienna
Bend
VIENNA
Maries River
TO PAGE 16
TO PAGE 14
OVERVIEW MAP
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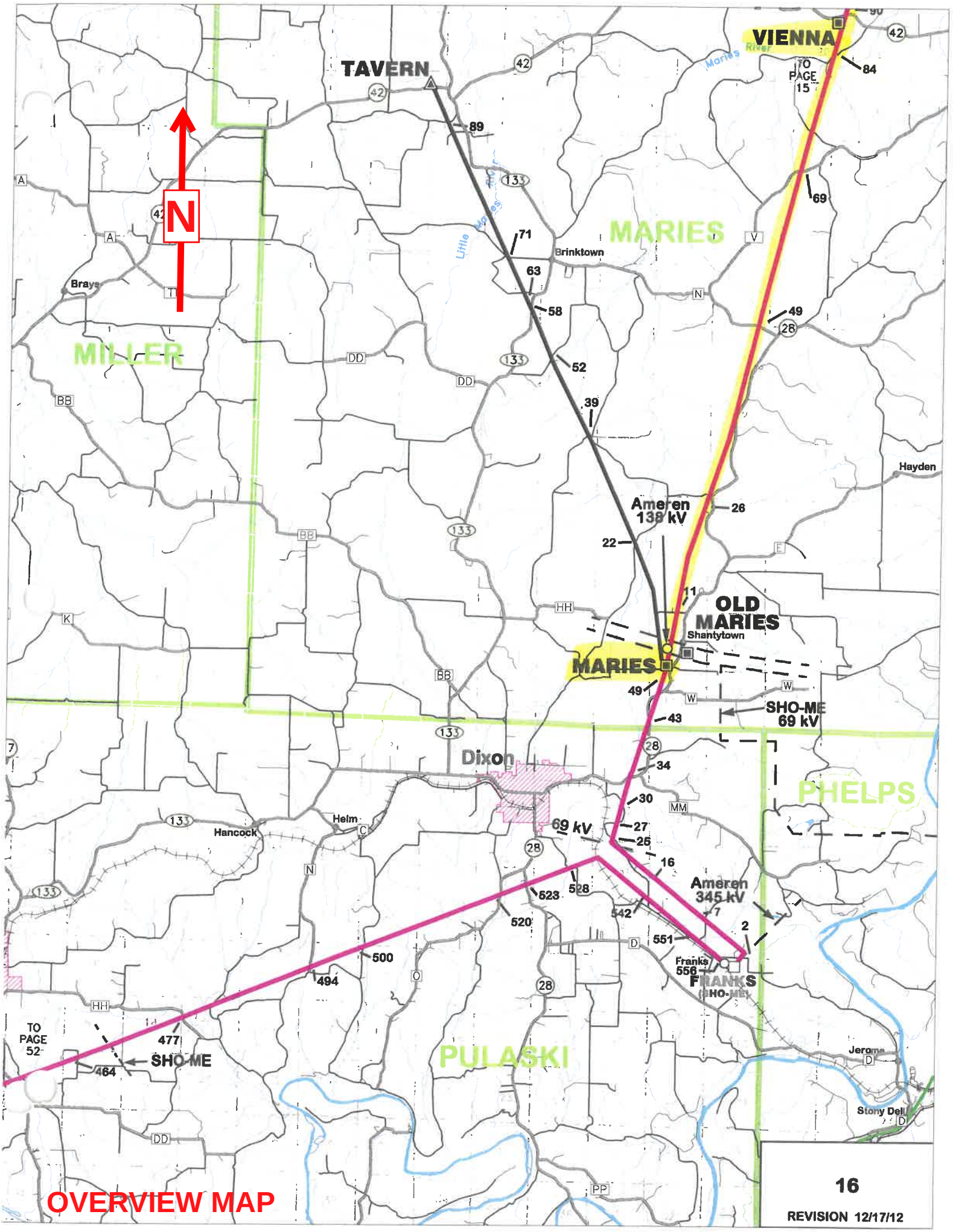
REVISED 12/14/17


VIENNA
TAVERN
MARIES
MILLER
PHELPS
PULASKI
Brinktown
Brays
Hayden
Dixon
Helm
Hancock
Shantytown
OLD MARIES
Ameren 138 kV
Ameren 345 kV
SHO-ME 69 kV
69 kV
Franks 556
FRANKS
(SHO-ME)
Jerome
Stony Dell
Little Maries Creek
Maries River
TO PAGE 15
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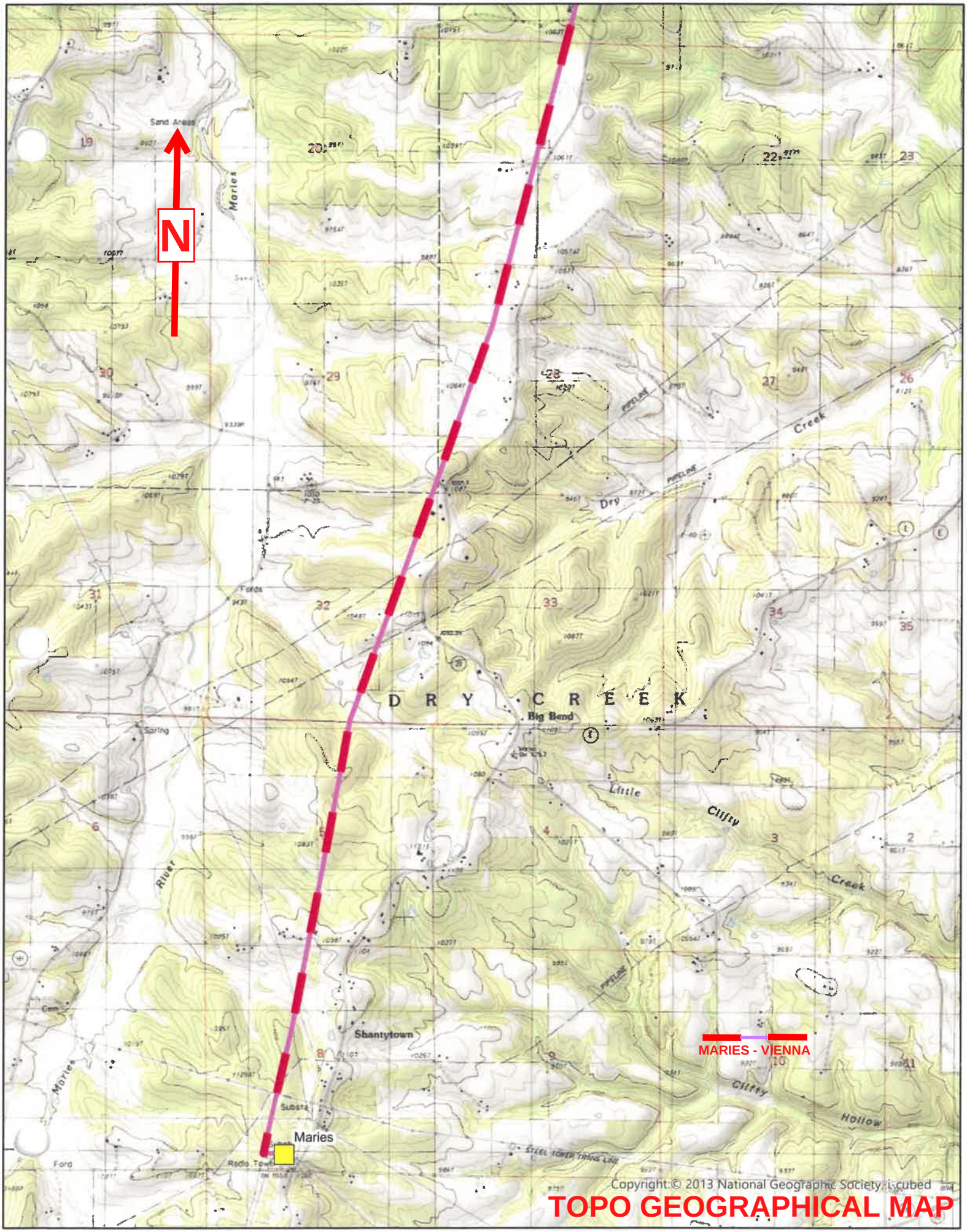
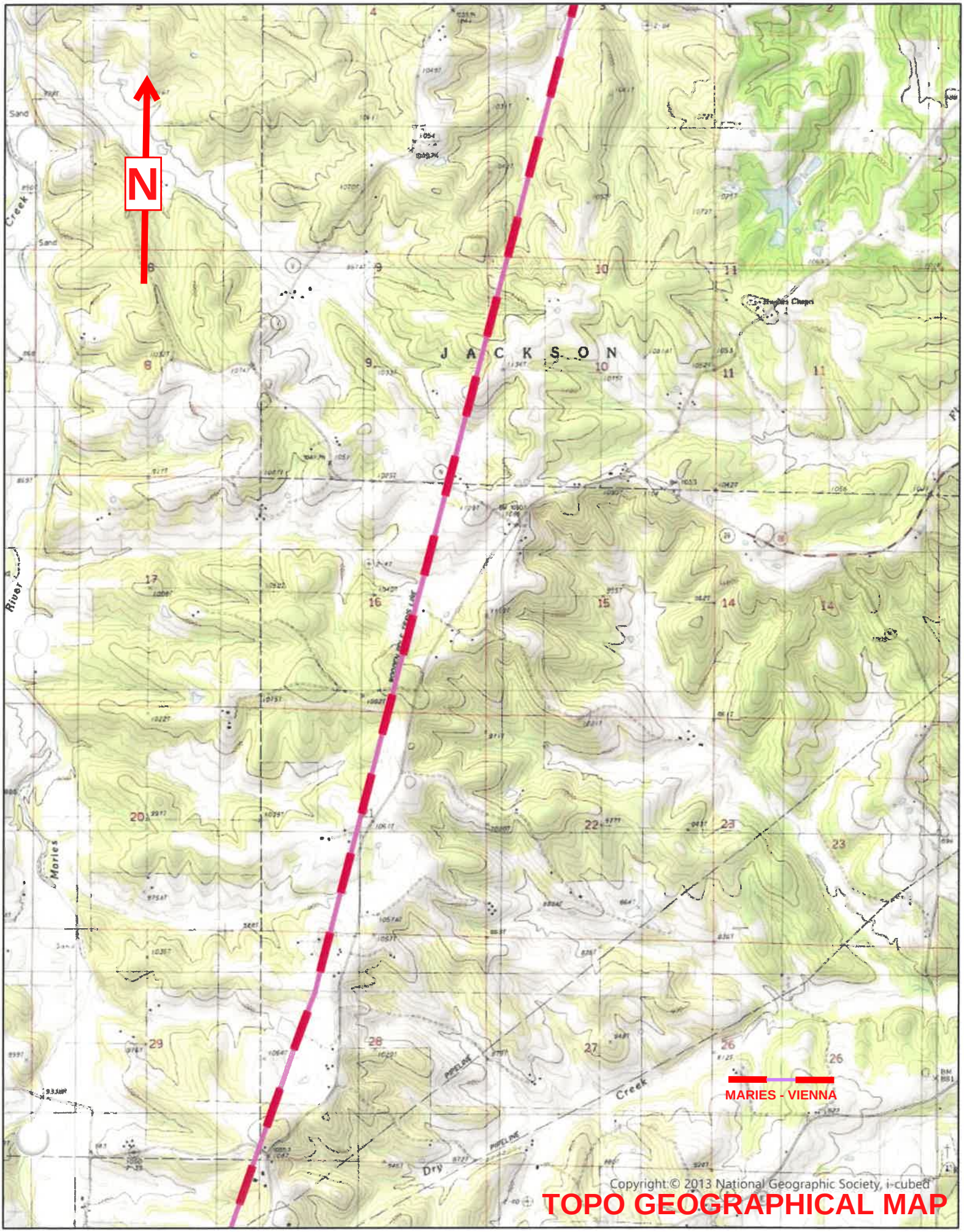


TOPO GEOGRAPHICAL MAP

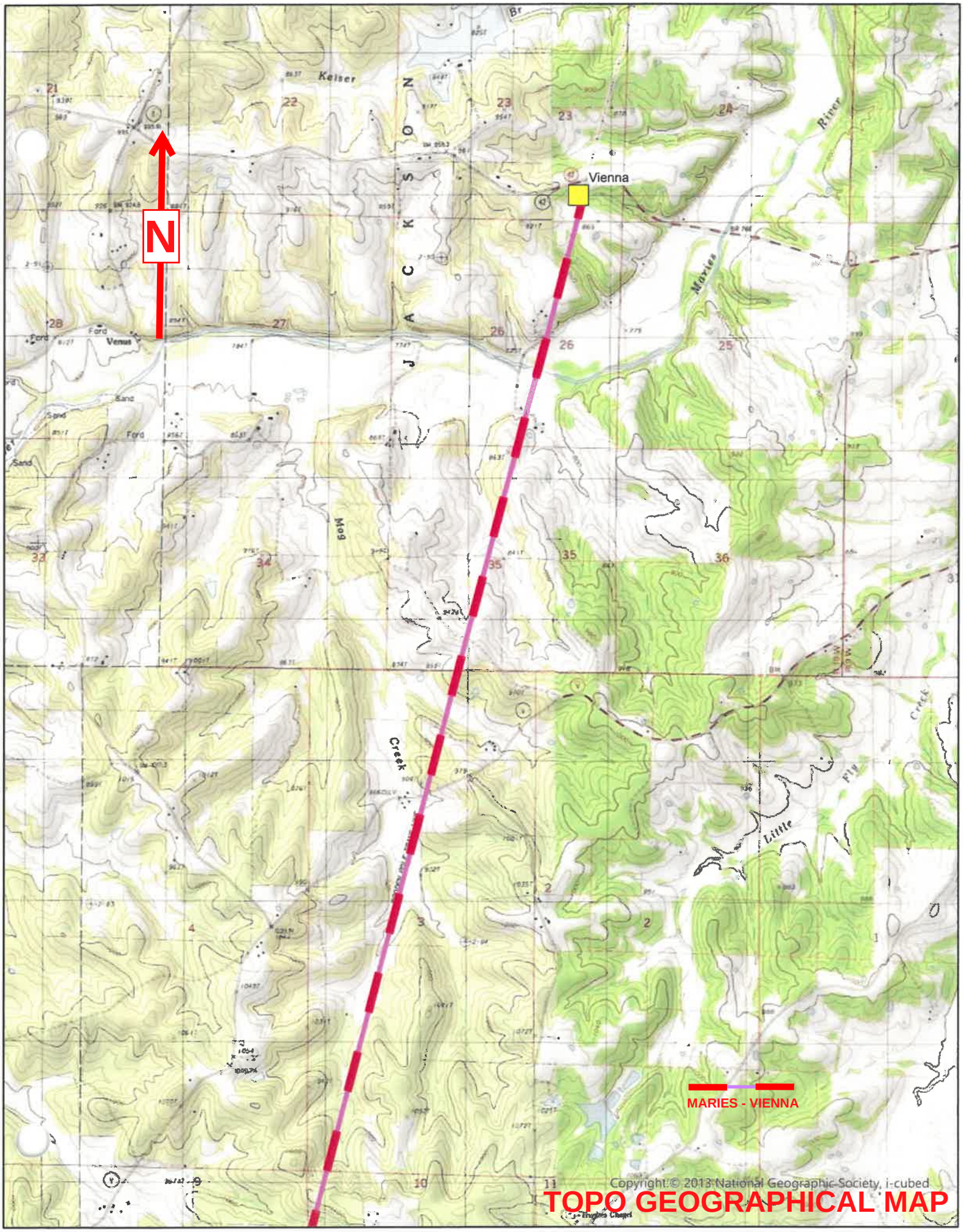
BIG BEND, MO

MARIES COUNTY



BIG BEND AND BRINKTOWN, MO

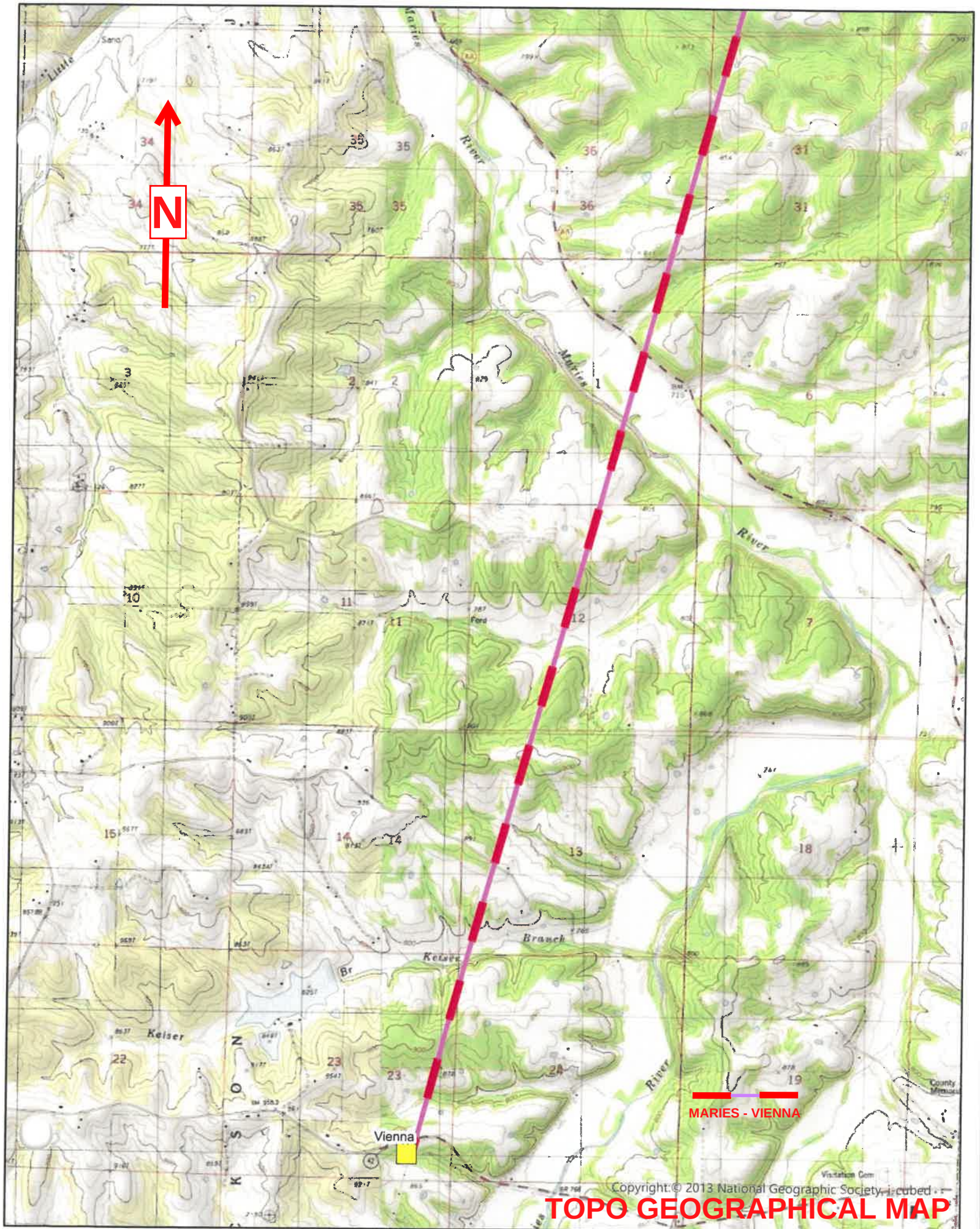
MARIES COUNTY



TOPO GEOGRAPHICAL MAP

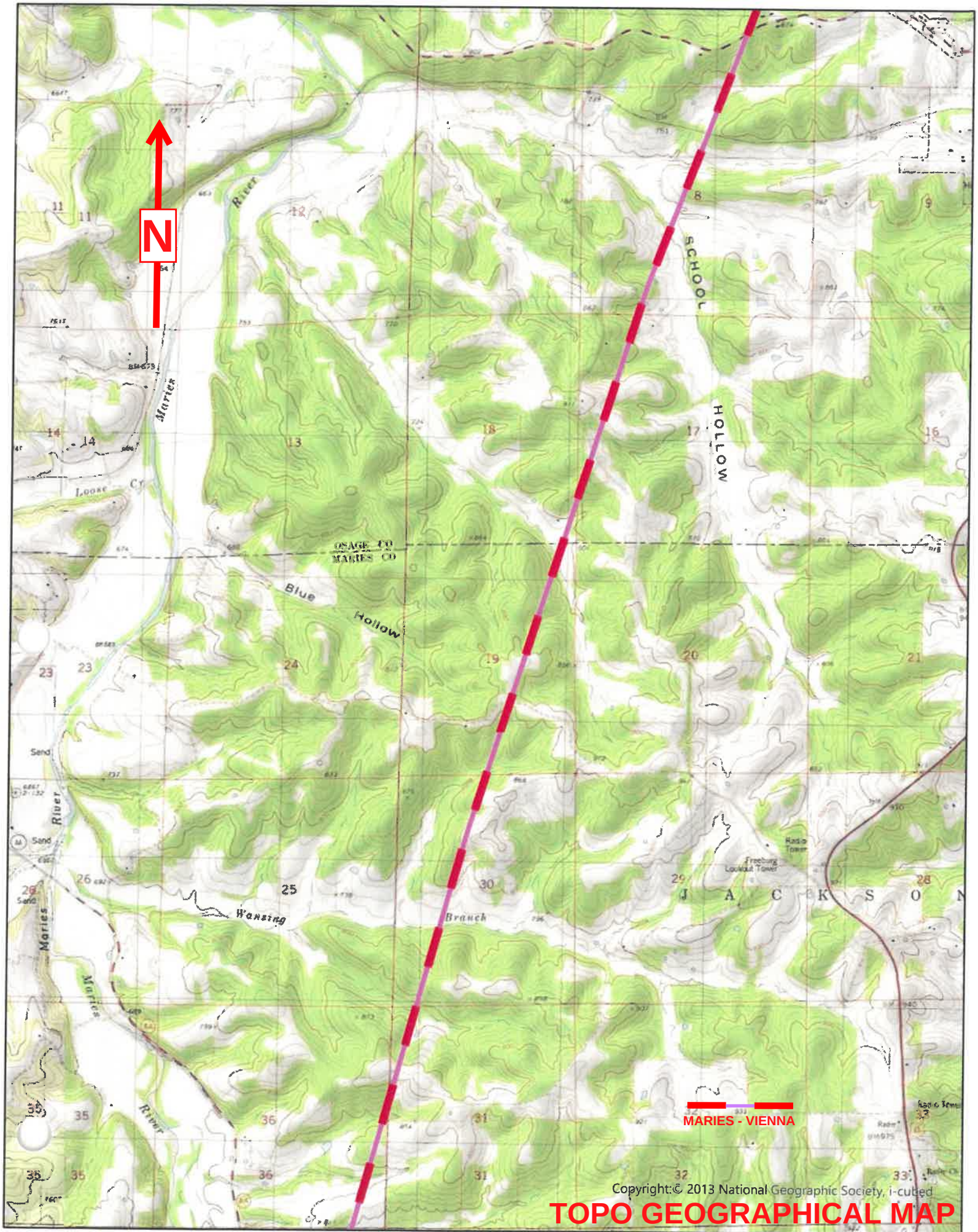
BRINKTOWN & VIENNA, MO

MARIES COUNTY



BRINKTOWN & VIENNA, MO

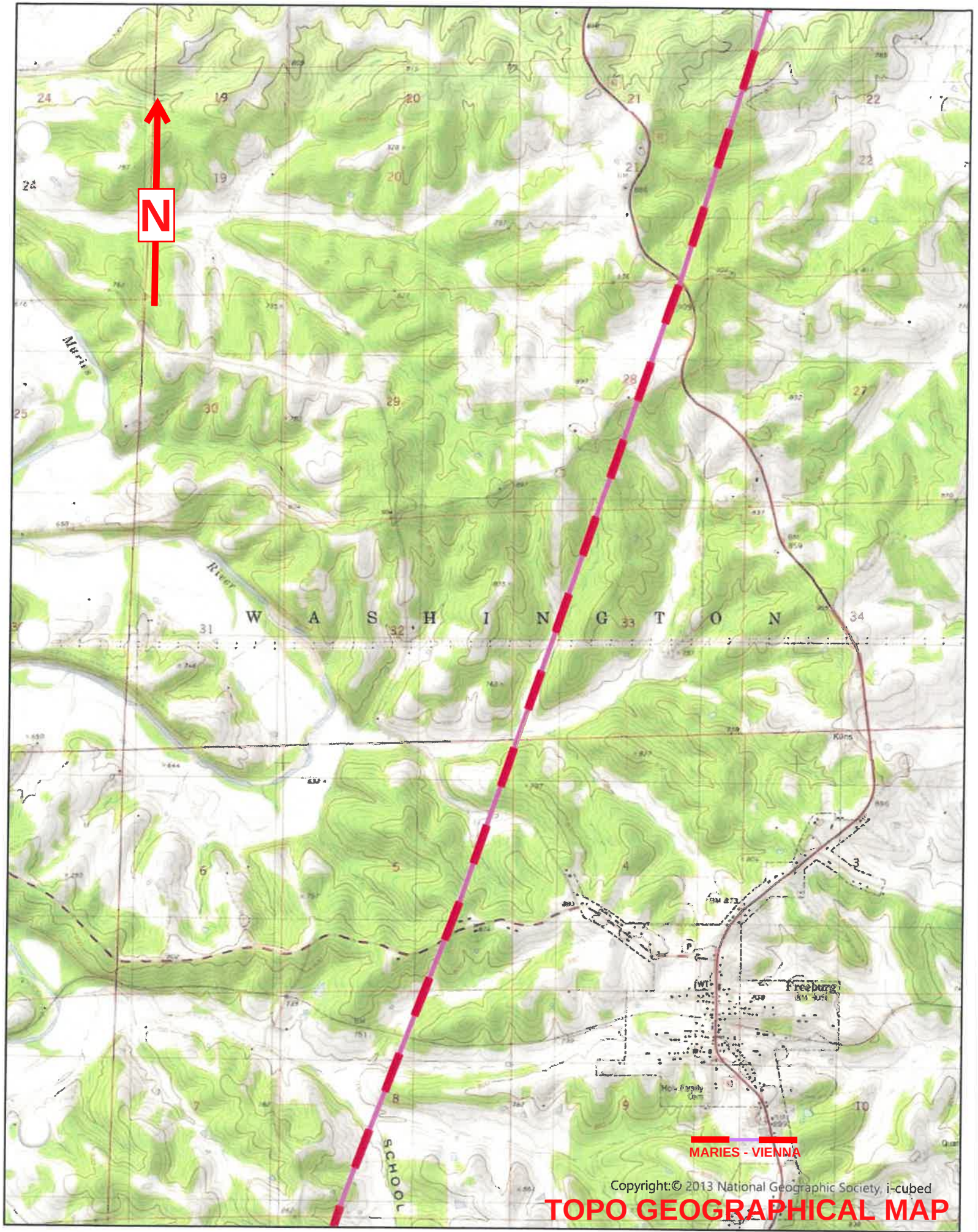
MARIES COUNTY



TOPO GEOGRAPHICAL MAP

VIENNA & FREEBURG, MO

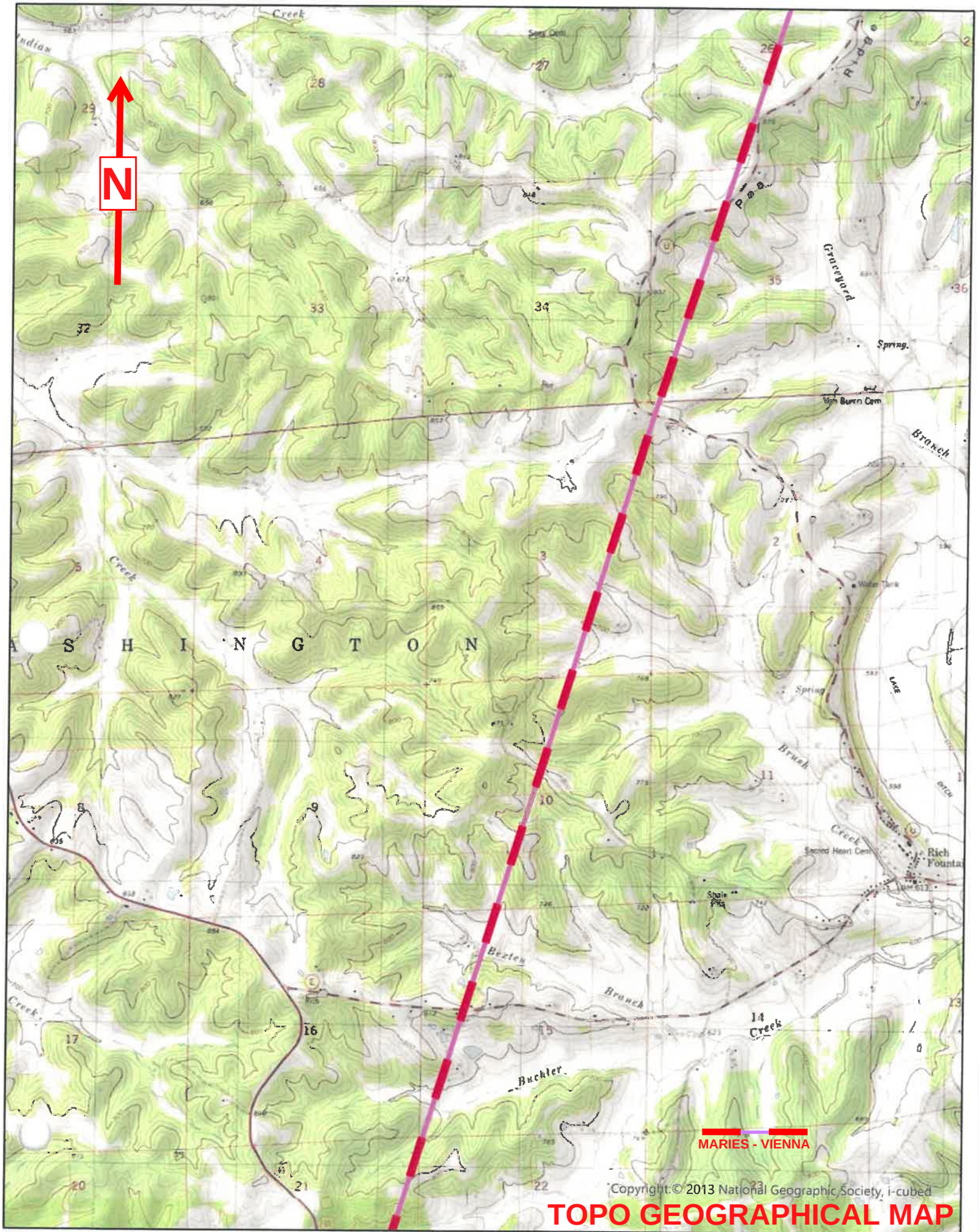
MARIES & OSAGE COUNTIES



TOPO GEOGRAPHICAL MAP

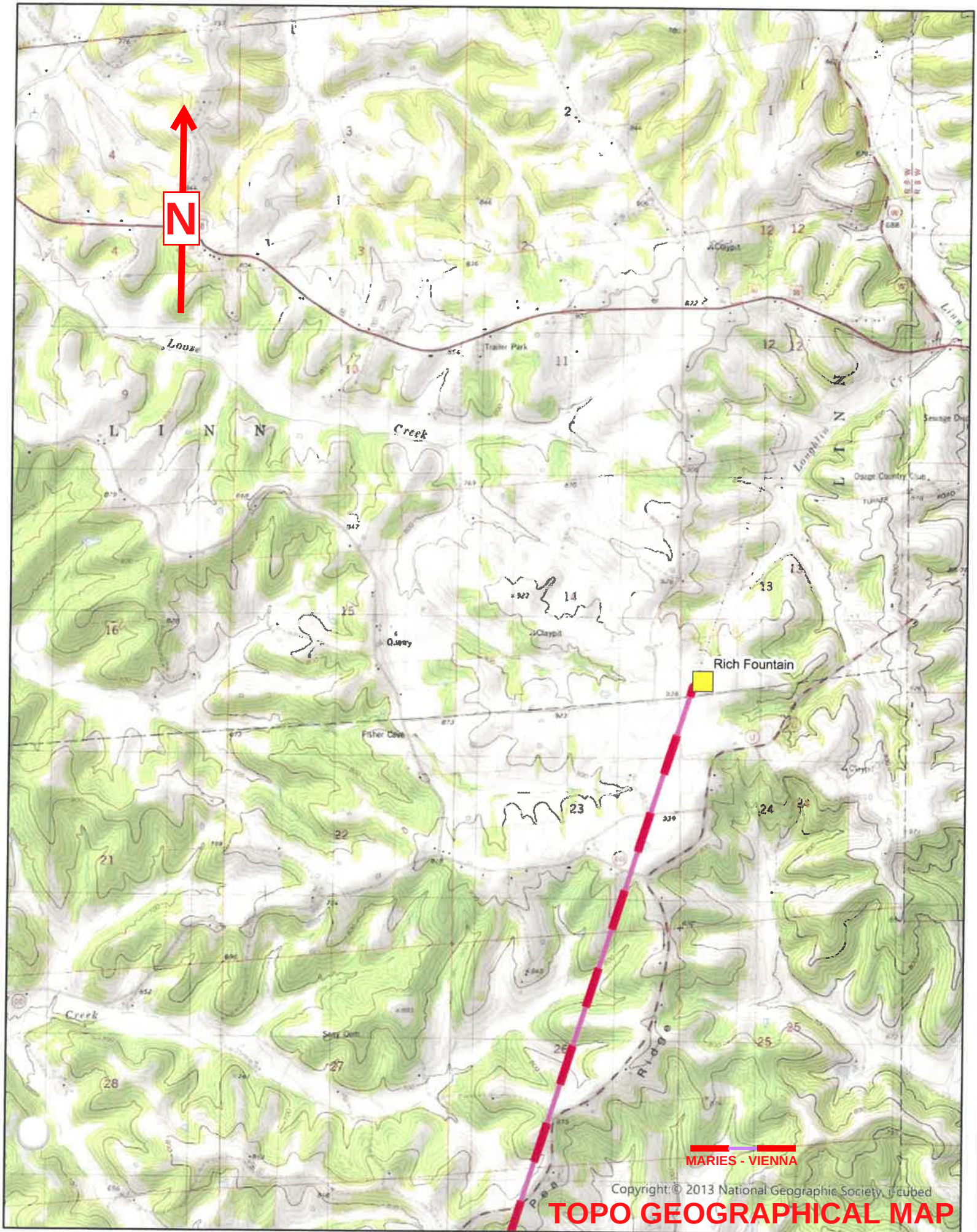
FREEBURG, MO

OSAGE COUNTY



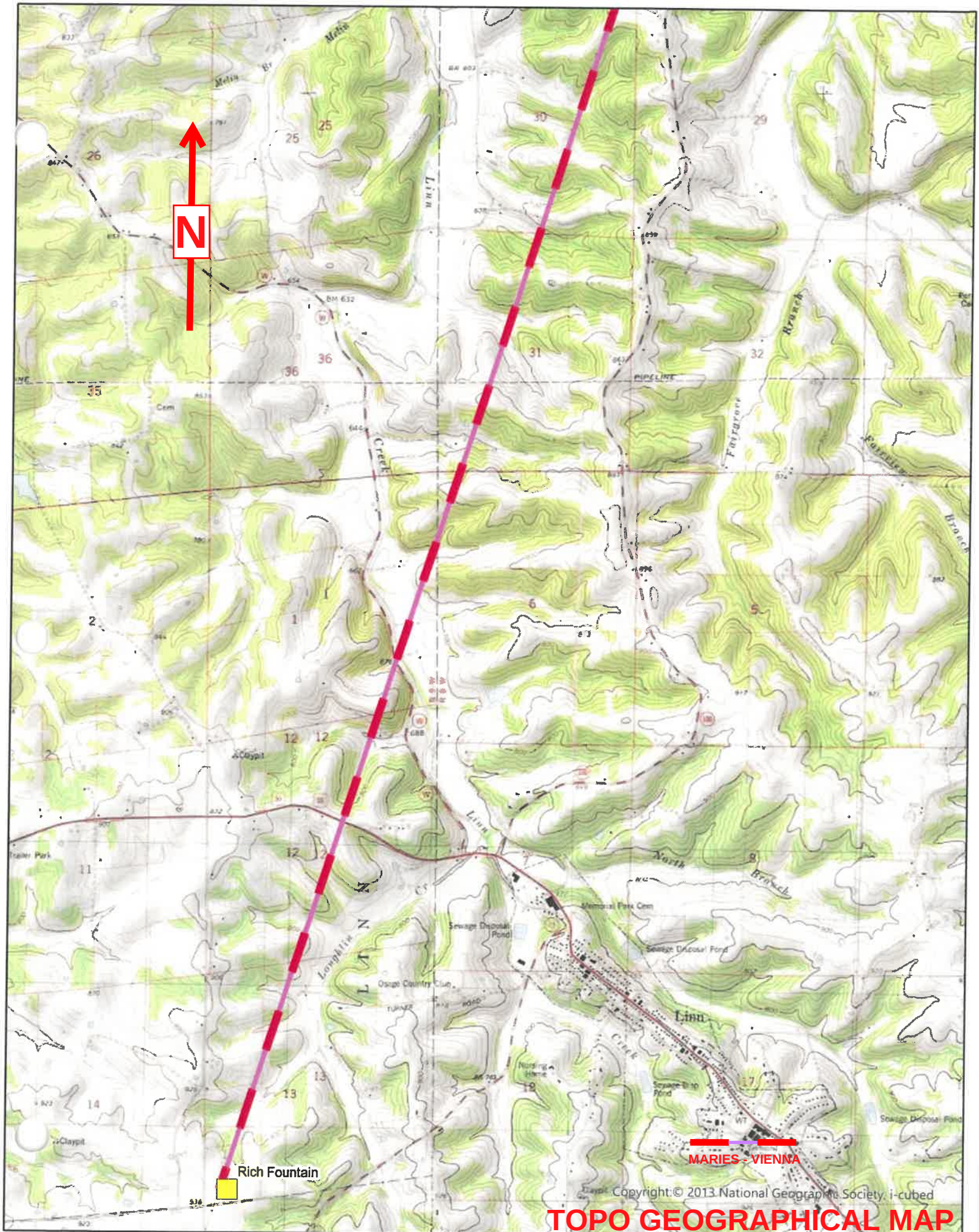
WESTPHALIA EAST, MO

OSAGE COUNTY



WESTPHALIA EAST & LINN, MO

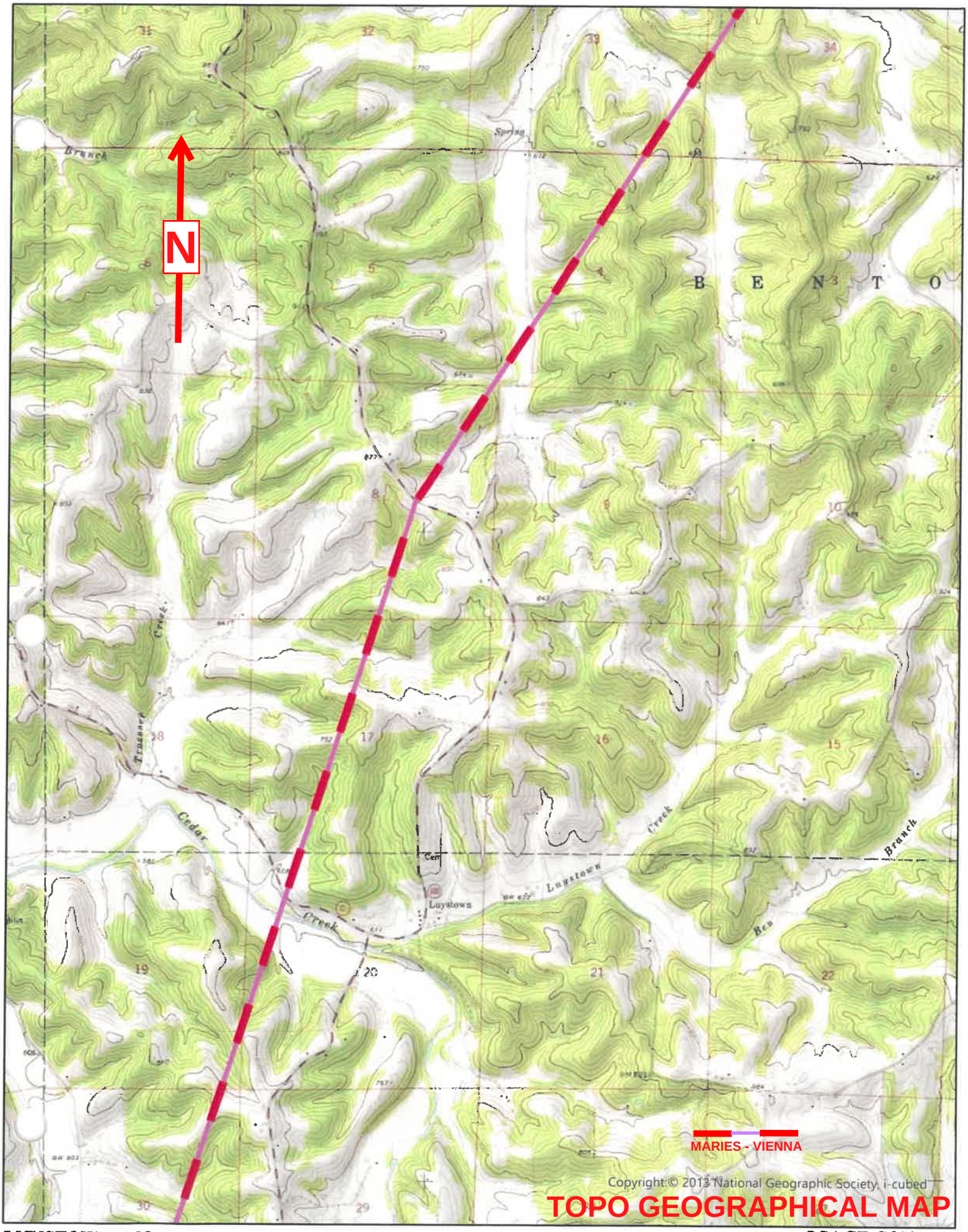
OSAGE COUNTY



TOPO GEOGRAPHICAL MAP

WESTPHALIA EAST, LINN & LUYSTOWN, MO

OSAGE COUNTY



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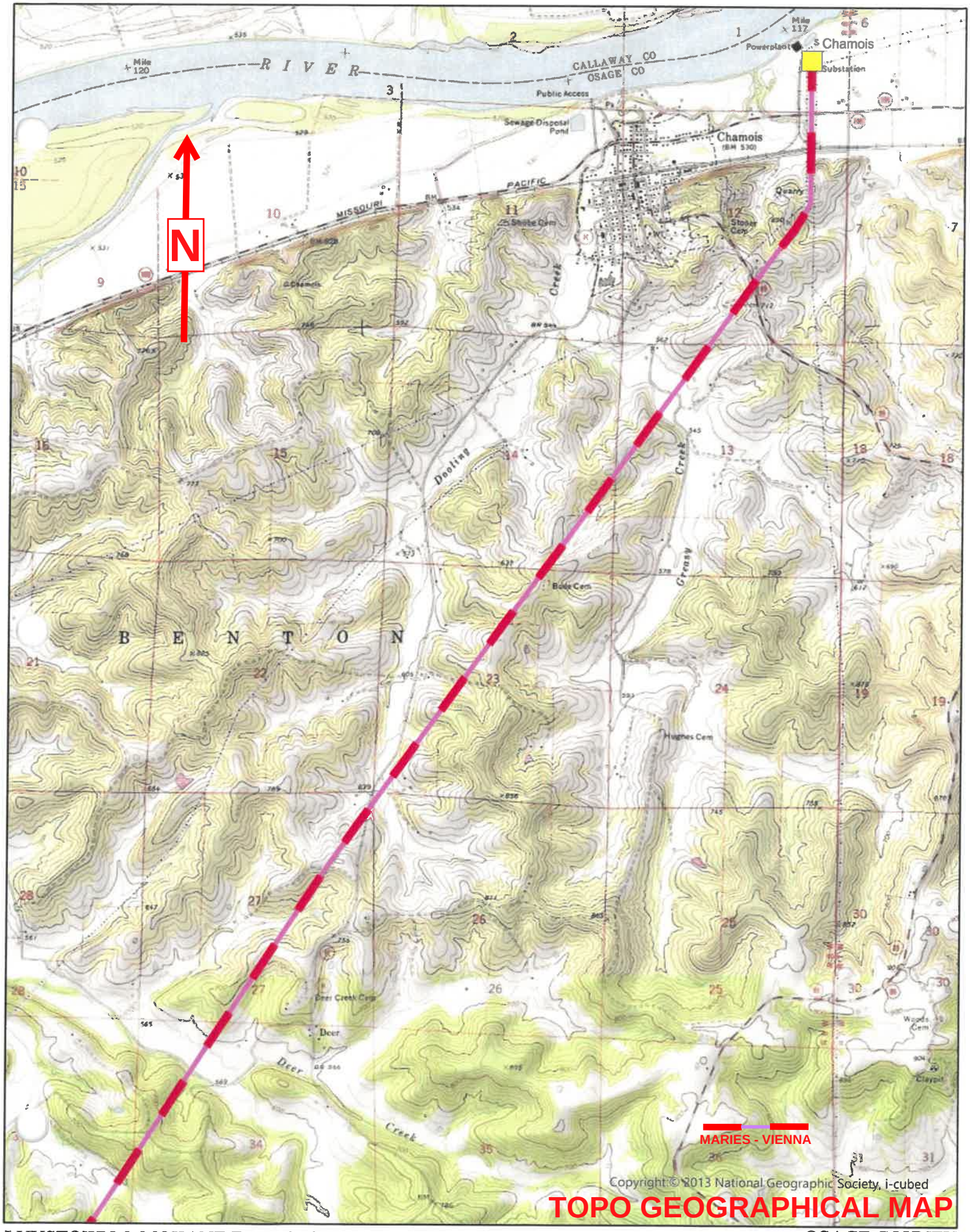
LUYSTOWN, MO

OSAGE COUNTY


N
MARIES - VIENNA
Copyright © 2013 National Geographic Society, i-cubed
TOPO GEOGRAPHICAL MAP
LUYSTOWN & MOKANE EAST, MO
OSAGE COUNTY

Central Electric Power Cooperative

2106 Jefferson Street, PO Box 269
Jefferson City, Missouri 65102
Telephone: (573) 634-2454
Fax: (573) 634-3892

November 18, 2020

Ms. Karen Herrington, Field Supervisor
Fish and Wildlife Service
101 Park DeVille Drive, Suite A
Columbia, MO 65203-0057

Subject: Maries - Chamois 161kV Transmission Line
IPAC Consultation Code: 03E14000-2021-SLI-0277

Dear Ms. Herrington:

Central Electric Power Cooperative (CEPC) is proposing to redesign, retire, and rebuild the Maries – Chamois 161kV line located in Osage and Maries County, Missouri. The rebuild will be constructed on existing transmission line right-of-way.

In compliance with RUS environmental guidelines, CEPC is corresponding with the following agencies:

Missouri Department of Conservation
Missouri Department of Natural Resources
Missouri Department of Transportation – Central District
Natural Resources Conservation Service
Regional Planning Agencies
Dept. of the Army, Corps of Engineers – Kansas City District
United States Fish and Wildlife Service
Osage County Commissioner
Maries County Commissioner

A topographic and location map for the proposed site is enclosed. Please review and comment regarding the construction of the facility as it relates to your organization. We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 573-761-2857.

Respectfully,

CENTRAL ELECTRIC POWER COOPERATIVE

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Enclosures

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
Phone: (573) 234-2132 Fax: (573) 234-2181

In Reply Refer To:
Project Code: 2022-0023345
Project Name: Maries-Vienna-Rich Fountain-Chamois

July 14, 2022

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Threatened and Endangered Species

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).
New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. **Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days.** The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance

Refer to the Midwest Region S7 Technical Assistance website for step-by-step instructions for making species determinations and for specific guidance on the following types of projects:

projects in developed areas, HUD, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

Federally Listed Bat Species

Indiana bats, gray bats, and northern long-eared bats occur throughout Missouri and the information below may help in determining if your project may affect these species.

Gray bats - Gray bats roost in caves or mines year-round and use water features and forested riparian corridors for foraging and travel. If your project will impact caves, mines, associated riparian areas, or will involve tree removal around these features – particularly within stream corridors, riparian areas, or associated upland woodlots –gray bats could be affected.
Indiana and northern long-eared bats - These species hibernate in caves or mines only during the winter. In Missouri the hibernation season is considered to be November 1 to March 31. During the active season in Missouri (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥5 inches diameter at breast height (dbh) for Indiana bat, and ≥3 inches dbh for northern long-eared bat, that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Tree species often include, but are not limited to, shellbark or shagbark hickory, white oak, cottonwood, and maple. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, Indiana bats or northern long-eared bats could be affected.
Examples of unsuitable habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas;
- Trees found in highly-developed urban areas (e.g., street trees, downtown areas);
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees; and
- A stand of eastern red cedar shrubby vegetation with no potential roost trees.

Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of "There are no listed species found within the vicinity of the project," then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.

2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see #3 below) – then project proponents can conclude the proposed activities **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain Life History Information for Listed and Candidate Species through the S7 Technical Assistance website.
3. If IPac returns a result that one or more federally listed bat species (Indiana bat, northern long-eared bat, or gray bat) are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** these bat species **IF** one or more of the following activities are proposed:
    a. Clearing or disturbing suitable roosting habitat, as defined above, at any time of year;
    b. Any activity in or near the entrance to a cave or mine;
    c. Mining, deep excavation, or underground work within 0.25 miles of a cave or mine;
    d. Construction of one or more wind turbines; or
    e. Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

If none of the above activities are proposed, project proponents can conclude the proposed activities will have **no effect** on listed bat species. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.
If any of the above activities are proposed in areas where one or more bat species may be present, project proponents can conclude the proposed activities **may affect** one or more bat species. We recommend coordinating with the Service as early as possible during project planning. If your project will involve removal of over 5 acres of suitable forest or woodland habitat, we recommend you complete a Summer Habitat Assessment prior to contacting our office to expedite the consultation process. The Summer Habitat Assessment Form is available in Appendix A of the most recent version of the Range-wide Indiana Bat Summer Survey Guidelines.

Other Trust Resources and Activities

Bald and Golden Eagles - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. Should bald or golden eagles occur within or near the project area please contact our office for further coordination. For communication and wind energy projects, please refer to additional guidelines below.

Migratory Birds - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA

to proactively prevent the mortality of migratory birds whenever possible and we encourage implementation of recommendations that minimize potential impacts to migratory birds. Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

Communication Towers - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed voluntary guidelines for minimizing impacts.

Transmission Lines - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to guidelines developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

Wind Energy - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's Wind Energy Guidelines. In addition, please refer to the Service's Eagle Conservation Plan Guidance, which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

Next Steps

Should you determine that project activities **may affect** any federally listed species or trust resources described herein, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

If you have not already done so, please contact the Missouri Department of Conservation (Policy Coordination, P. O. Box 180, Jefferson City, MO 65102) for information concerning Missouri Natural Communities and Species of Conservation Concern.
We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

Karen Herrington

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
(573) 234-2132

Project Summary

Project Code: 2022-0023345
Event Code: None
Project Name: Maries-Vienna-Rich Fountain-Chamois
Project Type: Transmission Line - Maintenance/Modification - Above Ground
Project Description: 48.6 mile 161kV transmission line rebuild in Maries and Osage counties
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.35479427039441,-91.93057845145324,14z

Counties: Maries and Osage counties, Missouri

Endangered Species Act Species

There is a total of 10 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Gray Bat *Myotis grisescens*	Endangered
No critical habitat has been designated for this species.	
Species profile: https://ecos.fws.gov/ecp/species/6329	
Indiana Bat *Myotis sodalis*	Endangered
There is **final** critical habitat for this species. The location of the critical habitat is not available.	
Species profile: https://ecos.fws.gov/ecp/species/5949	
General project design guidelines: https://ipac.ecosphere.fws.gov/project/SCRGNTSHXBCS7PZXHHX62HFD3M/documents/generated/6868.pdf	
Northern Long-eared Bat *Myotis septentrionalis*	Threatened
No critical habitat has been designated for this species.	
Species profile: https://ecos.fws.gov/ecp/species/9045	
General project design guidelines: https://ipac.ecosphere.fws.gov/project/SCRGNTSHXBCS7PZXHHX62HFD3M/documents/generated/6868.pdf	

Amphibians

NAME	STATUS
Eastern Hellbender *Cryptobranchus alleganiensis alleganiensis*	Endangered
Population: Missouri DPS	
No critical habitat has been designated for this species.	
Species profile: https://ecos.fws.gov/ecp/species/9039	

Fishes

NAME — STATUS

Niangua Darter *Etheostoma nianguae* — Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/7157

Pallid Sturgeon *Scaphirhynchus albus* — Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/7162

Clams

NAME — STATUS

Pink Mucket (pearlymussel) *Lampsilis abrupta* — Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/7829

Scaleshell Mussel *Leptodea leptodon* — Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/5881

Spectaclecase (mussel) *Cumberlandia monodonta* — Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/7867

Insects

NAME — STATUS

Monarch Butterfly *Danaus plexippus* — Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

RIVERINE

- Riverine

FRESHWATER EMERGENT WETLAND

- Palustrine

IPaC User Contact Information

Agency: Central Electric Power Cooperative
Name: Lori Bartlett
Address: PO Box 269
City: Jefferson City
State: MO
Zip: 65102
Email bartlettl2376@gmail.com
Phone: 5737612862

Lead Agency Contact Information

Lead Agency: Rural Utilities Service

Hoskins, Spencer

From: Weber, John S <John_S_Weber@fws.gov>
Sent: Thursday, March 25, 2021 12:04 PM
To: Hoskins, Spencer
Cc: Riedel, Ashley D; Hill, Laurel A
Subject: IPAC 03E14000-2021-SLI-0278 and 03E14000-2021-SLI-0277

EXTERNAL E-MAIL

Hello Mr. Hoskins,

Thank you for the additional information on the phone today regarding your electrical infrastructure project. I see no need for further consultation on this project, and our concurrence follows.

The U.S. Fish and Wildlife Service has reviewed your November 18, 2020 email and enclosures, requesting consultation on the proposed Maries to Chamois 161kV Transmission Line project as well as your Kingdom City to Santa Fe 69kV Transmission Line project in Missouri, and submits these comments pursuant to the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1544).

Based on the information you submitted, the Service concurs with your determination that your project should have "No Effect" on federally listed species.

Should the scope, timing, or manner of activity change, please contact this office.

Please let me know if you have any concerns or questions. I'm always happy to help.

Best,

John Weber
Deputy Field Supervisor
Missouri Field Office
U.S. Fish & Wildlife Service
Office: 573-234-5040; Cell: 573-825-6048

From: Hoskins, Spencer <SHoskins@cepc.net>
Sent: Monday, March 22, 2021 10:29 AM
To: Riedel, Ashley D <ashley_riedel@fws.gov>; Hill, Laurel A <laurel_hill@fws.gov>
Cc: Backus, Timothy L <timothy_backus@fws.gov>
Subject: RE: [EXTERNAL] IPAC 03E14000-2021-SLI-0278 and 03E14000-2021-SLI-0277

Good morning Ashley and Laurel,

Just curious if we have had a chance to review these two projects?

Thanks,

Spencer

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative
office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

Hoskins, Spencer

From: Weber, John S <John_S_Weber@fws.gov>
Sent: Thursday, March 25, 2021 11:47 AM
To: Hoskins, Spencer
Subject: Fw: [EXTERNAL] IPAC 03E14000-2021-SLI-0278 and 03E14000-2021-SLI-0277

EXTERNAL E-MAIL

Hello Spencer,

I can help you with your consultation needs immediately. I apologize sincerely for the delay. Please call my cell phone at your convenience.

Best regards,

John Weber
Deputy Field Supervisor
Missouri Field Office
U.S. Fish & Wildlife Service
Office: 573-234-5040; Cell: 573-825-6048

From: Hoskins, Spencer <SHoskins@cepc.net>
Sent: Monday, March 22, 2021 10:29 AM
To: Riedel, Ashley D <ashley_riedel@fws.gov>; Hill, Laurel A <laurel_hill@fws.gov>
Cc: Backus, Timothy L <timothy_backus@fws.gov>
Subject: RE: [EXTERNAL] IPAC 03E14000-2021-SLI-0278 and 03E14000-2021-SLI-0277

Good morning Ashley and Laurel,

Just curious if we have had a chance to review these two projects?

Thanks,
Spencer

Spencer K, Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative
office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

From: Riedel, Ashley D <ashley_riedel@fws.gov>
Sent: Friday, March 5, 2021 10:53 AM
To: Hoskins, Spencer <SHoskins@cepc.net>
Cc: Backus, Timothy L <timothy_backus@fws.gov>; Hill, Laurel A <laurel_hill@fws.gov>
Subject: Re: [EXTERNAL] IPAC 03E14000-2021-SLI-0278 and 03E14000-2021-SLI-0277

EXTERNAL E-MAIL

No worries at all. With the staff turnover we've had, a lot of responsibilities have been shifted; so I'm sure it just got lost in the shuffle. But Laurel is wonderful to work with and she'll take great care of you!

Very Respectfully,
Ashley D. Riedel
Biological Science Technician, USFWS
Missouri Ecological Services Field Office
101 Park Deville Drive, Suite A
Columbia, MO 65203
Tel. (660) 672-2816 ext. 107*
*Teleworking - please email to schedule a call.

From: Hoskins, Spencer <SHoskins@cepc.net>
Sent: Friday, March 5, 2021 10:48 AM
To: Riedel, Ashley D <ashley_riedel@fws.gov>
Cc: Backus, Timothy L <timothy_backus@fws.gov>; Hill, Laurel A <laurel_hill@fws.gov>
Subject: RE: [EXTERNAL] IPAC 03E14000-2021-SLI-0278 and 03E14000-2021-SLI-0277

Thanks Ashley, I didn't write down the name since they appeared to have my contact info and had planned to email me a confirmation letter for each project that no further consultation was required, but the letters never came.

Spencer K, Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative
office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

From: Riedel, Ashley D <ashley_riedel@fws.gov>
Sent: Friday, March 5, 2021 10:38 AM
To: Hoskins, Spencer <SHoskins@cepc.net>
Cc: Backus, Timothy L <timothy_backus@fws.gov>; Hill, Laurel A <laurel_hill@fws.gov>
Subject: Re: [EXTERNAL] IPAC 03E14000-2021-SLI-0278 and 03E14000-2021-SLI-0277

EXTERNAL E-MAIL

Hi Spencer,

I apologize for the delay. We've had some staff turnover recently and I am wondering if perhaps you'd discussed the project with one of the individuals who has since left, as I have no records of either consultation. I generally work on FCC, HUD and FEMA consultations. I've reached out to our new RUS lead (CC'd above) to see if she recognizes the projects and/or can provide a quick comment. Otherwise, I would be happy to review them for you.

Very Respectfully,
Ashley D. Riedel
Biological Science Technician, USFWS
Missouri Ecological Services Field Office
101 Park Deville Drive, Suite A
Columbia, MO 65203
Tel. (660) 672-2816 ext. 107*
*Teleworking - please email to schedule a call.

From: Hoskins, Spencer <SHoskins@cepc.net>
Sent: Friday, March 5, 2021 10:20 AM
To: Backus, Timothy L <timothy_backus@fws.gov>; Riedel, Ashley D <ashley_riedel@fws.gov>
Subject: RE: [EXTERNAL] IPAC 03E14000-2021-SLI-0278 and 03E14000-2021-SLI-0277

Tim/Ashley,

Any word on this set of projects?

Spencer K, Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative
office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

From: Backus, Timothy L <timothy_backus@fws.gov>
Sent: Wednesday, February 17, 2021 4:10 PM
To: Hoskins, Spencer <SHoskins@cepc.net>
Subject: Fw: [EXTERNAL] IPAC 03E14000-2021-SLI-0278 and 03E14000-2021-SLI-0277

EXTERNAL E-MAIL

Spencer,

Here's a update from Ashley, she will be in touch tomorrow or Friday with ya, just letting ya know.

Tim

From: Riedel, Ashley D <ashley_riedel@fws.gov>
Sent: Wednesday, February 17, 2021 3:05 PM
To: Backus, Timothy L <timothy_backus@fws.gov>
Subject: Re: [EXTERNAL] IPAC 03E14000-2021-SLI-0278 and 03E14000-2021-SLI-0277

Hi Tim,

I do have a HUD consultation in Chamois, but I don't recognize this man's name. I'll look into the consultation codes to double check, and get back with him. My ArcGIS is down today though, so he likely won't get a response until COB tomorrow or the day after -- just as an FYI.

Very Respectfully,
Ashley D. Riedel
Biological Science Technician, USFWS
Big Muddy National Fish and Wildlife Refuge
& Missouri Ecological Services Field Office
101 Park Deville Drive, Suite A
Columbia, MO 65203
Tel. (660) 672-2816 ext. 107

From: Backus, Timothy L <timothy_backus@fws.gov>
Sent: Wednesday, February 17, 2021 2:39 PM
To: Riedel, Ashley D <ashley_riedel@fws.gov>
Subject: Fw: [EXTERNAL] IPAC 03E14000-2021-SLI-0278 and 03E14000-2021-SLI-0277

Ashley,

I spoke to him via phone, I ask him if it was Vona who helped him and he said it wasn't, only other person I could think that may have helped him was you. If it wasn't will you shoot the email to Vona and she can figure out who it was.

Thanks,

Tim

From: Hoskins, Spencer <SHoskins@cepc.net>
Sent: Wednesday, February 17, 2021 2:26 PM
To: Riedel, Ashley D <ashley_riedel@fws.gov>
Cc: Backus, Timothy L <timothy_backus@fws.gov>
Subject: [EXTERNAL] IPAC 03E14000-2021-SLI-0278 and 03E14000-2021-SLI-0277

Good Afternoon Ashley,

Just sending an email to follow up on our conversation on two projects that we discussed over the phone with the IPAC numbers listed above (Kingdom City – Santa Fe and Chamois – Maries). Both projects were rebuilds on existing R/W and you were going to send me confirmation emails for my records that these would not cause any impacts to the appropriate species and that they would be a determination of "No Effect". If you have any questions or need further information, please feel free to email me or use either of the contact numbers below.

Thanks,
Spencer

Spencer K, Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative
office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

Central Electric Power Cooperative

2106 Jefferson Street, PO Box 269
Jefferson City, Missouri 65102
Telephone: (573) 634-2454
Fax: (573) 634-3892

November 18, 2020

Ms. Machelle Watkins, District Engineer
Missouri Department of Transportation
Central District
1511 Missouri Blvd.
Jefferson City, MO 65109

Subject: Maries - Chamois 161kV Transmission Line

Dear Ms. Watkins:

Central Electric Power Cooperative (CEPC) is proposing to redesign, retire, and rebuild the Maries – Chamois 161kV line located in Osage and Maries County, Missouri. The rebuild will be constructed on existing transmission line right-of-way.

In compliance with RUS environmental guidelines, CEPC is corresponding with the following agencies:

Missouri Department of Conservation
Missouri Department of Natural Resources
Missouri Department of Transportation – Central District
Natural Resources Conservation Service
Regional Planning Agencies
Dept. of the Army, Corps of Engineers – Kansas City District
United States Fish and Wildlife Service
Osage County Commissioner
Maries County Commissioner

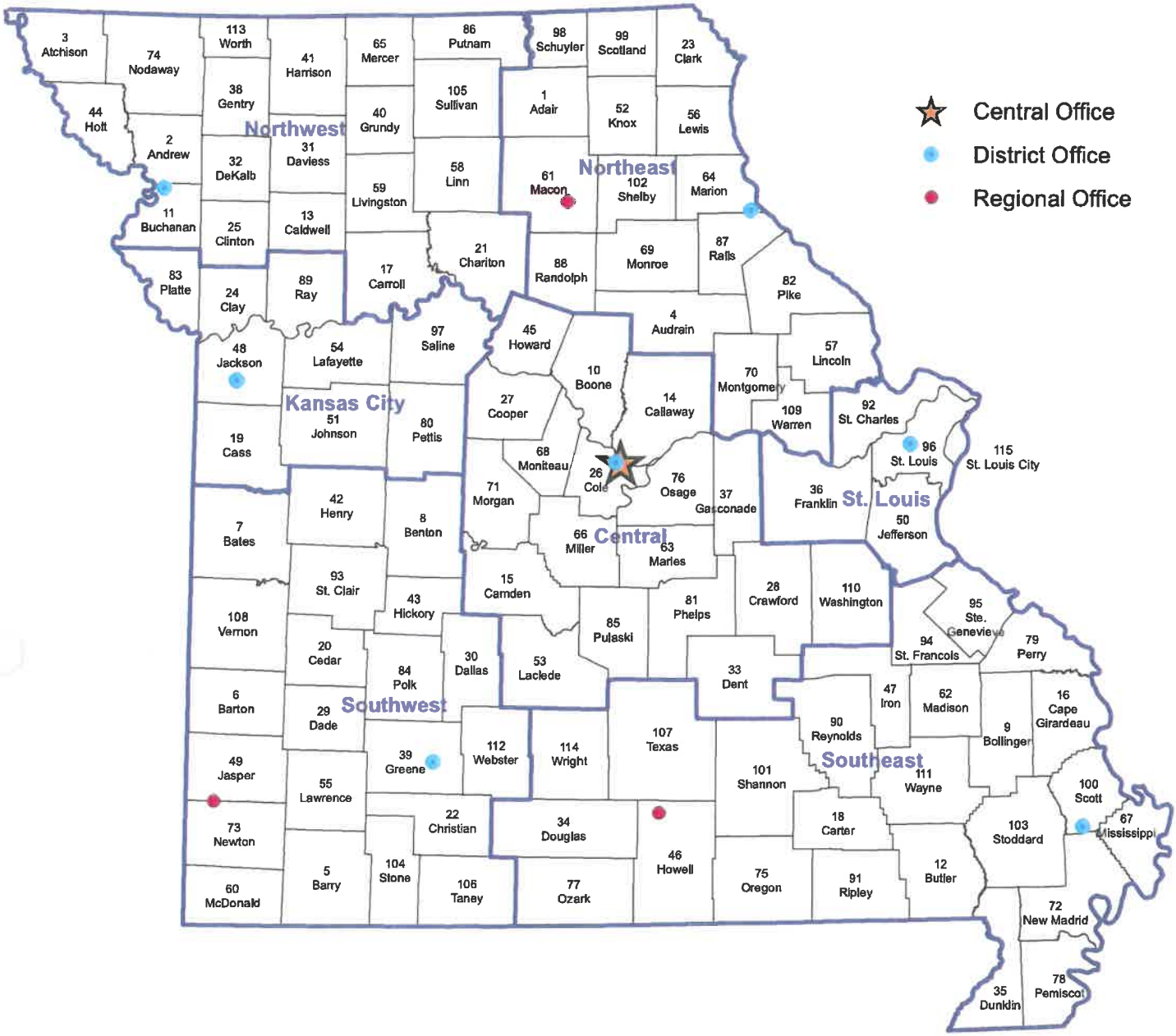
A topographic and location map for the proposed site is enclosed. Please review and comment regarding the construction of the facility as it relates to your organization. We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 573-761-2857.

Respectfully,

CENTRAL ELECTRIC POWER COOPERATIVE

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Enclosures

Missouri Department of Transportation
District Map



County	No.	Dist.	County	No.	Dist.	County	No.	Dist.	County	No.	Dist.	County	No.	Dist.	County	No.	Dist.
Adair	1	NE	Chariton	21	NW	Harrison	41	NW	Macon	61	NE	Phelps	81	C	Shannon	101	SE
Andrew	2	NW	Christian	22	SW	Henry	42	SW	Madison	62	SE	Pike	82	NE	Shelby	102	NE
Atchison	3	NW	Clark	23	NE	Hickory	43	SW	Maries	63	C	Platte	83	KC	Stoddard	103	SE
Audrian	4	NE	Clay	24	KC	Holt	44	NW	Marion	64	NE	Polk	84	SW	Stone	104	SW
Barry	5	SW	Clinton	25	NW	Howard	45	C	Mercer	65	NW	Pulaski	85	C	Sullivan	105	NW
Barton	6	SW	Cole	26	C	Howell	46	SE	Miller	66	C	Putnam	86	NW	Taney	106	SW
Bates	7	SW	Cooper	27	C	Iron	47	SE	Mississippi	67	SE	Ralls	87	NE	Texas	107	SE
Benton	8	SW	Crawford	28	C	Jackson	48	KC	Moniteau	68	C	Randolph	88	NE	Vernon	108	SW
Bollinger	9	SE	Dade	29	SW	Jasper	49	SW	Monroe	69	NE	Ray	89	KC	Warren	109	NE
Boone	10	C	Dallas	30	SW	Jefferson	50	SL	Montgomery	70	NE	Reynolds	90	SE	Washington	110	C
Buchanan	11	NW	Daviess	31	NW	Johnson	51	KC	Morgan	71	C	Ripley	91	SE	Wayne	111	SE
Butler	12	SE	Dekalb	32	NW	Knox	52	NE	New Madrid	72	SE	St. Charles	92	SL	Webster	112	SW
[illegible]well	13	NW	Dent	33	C	Laclede	53	C	Newton	73	SW	St. Clair	93	SW	Worth	113	NW
[illegible]way	14	C	Douglas	34	SE	Lafayette	54	KC	Nodaway	74	NW	St. Francois	94	SE	Wright	114	SE
[illegible]nden	15	C	Dunklin	35	SE	Lawrence	55	SW	Oregon	75	SE	Ste. Genevieve	95	SE	St. Louis City	115	SL
Cape Girardeau	16	SE	Franklin	36	SL	Lewis	56	NE	Osage	76	C	St. Louis	96	SL			
Carroll	17	NW	Gasconade	37	C	Lincoln	57	NE	Ozark	77	SE	Saline	97	KC			
Carter	18	SE	Gentry	38	NW	Linn	58	NW	Pemiscot	78	SE	Schuyler	98	NE			
Cass	19	KC	Greene	39	SW	Livingston	59	NW	Perry	79	SE	Scotland	99	NE			
Cedar	20	SW	Grundy	40	NW	McDonald	60	SW	Pettis	80	KC	Scott	100	SE			

6/27/2011

MoDOT

Missouri Department of Transportation

Central District
Machelle Watkins, District Engineer

1511 Missouri Blvd.
P.O. Box 718
Jefferson City, Missouri 65102
573.751.3322
Fax: 573.522.1059
1.888.ASK MODOT (275.6636)

January 6, 2021

Mr. Spencer Hoskins
Central Electric Power Cooperative
2106 Jefferson Street
P.O. Box 269
Jefferson City, MO 65102

Dear Mr. Hoskins;

I have reviewed your proposed project for Central Electric Power Cooperative in your letter dated November 18, 2020 sent to Ms. Machelle Watkins.

Specifically, project:
Maries – Chamois 161kV Transmission Line

I reviewed the project for Maries and Osage Counties. The proposed project will not adversely affect the current State Highway System in those counties.

We ask that prior to your final design/construction that Central Electric provide MoDOT with the opportunity to review the project's specifics in regard to the State's right of way. In particular, we will review the project for clearance heights when crossing MoDOT roadways as well as any poles being placed on MoDOT Right of Way. I will also review the plans for roadway traffic control. Any project that would involve MHTC right of way would need an approved permit prior to construction.

If you need any additional information or have any questions, please call me at 573-751-7380 or by email, john.schaefer@modot.mo.gov.

Respectfully,

John Schaefer

John Schaefer, P.E.
District Utilities Engineer

Central Electric Power Cooperative

2106 Jefferson Street, PO Box 269
Jefferson City, Missouri 65102
Telephone: (573) 634-2454
Fax: (573) 634-3892

November 18, 2020

Ms. Toni Prawl
Missouri Department of Natural Resources
State Historic Preservation Office
Attn: Section 106 Review
P.O. Box 176
Jefferson City, MO 65102-0176

Subject: Maries - Chamois 161kV Transmission Line

Dear Ms. Prawl:

Central Electric Power Cooperative (CEPC) is proposing to redesign, retire, and rebuild the Maries – Chamois 161kV line located in Osage and Maries County, Missouri. The rebuild will be constructed on existing transmission line right-of-way.

In compliance with RUS environmental guidelines, CEPC is corresponding with the following agencies:

Missouri Department of Conservation
Missouri Department of Natural Resources
Missouri Department of Transportation – Central District
Natural Resources Conservation Service
Regional Planning Agencies
Dept. of the Army, Corps of Engineers – Kansas City District
United States Fish and Wildlife Service
Osage County Commissioner
Maries County Commissioner

A completed Section 106 Form, topographic and location map for the proposed site is enclosed. Please review and comment regarding the construction of the facility as it relates to your organization. We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 573-761-2857.

Respectfully,

CENTRAL ELECTRIC POWER COOPERATIVE

Spencer K Hoskins

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Enclosures

MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE

SECTION 106 PROJECT INFORMATION FORM

Submission of a completed Project Information Form with adequate information and attachments constitutes a request for a review pursuant to Section 106 of the National Historic Preservation Act of 1966 (as amended). We reserve the right to request more information. **Please refer to the CHECKLIST on Page 2 to ensure that all basic information relevant to the project has been included.** For further information, refer to our website at: http://dnr.mo.gov/shpo and follow the links to Section 106 Review.

NOTE: Section 106 regulations provide for a 30-day response time by the Missouri State Historic Preservation Office from the date of receipt.

PROJECT NAME

Maries - Chamois 161kV Transmission Line Rebuild

FEDERAL AGENCY PROVIDING FUNDS, LICENSE, OR PERMIT

Rural Utilies Service

APPLICANT	TELEPHONE
Central Electric Power Cooperative	(573) 761-2857
CONTACT PERSON	TELEPHONE
Spencer K. Hoskins	(573) 761-2857

ADDRESS FOR RESPONSE

Central Electric Power Cooperative
ATTN: Spencer K. Hoskins
2106 Jefferson St
PO Box 269
Jefferson City, MO 65102-0269

LOCATION OF PROJECT

COUNTY

Osage and Maries

STREET ADDRESS	CITY
N/A	N/A

LEGAL DESCRIPTION OF PROJECT AREA (TOWNSHIP, RANGE, SECTION, ¼ SECTION)

USGS TOPOGRAPHIC MAP QUADRANGLE NAME (SEE MAP REQUIREMENTS ON PAGE 2)

Mokane East, Luystown, Linn, Westphalia East, Freeburg, Vienna, Brinktown, Big Bend

YEAR	TOWNSHIP	RANGE	SECTION
Varies/ESRI scan Topo Maps	T38N-T45N	R8W-R10W	

PROJECT DESCRIPTION

DESCRIBE THE OVERALL PROJECT IN DETAIL. IF IT INVOLVES EXCAVATION, INDICATE HOW WIDE, HOW DEEP, ETC. IF THE PROJECT INVOLVES DEMOLITION OF EXISTING BUILDINGS, MAKE THAT CLEAR. IF THE PROJECT INVOLVES REHABILITATION, DESCRIBE THE PROPOSED WORK IN DETAIL. USE ADDITIONAL PAGES IF NECESSARY.

Central Electric Power Cooperative has traditionally hired outside contractors to build/rebuild transmission lines. A full-time inspector representing CEPC will be on the project site during all phases of construction. Restoration procedures will be used on the right-of-ways to prevent erosion and to reestablish ground cover. The procedures include cultivating, seeding, and fertilizing the disturbed areas to stimulate rapid growth. Should cultural resources be encountered during construction, all activity will be halted and the State Historic Preservation officer and RUS immediately notified. Construction practices will conform to USDA/USDI guidelines. The measures recommended by the agencies contacted during the notification phase, to mitigate potential environmental threats, will be incorporated during the construction of the project.

ARCHAEOLOGY (EARTHMOVING ACTIVITIES)

HAS THE GROUND INVOLVED BEEN GRADED, BUILT ON, BORROWED, OR OTHERWISE DISTURBED? PLEASE DESCRIBE IN DETAIL (USE ADDITIONAL PAGES, IF NECESSARY) PHOTOGRAPHS ARE HELPFUL:

No, existing line was originally built in the 1950's era.

WILL THE PROJECT REQUIRE FILL MATERIAL? ☐ YES ☑ NO

IF **YES**, INDICATE PROPOSED BORROW AREAS (SOURCE OF FILL MATERIAL) ON TOPOGRAPHIC MAP

ARE YOU AWARE OF ARCHAEOLOGICAL SITES ON OR ADJACENT TO PROJECT AREA? ☐ YES ☑ NO

IF **YES**, IDENTIFY THEM ON THE TOPOGRAPHIC MAP

STRUCTURES (REHABILITATION, DEMOLOTION, ADDITIONS TO, OR CONTRUCTION NEAR EXISTING STRUCTURES)

TO THE BEST OF YOUR KNOWLEDGE, IS THE STRUCTURE LOCATED IN ANY OF THE FOLLOWING?

☐ AN AREA PREVIOUSLY SURVEYED FOR HISTORIC PROPERTIES.	☐ A NATIONAL REGISTER DISTRICT	☐ A LOCAL HISTORIC DISTRICT
IF YES, PLEASE PROVIDE THE NAME OF THE SURVEY OR DISTRICT:	IF YES, PLEASE PROVIDE THE NAME OF THE SURVEY OR DISTRICT:	IF YES, PLEASE PROVIDE THE NAME OF THE SURVEY OR DISTRICT:

- PLEASE PROVIDE PHOTOGRAPHS OF ALL STRUCTURES, SEE PHOTOGRAPHY REQUIREMENTS
- **NOTE:** ALL PHOTOGRAPHS SHOULD BE LABELED AND KEYED TO ONE MAP OF THE PROJECT AREA
- PLEASE PROVIDE A BRIEF HISTORY OF THE BUILDING(S), INCLUDING CONSTRUCTION DATES AND BUILDING USES. (USE ADDITONAL PAGES, IF NECESSARY.)

ADDITIONAL REQUIREMENTS

Map Requirements: Attach a copy of the relevant portion (8 ½ x 11) of the current USGS 7.5 min. topographic map **and**, if necessary, a large scale project map. Please do not send an individual map with each structure or site. While an original map is preferable, a good copy is acceptable. For a list of sites from which to order, download or print the required USGS 7.5 min. topographic maps at little or no cost, consult http://dnr.mo.gov/shpo/sectionrev.htm .

Photography Requirements: Clear black and white or color photographs (minimum 3" x 5") are acceptable. Polariods, photocopies, emailed or faxed photographs are not acceptable. **Good quality photographs are important for expeditious project review**. Photographs of neighboring or nearby buildings are also helpful. All photographs should be labeled and keyed to one map of the project area.

CHECKLIST-DID YOU PROVIDE THE FOLLOWING INFORMATION?

☑ Topographic map 7.5 min. (per project, not structure)	☐ Other supporting documents (If necessary to explain the project)
☑ Thorough description (all projects)	☐ For new construction, rehabilitations, etc., attach work write-ups, plans, drawings, etc.
☐ Photographs (all structures)	☑ Is topographic map identified by quadrangle and year?

Return this Form and Attachments to:

MISSOUR DEPARTMENT OF NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
Attn: Section 106 Review
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102-0176

Hoskins, Spencer

From: Alvey, Jeffrey <Jeffrey.Alvey@dnr.mo.gov>
Sent: Thursday, December 10, 2020 10:02 AM
To: Hoskins, Spencer
Subject: SHPO Project No. 009-MLT-21 - Maries - Chamois 161kV Transmission Line Rebuild
Attachments: 009MLT21 0585 nhpa.pdf

EXTERNAL E-MAIL

Dear Spencer Hoskins,

Thank you for submitting information on the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which require identification and evaluation of cultural resources. Our formal letter of comment is attached. Please retain a copy of this letter for your records as no physical copies will be mailed.

If you have any questions, please respond to jeffrey.alvey@dnr.mo.gov .

Best,
Jeffrey Alvey

Jeffrey S. Alvey, PhD, RPA
Archaeologist
Missouri State Historic Preservation Office
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
(573)751-7862

CULTURAL RESOURCE ASSESSMENT
Section 106 Review

NTACT PERSON/ADDRESS:

Spencer K. Hoskins
Central Electric Power Cooperative
2106 Jefferson St.
Jefferson City, MO 65102-0269

C:

PROJECT:

Maries - Chamois 161kV Transmission Line Rebuild

FEDERAL AGENCY:

RUS

COUNTY:

Osage and Maries

The State Historic Preservation Office has reviewed the information submitted on the above referenced project. Based on this review, we have made the following determination:

[X] Adequate documentation has been provided as outlined in 36 CFR Section 800.11. After review of the initial submission, the project area has no known historic properties present and a low potential for the occurrence of cultural resources. We concur with a determination of **No Historic Properties Affected**.

[ ] An adequate cultural resource survey of the project area has been previously conducted; therefore, SHPO concurs with your determination of **No Historic Properties Affected**.

[ ] An adequate cultural resource survey has been conducted for this project titled, , by . Based on this survey and its negative findings, SHPO concurs with your determination of **No Historic Properties Affected.**

For the above checked reason, the State Historic Preservation Office has no objection to the initiation of project activities. PLEASE BE ADVISED THAT, IF THE CURRENT PROJECT AREA OR SCOPE OF WORK CHANGES, A BORROW AREA IS INCLUDED IN THE PROJECT, OR CULTURAL MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION, APPROPRIATE INFORMATION MUST BE PROVIDED TO THIS OFFICE FOR FURTHER REVIEW AND COMMENT. Please retain this documentation as evidence of compliance with Section 106 of the National Historic Preservation Act, as amended.

By: Toni M. Prawl — **December 9, 2020**

Toni M. Prawl, Ph.D., Deputy State Historic Preservation Officer — **Date**

MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
P.O. Box 176, Jefferson City, Missouri 65102
For additional information, please contact Jeffrey Alvey, (573) 751-7862.

Please be sure to refer to the project number: 009-MLT-21

Hoskins, Spencer

From: Alvey, Jeffrey <Jeffrey.Alvey@dnr.mo.gov>
Sent: Thursday, March 3, 2022 2:40 PM
To: Hoskins, Spencer
Subject: RE: SHPO Project No. 009-MLT-21 - Maries - Chamois 161kV Transmission Line Rebuild

****EXTERNAL E-MAIL****

Hi Spencer,
Yes, if a cultural resources survey is done SHPO needs to review it under Section 106 compliance, even if we were not the ones who requested it. We do need a hard copy and PDF version of the report so you can either include a CD containing the PDF when you mail in the hard copy or you can email the PDF to me and I will forward to our admin who processes incoming reports.

Best,
Jeffrey

Jeffrey S. Alvey, PhD, RPA
Archaeologist
Missouri State Historic Preservation Office
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
(573)751-7862
Mostateparks.com/SHPO

From: Hoskins, Spencer <SHoskins@cepc.net>
Sent: Thursday, March 3, 2022 2:37 PM
To: Alvey, Jeffrey <Jeffrey.Alvey@dnr.mo.gov>
Subject: RE: SHPO Project No. 009-MLT-21 - Maries - Chamois 161kV Transmission Line Rebuild

Greetings Jeffery Alvey,

On the above referenced project, similar to our 010-MLT-21 KC Tap-Santa Fe project, we have to provide the Osage Indian Tribe with a Phase I Cultural Resource Investigation. I assume you'd like to review a copy of this and have a copy for your records. I can print out a copy and email you an electronic one as well, if that is what you need. Just let me know and I will arrange for them to be delivered and emailed to you.

Thanks,
Spencer

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative

office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

From: Alvey, Jeffrey <Jeffrey.Alvey@dnr.mo.gov>
Sent: Thursday, December 10, 2020 10:02 AM
To: Hoskins, Spencer <SHoskins@cepc.net>
Subject: SHPO Project No. 009-MLT-21 - Maries - Chamois 161kV Transmission Line Rebuild

EXTERNAL E-MAIL

Dear Spencer Hoskins,

Thank you for submitting information on the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which require identification and evaluation of cultural resources. Our formal letter of comment is attached. Please retain a copy of this letter for your records as no physical copies will be mailed.

If you have any questions, please respond to jeffrey.alvey@dnr.mo.gov .

Best,
Jeffrey Alvey

Jeffrey S. Alvey, PhD, RPA
Archaeologist
Missouri State Historic Preservation Office
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
(573)751-7862

Hoskins, Spencer

From: Hoskins, Spencer
Sent: Friday, June 3, 2022 11:27 AM
To: 'Alvey, Jeffrey'
Subject: RE: SHPO Project No. 009-MLT-21 - Phase I Cultural Resources Survey of the Proposed Chamois-Rich Fountain-Vienna-Maries Transmission Line Rebuild Project, Osage and Maries Counties, Missouri

Jeffery,

I really appreciate the feedback. We are currently working with Greg and RUS on the Phase I Cultural Survey and will hopefully be able to resolve the issues with the report as presented in a timely fashion.

Thanks again for your time and attention in this matter,
Spencer

Spencer K, Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative
office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

From: Alvey, Jeffrey <Jeffrey.Alvey@dnr.mo.gov>
Sent: Thursday, June 2, 2022 10:09 AM
To: Hoskins, Spencer <SHoskins@cepc.net>
Subject: SHPO Project No. 009-MLT-21 - Phase I Cultural Resources Survey of the Proposed Chamois-Rich Fountain-Vienna-Maries Transmission Line Rebuild Project, Osage and Maries Counties, Missouri

EXTERNAL E-MAIL

Dear Spencer,

Regarding the report you submitted to our office associated with the above-referenced project, RUS has recently begun requiring that any such submission must be reviewed by their office before being submitted to the SHPO or tribes. We were asked by Greg Korosec, archaeologist with RUS, to provide him with a copy of the report and to hold off on our review until RUS finishes their review of the document. If you would like to contact Greg with questions he can be reached at 202-720-2662 or Gregory.korosec@usda.gov.

Once we have been given the go-ahead by Greg we will provide our response regarding the report.

Best,
Jeffrey

Jeffrey S. Alvey, PhD, RPA
Archaeologist
Missouri State Historic Preservation Office
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
(573)751-7862
Mostateparks.com/SHPO

We'd like your feedback on the service you received from the Missouri Department of Natural Resources. Please consider taking a few minutes to complete the department's Customer Satisfaction Survey at https://www.surveymonkey.com/r/MoDNRsurvey. Thank you.

Hoskins, Spencer

rom: Alvey, Jeffrey <Jeffrey.Alvey@dnr.mo.gov>
Sent: Tuesday, July 12, 2022 9:20 AM
To: Hoskins, Spencer
Subject: RE: SHPO Project No. 009-MLT-21 - Phase I Cultural Resources Survey of the Proposed Chamois-Rich Fountain-Vienna-Maries Transmission Line Rebuild Project, Osage and Maries Counties, Missouri

EXTERNAL E-MAIL

Yes, that's no problem. I'm working from home this week, but you can drop it off at the front desk and tell them to give it to Chris Tellman. Chris processes all of our incoming submissions for 106 review. We're at 1659 E. Elm St.

Jeffrey S. Alvey, PhD, RPA
Archaeologist
Missouri State Historic Preservation Office
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
(573)751-7862
Mostateparks.com/SHPO

From: Hoskins, Spencer <SHoskins@cepc.net>
Sent: Tuesday, July 12, 2022 9:17 AM
To: Alvey, Jeffrey <Jeffrey.Alvey@dnr.mo.gov>
Subject: RE: SHPO Project No. 009-MLT-21 - Phase I Cultural Resources Survey of the Proposed Chamois-Rich Fountain-Vienna-Maries Transmission Line Rebuild Project, Osage and Maries Counties, Missouri

Jeffery, Can I just bring it to you in person, we've had some delivery issues lately and I'd rather not take any chances since we are just across town.

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative
office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

From: Alvey, Jeffrey <Jeffrey.Alvey@dnr.mo.gov>
Sent: Tuesday, July 12, 2022 9:13 AM
To: Hoskins, Spencer <SHoskins@cepc.net>
Subject: RE: SHPO Project No. 009-MLT-21 - Phase I Cultural Resources Survey of the Proposed Chamois-Rich Fountain-Vienna-Maries Transmission Line Rebuild Project, Osage and Maries Counties, Missouri

EXTERNAL E-MAIL

Spencer,
Yes, please send a hard copy and PDF copy when you submit.

Best,
Jeffrey

Jeffrey S. Alvey, PhD, RPA
Archaeologist
Missouri State Historic Preservation Office
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
(573)751-7862
Mostateparks.com/SHPO

From: Hoskins, Spencer <SHoskins@cepc.net>
Sent: Tuesday, July 12, 2022 8:59 AM
To: Alvey, Jeffrey <Jeffrey.Alvey@dnr.mo.gov>
Subject: RE: SHPO Project No. 009-MLT-21 - Phase I Cultural Resources Survey of the Proposed Chamois-Rich Fountain-Vienna-Maries Transmission Line Rebuild Project, Osage and Maries Counties, Missouri

Good Morning Jeffery,

We have finished our review and revisions with Greg at RUS. We have a revised copy of the Phase I survey that they have approved to be sent to you for your review. Would you like an electronic copy and a paper copy like normal?

Thanks,
Spencer

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative
office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

From: Hoskins, Spencer <>
Sent: Friday, June 3, 2022 11:27 AM
To: 'Alvey, Jeffrey' <Jeffrey.Alvey@dnr.mo.gov>
Subject: RE: SHPO Project No. 009-MLT-21 - Phase I Cultural Resources Survey of the Proposed Chamois-Rich Fountain-Vienna-Maries Transmission Line Rebuild Project, Osage and Maries Counties, Missouri

Jeffery,

I really appreciate the feedback. We are currently working with Greg and RUS on the Phase I Cultural Survey and will hopefully be able to resolve the issues with the report as presented in a timely fashion.

Thanks again for your time and attention in this matter,
Spencer

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative
office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

From: Alvey, Jeffrey <Jeffrey.Alvey@dnr.mo.gov>
Sent: Thursday, June 2, 2022 10:09 AM
To: Hoskins, Spencer <SHoskins@cepc.net>
Subject: SHPO Project No. 009-MLT-21 - Phase I Cultural Resources Survey of the Proposed Chamois-Rich Fountain-Vienna-Maries Transmission Line Rebuild Project, Osage and Maries Counties, Missouri

EXTERNAL E-MAIL

Dear Spencer,

Regarding the report you submitted to our office associated with the above-referenced project, RUS has recently begun requiring that any such submission must be reviewed by their office before being submitted to the SHPO or tribes. We were asked by Greg Korosec, archaeologist with RUS, to provide him with a copy of the report and to hold off on our review until RUS finishes their review of the document. If you would like to contact Greg with questions he can be reached at 202-720-2662 or Gregory.korosec@usda.gov.

Once we have been given the go-ahead by Greg we will provide our response regarding the report.

Best,

Jeffrey

Jeffrey S. Alvey, PhD, RPA
Archaeologist
Missouri State Historic Preservation Office
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
(573)751-7862
Mostateparks.com/SHPO

Central Electric Power Cooperative

2106 Jefferson Street, PO Box 269
Jefferson City, Missouri 65102
Telephone: (573) 634-2454
Fax: (573) 634-3892

November 18, 2020

Natural Heritage Review Coordinator
Missouri Department of Conservation
Resource Science Division
P.O. Box 180
Jefferson City, MO 65102

Subject: Maries - Chamois 161kV Transmission Line

Dear Review Coordinator:

Central Electric Power Cooperative (CEPC) is proposing to redesign, retire, and rebuild the Maries – Chamois 161kV line located in Osage and Maries County, Missouri. The rebuild will be constructed on existing transmission line right-of-way.

In compliance with RUS environmental guidelines, CEPC is corresponding with the following agencies:

Missouri Department of Conservation
Missouri Department of Natural Resources
Missouri Department of Transportation – Central District
Natural Resources Conservation Service
Regional Planning Agencies
Dept. of the Army, Corps of Engineers – Kansas City District
United States Fish and Wildlife Service
Osage County Commissioner
Maries County Commissioner

A topographic and location map for the proposed site is enclosed. Please review and comment regarding the construction of the facility as it relates to your organization. We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 573-761-2857.

Respectfully,

CENTRAL ELECTRIC POWER COOPERATIVE

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Enclosures

Hoskins, Spencer

From: Hoskins, Spencer
Sent: Tuesday, December 8, 2020 3:17 PM
To: 'Natural Heritage Review'
Subject: RE: MO Natural Heritage Review Report for Maries - Chamois Transmission Line

Hello Kate,

We will look forward to our Natural Heritage Review when it comes. Thanks for the update on the project and letting us know it was received.

Have a wonderful holiday season,
Spencer

Spencer K, Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative
office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

From: Natural Heritage Review <NaturalHeritageReview@mdc.mo.gov>
Sent: Monday, December 7, 2020 3:13 PM
To: Hoskins, Spencer <SHoskins@cepc.net>
Subject: RE: MO Natural Heritage Review Report for Maries - Chamois Transmission Line

EXTERNAL E-MAIL

Hello,

I have received your request and added it to my work queue. Reports are processed as they are received and may take 4 to 5 weeks to complete. Response time can vary based on request traffic, the size of a project, the species nearby, and MDC's internal review processes.

If you have further questions, please reply to this email chain or call the phone number (573)-522-4115 ext 3182.

Thank you for using the Natural Heritage Review Program,

Kate Hodge
Missouri Dept. of Conservation
2901 W. Truman Blvd
PO Box 180

Jefferson City, MO, 65102
573-522-4115 ext 3182
FAX:573-526-5582

From: Hoskins, Spencer <SHoskins@cepc.net>
Sent: Thursday, December 3, 2020 11:44 AM
To: Natural Heritage Review <NaturalHeritageReview@mdc.mo.gov>
Cc: Janet Sternburg <Janet.Sternburg@mdc.mo.gov>
Subject: MO Natural Heritage Review Report for Maries - Chamois Transmission Line

Dear Review Coordinator:

Central Electric Power Cooperative (CEPC) is proposing to redesign, retire, and rebuild the Maries – Chamois 161kV line located in Osage and Maries County, Missouri. The rebuild will be constructed on existing transmission line right-of-way. Please review and comment regarding the construction of the facility as it relates to your organization. I have also sent a duplicate paper copy of this through the mail as a backup.

Thanks for your time and consideration,
Spencer

Spencer K, Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative
office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

From: Hoskins, Spencer
Sent: Wednesday, November 4, 2020 3:41 PM
To: 'Jordan Meyer' <Jordan.Meyer@mdc.mo.gov>; Janet Sternburg <Janet.Sternburg@mdc.mo.gov>
Cc: Natural Heritage Review <NaturalHeritageReview@mdc.mo.gov>
Subject: RE: MO Natural Heritage Review Report for California_Scruggs_Brazito Line

Thanks Jordan, I'll send the information to the Natural Heritage Review email address when it's ready.

Spencer K, Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative
office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

From: Jordan Meyer <Jordan.Meyer@mdc.mo.gov>
Sent: Wednesday, November 4, 2020 11:19 AM
To: Hoskins, Spencer <SHoskins@cepc.net>; Janet Sternburg <Janet.Sternburg@mdc.mo.gov>
Cc: Natural Heritage Review <NaturalHeritageReview@mdc.mo.gov>
Subject: RE: MO Natural Heritage Review Report for California_Scruggs_Brazito Line

EXTERNAL E-MAIL

Spencer,

Thank you for reaching out. A digital copy sent to NaturalHeritageReview@mdc.mo.gov would be the best option for us to receive and process your requests in a timely manner. I recently transferred out of the Environmental Review Coordinator position and we have multiple staff working to fill the job duties of that vacancy. Submissions to the NaturalHeritageReview@mdc.mo.gov email address are accessible by all those staff.

Let me know if you have any additional questions. Thank you for using the Natural Heritage Review Program,

Jordan James Meyer
Bat Ecologist
MO Dept. of Conservation
2901 W. Truman Blvd
PO Box 180
Jefferson City, MO, 65102
573-522-4115 ext 3182
FAX:573-526-5582

From: Hoskins, Spencer <SHoskins@cepc.net>
Sent: Wednesday, November 4, 2020 11:15 AM
To: Janet Sternburg <Janet.Sternburg@mdc.mo.gov>
Cc: Natural Heritage Review <NaturalHeritageReview@mdc.mo.gov>; Jordan Meyer <Jordan.Meyer@mdc.mo.gov>
Subject: RE: MO Natural Heritage Review Report for California_Scruggs_Brazito Line

Janet,

I will be sending out 2 more projects similar to the California-Brazito 69kV line rebuild from last year. Who would you like me to address it to? Would you prefer a physical mailed copy, an electron emailed copy or both?

Thanks,
Spencer

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Central Electric Power Cooperative

office: (573) 761-2857
cell: (573) 680-9568
shoskins@cepc.net

From: Janet Sternburg <Janet.Sternburg@mdc.mo.gov>
Sent: Monday, November 18, 2019 11:46 AM
To: Hoskins, Spencer <SHoskins@cepc.net>
Cc: Natural Heritage Review <NaturalHeritageReview@mdc.mo.gov>; Janet Sternburg <Janet.Sternburg@mdc.mo.gov>; Jordan Meyer <Jordan.Meyer@mdc.mo.gov>
Subject: MO Natural Heritage Review Report for California_Scruggs_Brazito Line

EXTERNAL E-MAIL

Dear Mr. Hoskins,

Here is the above referenced report for your project. If you have any questions on the information, please let us know.

I apologize for the delay in our reply. Our new environmental review coordinator, Jordan James Meyer, starts today, so we should soon pick up the pace in providing the reports.

Thank you for your patience,

Janet

Janet Sternburg
Resource Science Supervisor
MO Dept. of Conservation
2901 W. Truman Blvd./Jefferson City, MO 65109 (street)
PO Box 180/Jefferson City, MO, 65102
573-522-4115 ext 3372
FAX:573-526-5582

JAN 15 2021

January 8, 2021

Hello

Attached are the Natural Heritage Review Reports for your two transmission line replacement projects. If you have questions regarding the reports please let me know.

Thank you for using the Natural Heritage Review Program.

Kelly Rezac
Wildlife Diversity Coordinator
Missouri Department of Conservation
(573) 522-4115 ext 3151

Missouri Department of Conservation

Natural Heritage Review Report

January 7, 2021 – Page 1 of 5

Science Branch
P. O. Box 180
Jefferson City, MO 65102
Prepared by: Kate Hodge
NaturalHeritageReview@mdc.mo.gov
(573) 522 – 4115 ext. 3182

Spencer Hoskins
Central Electric Power Cooperative
2106 Jefferson Street, PO Box 269
Jefferson City, MO 65102
573-634-2454

Project type:	Utility Line
Location/Scope:	T45NR08WS12
County:	Osage
Query reference:	Maries - Chamois 161kV Transmission Line
Query received:	12/7/2020

This NATURAL HERITAGE REVIEW is not a site clearance letter. Rather, it identifies public lands and sensitive resources known to have been located close to and/or potentially affected by the proposed project. *On-site verification is the responsibility of the project. Natural Heritage records were identified at some date and location. This report considers records near but not necessarily at the project site. Animals move and, over time, so do plant communities. To say "there is a record" does not mean the species/habitat is still there. To say that "there is no record" does not mean a protected species will not be encountered. These records only provide one reference and other information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Look for additional information about the biological and habitat needs of records listed in order to avoid or minimize impacts. More information may be found at* http://mdc.mo.gov/discover-nature/places-go/natural-areas *and* mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx.

Level 3 issues: Records of federal-listed (these are also state-listed) species or critical habitats near the project site:

Natural Heritage records indicate the following federal-listed species occur near the project area:

Scientific Name	Common Name	Federal-listed, State-listed	Proximity (miles)
Etheostoma nianguae	Niangua Darter	Threatened, Endangered	0.75
Myotis septentrionalis	Northern Long-eared Myotis	Threatened, Endangered	4.68
Cryptobranchus alleganiensis alleganiensis	Eastern Hellbender	Protected, Endangered	4.32
Haliaeetus leucocephalus	Bald Eagle	Protected	0.31
Lampsilis abrupta	Pink Mucket	Endangered, Endangered	4.58
Leptodea leptodon	Scaleshell	Endangered, Endangered	4.87
Margaritifera monodonta	Spectaclecase	Endangered, Endangered	4.35
Myotis grisescens	Gray Myotis	Endangered, Endangered	4.67
Scaphirhynchus albus	Pallid Sturgeon	Endangered, Endangered	0.23

- **Niangua Darter:** The project is near a stream which is habitat for the Niangua Darter (*Etheostoma nianguae*, federally-listed threatened, state-listed endangered); a sensitive indicator of stream habitat and water quality. Protecting its environment also benefits other fish, such as Smallmouth Bass, Rock Bass, and Redhorse Suckers. In-stream project activities (e.g. channelization, mining, road construction, bank stabilization, wastewater discharge, solid waste disposal) should be avoided between March 15

and June 15. They normally require permits under the federal Clean Water Act (contact U.S. Army Corps of Engineers or Missouri Department of Natural Resources) and consultation with the U.S. Fish and Wildlife Service. For best management recommendations, see http://mdc.mo.gov/sites/default/files/downloads/Niangua%20Darter.pdf.

- **Northern Long-eared Bats** occur in Maries County and could occur within the project area. Northern Long-eared bats (*Myotis septentrionalis,* federal-listed threatened) hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Northern Long-Eared Bats, especially from September to April. **If any trees need to be removed by your project, please contact the U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 Ext. 100 for Ecological Services) for further coordination under the Endangered Species Act.**
- **Hellbenders:** The proposed project occurs near a stream known to include or to provide habitat suitable for Ozark Hellbenders (*Cryptobranchus alleganiensis bishopi*, federally-listed endangered and state-listed endangered) or Eastern Hellbenders (*Cryptobranchus alleganiensis alleganiensis*, state-listed endangered). Hellbenders are strictly aquatic salamanders whose well-being is dependent on high-quality water systems with constant levels of dissolved oxygen, temperature, and flow. These unusual animals are in serious decline, and information about best-management is available at https://mdc.mo.gov/sites/default/files/downloads/BMP-Eastern-Ozark%20Hellbender.pdf. Activities that change physical characteristics of rivers and streams (especially introducing silt loads or destabilizing gravel bars) or alter the flow of water should be avoided.
- **Bald Eagles:** Bald Eagles (*Haliaeetus leucocephalus*) nest near streams or water bodies in the project area. Nests are large and fairly easy to identify. While no longer listed as endangered, eagles continue to be protected by the federal government under the Bald and Golden Eagle Protection Act. Work managers should be alert for nesting areas within 1500 meters of project activities, and follow federal guidelines at: https://www.fws.gov/midwest/eagle/permits/index.html if eagle nests are seen.
- **Mussels:** Mussels are relatively immobile animals that are vulnerable to pollutants, sediment discharges, channel alterations and other activities destructive to mussel habitat. Activities that alter or destabilize stream bottoms or banks or introduce silt, chemical or organic pollutants should be avoided. Avoid crossing flowing water but, if unavoidable, minimize crossing distance and use temporary crossings that do not restrict water flow. See https://mdc.mo.gov/sites/default/files/downloads/FreshwaterMusselsBMP.PDF for Best Management Practices regarding these animals.
- **Gray Bats:** Gray Bats (*Myotis grisescens*, federal and state-listed endangered) occur in Maries County and could occur in the project area, as they forage over streams, rivers, and reservoirs. Avoid entry or disturbance of any cave inhabited by gray bats and when possible retain forest vegetation along the stream and from the gray bat cave opening to the stream.
- **Pallid Sturgeon:** Pallid Sturgeons (*Scaphirhynchus albus*, federal and state-listed endangered) are big river fish that range widely in the Mississippi and Missouri River system (including parts of major tributaries). Although Pallid Sturgeon are not expected to occur at the project site, any project that impacts water quality should consider the possible impact to Pallid Sturgeon populations that occur in downstream-connected rivers. See https://mdc.mo.gov/sites/default/files/downloads/Pallid%20Sturgeon.pdf for Best Management Practices.

FEDERAL LIST species/habitats are protected under the Federal Endangered Species Act. Contact U.S. Fish and Wildlife Service, 101 Park DeVille Drive Suite A, Columbia, Missouri 65203-0007; 573-234-2132 for Endangered Species Act coordination and concurrence information.

Level 2 issues: Records of state-listed (not federal-listed) endangered species AND / OR state-ranked (not state-listed endangered) species and natural communities of conservation concern. The Department tracks these species and natural communities due to population declines and/or apparent vulnerability.

Natural Heritage records indicate *Acipenser fulvescens* (Lake Sturgeon, state-listed endangered) occurs 0.22 mi and *Elliptio crassidens* (Elephantear, state-listed endangered) occurs 4.58 mi from project area.

- **Lake Sturgeon:** Lake Sturgeon (*Acipenser fulvescens*) are widely distributed in North America. In Missouri, they are found in the Mississippi and Missouri Rivers but have also been known to occur in the larger tributaries of those two rivers. Lake Sturgeon are listed as either threatened or endangered throughout most of its original range in the United States. Over-harvest appears to have been responsible for the greatest decline in abundance of the Lake Sturgeon. Pollution and restriction of migratory movements due to construction of dams have compounded the problems of over- exploitation. Although Lake Sturgeon are not expected to occur at the project site, any project that impacts water quality should consider the possible impact to Lake Sturgeon that occur nearby in downstream-connected rivers. Best management for this species can be found at https://mdc.mo.gov/sites/default/files/downloads/9547.pdf .
- **Mussels:** Mussels are relatively immobile animals that are vulnerable to pollutants, sediment discharges, channel alterations and other activities destructive to mussel habitat. Activities that alter or destabilize stream bottoms or banks or introduce silt, chemical or organic pollutants should be avoided. Avoid crossing flowing water but, if unavoidable, minimize crossing distance and use temporary crossings that do not restrict water flow. See https://mdc.mo.gov/sites/default/files/downloads/FreshwaterMusselsBMP.PDF for Best Management Practices regarding these animals.

Natural Heritage records indicate the following species occur near the project area:

Scientific Name	Common Name	State Rank	Proximity (miles)
Acroneuria ozarkensis	Ozark Stone	S2	4.02
Alasmidonta marginata	Elktoe	S2	4.36
Alosa alabamae	Alabama Shad	S2	3.97
Carpiodes velifer	Highfin Carpsucker	S2	1.42
Crotaphytus collaris	Eastern Collared Lizard	S4	2.45
Fundulus sciadicus	Plains Topminnow	S3	0.42
Hybognathus argyritis	Western Silvery Minnow	S2	4.63
Hybognathus placitus	Plains Minnow	S2	4.6
Ligumia recta	Black Sandshell	S2	4.36

Macrhybopsis gelida	Sturgeon Chub	S3	0.2
Myotis lucifugus	Little Brown Myotis	S2	4.71
Niangua Darter Known Range		SNR	0.74
Notropis buchanani	Ghost Shiner	S2	3.37
Notropis heterolepis	Blacknose Shiner	S2	4.27
Parmotrema hypoleucinum	A Lichen	S1	3.88
Percina shumardi	River Darter	S3	3.53
Primula fassettii	Amethyst Shooting Star	S2	1.44
Serratella frisoni	Frison's Seratellan Mayfly	S2	4.35
Somatochlora ozarkensis	Ozark Emerald	S1S2	3.78
Taxidea taxus	American Badger	S3	1.95

State Rank Definitions:

- S1: Critically imperiled in the state because of extreme rarity of or because of some factor(s) making it especially vulnerable to extirpation from the state. Typically, 5 or fewer occurrence or very few remaining individuals.
- S2: Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. (6 to 20 occurrences or few remaining individuals).
- S3: Vulnerable in the state means this species is rare and uncommon, or found only in a restricted range (even if abundant in some locations), or because of other factors making it vulnerable to extirpation. Typically, 21 to 100 occurrences or between 3,000 and 10,000 individuals.
- S4: Uncommon but not rare, and usually widespread in the nation or state. Possibly of long-term concern. Usually more than 100 occurrences and more than 10,000 individuals.
- SU: Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

There are no regulatory requirements associated with this status, but we encourage voluntary stewardship for all these species to minimize the risk of further decline that could lead to listing.

See http://mdc.mo.gov/145 for a complete list of species and communities of conservation concern.

STATE ENDANGERED species are listed in and protected under the Wildlife Code of Missouri (3CSR10-4.111).

General recommendations related to this project or site, or based on information about the historic range of species (unrelated to any specific heritage records):

- Indiana bats *(Myotis sodalis*, federal and state-listed endangered) and Northern long-eared bats (*Myotis septentrionalis,* federal-listed threatened) hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor

Indiana bats and/or Northern long-eared bats, especially from September to April. **If any trees need to be removed by your project, please contact the U.S. Fish and Wildlife Service (Ecological Services, 101 Park DeVille Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 Ext. 100 for Ecological Services) for further coordination under the Endangered Species Act.**

- **Karst:** Maries County has known karst geologic features (e.g. caves, springs, and sinkholes, all characterized by subterranean water movement). Few karst features are recorded in Natural Heritage records, and ones not noted here may be encountered at the project site or affected by the project. Cave fauna (many of which are species of conservation concern) are influenced by changes to water quality, so check your project site for any karst features and make every effort to protect groundwater in the project area.
- **Utility Lines:** Cross-country lines affect both plants and wildlife, as do activities necessary to their construction, maintenance and repair. Stream and drainage crossings are primary concerns, and every effort should be made to avoid erosion, silt introduction, petroleum or chemical pollution, and disruption or realignment of stream banks and beds. See https://mdc.mo.gov/sites/default/files/downloads/page/Streams.pdf for best management recommendations for in-stream work. Revegetation is an important part of managing utility corridors, and it can have significant resource impacts – for better or worse. Revegetation of disturbed areas is recommended to minimize erosion, as is restoration with native plant species compatible with the local landscape and wildlife needs. Annuals like Rye Grass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as Crown Vetch and *Sericea lespedeza*.
  Maintenance of ground cover in utility corridors can have significant implications for sensitive resources. Native plant species typically require low maintenance over the long term and provide more benefits to native wildlife. Utility corridors can provide wildlife travel corridors, food sources and types of low-growing plant diversity sometimes rare in adjoining land. Mowing and maintenance schedules should consider nesting seasons, and diversity in plant composition.
- Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment, so inspect and clean equipment thoroughly before moving between project sites.
  - Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
  - Drain water from boats and machinery that has operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
  - When possible, wash and rinse equipment thoroughly with hard spray or HOT water (≧140° F, typically available at do-it-yourself carwash sites), and dry in the hot sun before using again.

These recommendations are ones project managers might prudently consider based on a general understanding of species needs and landscape conditions. Natural Heritage records largely reflect only sites visited by specialists in the last 30 years. This means that many privately owned tracts could host unknown remnants of species once but no longer common.

Central Electric Power Cooperative

2106 Jefferson Street, PO Box 269
Jefferson City, Missouri 65102
Telephone: (573) 634-2454
Fax: (573) 634-3892

November 18, 2020

Mr. Scott Larsen
Area Resource Soil Scientist
USDA-NRCS
6465 Highway 168, Suite C
Palmyra, MO 63461

Subject: Maries - Chamois 161kV Transmission Line

Dear Mr. Larsen:

Central Electric Power Cooperative (CEPC) is proposing to redesign, retire, and rebuild the Maries – Chamois 161kV line located in Osage and Maries County, Missouri. The rebuild will be constructed on existing transmission line right-of-way.

In compliance with RUS environmental guidelines, CEPC is corresponding with the following agencies:

Missouri Department of Conservation
Missouri Department of Natural Resources
Missouri Department of Transportation – Central District
Natural Resources Conservation Service
Regional Planning Agencies
Dept. of the Army, Corps of Engineers – Kansas City District
United States Fish and Wildlife Service
Osage County Commissioner
Maries County Commissioner

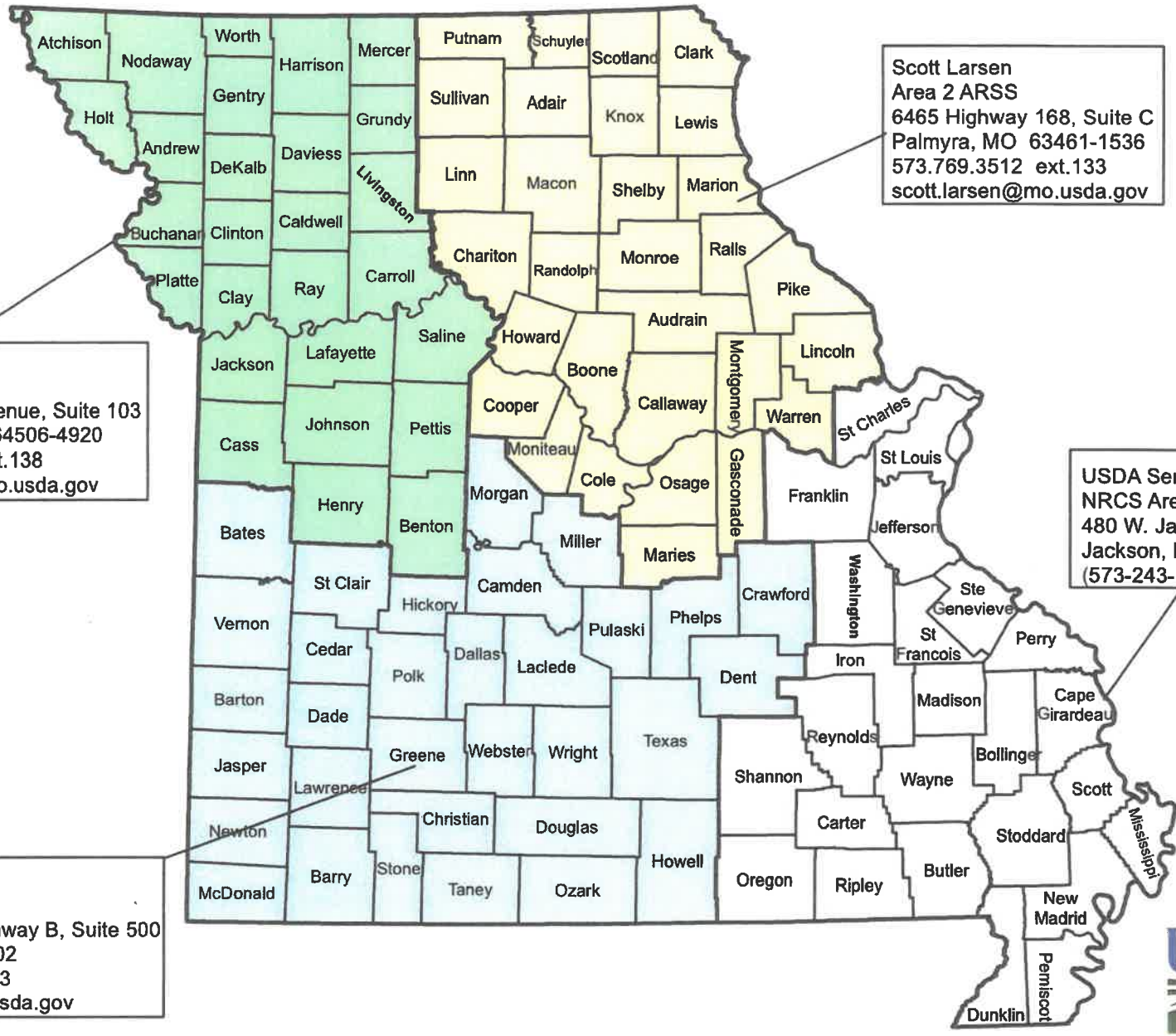
A completed Form AD1006, topographic map, and location map for the proposed site is enclosed. Please review and comment regarding the construction of the facility as it relates to your organization. We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 573-761-2857.

Respectfully,

CENTRAL ELECTRIC POWER COOPERATIVE

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Enclosures

Area Resource Soil Scientists (ARSS)
Providing Technical Soil Services



Scott Larsen
Area 2 ARSS
6465 Highway 168, Suite C
Palmyra, MO 63461-1536
573.769.3512 ext.133
scott.larsen@mo.usda.gov

David Kacirek
Area 1 ARSS
3915 Oakland Avenue, Suite 103
St. Joseph, MO 64506-4920
816.232.6555 ext.138
david.kacirek@mo.usda.gov

USDA Service Center
NRCS Area Office
480 W. Jackson Trails
Jackson, MO 63755-266
(573-243-1467 ext.3)

Allan Johnston
Area 4 ARSS
688 South State Highway B, Suite 500
Springfield, MO 65802
417.831.5246 ext.133
allan.johnston@mo.usda.gov

USDA

September 2018

USDA

United States Department of Agriculture

DEC 2 8 2020

December 22, 2020

Spencer K. Hoskins, P.E.
Manager – Transmission Line Design
Central Electric Power Cooperative
2106 Jefferson Street
P.O. Box 269
Jefferson City, MO 65102

Dear Mr. Hoskins

Attached is a Farmland Conversion Impact Rating (form AD-1006) for the proposed rebuild of the Maries – Chamois 161kV line in Osage and Maries Counties Missouri.

If you have any questions, please call me at (573) 769-2235 Ext. # 133.

Sincerely,

Scott Larsen
Area Resource Soil Scientist

Attachment

cc: Gary Applegate, DC, NRCS, Linn, MO

Natural Resources Conservation Service
6465 Highway 168, Suite C, Palmyra, Missouri 63461
PH: (573) 769-2235 FAX: (855) 849-1536

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request November 18, 2020
Name of Project Maries - Chamois Transmission Line	Federal Agency Involved RUS
Proposed Land Use Rebuild 161kV line on existing R/W	County and State Osage and Maries, MO
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 12/3/20 — Person Completing Form: SL

Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☐ NO ☑	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %	Amount of Farmland As Defined in FPPA Acres: %	
Name of Land Evaluation System Used	Name of State or Local Site Assessment System	Date Land Evaluation Returned by NRCS 12/22/20	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	0			
B. Total Acres To Be Converted Indirectly	0			
C. Total Acres In Site	585			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide Important or Local Important Farmland				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)				

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)				
2. Perimeter In Non-urban Use	(10)				
3. Percent Of Site Being Farmed	(20)				
4. Protection Provided By State and Local Government	(20)				
5. Distance From Urban Built-up Area	(15)				
6. Distance To Urban Support Services	(15)				
7. Size Of Present Farm Unit Compared To Average	(10)				
8. Creation Of Non-farmable Farmland	(10)				
9. Availability Of Farm Support Services	(5)				
10. On-Farm Investments	(20)				
11. Effects Of Conversion On Farm Support Services	(10)				
12. Compatibility With Existing Agricultural Use	(10)				
TOTAL SITE ASSESSMENT POINTS	160	0	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	0	0	0	0
Total Site Assessment *(From Part VI above or local site assessment)*	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☐

Reason For Selection:

Name of Federal agency representative completing this form:	Date:

(See Instructions on reverse side)

Form AD-1006 (03-02)

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s)of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)

Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.

Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \times 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

Central Electric Power Cooperative

2106 Jefferson Street, PO Box 269
Jefferson City, Missouri 65102
Telephone: (573) 634-2454
Fax: (573) 634-3892

November 18, 2020

Department of the Army
Corps of Engineers
Kansas City District
MO State Regulatory Office
515 E. High Street, Suite 102
Jefferson City, MO 65101-3261

Subject: Maries - Chamois 161kV Transmission Line

To Whom It May Concern:

Central Electric Power Cooperative (CEPC) is proposing to redesign, retire, and rebuild the Maries – Chamois 161kV line located in Osage and Maries County, Missouri. The rebuild will be constructed on existing transmission line right-of-way.

In compliance with RUS environmental guidelines, CEPC is corresponding with the following agencies:

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Missouri Department of Natural Resources
Missouri Department of Transportation – Central District
Natural Resources Conservation Service
Regional Planning Agencies
Dept. of the Army, Corps of Engineers – Kansas City District
United States Fish and Wildlife Service
Osage County Commissioner
Maries County Commissioner

A topographic and location map for the proposed site is enclosed. Please review and comment regarding the construction of the facility as it relates to your organization. We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 573-761-2857.

Respectfully,

CENTRAL ELECTRIC POWER COOPERATIVE

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Enclosures

Regulatory Office Boundary Map

1
Kansas City Regulatory Office
601 East 12th Street
Kansas City, MO 64106
Tel: 816-389-3990
FAX: 816-389-2032
Regulatory.KansasCity@usace.army.mil

2
Missouri State Regulatory Office
515 East High Street #202
Jefferson City, MO 65101
Tel: 573-634-2248
Fax: 573-634-7960
Regulatory.MissouriState@usace.army.mil

3
Kansas State Regulatory Office
2710 NE Shady Creek Access Road
El Dorado, KS 67042
Tel: 316-322-8247
Fax: 316-322-8259
Regulatory.KansasState@usace.army.mil

4
Kanopolis Regulatory Satellite Office
107 Riverside Drive
Marquette, KS 67464
Tel: 785-546-2130
Fax: 785-546-2050
Regulatory.Kanopolis@usace.army.mil

US Army Corps of Engineers
Kansas City District
Regulatory Program
Service Areas

September 2020

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

Form Approved - OMB No. 0710-0003 Expires: 30-SEPTEMBER-2015

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Spencer Middle - Kelly Last - Hoskins	First - Middle - Last -
Company - Central Electric Power Cooperative	Company -
E-mail Address - shoskins@cepc.net	E-mail Address -
6. APPLICANT'S ADDRESS:	**9. AGENT'S ADDRESS:**
Address- 2106 Jefferson St PO BOX 269	Address-
City - Jefferson City State - MO Zip - 65102 Country - USA	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	**10. AGENTS PHONE NOs. w/AREA CODE**
a. Residence b. Business c. Fax	a. Residence b. Business c. Fax
5736809568 5737612857 5736343892	

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ _____

SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

Maries - Chamois Transmission Line Rebuild

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
See Enclosed Maps	Address
15. LOCATION OF PROJECT Latitude: °N 38.684376° Longitude: °W -91.753971°	City - State- Zip-

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID Municipality Chamois, MO - Osage County, MO

Section - Township - Range -

17. DIRECTIONS TO THE SITE

See attached maps

18. Nature of Activity (Description of project, include all features)

Rebuild existing transmission line

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

Existing transmission line near or beyond life expectancy.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

No expected discharge, all transmission line poles will be well outside of channel area. Existing crossings will be utilized for creek, tributary and wetland areas.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

No expected discharge, all transmission line poles will be well outside of channel area. Existing crossings will be utilized for creek, tributary and wetland areas.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

Rebuilding existing line

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address-

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
			2020-11-18		

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE
	2020-11-18		

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

January 8, 2016

Department of the Army
Corps of Engineers
Mr. Anthony Koch, Regulatory Specialist
Kansas City District
MO State Regulatory Office
515 E. High Street, Suite 102
Jefferson City, MO 65101-3261

RE: Transmission Line Rebuilding Process
Crook-Linn NWK-2015-02092

Dear Mr. Koch,

This letter will provide information on the transmission line construction and rebuilding process.

Central Electric Power Cooperative (Central) has traditionally hired outside contractors to rebuild transmission lines. A project engineer/project manager is assigned and a full time inspector from Central will be on the project site during all aspects of construction. Initially, Central's field crew will traverse the transmission line right-of-way (ROW) to collect and verify obstacle data pertaining to access, roads, gates, other electric lines, waterways, etc. Central's ROW is generally 100' in width. Before the contractor begins work on the ROW, Central's field crew will then traverse sections of the ROW a second time for the purpose of staking the location of the new transmission line structures. The structures for the rebuilt transmission line are constructed of wood poles, crossarms and braces.

During the line rebuild project, the line contractor will haul the wood poles, crossarms, braces and other structure components to each staked structure location. After or during material delivery, the drilling crew will set up an auger rig at each structure location and auger the required 42" diameter holes. Holes that are not immediately set with a pole are covered with a barrier to protect people and animals from fall hazards. The setting crew will follow the drilling crew and set the wood poles in the augured holes. Generally, the structures are a two pole H-frame configuration with the poles being spaced at 10.5' or 15.5' apart. The framing crew follows the setting crew and will attach the crossarms, braces and other structure components to the wood poles. The framing crew also transfers the existing conductor to the new structures. As the framing crew performs their tasks another crew will dismantle the existing transmission structures, fill holes and haul the retired structure components off the ROW.

When the new structures are built and the existing conductor has been transferred then the new conductor is installed. This stringing operation is accomplished by using the existing conductor to pull in the new conductor. With the new conductor installed and sagged, then the new conductor is attached or clipped-in to the insulators on the transmission structures.

Once the stringing, sagging and clipping tasks are complete then the contractor crews clean up the ROW and reviews the engineer's final inspection list for any required final tasks. The Cooperative then takes control of the transmission line.

The Contractor will limit the movement of its crews and equipment so as to minimize the damage to crops and property along the ROW. Restoration procedures will be used on the ROW to prevent erosion and to re-establish ground cover. The procedures include cultivating, seeding, mulching and/or fertilizing the disturbed areas as needed to stimulate rapid growth. During construction the vehicle traffic is generally limited to a 15' wide path on the 100' wide ROW and an area of 50' radius at each structure. Central utilizes private easements that allow for ingress and egress across the property that the easement encumbers, so that existing roads, field roads, crossings and bridges may be used. Existing creek crossings will be used as they are found, but if none are available, alternative methods will be utilized, usually simply approaching the crossing from access on the opposite side, as the construction process does not require linear movement down the ROW. If no other method is possible and a creek crossing has to be made and/or upgraded, an appropriate Corps of Engineers permit would be requested.

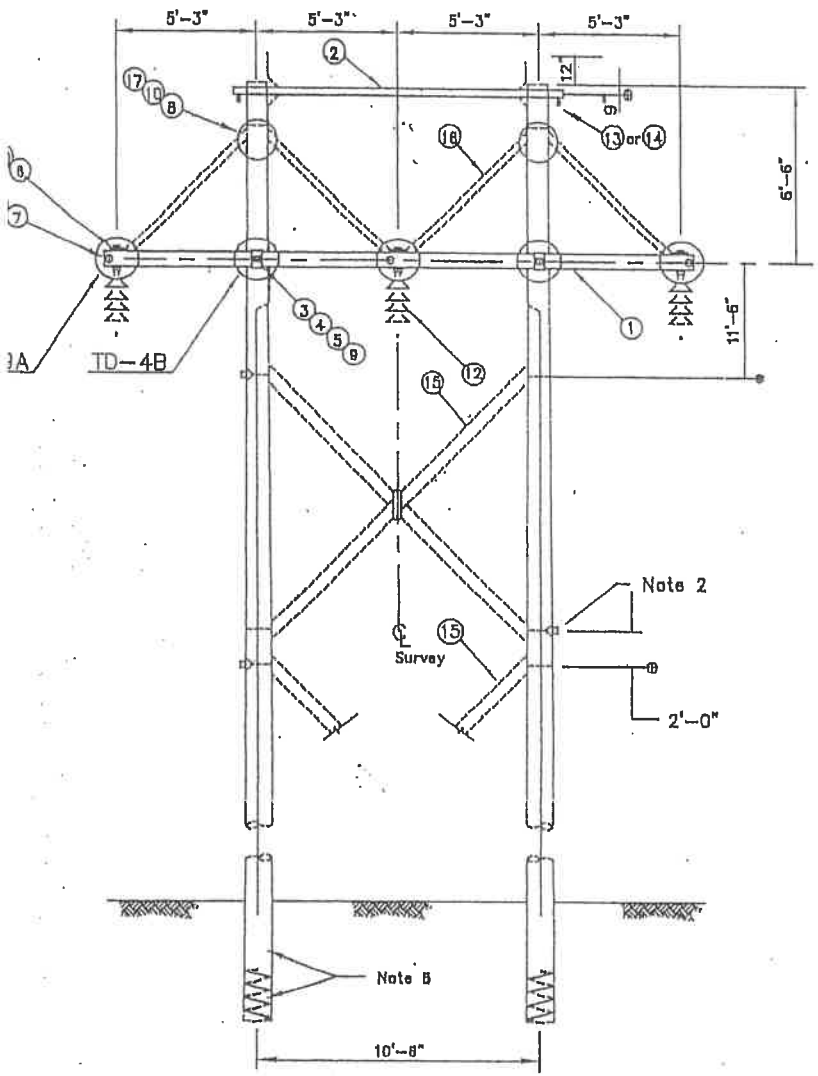
Should cultural resources be encountered during construction, all activity in the affected area will be halted and the State Historic Preservation officer and RUS immediately notified. Construction practices will conform to USDA/USDI guidelines. The measures recommended by the agencies contacted during the notification phase, to mitigate potential environmental threats, will be incorporated during the construction of the project.

The Contractor will take all practicable measures to avoid degradation of surface water quality during and after the construction period. Oil and fuel shall not be stored closer than 1,000 feet to any waterway, nor shall used oil be disposed of by pouring on the ground or in the waterway. The Contractor shall be liable for clean-up of any hazardous material spills including gasoline, oil, and herbicides and reporting such spills as required by the Environmental Protection Agency or Missouri DNR regulations. All Cooperative crews and contractor crews are directed to stay out of waterways. No dredged or fill material will be placed or disposed of in waterways or wetlands. Due to the long length of spans, transmission structures are not placed in waterways or wetlands.

Sincerely,

CENTRAL ELECTRIC POWER COOPERATIVE

Spencer K. Hoskins, P.E.
Transmission Engineer



TH-1G

DWG. REF.	TH-1G V0	TH-1G V1	TH-1G V4	X-BRACE X	X-BRACE XX	DESCRIPTION	ITEM	DET.	CODE No.
1			1	–	–	X-Arm, 5-5/8"X7-3/8"X22'-0", #41		TCD-20	
2			1	–	–	OHGW Support Assembly, double bolt	–	TM-7C	
3			2	–	–	Plate, X-Arm Reinforcing	eg		
4			2	–	–	7/8" Bolt, Machine, by req'd length	c		
5			2	–	–	Washer, Curved,4"sq x1/4",15/16" hole	d		
6			3	–	–	3/4" Bolt, Shoulder Eye, by req'd l.	o		
7			3	–	–	1/2" Bolt, Washer Head, w/Washer Nut	c		
8			2	–	–	Washer, Curved,4"sq x1/4",13/16" hole	d		
9			2	–	–	7/8" Locknut, MF Type	ek		
10			5	–	–	3/4" Locknut, MF Type	ek		
11			3	–	–	1/2" Locknut, MF Type	ek		
12			3	–	–	Insulator Assembly, Tangent	–	TM-2A	
13			1	–	–	OHGW Assembly, Tangent	–	TM-4A	
14			1	–	–	OPGW Assembly, Tangent	–	TM-4B-OP	
15			–	1	2	X-Brace Assembly	vx	TM-110A	
16			4	–	–	Brace, X-Arm,3-3/8"x5-3/8"x req'd l.			
17			2	–	–	3/4" Bolt, Machine, by req'd length	c		

NOTES:

1. Description and materials for structures are as follows:
   TH-1G – – – no braces
   TH-1GX– – – same as TH-1G w/one X-Brace
   TH-1GV0 – – two outside X-Arm braces
   TH-1GV0X– – same as TH-1GV0 w/one X-Brace
   TH-1GV1 – – two inside X-Arm braces
   TH-1GV1X – – same as TH-1GV1 w/one X-Brace
   TH-1GV4 – – four X-Arm braces
   TH-1GV4X– – same as TH-1GV4 w/one X-Brace
   (For two X-Braces, structure designation to use "XX" suffices.)
2. Field drilled holes shall be thoroughly treated.
3. See the TPF-5 drawing for pole framing guide.
4. Drawings TE-1 and TE-2 give guidence to subassembly alternatives.
5. The following materials are to be specified on plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLIES, AND ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

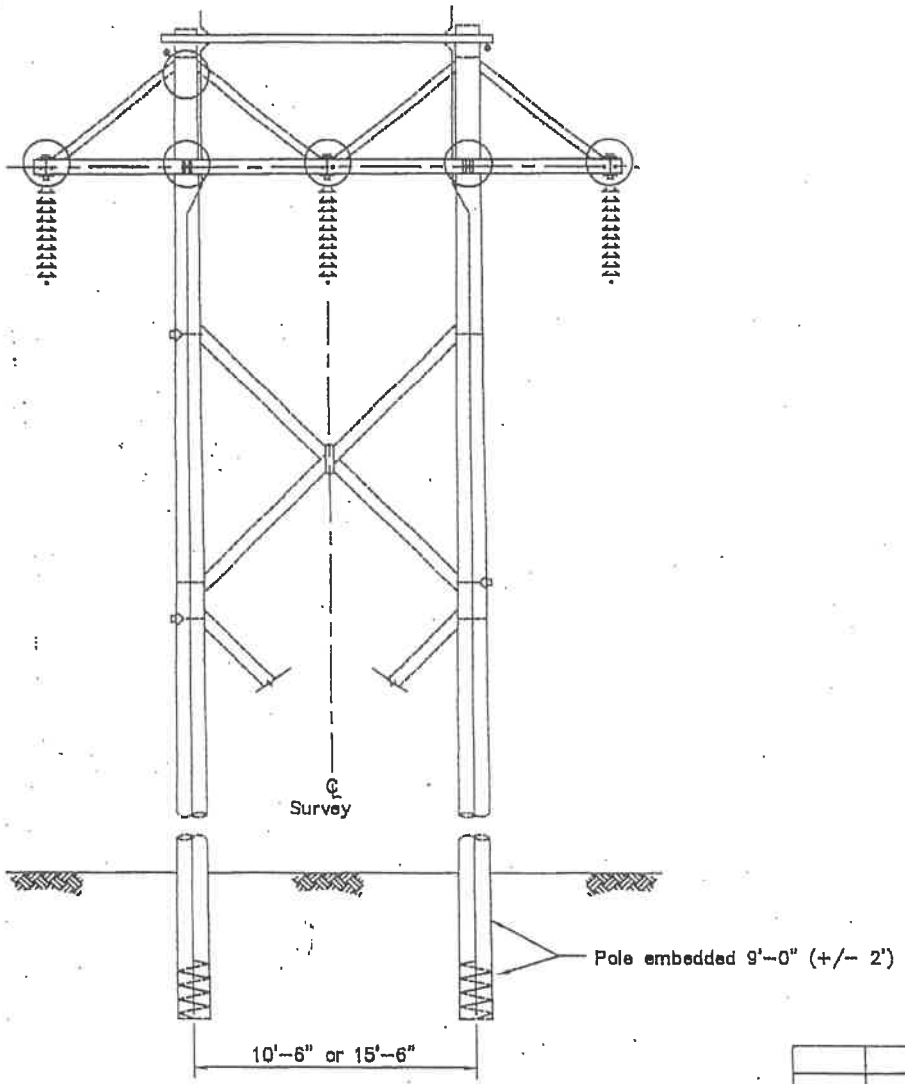
FORTUNA – FLORENCE

TRANSMISSION LINE STRUCTURE

TANGENT H-FRAME
(69 kv MAXIMUM)

NO.	REVISION	DATE
		LB 3/21/14

TH-1G SERIES



TRANSMISSION LINE SRUCTURE

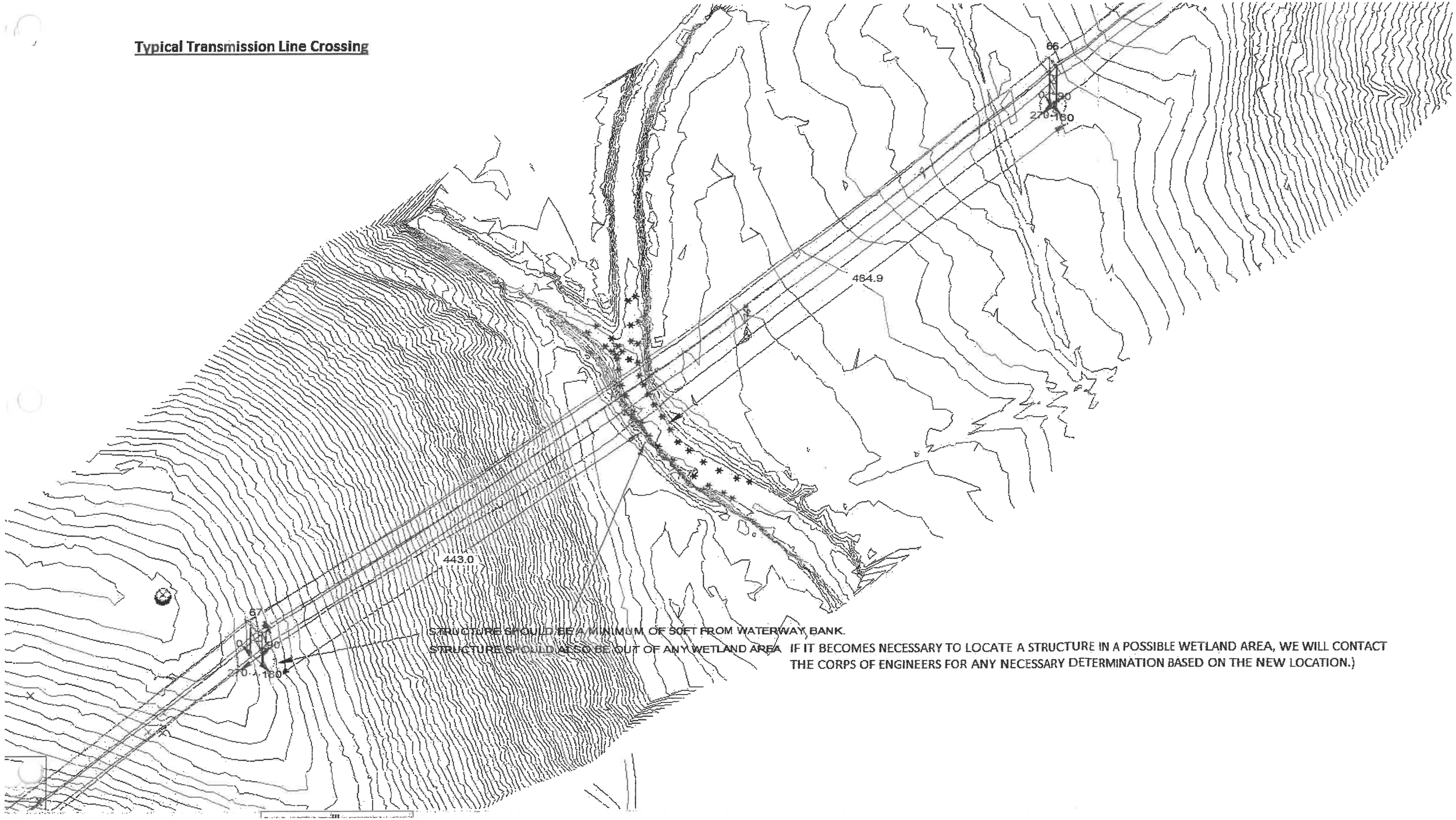
TANGENT H–FRAME

(161kv MAXIMUM)

NO.	REVISION	DATE
		L. BARTLETT
		11/19/15

TH–10 SERIES

Typical Transmission Line Crossing



STRUCTURE SHOULD BE A MINIMUM OF 50FT FROM WATERWAY BANK.

STRUCTURE SHOULD ALSO BE OUT OF ANY WETLAND AREA IF IT BECOMES NECESSARY TO LOCATE A STRUCTURE IN A POSSIBLE WETLAND AREA, WE WILL CONTACT THE CORPS OF ENGINEERS FOR ANY NECESSARY DETERMINATION BASED ON THE NEW LOCATION.)

Hoskins, Spencer

From: Garner, Joshua G CIV USARMY CENWK (USA) <Joshua.G.Garner@usace.army.mil>
Sent: Tuesday, January 5, 2021 11:46 AM
To: Hoskins, Spencer
Subject: NWK-2020-01017 (Central Electric Power Coop - Maries-Chamois 161kV line)
Attachments: 2020-01-04 - Gen Inquiry (NWK-2020-01017) - Maries-Chamois 161kV Transmission Line.pdf

EXTERNAL E-MAIL

Spencer,

Regarding the subject-line project, attached is a copy of the USACE letter for your files.

Hard-copies will not be mailed out. Therefore, please confirm your receipt. Please let me know if you do not receive the file attached.

Best Regards,

Joshua Garner
U.S. Army Corps of Engineers
Missouri State Regulatory Office
Regulatory Specialist - Kansas City District
515 East High Street, Suite 202
Jefferson City, Missouri 65101
Phone: (816) 389-3834

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, KANSAS CITY DISTRICT
MISSOURI STATE REGULATORY OFFICE
515 EAST HIGH STREET, #202
JEFFERSON CITY, MISSOURI 65101

January 4, 2021

Missouri State Regulatory Office
(NWK-2020-01017)
(Maries, MO)

Mr. Spencer Hoskins
Central Electric Power Cooperative
2106 Jefferson Street
P.O. Box 269
Jefferson City, Missouri 65102

Dear Mr. Hoskins:

This is in reply to your letter to the U.S. Army Corps of Engineers (Corps) requesting input regarding the Maries-Chamois 161 kV Transmission Line. It was received in this office November 08, 2020. The proposed project involves the redesign, retire, and rebuild of a 161kV transmission line within Osage and Maries County, Missouri.

The Corps has jurisdiction over all waters of the United States. Discharges of dredged or fill material in waters of the United States, including wetlands, require prior authorization from the Corps under Section 404 of the Clean Water Act (Title 33 United States Code Section 1344). The implementing regulation for this Act is found at Title 33 Code of Federal Regulations Parts 320-332.

Should any future construction plans associated with the project require the discharge of dredged or fill material in any waters of the United States, including wetlands, a Department of the Army (DA) permit may be required. However, if the proposed plans do not require the discharge of dredged or fill material in any waters of the United States, including wetlands, a DA permit will not be required. If you desire an official determination that any of the project is located within uplands and/or waters of the United States, and/or that a permit is or is not required, please contact this office.

We are interested in your thoughts and opinions concerning your experience with the Kansas City District, Corps of Engineers Regulatory Program. Please feel free to complete our Customer Service Survey form on our website at: http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey. You may also call and request a paper copy of the survey which you may complete and return to us by mail or fax.

If you have any questions concerning this matter, please feel free to contact Mr. Joshua Garner at 816-389-3834 or by email at joshua.g.garner@usace.army.mil. Your request has been assigned Regulatory File No. **NWK-2020-01017**. Please reference this file number on any correspondence to us or to other interested parties concerning this matter.

Central Electric Power Cooperative

2106 Jefferson Street, PO Box 269
Jefferson City, Missouri 65102
Telephone: (573) 634-2454
Fax: (573) 634-3892

November 18, 2020

Mr. Darryl Griffin, Presiding Commissioner
Osage County Commission
205 E Main Street
Linn, MO 65051

Subject: Maries - Chamois 161kV Transmission Line

Dear Mr. Griffin:

Central Electric Power Cooperative (CEPC) is proposing to redesign, retire, and rebuild the Maries – Chamois 161kV line located in Osage and Maries County, Missouri. The rebuild will be constructed on existing transmission line right-of-way.

In compliance with RUS environmental guidelines, CEPC is corresponding with the following agencies:

Missouri Department of Conservation
Missouri Department of Natural Resources
Missouri Department of Transportation – Central District
Natural Resources Conservation Service
Regional Planning Agencies
Dept. of the Army, Corps of Engineers – Kansas City District
United States Fish and Wildlife Service
Osage County Commissioner
Maries County Commissioner

A topographic and location map for the proposed site is enclosed. Please review and comment regarding the construction of the facility as it relates to your organization. We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 573-761-2857.

Respectfully,

CENTRAL ELECTRIC POWER COOPERATIVE

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Enclosures

No Response Received

Central Electric Power Cooperative

2106 Jefferson Street, PO Box 269
Jefferson City, Missouri 65102
Telephone: (573) 634-2454
Fax: (573) 634-3892

November 18, 2020

Mr. Victor Stratman, Presiding Commissioner
Maries County Commission
PO Box 205
Vienna, MO 65582

Subject: Maries - Chamois 161kV Transmission Line

Dear Mr. Stratman:

Central Electric Power Cooperative (CEPC) is proposing to redesign, retire, and rebuild the Maries – Chamois 161kV line located in Osage and Maries County, Missouri. The rebuild will be constructed on existing transmission line right-of-way.

In compliance with RUS environmental guidelines, CEPC is corresponding with the following agencies:

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Missouri Department of Natural Resources
Missouri Department of Transportation – Central District
Natural Resources Conservation Service
Regional Planning Agencies
Dept. of the Army, Corps of Engineers – Kansas City District
United States Fish and Wildlife Service
Osage County Commissioner
Maries County Commissioner

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Respectfully,

CENTRAL ELECTRIC POWER COOPERATIVE

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Enclosures

Victor Stratman called on 12/14/2020, he said that after reviewing the maps and rebuild data that they have no comments or concerns about the project.

Central Electric Power Cooperative

2106 Jefferson Street, PO Box 269
Jefferson City, Missouri 65102
Telephone: (573) 634-2454
Fax: (573) 634-3892

November 18, 2020

Ms. Bonnie Prigge
Meramec Regional Planning Commission
4 Industrial Drive
Saint James, MO 65559

Subject: Maries - Chamois 161kV Transmission Line

Dear Ms. Prigge:

Central Electric Power Cooperative (CEPC) is proposing to redesign, retire, and rebuild the Maries – Chamois 161kV line located in Osage and Maries County, Missouri. The rebuild will be constructed on existing transmission line right-of-way.

In compliance with RUS environmental guidelines, CEPC is corresponding with the following agencies:

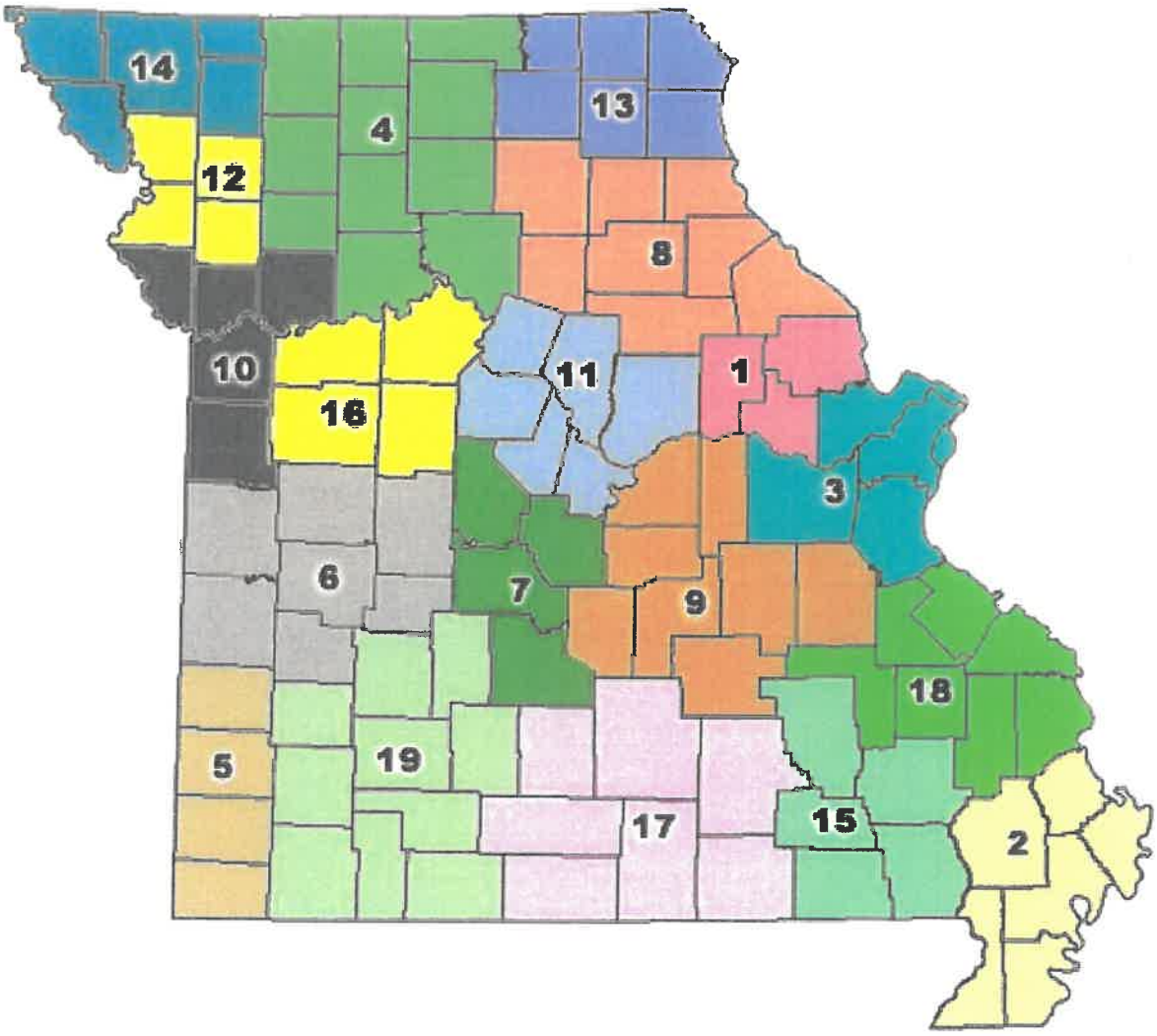
Missouri Department of Conservation
Missouri Department of Natural Resources
Missouri Department of Transportation – Central District
Natural Resources Conservation Service
Regional Planning Agencies
Dept. of the Army, Corps of Engineers – Kansas City District
United States Fish and Wildlife Service
Osage County Commissioner
Maries County Commissioner

A topographic and location map for the proposed site is enclosed. Please review and comment regarding the construction of the facility as it relates to your organization. We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 573-761-2857.

Respectfully,

CENTRAL ELECTRIC POWER COOPERATIVE

Spencer K. Hoskins, P.E.
Manager - Transmission Line Design
Enclosures



Missouri Association of Councils of Governments

213 East Capitol Avenue

P.O. Box 1865

Jefferson City, MO 65102

MACOG Home Office

573-634-5337

planning@macog.org

Missouri Association of COUNCILS OF GOVERNMENT
MACOG

Missouri Regional Planning Commissions and Councils of Government

1. Boonslick Regional Planning Commission
2. Bootheel Regional Planning and Economic Development Commission
3. East-West Gateway Council of Governments
4. Green Hills Regional Planning Commission
5. Harry S Truman Coordinating Council
6. Kaysinger Basin Regional Planning Commission
7. Lake of the Ozarks Council of Local Governments
8. Mark Twain Regional Council of Governments
9. Meramec Regional Planning Commission
10. Mid-America Regional Council
11. Mid-Missouri Regional Planning Commission
12. Mo-Kan Regional Council
13. Northeast Missouri Regional Planning Commission
14. Northwest Missouri Regional Council of Governments:
15. Ozark Foothills Regional Planning Commission
16. Pioneer Trails Regional Planning Commission
17. South Central Ozark Council of Governments
18. Southeast Missouri Regional Planning and Economic Development Commission
19. Southwest Missouri Council of Governments

No Response Received