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June 30, 2021

Via Email: psc.info@ky.gov

Public Information Officer
Kentucky Public Service Commission
PO Box 615
211 Sower Boulevard
Frankfort, Kentucky 40602

RE: Case No. 2020-00350

Dear Public Information Officer:

Pursuant to the Public Service Commission's request for public comment, please accept this letter on behalf of Iola Capital, LLC, Kimberly Brown, David Brown, Mark Carter, Monica Carter, and Pam Quarterly, all property owners in Bullitt County whose property will be directly affected by a proposed natural gas pipeline in Bullitt County which has been brought up in the above-referenced rate case ("the Proposed Pipeline"). Thank you for the opportunity to make the Commission aware of a number of issues that the Commission should consider in its deliberations on the matter.

As the Commission is aware, LG&E previously acquired a Certificate of Public Convenience and Necessity ("the Original CPCN") for the Proposed Pipeline via a ruling issued by the Kentucky Public Service Commission in the 2016 Rate Case. LG&E then initiated condemnation proceedings against numerous property owners along the path of the Proposed Pipeline, including the undersigned, which alerted them to LG&E's plans and the existence of the Original CPCN.

As a threshold matter, the Commission should note the irregularities in its grant of the Original CPCN:

- LG&E did not submit an application for the Original CPCN as required by statue and regulation. Instead, in testimony before the Commission in the 2016 Rate Case, Mr. Lonnie Bellar, LG&E's Chief Operating Officer, mentioned the proposed pipeline. In fact, LG&E denied the need for a CPCN.

- After the Commission requested that LG&E provide additional information regarding the pipeline project, LG&E requested *in a post-trial brief* that the PSC deem the application made and grant a CPCN for the proposed project.

- The PSC assented and issued the Original CPCN.

- Thus, LG&E did not provide notice to the public that it would seek a CPCN for the pipeline, and for all practical purposes, acquired the Original CPCN in secret, without public input.

Now, as the entity entrusted with protecting the public and ensuring that the public utilities are transparent and forthright in their dealings with the public, we urge the Commission to consider the following three (3) issues as it revisits the issue.

1. LG&E was at best deceptive (and at worst, outright lying to the Commission) when it presented its justifications for the pipeline to the Commission in the 2016 Rate Case.

Litigation in the condemnation proceedings following the issuance of the Original CPCN has revealed that LG&E's assertions of a need for the pipeline based on reliability concerns did not reflect the true intent or primary purpose of the pipeline. Simply put, the primary purpose of the Proposed Pipeline was to benefit planned expansion of the Jim Beam Distilleries by enabling Jim Beam to transport natural gas it intended to purchase from third parties through the new pipeline to Jim Beam, with Kentucky rate-payers footing the bill for the pipeline's construction.

The evidence demonstrating that Jim Beam was the driving force and primary beneficiary of the Proposed Pipeline project is overwhelming. The following evidence (attached hereto as Attachment 1, with references to Defendants' Exhibit Numbers "**DEX**") was presented in the condemnation proceedings held in Bullitt County on March 11-12, 2021, Case Nos. 19-CI-750 and 19-CI-755:

- That in LG&E's maps and internal discussions, the Proposed Pipeline was consistently referred to as the "Jim Beam Pipeline." For example, maps believed to be in the possession of the PSC, (and entered into evidence as confidential documents) show that the proposed pipeline feeds into the Jim Beam Line Regulation facility and then into the Jim Beam HP distribution system. *If the primary purpose was the public, why would it be referred to as the Jim Beam Pipeline?*

- That although the supply of natural gas to the area was through an existing system that had worked well and unchanged for over fifty years, the direct impetus for the project was Jim Beam's request for the

pipeline. (**DEX 92** and **DEX 25**). *If the primary purpose was the public, why would the existing system only be expanded after Jim Beam demanded it?*

- That LG&E's estimates for projected natural gas usage establish that in the relevant time frame, LG&E believed that one hundred percent (100%) of the gas going through the Proposed Pipeline in the first two years would be used by Jim Beam and that over ninety-five percent (95%) of the estimated additional gas usage in the next three years was also for Jim Beam. (**DEX 25**). *If the primary purpose was the public, why would 100% in years one and two, and more than 95% thereafter be for Jim Beam?*

- That Jim Beam was and is the only user of the pipeline system in Bullitt County with "FT status," allowing it to privately contract with natural gas suppliers other than LG&E. As such, Jim Beam is not currently using nor projected to use any Proposed Pipeline for gas purchased from LG&E as a public utility. *If the primary purpose was the public, then why did LG&E ask Jim Beam to pay for it, who isn't even purchasing its gas from LG&E??*

- That Jim Beam's use of the Proposed Pipeline would simply be as a means to transport natural gas from other privately contracted third-party natural gas vendors to Jim Beam though a pipeline to be paid for by the rate-payors of Kentucky. *If the primary purpose was the public, then why is the primary user not purchasing gas from LG&E like the public rate payer?*

- That Tom Rieth conceded on cross-examination that proposed maps showing possible routes for the Proposed Pipeline had been sent to Jim Beam by LG&E prior to the route selection. *If the primary purpose was the public, why was LG&E privately sharing confidential route maps with Jim Beam?*

- That Kevin Evans, the then Operations Manager at Jim Beam, for the distilleries to be served by the Proposed Pipeline, prepared a timeline regarding Jim Beam's understanding of the sequence of events (**DEX 92**), that confirmed in 2015 (i.e., prior to the 2016 Rate Case testimony of Mr. Bellar regarding the need for a new pipeline to address reliability issues without mentioning Jim Beam) Jim Beam's deep involvement in the pipeline project. *If the primary purpose was to benefit the public, why was Jim Beam the only customer directly involved with LG&E*?

- That this timeline, entitled "Beam Pipeline Discussion General Timeline – June 26, 2019," (and introduced as **DEX 92**) as well as Mr. Evans' testimony established that Jim Beam: a) recognized a gap in its natural gas supply while working on distillery expansion concepts and options; b) hired Schneider Electric as a 3rd party utility consultant; c) held meetings with LG&E on options to supply more natural gas to its facilities; d) was asked by LG&E to pay for a new pipeline with an estimated cost of $20-25 MM; e) rejected that request; f) asked Schneider Electric to come up with other options; and g) noted "gas line extension is planned without Beam funding." *If the primary purpose was the public, then why did LG&E ask Jim Beam to pay for 100% of the project costs?*

- That on examination, Kevin Evans with Jim Beam conceded that Jim Beam and Schneider Electric developed a strategy to shift the cost of the pipeline onto the rate payers rather than Jim Beam and that after such meetings Jim Beam received the "good news" that there may be no cost to Jim Beam for the Pipeline. (**DEX 133b**). *If the primary purpose was to benefit the public, why was LG&E having multiple meetings with Jim Beam and Schneider Electric regarding the pipeline and why would LG&E be informing Jim Beam of the news that it was no longer required to pay for it*?

- That the direct testimony of Lonnie Bellar, LG&E's COO, to the effect that LG&E did not treat Jim Beam any differently than it treated any other LG&E customer regarding the Proposed Pipeline was unbelievable on its face. *If the primary purpose was the public, why did Mr. Bellar try to conceal the true importance of Jim Beam before the PSC?*

2. LG&E's Biological Assessment of the pipeline project flatly contradicts its assertions regarding the need for the pipeline.

In LG&E's Biological Assessment for the Proposed Pipeline, LG&E took the position that future development in Bullitt County *would happen anyway and independent of any natural gas provided by the proposed pipeline*. And yet, LG&E claimed and argued exactly the opposite in the Bullitt County condemnation proceeding. (LG&E's Biological Assessment and relevant excerpts of LG&E's arguments to the Bullitt County Circuit Court are attached hereto as Attachment 2).

In the Biological Assessment, LG&E, through its agent Cardno, states:

> The availability of natural gas service **is not a pre-condition for residential, commercial, or industrial development** due to the availability of **other feasible energy options** including

> propane, electric, and geothermal. In projecting increased customer demand to be served by the proposed project, LG&E relied in part on growth projections from the Bullitt County Economic Development Authority whose **growth projections were not contingent on construction of the proposed project**. **Because the residential, commercial, or industrial land use to be served by the pipeline would likely occur independent of pipeline construction**, any impacts associated with natural gas end users would not occur "but for" construction of the proposed project.

And yet, in the Bullitt County Circuit Court at the takings trial, LG&E's opening statement included the following:

> Not only does LG&E have [the] statutory right to do so, this pipeline is sorely needed in Bullitt County as there are two problems currently facing LG&E's natural gas system in Bullitt County. The first is reliability and the second is capacity. I'll begin with reliability and this will be described further by LG&E witness Mr. Bellar. LG&E operates a transmission line that runs from Shepherdsville south until it terminates in Boston and there are roughly 95 hundred customers served off that pipeline. That is their single source of gas supply. And should there be an outage which can occur for any number of reasons, thousands of customers would be without natural gas which for many is their heating source. The second problem is capacity. **There is a significant growth along that line** especially in the area around 480 and around the new I-65 interstate exchange. **And as there is continued growth, LG&E has reached the point where it cannot push any additional gas through this line and that will be testified to by Mr. Reith later today. And because of that there has already been 450 denials of service to homes and businesses in Bullitt County. This is not a forecasted problem. This is a current problem and a problem that we expect to continue until the pipeline is constructed. The pipeline that LG&E is preparing to construct will solve both of these problems.**

And LG&E's closing statement to the Court included the following:

> Here is what has been unrebutted over two days of testimony. That at present there are 450 homes and businesses in Bullitt County that have been denied their request for natural services. Mr. Reith testified that if there is an outage along the existing distribution line that serves most of Bullitt County, thousands of Bullitt County customers could have service interruptions. That has been the unrebutted testimony over these two days. The focus of the

> Defendants has been on LG&E's decision making in 2015 and 2016, what projections did LG&E consider, what forecast did is consider, how did it talk to. **But what we have testified is that in 2021, LG&E is denying service to customers because there is no additional capacity on this pipeline. Those are the facts today. And until this pipeline is constructed your Honor, the number of denials of gas service will continue to grow and the risk of an outage for current customers will continue to exist.**

Thus, LG&E made directly contradicting statements to the U.S. government and to this body with respect to the existence of projected need and growth in Bullitt County along the path of the Proposed Pipeline. In its representations to U.S. Fish and Wildlife, LG&E specifically stated "the residential, commercial, or industrial land use to be served by the pipeline would **likely** occur **independent** of pipeline construction …" Furthermore, LG&E stated that "the availability of natural gas service is **not** a precondition for residential, commercial, or industrial development due to the availability of other feasible energy options including propane, electric, and geothermal." Those statements were made in the context of LG&E addressing environmental regulations that define what the consequences of the Proposed Pipeline would be. LG&E told U.S. Fish and Wildlife that the environmental consequences of the pipeline would be a non-factor *precisely because development in the area would occur regardless of the existence of the Proposed Pipeline, with energy needs being met by other sources*.

But LG&E told the Bullitt County Circuit Court that until and unless the Proposed Pipeline is built, the demands on the system caused by the growth and development in the area will continue and "the number of denials of gas service will continue to grow and the risk of an outage for current customers will continue to exist."

The Commission should consider that LG&E's Biological Assessment directly undercuts the fundamental basis LG&E has asserted to this Commission in justifying the need for the Proposed Pipeline because development in Bullitt County will occur with or without the Proposed Pipeline.

3. The Original Improperly Issued CPCN has expired and the Cost of the Pipeline has Tripled Since Issuance.

KRS 278.020(e) states:

> Unless exercised within one (1) year from the grant thereof, exclusive of any delay due to the order of any court or failure to obtain any necessary grant or consent, the authority conferred by the issuance of the certificate of convenience and necessity shall be void, but the beginning of any new construction or facility in good faith within the time prescribed by the commission and the prosecution thereof with

> reasonable diligence shall constitute an exercise of authority under the certificate.

It has been more than one (1) year since the Original CPCN was improperly granted with no application. LG&E received their CPCN on June 22, 2017. As of at least July 2018, LG&E still had not even settled on a final route, much less begun construction. As such, the Original CPCN is therefore void by operation of statute. The Commission should require LG&E to properly apply for a new CPCN for the Proposed Pipeline.

The rationale behind the statute requiring the CPCN to be declared void is highlighted by the exponentially increasing cost. What started as a $20-25 million project that LG&E asked Jim Beam to pay for, has now ballooned to more than $74 million on the backs of rate payers, despite LG&E's internal documents showing it is still primarily for Jim Beam. This is an expense the hardworking citizens of this Commonwealth should not bear without a thorough and thoughtful consideration of the facts in a proper CPCN proceeding. The PSC should step forward and declare that if LG&E wants a CPCN for the Proposed Pipeline, it must file a new application with full and honest disclosures as to why the rate payers should pay for this project.

Respectfully submitted,

/s/ John D. Cox

John D. Cox
Attorney for Iola Capital, LLC, Kimberly Brown, David Brown, Mark Carter, Monica Carter, & Pam Quarterly

ATTACHMENT 1

1. Mount Washington System Reinforcement Presentation (DEX25)
2. Beam Timeline (DEX92)
3. Email (DEX133b)

1.

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Mt. Washington System Reinforcement





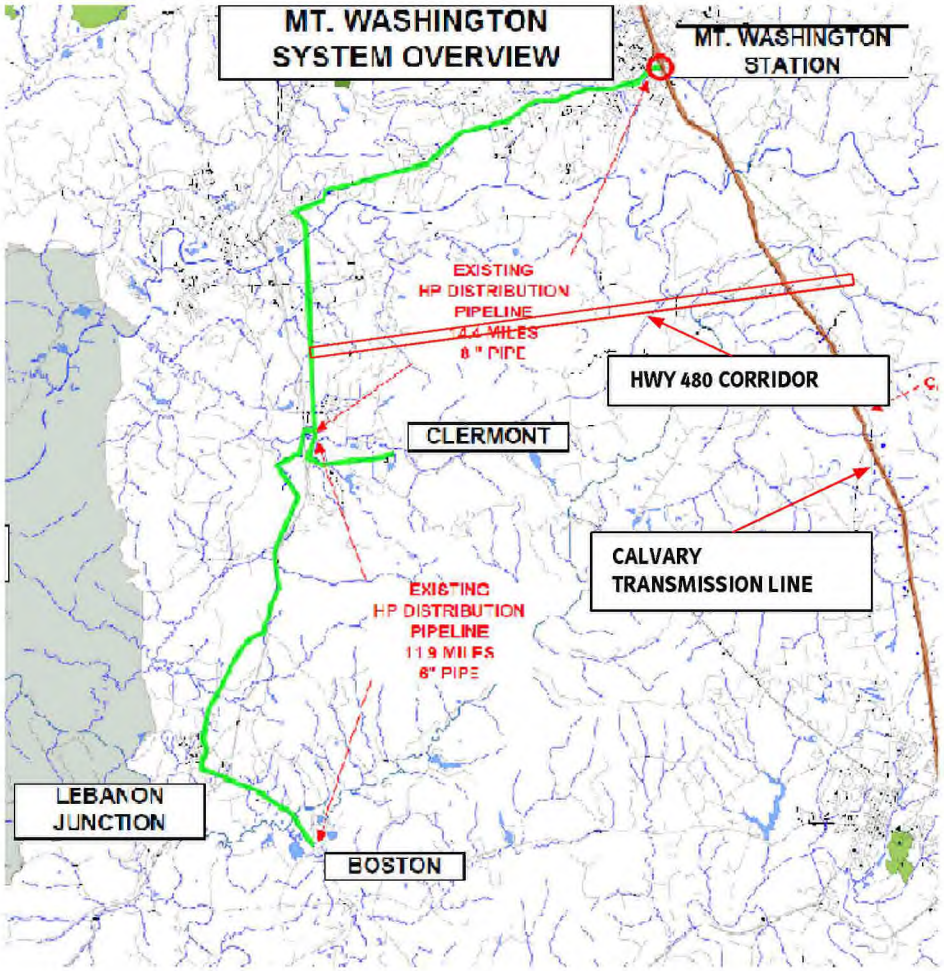

Mt Washington System Reinforcement

- Executive Summary
- Proposed Project
- Benefits
- Cost Proposal
- Recommendations

PPL companies

Executive Summary

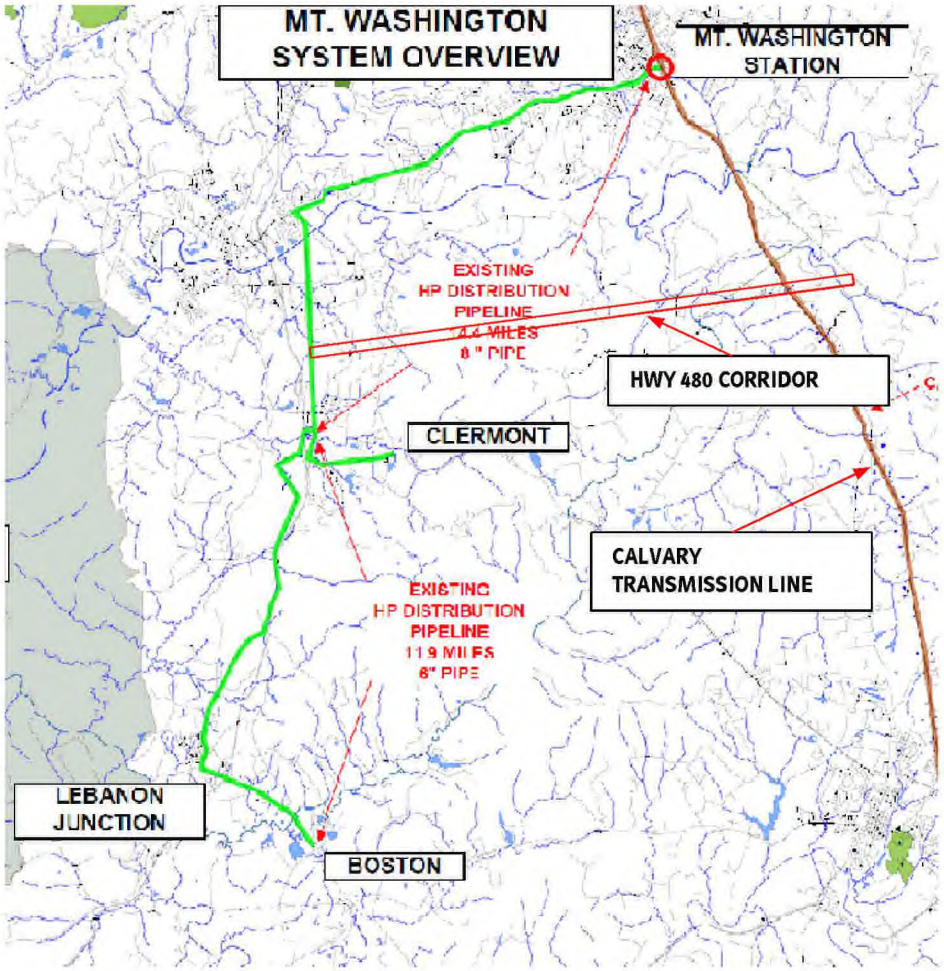
- Mt. Washington System serves Mt. Washington, Shepherdsville, Clermont, Boston and Lebanon Jct
- Fed from a single gas supply from the Calvary transmission line in Mt. Washington
- Gas system is approaching maximum capacity and currently must evaluate and loads in excess of the tariffed threshold of 8 mscfh have had to be declined to maintain reliable service to existing customers.
- Major customers include Jim Beam (Boston and Clermont), Publishers Printing and 480 Industrial Park Customers



PPL companies

Executive Summary

- System was uprated in mid-2000's as a reinforcement to support load growth.
- System cannot be uprated again.
- Majority of load is north of Hwy 480



PPL companies

LGE0017083

Jim Beam Request

- The Mt. Washington system feeds the Jim Beam plants at Clermont and Boston, which are both currently a FT customers, but had been IGS or AAGS in the recent past.
- Jim Beam is projecting energy growth at both the Boston and Clermont plants due to business expansion and replacement of coal with gas for its boilers.
  - *Projected Incremental Maximum Gas Capacity within 5 years*
    - Clermont – From 100 mscfh to 160 mscfh
    - Boston – From 90 mscfh to 220 mscfh
- Jim Beam understands that it will require a significant investment and has requested LG&E provide them with a cost contribution amount required for the investment to serve this load.
- In addition Jim Beam has provided LG&E with usage projections to be used in developing the cost contribution.

Bullitt County

- Bullitt County has had steady growth over the past 4 years for residential, small commercial and light industrial gas customers on the Mt. Washington System.
- In recent meetings with Bullitt County officials and developers growth is expected to continue and possibly escalate.
- Over the next 5 years Bullitt County Economic Development officials project…
  - Residential growth for 300-500 homes annually.
  - Over 8 million square feet of distribution or light industrial space to be built. Primarily due to proximity to Louisville via I-65 and labor costs.
  - Possibly another distillery.
- The commercial and industry growth will primarily occur in the Hwy 480 to Hwy 245 corridor.

Bullitt County

- The system does not currently have enough capacity to support this growth.
- The system will need to be reinforced to support current residential and small commercial load growth even if large commercial and industrial requests are not approved.

Options for Infrastructure Enhancement

Options	Description	Supports Jim Beam Request	Provides additional system reliability	Growth support Years 0 – 3 after project	Growth support Years 3+ after project	Capital Cost ($)
1	No project to reinforce system	No	No, system still one-way feed	Residential and Small Commercial	No additional Growth	$0
2	System reinforcement completed in year 3. No new gas supply to system.	No	No, system still one-way feed	Residential and Small Commercial	Residential and Small Commercial	$1.5m to $4.5m
3	New Gas Supply from Calvary Line tied into system near Hwy 480.	Yes	Yes, provides second gas supply	Residential, Commercial & Industrial	Residential, Commercial & Industrial	App $28m
4	New Gas Supply from Calvary Line tied into system in Boston near Jim Beam plant	Yes	Yes, provides second gas supply	Residential, Commercial & Industrial	Residential, Commercial & Industrial	App $33m

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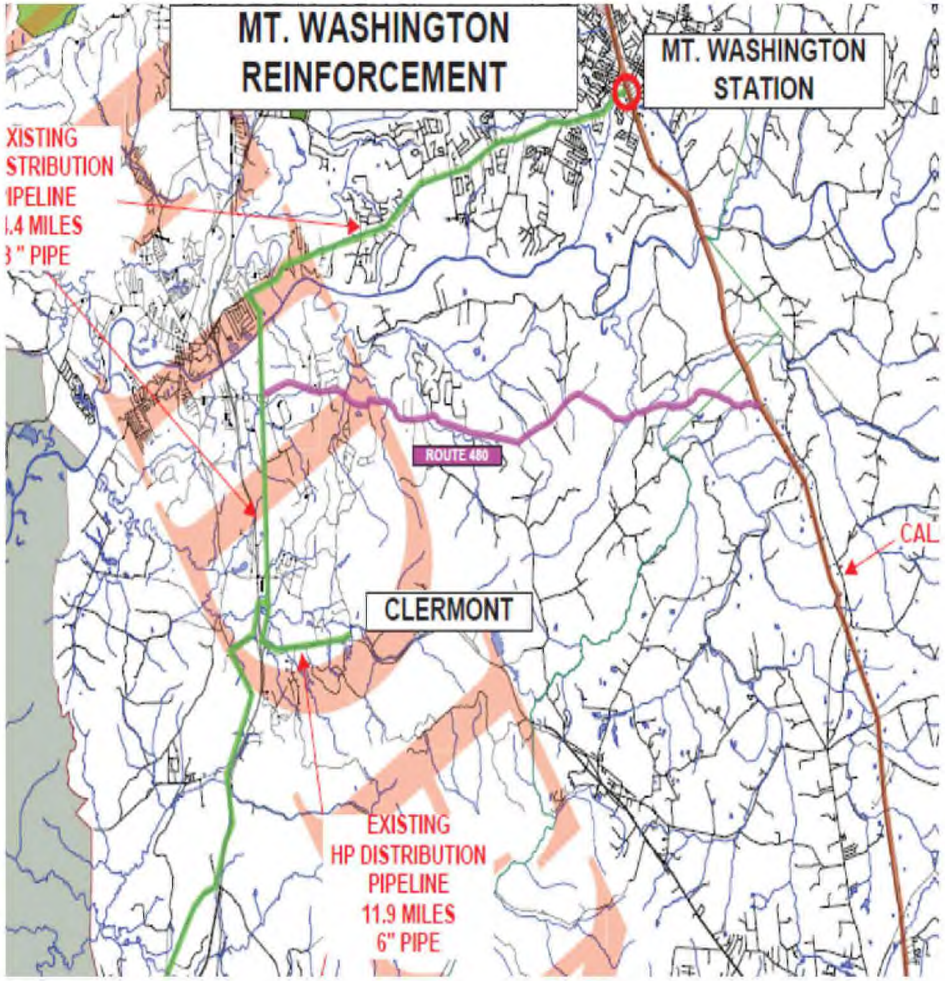
Recommended Project – Option 3

- A new supply of gas will be required to serve the Jim Beam request and projected Bullitt County growth.
- GDO has studied several options and based on projected growth location recommend installing an approximately 12.5 mile, 16-inch line along the Hwy 480 corridor.
- An high level estimate for this project is $26m - $30m.



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Project Benefits

- Completing the project provides the following benefits…
  - The system would have capacity to serve projected Jim Beam and Bullitt County gas usage needs.
    - Note – Additional reinforcement may be required in the future for Bullitt County as growth extends southward from Hwy 245.
  - The company would avoid significant necessary capital expenditures to reinforce the system to serve just new residential and small commercial loads.
  - Reliability of the system is significantly increased with a second gas supply to the system.

Cost Contribution

- Cost Contribution normally calculated based on customer's average annual revenue for 3 years.
- For this project the 3-year contribution would be…
  - FT Rate – app $970k (Based on 3 yrs for both plants)
  - IGS Rate – app $7,600k (Based on 3 yrs for both plants)
- An alternative method of calculating the contribution has been proposed due to the unique benefits this project provides that is not typical for most projects.

Proposed Factors for Cost Contribution

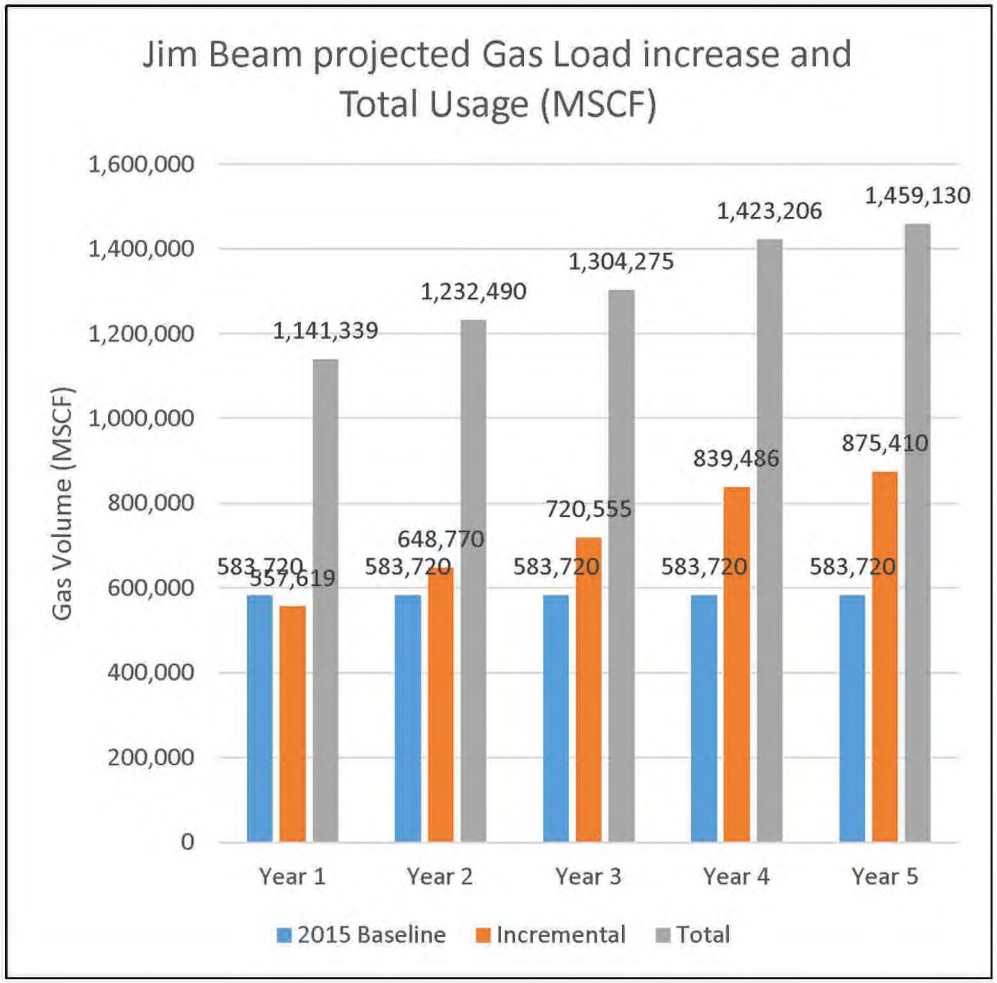
- Other System Growth
  - Recent history and projections based on meeting with Bullitt County personnel support solid to strong growth in the area.
- Avoided Capital Costs
  - A significant cost contribution would have to be made to continue serving residential and small commercial load.
- Reliability Factor
  - System is currently has only one supply. Disruption through a third-party damage or other cause would lead to an outage up to 4,000 to 5,000 customers including Jim Beam.

Jim Beam Growth

- Jim Beam provided usage and maximum hourly load data for the analysis.
- Volumes considered flat after 2021.

Jim Beam Growth

- Serving the additional Jim Beam load provides significant volumetric growth for the company's gas system.



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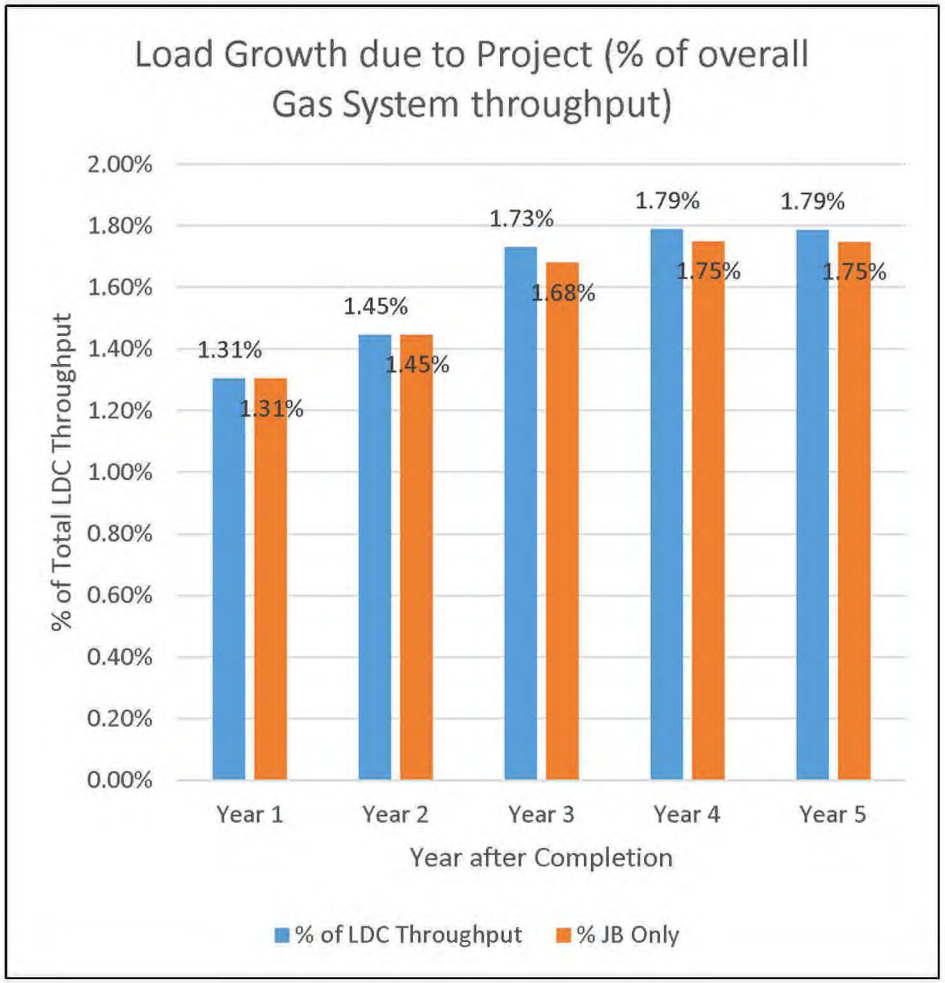
System Growth

- Projected volume increase represents significant base growth.
- Jim Beam increase is the primary contributor in the near term.
- Load will be significant throughout the year.



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Jim Beam Growth – Customer Ranking

2013 (in MSCF)		
Ranking	Customer	Usage (MSCF)
1	Ford KTP	1,431,940
2	Ford LAP	1,037,729
3	American Synthetic	935,203
14	**Jim Beam Boston**	269,654
23	**Jim Beam Clermont**	139,550
	Total (1-25)	**9,775,102**

2014 (in MSCF)		
Ranking	Customer	Usage (MSCF)
1	Ford KTP	1,514,647
2	Ford LAP	1,218,864
3	American Synthetic	755,487
16	**Jim Beam Boston**	184,406
22	**Jim Beam Clermont**	142,523
	Total (1-25)	**9,560,230**

2015 (in MSCF)		
Ranking	Customer	Usage (MSCF)
1	Ford KTP	1,592,253
2	Ford LAP	1,129,375
3	American Synthetic	593,788
10	**Jim Beam Boston**	372,800
16	**Jim Beam Clermont**	210,921
	Total (1-25)	**9,348,231**

Based on Year 5 projections (in MSCF)		
Ranking	Customer	Usage (MSCF)
1	Ford KTP	1,592,253
2	Ford LAP	1,129,375
3	**Jim Beam Boston**	823,194
4	**Jim Beam Clermont**	612,087
5	American Synthetic	593,788
	Total (1-25)	**10,199,791**

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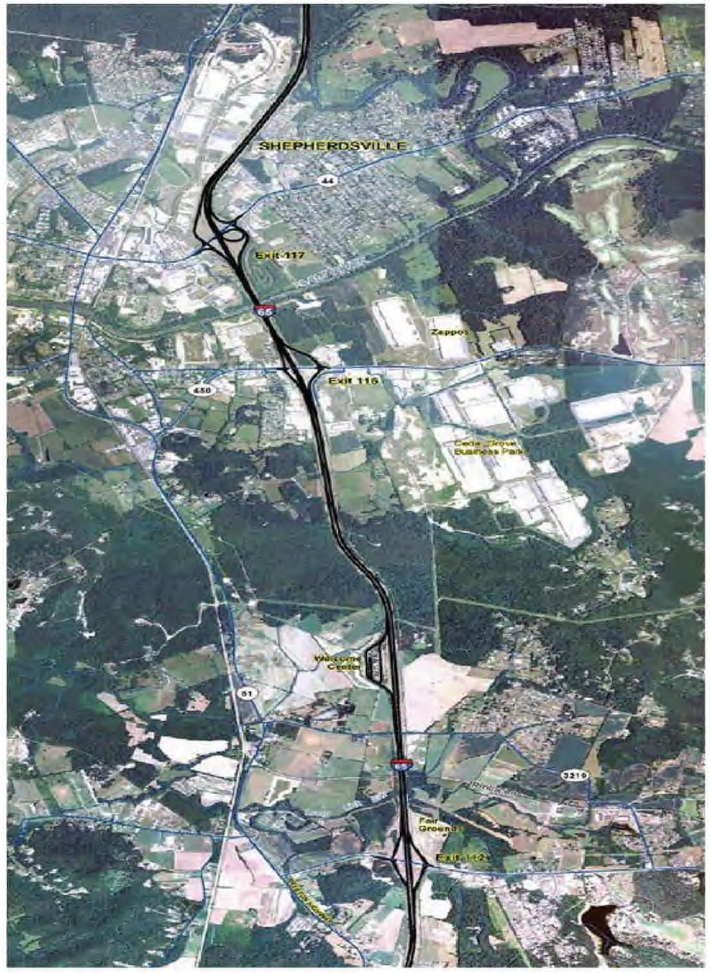
Other Projected System Growth

- Gas Engineering developed optimistic, realistic and pessimistic growth rates for other projected growth based on prior 4 years for the scenarios considered
- Large Commercial and Industrial growth can't be supported without the recommended option.



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Other Factors

- Capital Avoidance
  - Projects or multiple projects will have to be completed in the future to serve new residential and small commercial load.
  - Factors of $4.5m (optimistic), $3.0m (realistic) and $1.5m (pessimistic) have been considered based on projected growth for residential and small commercial.
- Reliability
  - A $4.0m factor has been considered based on avoiding an outage on this system because it is a one-way feed.
  - The factor is estimated based on restoration cost for a 4,000 – 4,500 customer outage (app $2.0m) plus consideration for negative company image and customer hardship during the outage.

Cost Contribution

Assume Capital Cost = $28.0m			
		Case 1 - JB R, OR (O), CA (O)	Case 2 - JB P, OR (O), CA (O)
N P V R R	Project ($000)		
	Jim Beam Revenue ($000) =		
	Other Revenue ($000) =		
	Capital Avoidance ($000) =		
	Reliabilty ($000) =		

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Recommendation

- Proposed Cost Contributions
  - $x.xxm if Jim Beam agrees to be an IGS customer for 5 years after pipeline is constructed.
  - $x.xxm if Jim Beam agrees to be an IGS customer for 3 years after pipeline is constructed.
  - $x.xxm if Jim Beam remains a FT customer after the pipeline is constructed.

2.

Beam Pipeline Discussion General Timeline - June 26, 2019

2015

- Ops team started working on distillery expansion ideas, concepts and options – this highlighted a gap in natural gas supply (KE, AS)
- Schneider Electric was hired as 3rd party utility consultant.
- Initial meetings held with LG&E on options to supply more natural gas to both Clermont and Boston. (BG, KE).
- Response from LG&E- not enough gas available, LG&E ask Beam to pay for a new pipeline, estimated cost $20-25MM … Beam rejects this proposal. (BG, KE, AS)
- Beam asks Schneider Electric to help find other options… tankers, etc. (BG, KE, AS)
- In further meetings between Schneider Electric and LG&E it was determined that future growth in the Bullitt County area would require more gas than just our need and it made sense for LG&E to install a pipeline at their expense to support the need in Bullitt County (BG, KE, AS)
- November 15th Beam team has additional internal discussions regarding Bioreactor as an alternative (KE)

2016

- Beam continues to hold internal meetings to discuss development of distillery growth plans (AS, KE)
- Schneider Electric continued to develop utility strategy and work with Beam and LG&E on potential solutions (KE)
- In March, cross functional meeting with Schneider Electric, LG&E and Beam to discuss growth plans and gas needs. (KE)
- May 27th Economic Development meeting hosted by John Snider, Bullitt Economic Development Director. Attendees at this meeting included BCEDA, LG&E, Salt River Electric, City of Shepherdsville, Flynn Brothers, RAF/2M (McGruder), Miles Enterprise, Beam Suntory (Kevin Evans). Meeting focused on current infrastructure, growth plans, the need for increased gas supply, and a very general discussion regarding potential volume and estimated timing. While there were no notes or maps on pipeline path options, Kevin Evans recalls that there was a brief, conceptual discussion regarding the pathway LG&E might consider for thepipeline…for example it could go to northern end of the county, the southern end of the county, middle of the county, etc. (KE)
- June 13th Cross functional meeting with Schneider Electric, LG&E and Beam to review and discuss gas supply options. 2 points of interest from Evans notes- 1) Gas line extension is planned without Beam funding, 2) LG&E does not have exact route at this time. (KE)
- August 8th, 2016 – Non-binding letter of intent sent to LG&E from Brain on estimated gas needs thru 2020. (BG, KE)

2017-2018

- Surveying, engineering, right of way activity by LG&E begins (LP)
- Ongoing quarterly updates between procurement and LG&E…. at some point the "general route" is shared but no specific routes are provided nor is Beam asked for input on the route selected. It is possible a map of the general route was shown with a highlighted corridor marked as the general area they will take the pipeline. (BG, KD)

2019

- Early 2019 (Jan – April) pipeline route becomes public issue, media gets story, first public effort by individuals and Bernheim against pipeline.
- WIK and Beam PR alerted to Bernheim's position/announcement by Mark Wourm on April 4th. (KS, EY, AS)
- April 4th- WIK and Beam PR begin gathering general details internally and monitor media. Maps of general route obtained from LG&E (LP) and map of specific route obtained from Bernheim (MW). (KS, EY, RS)
- April through June- WIK and Beam PR monitor situation. (KS, RS, EY)
- Week of June 17th – Email received by Brett Hale. Team meeting to discuss response and team begins detailed investigation of timeline and confirmation of facts. First draft of a holding statement is created. (BH, CD, DH, TM, KS, EY, RA)

3.

To: White, Mark[Mark.White@lge-ku.com]
Cc: French, Dave[Dave.French@lge-ku.com]
From: Payne, Lisa
Sent: Fri 6/17/2016 4:53:19 PM
Subject: Confidential Bullitt Co.

I had a conference call with Tom Reith and Cheryl today. The capital investment to install and reinforce a pipeline in Bullitt Co. to serve Jim Beam and others has potential.
Internal conversations have been that this is an opportunity for growth and will benefit us from a reliability stance. Tom may have more information late next week, but says it might be a good idea to go ahead and talk to Jim Beam to let them know that we could meet with them the first of July or so. And that our strategies are coming along.

The good news is confidential, but this gas expansion may be at no cost to Jim Beam. Obviously there will be more discussion about Jim Beam's commitment, etc., but this is good news for Beam and others preparing to build.

Mark, I'm headed out for vacation the middle of next week until 7/8. We can talk early week if needed. Cheryl is out quite a bit too and she asked me to let you know all. Please work directly with Tom the week of 6/27 to develop discussion, dates/times for a meeting. Thanks!

Lisa A. Payne
Team Leader | Economic Development and Major Accounts | LG&E and KU Energy LLC
220 West Main Street, Louisville, KY 40202
M: 502-548-7426 | O: 502-627-4955 | F: 502-217-2494
lisa.payne@lge-ku.com
lge-ku.com

ATTACHMENT 2

1. LG&E's Biological Assessment
2. Informal Transcript from March 11-12, 2021 Trial

1.

Biological Assessment

LG&E Bullitt County Transmission Pipeline Project

February 18, 2020

Cardno®

Contact Information

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Executive Summary

Louisville Gas & Electric (LG&E) is proposing to construct a natural gas pipeline within Bullitt County, Kentucky in order to provide reliability and meet the growing demand for gas service in the area. The proposed project, known as LG&E's Bullitt County Transmission Pipeline Project, consists of an 11.84-mile corridor with a proposed right-of-way width of 50 feet. The project corridor starts approximately 1.0 mile east of the intersection of Grigsby Lane and Rummage Lane and extends west and south, crossing Cedar Grove Road and Deatsville Road. The project corridor ends east of Interstate 65 and north of Chapeze Lane.

Cardno, on behalf of LG&E, submitted a pre-construction notification to the US Army Corps of Engineers (USACE) for proposed impacts to jurisdictional streams and wetlands within the project area. The USACE sought US Fish and Wildlife Service (USFWS) input on the project to comply with Endangered Species Act (ESA) requirements. The USFWS has indicated that the following protected species may be present within the project area: Kentucky glade cress, gray bat, Indiana bat, northern long-eared bat (NLEB), orangefoot pimpleback, pink mucket, and sheepnose mussel. In a letter dated April 8, 2019, formal consultation was requested by USACE for a "may affect and likely to adversely affect" determination for the Indiana bat and Kentucky glade cress species within the proposed project boundaries. On June 4, 2019, USACE received a letter from USFWS requesting additional information and suggesting a Biological Assessment be submitted for their review.

The biological assessment proposes whether the project may affect Kentucky glade cress, gray bats, Indiana bats, NLEB, and mussel species; or these species' critical habitats. All suitable habitat for mussel species will be avoided by the project, so a determination of "no affect" has been proposed. Adverse effects are not expected for the gray bat, because roosting habitat or hibernacula are not present within the project vicinity. Thus, an effects determination of "may affect, not likely to adversely affect" for the gray bat has been proposed. LG&E has developed the project alignment to avoid critical Kentucky glade cress habitat within the vicinity. Furthermore, LG&E will continue to work with regulatory agencies to avoid and minimize impacts to populations of Kentucky glade cress during construction activities and develop a mutually agreed upon mitigation proposal prior to the start of construction. After consultation with the USFWS and USACE, adverse effects are anticipated for this species. It is assumed that potential summer roosting and foraging habitat occurs for the Indiana bat and NLEB within the action area. Critical habitat for these species does not occur within the action area and will not be impacted. LG&E anticipates tree clearing within the potential and known habitat ranges for the Indiana bat and NLEB. Since clearing may take place during the summer, and it is presumed that these bat species and their summer roosts are present in the action area, the project may have an adverse effect on the Indiana bat and NLEB. Therefore, an effects determination of "may affect, likely to adversely affect" for the Kentucky glade cress and Indiana bat has been proposed. In accordance with the USFWS 4(d) rule on the NLEB, the project will not result in a prohibited take of NLEB. Thus, an effects determination of "may affect, likely to adversely affect but take is not prohibited" has been proposed for the NLEB. LG&E will mitigate the adverse impacts through consultation with the USFWS Kentucky Field Office and will utilize avoidance and minimization of clearing within forested areas where possible. Tree clearing will be performed during winter months (October 1 to March 31) if possible, but this will depend on when all approvals for the project are obtained. LG&E will also contribute to the Kentucky Natural Land Trust's Imperiled Bat Conservation Fund, which supports the reforestation and restoration of Indiana bat habitat within the area. In addition, best management practices will be implemented to limit impacts to aquatic resources that may serve as foraging habitat for these bat species.

1 Introduction

Louisville Gas & Electric (LG&E) proposes to construct a natural gas pipeline within Bullitt County, Kentucky in order to provide reliability and meet the growing demand for gas service in the area. The project area for the proposed project is 11.84 miles long with a permanent easement width of 50 feet (Appendix A, Figure 1). The purpose of this document is to assess the effects of the proposed action on the federally threatened Kentucky glade cress (*Leavenworthia exigua laciniata*), federally endangered gray bat (*Myotis grisescens*), federally endangered Indiana bat (*Myotis sodalis*), the federally threatened northern long-eared bat (*Myotis septentrionalis*) (NLEB), and three federally endangered mussel species which may occur within the project area (*Plethobasus cooperianus, Lampsilis abrupta, Plethobasus cyphyus*). Consultation for the NLEB is anticipated to proceed through the programmatic NLEB 4(d) rule framework. This Biological Assessment (BA) is being prepared by Cardno on behalf of LG&E in support of federal permit consultation for LG&E's Bullitt County Transmission Pipeline Project. The federal permitting is with the U.S. Army Corps of Engineers (USACE) Louisville District under the requirements of Section 404 of the Clean Water Act. USACE initiated consultation with the U.S. Fish and Wildlife Service (USFWS) Kentucky Ecological Services Field Office.

LG&E submitted a Pre-Construction Notification letter to the USACE on February 28, 2019. This project is assigned USACE Project Number LRL-2017-1046. The project proposes to permanently impact 18 linear feet of an intermittent tributary and conversion of 0.16 acres of a forested wetland to emergent wetland. While temporary impacts to streams and wetlands are anticipated due to pipeline construction, these areas will be returned to original conditions following construction. In a letter dated April 8, 2019, formal consultation was requested by USACE for a "may affect and likely to adversely affect" determination for the Indiana bat and Kentucky glade cress species within the proposed project boundaries. On June 4, 2019, USACE received a letter from USFWS requesting additional information and suggesting a Biological Assessment be submitted for their review.

2 Project Description

LG&E is proposing to construct a natural gas pipeline within Bullitt County, Kentucky in order to provide reliability and meet the growing demand for gas service in the area. LG&E's Bullitt County Transmission Pipeline is a new 12-inch diameter pipeline, approximately 11.84 miles, which will transport natural gas through the eastern portion of Bullitt County. The natural gas pipeline will extend from approximately 1 mile east of the intersection of Grigsby Lane and Rummage Road to the west and south to east of Interstate 65 and north of Chapeze Lane (Appendix A, Figure 1). The project area consists of various landforms and habitats. The survey corridor begins in a wide expanse floodplain associated with Cox Creek and its tributaries. The land use in the first 2 miles is associated with agricultural tilled crop and hay production. The corridor continues into a mixed-use landscape of agricultural use and residential use until the corridor reaches Deatsville Road. West of Deatsville Road, the corridor is adjacent to an existing electric transmission right-of-way and the landscape becomes characterized by long steep slopes and mature forest landscape, which is common among the local knob landforms. Several streams and wetlands were identified within the project area. In total, the following were identified within the project study limits: 17,496 linear feet of streams, 0.28 acres of pond open water and 1.11 acres of wetland including 0.50 acres of forested wetland.

The construction start is dependent upon obtaining all permits and easements. At the current time, LG&E has not established a start date for the project. Construction duration is expected to take 6 to 9 months with an expected need to return after one winter (i.e. freeze/thaw cycles) to restore areas where the grade has settled or vegetation did not adequately germinate. This 6 to 9 month long window is the anticipated length of potential time where glade cress populations may be directly impacted by construction activity. During construction, topsoil will be segregated from subsoil by bulldozer, and will be temporarily staged on the

distant side of the excavation within the construction workspace. Open trench pipe installation will generally require excavation to a minimum depth of 3 feet below ground surface (bgs) (measured to the top of the pipe) with a track-mounted backhoe or trencher advancing the trench with an average trench width of 3 to 5 feet. After the pipe is installed, it will be backfilled entirely with clean native soil or if unavailable, manufactured limestone dust may be added only around the pipe and the remainder of the trench is backfilled with previously excavated native soil. Then, the exposed ground surface will be planted with a seed mix and stabilized with temporary mulch to complete restoration of the right-of-way (ROW). Wetlands and Kentucky glade cress areas will be planted with a native seed mix appropriate for those areas, and as directed by the USFWS.

Mainline pipe construction will take place within the construction ROW, which consists of the permanently maintained ROW and temporary workspaces required for construction. LG&E will use a typical ROW limit that is 100 feet wide from approximate milepost 0 to 6.8 and 75 feet wide (maximum) from milepost 6.8 to 11.84, which includes the 50-foot wide permanent pipeline easement. The project will also include the construction of permanent valve sites and support infrastructure, as well as temporary pipe storage yards, access roads, and contractor yards. All of these areas were evaluated for the project studies, and all temporary and permanent work areas are considered in this BA. Tree clearing is anticipated within all forested areas included in the construction right-of-way. This would result in a total of 38.51 acres of tree clearing. Of this 38.51 acres, 12.05 acres are outside of the permanently maintained LG&E ROW and are therefore considered temporary impacts to forest. The remaining 26.46 acres are considered permanent tree clearing impacts. Tree clearing areas are shown on Figure 7 in Appendix A. Tree clearing is expected to occur over an approximate 2 month period of the project and will precede the pipeline installation activities.

To avoid and minimize impacts to the Kentucky glade cress, the pipeline route was modified to avoid federally designated critical glade cress habitat. A field investigation of the project area identified glade cress habitat areas and was summarized in the September 24, 2018 Cardno Threatened and Endangered Species Technical Assistance Request. This Technical Assistance is intended to assist USFWS with their determination and to help LG&E develop best management practices to minimize impacts to the glade cress. LG&E will use best management practices involving sediment and erosion control and will consult with the agencies to restore the affected areas. LG&E is currently working with the USFWS to develop a mutually agreed upon mitigation proposal. This proposal will be finalized prior to the start of construction. Some items that may be included in the final mitigation proposal are included in the attached figures and below. In areas where glade cress populations were identified, LG&E will remove topsoil and stockpile it, then re-spread this material following construction. LG&E will also use a modified seed mix where glade cress populations were identified, and as directed by the USFWS, to reduce the potential for aggressive species that may invade Kentucky glade cress habitat areas and compete with the species. Mulch may be placed in glade cress areas, but LG&E will not use fertilizer in these locations. Also, any herbicide treatment for vegetative maintenance within the known glade cress populations will be applied by licensed applicators and will occur after fruits have matured and fallen and before seeds germinate. This means that no broadcast spraying will be planned in the known glade cress areas by LG&E. If for a reason, spraying is required it will be planned between June 1st and October 1st. To avoid accidental spraying, LG&E will add signs during construction noting the general conservation area. Since most of the identified glade cress populations are in fields and lawns currently maintained by the landowners, minimal maintenance is expected.

Conservation measures for impacts to bat species include avoiding and minimizing tree clearing within forested areas where possible. The proposed pipeline alignment was kept as close to existing utility corridors as possible, which minimized clearing impacts. LG&E will complete mitigation based upon consultation with the USFWS Kentucky Field Office (KFO), and contribute to the Kentucky Natural Lands Trust (KNLT) Imperiled Bat Conservation Fund, consistent with the procedures described in the June 2016 Revised Conservation Strategy for Forest-Dwelling Bats in Kentucky (USFWS 2016). After project initiation, LG&E will track tree clearing acreage and dates, and provide a quarterly update to the USFWS KFO to track the payment required to the Conservation Fund. Impacts on foraging habitat will be minimized through

the use of construction best management practices, and nearly all impacts to stream corridors and wetlands are temporary and the features will be restored following construction.

3 Action Area

The "action area" includes all areas to be affected directly or indirectly by the Federal action. The USACE "limit of jurisdictional authority" is the area directly surrounding "waters of the U.S." The federal nexus for USFWS review and consultation on the project arose from proposed impacts to jurisdictional waters, which require approval of the USACE. The USFWS determined that the project could not proceed without the federal approval of impacts to waters, and after discussion with the USFWS the project action area was expanded to include areas not directly surrounding impacted waters. For this project, the action area is therefore the entire project corridor, including all temporary and permanent work areas associated with the project. The action area limits are shown on the figures included in the Appendices.

Table 3 Habitat Impacts Broken Down by Location

Impact Type	Acreage Impacted	Location
***Leavenworthia exigua laciniata* (Kentucky Glade Cress)**		
Habitat Alteration	3.872 acres	Overall Corridor
Habitat Alteration	0.265 acre	Within 100-Feet of USACE Jurisdictional Resource
***Myotis sodalis* (Indiana bat)**		
Tree Clearing	38.511 acres	Overall Location
Tree Clearing	15.307 acres	Within 100-Feet of USACE Jurisdictional Resource

The proposed project will have a direct impact on forested habitat within the action area. Tree clearing will be the primary direct impact. Temporary impacts may also occur in some areas during construction, where they are adjacent to active construction activity.

In revisions to 50 CFR Part 402 specified in 84 FR 44976 (August 27, 2019), the USFWS simplified the definition of "effects of the action" by eliminating reference to "direct," "indirect," "interrelated," and "interdependent" activities. The new definition covers:

> … all consequences to listed species or critical habitats that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur…. (emphasis added)
>
> 40 CFR 402.17

USFWS explained that "if the agency fails to take the proposed action and the activity would still occur, there is no 'but for' causation" and the activity would therefore not be considered an "effect of the action" 84 FR at 44977. Based on the above definition, the "action area" for the proposed project does not include areas beyond the project corridor, such as the locations of residential, commercial, or industrial end users of natural gas to be supplied by the pipeline. The availability of natural gas service is not a pre-condition for residential, commercial, or industrial development due to the availability of other feasible energy options including propane, electric, and geothermal. In projecting increased customer demand to be served by the proposed project, LG&E relied in part on growth projections from the Bullitt County Economic Development Authority whose growth projections were not contingent on construction of the proposed project. Because the residential, commercial, or industrial land use to be served by the pipeline would likely occur independent of pipeline construction, any impacts associated with natural gas end users would not occur

"but for" construction of the proposed project. Therefore, the "action area" is properly limited to encompass work performed within the project corridor.

4 Species Considered

Cardno requested records of threatened or endangered species within the project area using the USFWS Information for Planning and Consultation (IPaC) tool. An official species list was provided by the Kentucky Ecological Service Field Office in response to this request. This document presents information as to whether any species which is listed or proposed to be listed as threatened or endangered may be present in the proposed project area. Kentucky glade cress, gray bat, Indiana bat, and NLEB were included on the list, as were three mussel species. Additionally, the official species list stated that there are no Critical Habitats within the project area. See Appendix B for the official species list.

A verification letter regarding the 4(d) rule for NLEB was also provided by the Kentucky Ecological Service. The determination key result showed that the proposed project is located greater than 0.25 mile from any known NLEB hibernacula and greater than 150 feet from any known NLEB maternity roost trees. These conditions are consistent with and addressed via the NLEB final 4(d) rule and the USFWS's January 5, 2016 Intra-Service Programmatic Biological Opinion on the final 4(d) rule for the NLEB. In accordance with the USFWS 4(d) rule on the NLEB, the project will not result in a prohibited take of NLEB. See Appendix B for the letter verifying the use of the NLEB 4(d) rule for this project.

Table 4 IPaC Results, November 2019

Scientific Name	Common Name	Federal Status	Habitat Present
Plants			
Leavenworthia exigua laciniata	Kentucky Glade Cress	T	Known
Mammals			
Myotis grisescens	Gray Bat	E	Suitable Foraging
Myotis sodalis	Indiana Bat	E	Suitable Summer Roosting/Foraging
Myotis septentrionalis	Northern Long-eared Bat	T	Suitable Summer Roosting/Foraging
Clams (Mussels)			
Plethobasus cooperianus	Orangefoot Pimpleback	E	Not identified, potential habitat avoided
Lampsilis abrupta	Pink Mucket	E	Not identified, potential habitat avoided
Plethobasus cyphyus	Sheepnose Mussel	E	Not identified, potential habitat avoided

E = Federally Endangered; T = Federally Threatened

USFWS may have knowledge of specific species locations that are not publicly available. Thus, it is possible that the Indiana bat will be present within the action area. The two options for determining presence of these bat species were either to mist-net survey the area during the summer or to assume presence of listed bat species. Assuming presence of the Indiana bat in the project area is the only viable option, because of the critical project schedule.

4.1 Kentucky Glade Cress

Species Listing and Critical Habitat

Kentucky glade cress was listed as a threatened species by the USFWS on May 6, 2014 (79 FR 25683 25688). Critical habitat for the Kentucky glade cress was designated on the same day (79 FR 25689 25707).

Kentucky Glade Cress Life History

Kentucky glade cress usually occurs in open gravelly soils near rock outcrops within the Caneyville-Crider soil association, but seems to be adapted to shallow soils intermixed with flat-bedded, Silurian dolomite and dolomitic limestone (Whitaker and Waters 1986, Evans and Hannan 1990). Kentucky glade cress appears to prefer lack of soil and plant competition, as well as rock near or at the surface. Cedar or limestone glades are the habitat of this species, due to their thin soils and underlying limestone. These habitats are extremely wet from later winter to early spring and become dry in late spring and early summer (Evans and Hannan 1990).

Kentucky glade cress is a member of the mustard family (Brassicaceae) that is endemic to Kentucky. It is a winter annual with seed germination occurring in September and October. Seeds of this species were found to be dormant at any temperature, and once dormancy was broken, high temperatures prevented germination regardless of the moisture levels. This trait helps the Kentucky glade cress prevent germination following short summer showers and thus avoid the heat and dryness of summer. The seeds of Kentucky glade cress undergo physical changes that move them from dormancy to conditional dormancy, then finally break dormancy for fall germination (Baskin and Baskin 1985). In the winter, Kentucky glade cress persists as rosettes (Evans and Hannan 1990). Flowering starts in late February to early March, with seeds setting and plants dying in April and May when the glade habitats dry out (Baskin and Baskin 1985).

Range and Distribution

Kentucky glade cress is only known to be from northeastern Bullitt County and southeastern Jefferson County (Evans and Hannan 1990, Jones 2005, White 2004). Currently, there are 88 total known occurrences of Kentucky glade cress, with 21 of those being historical occurrences that are considered extirpated or not able to be relocated during recent surveys. According to the Kentucky State Nature Preserves Commission (KNSPC), 43 of the 67 existing occurrences are considered to be of poor quality (KSNPC 2016). There are no population estimates for the Kentucky glade cress, as plant numbers tend to naturally fluctuate from year to year for annual species.

The action area consists of various landforms and habitats. As observed during field surveys, agricultural fields make up the dominant land use between mileposts 0 and 5 of the project corridor. The routine disc and till, use of herbicides, monoculture vegetation, and thick well-developed soils do not meet the habitat type needed to maintain populations of Kentucky glade cress.

In the 2.5 mile portion of the proposed project corridor from milepost 5 to approximately milepost 7.5, the landscape has a mix of land-use including residential, light pasturing, and hay production. These areas have thinner soils and a multi-use landscape that could be suitable to Kentucky glade cress populations. This area has a known presence and proximity to Federally Designated Critical Habitat Areas.

West of Deatsville Road, from milepost 7.5 west, the proposed project corridor enters a densely forested landscape punctuated with steep slopes, narrow stream floodplains, and a consistently thick duff layer. The historical land type of dense hardwood forest and steep slopes is not typical Kentucky glade cress habitat. The project corridor is adjacent to an existing electric transmission right-of-way and the landscape is characterized by long, steep slopes and mature forest landscape, which is common among the local knob landforms. These slopes and well-drained soils have developed many stream features throughout the survey corridor. These landform characteristics limit the habitat availability for Kentucky glade cress.

The results of field surveys, performed by Cardno, categorize the acreages of Kentucky glade cress populations within the survey corridor for the LG&E Bullitt County Transmission Pipeline Project. This information will allow LG&E to design the project to avoid and minimize impacts and plan for any necessary mitigations of impacts to the nine population areas containing the species within the proposed corridor. See Figure 3 in Appendix A for exhibits showing the results of the field surveys.

4.2 Gray Bat

Species Listing and Critical Habitat

On April 28, 1976, the gray bat was listed as an endangered species (41 FR 17736). No Critical Habitat has been designated for the gray bat at this time.

Gray Bat Life History

Gray bats typically live in caves throughout the year. Gray bats hibernate in deep, vertical caves in the winter and roost in caves along rivers or reservoirs in the summer. These rivers and reservoirs are the waters over which the gray bats forage. Mating occurs in September to October, but adult females store the sperm through hibernation and do not become pregnant until they emerge in the spring. Females enter hibernation first, usually by early October. Males and juveniles begin hibernation by early November. Female gray bats emerge from hibernation in late March to early April and migrate from wintering caves, while the males and juveniles emerge and migrate after them in mid-April to mid-May (Tuttle 1976). Gray bats tend to habitually return to their summer and winter caves (Kennedy and Tuttle 2005).

Young are born in late May to early June, and most begin flying within 20 to 35 days after birth. Larger colonies and roosts near over-water foraging habitat are crucial to the growth and survival of young gray bats. Maternity colonies can consist of a couple of hundred to several thousands of individuals. The maternity caves usually have waterways within them. Forested areas surrounding streams and lakes have been found to provide protection for gray bats. The young often feed and take shelter in these forested areas near the cave entrance (Tuttle 1979).

Range and Distribution

The gray bat is found in limestone karst areas in the southeastern United States. Gray bats are primarily located in Alabama, northern Arkansas, Kentucky, Missouri, and Tennessee, but a few can be found in adjacent states. Gray bat hibernacula generally consist of individuals from a large portion of their summer range. They have been documented to migrate from 10 to 270 miles between summer maternity sites and winter hibernacula (Tuttle 1976). There are few caves that provide the roost requirements of the gray bat, which has led to approximately 95% of the range-wide population hibernating in less than 20 caves (Tuttle 1979).

White-nose syndrome (WNS) is still a threat to the long-term recovery of gray bats. However, the 2009 5-Year Review of the gray bat showed that 13 of the 29 Priority 1 maternity caves listed in the 1982 approved Gray Bat Recovery Plan had been stable or increasing over the 5-year period leading up to the review (Martin 2007, Sasse et al. 2007, and Elliott 2008). A study by Dr. Michael Harvey of Tennessee Technological University has estimated that gray bats increased from approximately 1,575,000 to about 2,678,000 in 2002 and 3,400,000 in 2004. It was reported that there has been a 104% increase in gray bat population levels since 1982 (Martin 2007). Although gray bat population levels have fluctuated, several studies have documented population increases in some of the major hibernacula.

Coach Cave, Kentucky saw gray bat population increases from 0 in 1995 to 337,750 in 2007; the Blanchard Springs Caverns, Arkansas population increased from 33 in 1985 to 128,005 in 2006; Cave Mountain Cave, Arkansas increased from 205 in 1988 to 139,740 in 2006; and Bellamy Cave, Tennessee increased from 347 in 1965, to 139,364 in 2006 (Martin 2007). Gray bat populations at Coffin Cave, Missouri increased from about 250,000 in 1977-1979 to 561,000 in 2005 (Martin 2007, Elliott 2008). The population increases at some hibernacula could be due to the movement of gray bats from other caves, but in general, populations have increased throughout many parts of the gray bat's range (Tuttle 1987; Tuttle and Kennedy 2005; Martin 2007; Sasse et al. 2007).

During field investigations, Cardno did not observe roosting or hibernacula caves that could be utilized by the gray bats. It is Cardno's assessment that foraging habitat between mileposts 0 and 2.5 potentially exists for this species. These areas are large expansive floodplains associated with large stream and river systems in the vicinity.

4.3 Indiana Bat

Species Listing and Critical Habitat

The Indiana bat was listed as an endangered species on March 11, 1967 (32 FR 4001), under the Endangered Species Preservation Act of October 15, 1966 (80 Stat. 926; 16 U.S.C. 668aa[c]). In 1973, the Endangered Species Preservation Act was subsumed by the Endangered Species Act and the Indiana bat was extended full protection under this law. Critical habitat was designated for the species on September 24, 1976 (41 FR 14914). Thirteen hibernacula, including 11 caves and two mines in six states, were listed as critical habitat. Critical habitat are areas of habitat that are believed to be essential to a species' conservation, which are designated on a species-specific basis under the ESA.

The Indiana bat is a temperate, insectivorous, and migratory bat that hibernates in caves and mines in the winter, and spends the summer in wooded areas. A description of the species physical appearance and a discussion of taxonomy can be found in the Indiana Bat Draft Recovery Plan: First Revision (USFWS 2007).

Indiana Bat Life History

The Indiana Bat Draft Recovery Plan: First Revision (USFWS 2007) provides a comprehensive discussion of Indiana bat life history. A summary of the life history follows (citation for information in the summary is USFWS 2007 unless otherwise noted).

Annual Chronology

In winter Indiana bats hibernate in caves or mines, often with other species. The period of hibernation varies across the range of the species, among years, and among individuals. On a range-wide basis, the months of October through April capture the hibernation period of most individuals.

In spring, Indiana bats emerge from hibernation. Female Indiana bats emerge first, generally late March and through April, and most males emerge later. The timing of annual emergence varies, depending in part on latitude and annual weather conditions. Shortly after emerging from hibernation, females become pregnant via delayed fertilization from the sperm that has been stored in their reproductive tracts through the winter. Most reproductive females appear to initiate migration to their summer habitat quickly after emerging from hibernation. Females migrate to their traditional roost sites, where they find other members of their maternity colony. Members of the same maternity colony may come from many different hibernacula. A hibernacula is the location, most often a cave, where bats spend their winter in hibernation. Most documented maternity colonies have 50 to 100 adult female bats; average colony size of 80 adult females (Whitaker and Brack 2002) is a widely used estimate.

Female Indiana bats exhibit strong site fidelity to summer roosting and foraging areas; that is, they return to the same summer range annually to bear their young. Female Indiana bats form maternity colonies in forested areas where they bear and raise their pups. Maternity colony habitats include riparian forests, bottomland and floodplain habitats, wooded wetlands, and upland forest communities. Maternity roost sites are most often under the exfoliating bark of dead trees that retain peeling bark. Live trees, especially shagbark hickory, are also used if they have flaking bark under which the bats can roost. Primary roosts, those used frequently by large numbers of female bats and their young, are usually large diameter snags (dead trees). Roost trees are often in mature mostly closed-canopy forests, but in trees with solar exposure (i.e., sunlight on the roost area for at least part of the day) – these may be in canopy gaps in the forest, in a fence line, or along a wooded edge. Indiana bats typically forage in forested habitats, forest edges, and riparian areas.

Fecundity, the potential reproductive output, is low with female Indiana bats producing only one pup per year in late June to early July. Young bats can fly at about four weeks of age. Cohesiveness of maternity colonies begins to decline after young bats become volant. That is, the bats tend to roost together in the same roosts less frequently and at lower densities. A few bats from maternity colonies may commence fall migration in August, although at many sites some bats remain in their maternity colony area through September and even into October. Members of a maternity colony do not necessarily hibernate in the same hibernacula and may migrate to hibernacula that are over 300 km (190 mi) apart (Kurta and Murray 2002, Winhold and Kurta 2006).

Indiana bats arrive at their hibernacula in preparation for mating and hibernation as early as late July; usually adult males or nonreproductive females make up most of the early arrivals (Brack 1983). The number of Indiana bats active at hibernacula increases through August and peaks in September and early October (Cope and Humphrey 1977, Hawkins and Brack 2004, Hawkins et al. 2005). Return to the hibernacula begins for some males as early as July, but most females arrive later. After fall migration, females typically do not remain active outside the hibernaculum as long as males. Males may continue swarming through October in what is believed to be an attempt to breed with late arriving females. Swarming is a critical part of the life cycle when Indiana bats converge at hibernacula, mate, and forage until sufficient fat reserves have been deposited to sustain them through the winter (Hall 1962). Swarming behavior typically involves large numbers of bats flying in and out of cave entrances throughout the night, while most of the bats continue to roost in trees during the day.

Swarming continues for several weeks and mating may occur on cave ceilings or near the cave entrance during the latter part of the period. Limited mating activity occurs throughout the winter and in spring before the bats leave hibernation (Hall 1962). Adult females store sperm through the winter and become pregnant via delayed fertilization soon after emergence from hibernation. Young female bats can mate in their first autumn and have offspring the following year (although how many actually do so is variable), whereas males may not mature until the second year.

Range and Distribution

Indiana bats are found over most of the eastern half of the United States. The recovery program for the Indiana bat delineates four Recovery Units (RUs): the Ozark-Central, Midwest, Appalachian Mountains, and Northeast RUs (see USFWS 2007 for explanation of RU boundaries). In 2017, approximately 34% of Indiana bats (180,583 of 530,705) hibernated in caves in southern Indiana. Other states which supported populations of over 50,000 hibernating Indiana bats included Illinois, Missouri, and Kentucky. Additional states within the current winter range of the Indiana bat include Alabama, Arkansas, Georgia, Michigan, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, Tennessee, Vermont, Virginia, and West Virginia. Approximately 46% of the population hibernated in the Midwest Recovery Unit. The 2017 population estimate (530,705) is almost 400,000 bats less than when the species was listed as endangered in 1967 (approximately 900,000).

The known summer distribution of the Indiana bat covers a broader geographic area than its winter distribution. For more detailed information on current summer distribution reference Appendix 2 in the Indiana Bat Draft Recovery Plan: First Revision (USFWS 2007); Appendix 2 details the distribution of approximately 270 known Indiana bat maternity colonies. Based on an estimated total Indiana bat population of 530,705 in 2017 and an average maternity colony size of 80 adult females, the USFWS estimates that there are about 6,634 maternity colonies of Indiana bats. Of these, the location of approximately 270 colonies is known, and therefore, less than 5% of the colonies assumed to exist.

Range-wide, the population trend is decreasing since the time of listing. The draft revised Recovery Plan (USFWS 2007) includes a detailed discussion of threats, but primary threats to the species include the loss of habitat, disturbance of hibernating bats, and impacts due to white-nose syndrome (WNS). WNS is a fatal disease caused by the fungus *Pseudogymnoascus destructans*. WNS has caused recent catastrophic declines among multiple species of bats in eastern North America (Lorch et al. 2011, Cryan et al. 2013) including large declines in Indiana bat populations (Turner et al. 2011). WNS is now recognized as the most significant threat to the Indiana bat.

During field surveys, Cardno observed forested habitats, tree lined fence rows, and pasture shade tree stands within the project area. Field study information was used to supplement aerial imagery to determine forested habitat within the proposed action area. Based upon coordination with the USFWS, there are two habitat zones present in the proposed corridor. The habitats are the known summer habitat and the potential habitat. These habitat areas are shown on Figure 5 in Appendix A.

4.4 Northern Long-Eared Bat

Species Listing and Critical Habitat

On April 2, 2015, the USFWS published a final rule to list the NLEB as a threatened species under the ESA (80 FR 17974). On January 14, 2016, the USFWS published a final 4(d) rule in the federal register regarding the protections necessary or advisable to conserve the NLEB (81 FR 1900). The NLEB does not have Critical Habitat designated at this time (81 FR 24707).

The NLEB is a temperate, insectivorous, and migratory bat that hibernates primarily in caves and abandoned mines in the winter, and spends the summer in wooded areas. Both hibernacula and summer habitat can vary for this species. A description of the species physical appearance and a discussion of taxonomy can be found in the 2013 species status listing (78 FR 61046) and the 2015 status listing (USFWS, 2015).

Northern Long-Eared Bat Life History

Northern long-eared bats predominantly overwinter in hibernacula that include caves and abandoned mines. Hibernacula used by NLEB are typically large, with large passages and entrances (Raesly and Gates 1987), relatively constant, cooler temperatures (0 to 9 °C; 32 to 48 °F) (Raesly and Gates 1987, Brack 2007), and with high humidity and no air currents (Fitch and Shump 1979, Raesly and Gates 1987). NLEB are typically found roosting in small crevices or cracks in cave or mine walls or ceilings, often within the tighter recesses of hibernacula (Griffin 1940, Barbour and Davis 1969, Caire et al. 1979, Van Zyll de Jong 1985, Whitaker and Mumford 2009). NLEB are also found hanging in the open, although this occurs less frequently than in cracks and crevices (Barbour and Davis 1969, Whitaker and Mumford 2009). To a lesser extent, NLEB have been found overwintering in other types of habitat such as abandoned railroad tunnels or culverts, especially where caves or mines are not present (Griffin 1945, Goehring 1954, Kurta and Teramino 1994).

NLEB typically uses mature, intact interior forest for roosting, though younger, managed forests are also used; roost selection is adaptable and variable depending on forest characteristics in an area (Broders et al. 2006, Carter and Feldhamer 2005, Ford et al. 2006, Foster and Kurta 1999, Henderson et al. 2008, Lacki and Schwierjohann 2001, Loeb and O'Keefe 2006, Perry and Thill 2007). The NLEB appears to prefer continuous forests with older forest stands (Owen et al. 2003, Loeb and O'Keefe 2006), but have been found in fragmented landscapes (Yates and Muzika 2006).

Similar to the variation in landscape characteristics, many studies suggest that NLEB use a variety of tree species for roosts based largely on the tree species' proportional availability on the local landscape, roosting in the types of trees in an area that offer the necessary structural characteristics (Foster and Kurta 1999, Krynak 2010, Menzel et al. 2002, Sasse and Pekins 1996, Schultes 2002). The NLEB usually lives in small groups in tree cavities or under bark, switching roosts often, which include live and dead trees, but also includes artificial roosts (Lacki and Schwierjohann 2001, Menzel et al. 2002, Carter and Feldhamer 2005, Whitaker et al. 2006). NLEB appear to be more flexible in roost selection than the Indiana bat using smaller trees and with less solar exposure and may be more variable than once thought (Laki et al. 2008, Timpone et al. 2009, Silvis et al. 2015b).

The species apparently tolerates dense forest stands more than other bat species during foraging, but may prefer small openings (Putriquin and Barclay 2003, Sheets et al. 2013). These bats have also been documented using scattered woodlots in an otherwise open habitat if continuous forest is unavailable (Brack and Whitaker 2001, Brack et al. 2004, Owen et al. 2003). They are also known to sometimes glean prey from plants (Brack and Whitaker 2001).

Range and Distribution

The known range of the NLEB includes a total of 39 states and covers a larger area than the Indiana bat (20 states), from Maine to Montana and from Canada to just north of Florida (Whitaker and Hamilton 1998). The NLEB ranges across much of the eastern and north-central United States, and all Canadian provinces west to the southern Yukon Territory and eastern British Columbia (Nagorsen and Brigham 1993, p. 89; Caceres and Pybus 1997).

The NLEB is known to hibernate in 29 out of 37 states within the species' range (USFWS 2016). Hibernacula include caves, mines, and possibly rock outcroppings with the bats found in cracks and crevices as individuals or in small groups (Boyles et al. 2009, Feldhamer et al. 2015). Information on the migration of the northern long-eared bat is limited. Northern long-eared bats are considered to only migrate a relative short distance, approximately 50 miles or less. Migration begins in late August to September where bats swarm and mate at hibernacula and leave in the spring in mid-March (Whitaker et al 2007, Feldhamer et al. 2015).

There are no firm population size estimates for the northern long-eared bat rangewide; however, a rough estimate of the population size in a portion of the Midwest has been calculated. That estimate shows there may have been more than four million bats in the six-State area that includes the States of Illinois, Indiana, Iowa, Ohio, Michigan, and Missouri (USFWS, 2015). Taking into account the documented effects of WNS in the Midwest to date (declines currently limited primarily to Ohio and Illinois), there may still be several million bats within the six-State area (USFWS, 2015). Though reliable population estimates are not available for the NLEB, it is generally assumed that a rangewide downward trend in number is occurring as a result of WNS (USFWS, 2015).

Although no Critical Habitat has been developed for the species, the 4(d) rule proposes certain protections for the species that are geographically based. Inside areas where WNS poses a risk, disturbance to known hibernacula and tree removal near hibernacula or roost trees is prohibited (81 CFR 24707). For the northern long-eared bat, the project is not within the impact distances for roost trees and hibernacula per the USFWS 4(d) rule.

4.5 Mussel Species

The mussel species identified on the USFWS response included *Plethobasus cooperianus*, *Lampsilis abrupta*, and *Plethobasus cyphyus*. These species only inhabit perennial streams. The only perennial streams within the pipeline corridor which contain suitable habitat for these species will be avoided by directionally drilling the pipeline through this area. Construction best management practices will limit indirect impacts to these species by limiting off-site sedimentation. Therefore, it is anticipated that these species will not be affected by the project, and a detailed life history description has been omitted from this section.

5 Effects Analysis

5.1 Kentucky Glade Cress

There is no designated critical habitat for the Kentucky glade cress in the action area. The project alignment was modified in order to avoid critical glade cress habitat near the proposed project corridor. Cardno biologists identified nine populations of Kentucky glade cress within the proposed project corridor.

Habitat alteration may occur due to excavation, grading, and tree removal during construction. Topsoil will be stockpiled and re-spread in areas where glade cress was identified to help preserve the seed bank and conditions favorable to the species. Substrate could be disrupted through removal, mixing, and addition of soil layers. Also, sediment may move from disturbed areas to the Kentucky glade cress habitat, which could result in conditions unsuitable for the species since it grows in shallow soils. Ground disturbance from tree removal could potentially damage individual plants or disturb dormant seeds. It is possible that tree removal will benefit the species in some locations by opening the canopy and promoting shallower soil conditions. Removing soil during construction could uproot, displace, or bury Kentucky glade cress individuals and displace or bury seeds in disturbed substrate. Soil removal may also be beneficial though if leaf litter and excess soil removed makes way for the thin soil habitat that the Kentucky glade cress prefers.

LG&E will work with the regulatory agencies to use best management practices to complete the project and to the extent practicable, avoid impacting populations of Kentucky glade cress during construction activities. LG&E is working closely with the USFWS to develop mutually agreed upon mitigation measures for the Kentucky glade cress, and this process will be finalized prior to the start of construction. LG&E will plant

seed mixtures in areas of known glade cress populations that consist of species unlikely to directly compete with or displace the glade cress, if directed to do so by the USFWS. These seed mixtures will also help prevent colonization of the population sites by invasive species. Based on this proposed construction methodology, the avoidance of Designated Critical Habitats, and the minimization of impacts to the species, it is anticipated that the project will have only temporary or minor impacts to the Kentucky glade cress populations within the proposed project corridor.

Vegetation maintenance in the action area, such as mowing and herbicide treatment, may adversely affect this species if not done with care. Mowing in early spring before seeds have reached maturity could crush the plants or cause the seeds to fall prematurely, which could negatively impact reproduction and next year's population. It is expected that most herbicide application would take place during the growing season after fruits have matured and before seeds germinate. This timing of herbicide application would prevent direct effects to plants and not affect the production of seeds. Although live plants potentially may be affected by herbicide application at this time, the effect is considered insignificant because the seeds would have matured and fallen by this time. Seed germination is unlikely to be significantly affected by residual chemicals in the soil due to the nature of the herbicides used, which consist primarily of foliar herbicides (post-emergence).

Table 5.1.1 Effects pathway for habitat alteration

Activity: Construction	
Stressor: Habitat alteration	
Exposure (time)	Short-term to perpetuity
Exposure (space)	Right-of-ways
Resource affected	Plants, seeds
Individual response	Reduced vitality, reduced germination rates, mortality
Effect	Insignificant/discountable
Conservation Measures	Use of Best Management Practices (BMPs) and sediment and erosion control measures to minimize off-site sediment damage. Restore the affected areas. Best management practices in glade cress areas are included on Figure 4b in Appendix A
Interpretation	Kentucky glade cress individuals in patches within the construction limits may be uprooted or displaced. The final restored condition of the known and other potential glade cress habitat is likely to be similar to existing conditions, which will allow seeds to germinate and persist. The use of construction BMPs will reduce the long-term impacts to glade cress habitat in the area.

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Table 5.1.2 Effects pathway for tree removal, ground disturbance

Activity: Construction	
Stressor: Permanent conversion to open area	
Exposure (time)	Short-term to perpetuity
Exposure (space)	Right-of-ways
Resource affected	Plants, seeds
Individual response	Initial mortality, possible increase in local habitat through tree removal/erosion
Effect	Insignificant/discountable, beneficial (but not wholly beneficial)
Conservation Measures	Use of BMPs and sediment and erosion control measures to minimize off-site sediment leading to bare soil areas.
Interpretation	Areas where woody species are present are less likely to support glade cress populations. The conservation measures will avoid and minimize direct effects from this stressor. There may be some areas which become more conducive to glade cress establishment once trees are cleared.

Table 5.1.3 Effects pathway for soil removal

Activity: Construction	
Stressor: Soil removal	
Exposure (time)	During construction phase
Exposure (space)	Existing right-of-ways
Resource affected	Plants, seeds
Individual response	Reduced germination rates, mortality
Effect	Insignificant/discountable, beneficial (but not wholly beneficial)
Conservation Measures	Retain, segregate, and re-spread topsoil in the areas where glade cress is present.
Interpretation	If soil or leaf litter is removed in areas where known glade cress is present, it may also remove individual plants or banked seed. Seed may also be buried to a depth which does not allow the establishment of new plants through soil movement on the site. Topsoil will be stockpiled and re-spread in areas where glade cress was identified to help preserve the seed bank and conditions favorable to the species.

Table 5.1.4 Effects pathway for vegetation maintenance, mowing

Activity: Operation	
Stressor: Vegetation maintenance, mowing	
Exposure (time)	Seasonal; on-going
Exposure (space)	Right-of-ways
Resource affected	Plants, seeds
Individual response	Reduced germination rates, mortality
Effect	Insignificant/discountable
Conservation Measures	Use of a modified seed mix within the known glade cress areas when re-vegetating and as recommended by the USFWS. Implementation would reduce the potential for aggressive species that may invade Kentucky glade cress habitat and outcompete the species. Only mow after seeds have matured and fallen.
Interpretation	Mowing is anticipated to occur after plants have matured and fruits have fallen, so is not anticipated to directly impact the species. Some soil disturbance may occur from mowing equipment, but this is anticipated to be minimal or discountable.

Table 5.1.5 Effects pathway for vegetation maintenance, herbicide application

Activity: Operation	
Stressor: Vegetation maintenance, herbicide application	
Exposure (time)	Seasonal; on-going
Exposure (space)	Right-of-ways
Resource affected	Plants, seeds
Individual response	Reduced vigor, mortality
Effect	Insignificant/discountable; beneficial (but not wholly beneficial)
Conservation Measures	Follow herbicide label for instructions for use; licensed applicators. This activity will only occur after fruits have matured and fallen and before seeds germinate.
Interpretation	Herbicide application is anticipated to occur after plants have matured and fruits have fallen, so is not anticipated to directly impact the species. Herbicides used will not significantly impact seedling establishment. Some soil disturbance may occur from mowing equipment, but this is anticipated to be minimal or discountable.

Table 5.1.6 Summary of stressors and effects on the Kentucky glade cress

Stressors	Adverse	Insignificant/ Discountable	Beneficial
Construction:			
Habitat alteration		X	
Tree removal, ground disturbance		X	X
Soil removal		X	X
Operation:			
Vegetation maintenance, mowing		X	
Vegetation maintenance, herbicide treatment		X	X

5.2 Gray Bat

Cardno biologists identified potential foraging habitat for the gray bat within the survey corridor. It is Cardno's assessment that no adverse effects will occur to the species as a result of this project, based upon the lack of roosting or hibernacula present. There is no designated critical habitat for the gray bat, so none exists within the action area.

Gray bat typically forages only within larger riparian corridors. The only area where these corridors exist within the project area surrounds Cox Creek and Rocky Run. Some tree clearing will occur at this location, but it will be minimal and significant foraging corridors will remain within this large floodplain bottomland. Directional drilling the pipeline through this area will further reduce impacts to gray bat. Gray bat will not be within the project area during active construction, as there is no suitable roosting or hibernacula within the project area. Further detailed analysis is not proposed as the project is not anticipated to have an adverse effect on the species.

5.3 Indiana Bat

There is also no designated critical habitat for the Indiana bat in the action area. However, Cardno biologists identified existing forested habitat that is conducive to utilization by the Indiana bat. Based on this and coordination with the USFWS, the Indiana bat and its potential summer roosting and foraging habitat is assumed to be present in the action area. Trees must be cleared in order to complete the proposed pipeline installation, in areas of known and potential habitat for the Indiana bat. There are two habitat zones present in the proposed corridor. The habitats are the known summer habitat (western project area) and the potential habitat (eastern project area) as defined by the USFWS, as shown on Figure 5 in Appendix A.

Direct impacts to Indiana bat could occur if trees are cleared from April 1st to September 30th. Direct effects would consist of killing, injuring, harassing, or otherwise harming individuals residing in trees that are cleared in the project area. LG&E intends to clear trees during periods when bats are not present or less likely to be present within the project area, which would be between August 15th and March 31st. However, due to project timing, it has been assumed that bats may be present during tree clearing operations. For purposes of this document, clearing between June 1st and July 31st is assumed. A total of 38.51 acres of tree clearing will occur for the project (temporary and permanent). Of this total, 28.09

acres will be cleared in the summer habitat project area and 10.42 acres will be cleared in the potential habitat project area.

Clearing within the action area, totaling 26.46 permanent acres and 12.05 temporary acres, may reduce the availability of suitable maternity roosts and foraging habitat for the Indiana bat. The permanently cleared areas may still be used by bats as foraging habitat. It is anticipated that the 12.05 acres of temporarily cleared forest will re-establish over time. It is not expected that this project will spur additional or accelerated development in this area. No cumulative effects to the Indiana bat are anticipated.

During construction of the pipeline, the felling of trees and operation of heavy equipment and tools will produce noise and vibrations. The noise and disturbances of clearing and construction may impact the Indiana bat's behavior or cause bats to flush from their roosts. Tree removal occurring first on the site will reduce habitat for the Indiana bat in the action area, thus individuals exposed to noise and vibration will be limited to those using habitat on the margins of the construction limits of this project.

In total, 17,496 linear feet of streams were identified within the property area. A total of 0.28 acres of pond open water and 1.11 acres of wetlands were identified within property limits, with 0.50 acres of this wetland forested. The water quality of these features may be degraded as a result of increased sedimentation during construction, which can negatively impact foraging habitat. Water quality degradation has the potential to adversely affect foraging bats by reducing aquatic insect populations that make up part of the Indiana bat diet.

Table 5.3.1 Effects pathway for tree removal, bat mortality

Activity: Construction	
Stressor: Tree clearing while bats are present	
Exposure (time)	During construction phase, assumed from April 1 to September 30
Exposure (space)	38.51 acres within the project site
Resource affected	Habitat (roost trees), trees used by individuals (adults)
Individual response	Daytime flushing from trees, searching for new daytime roosts resulting in decreased fitness and fecundity, injury or mortality from tree clearing activity
Effect	Adverse
Conservation Measures	Avoidance and minimization of clearing within forested areas where possible. Attempting to clear trees between October 1 and March 31 where possible. Completion of mitigation for impacts through contribution to the KNLT Imperiled Bat Conservation Fund
Interpretation	Active clearing may have a direct impact on bats residing within the construction limits. Since clearing will occur generally from one direction to the other, bats may flush from trees as adjacent trees are cleared. This would still result in stress from daytime flushing, but may reduce the overall amount of bat mortality. Flushing or direct mortality would likely result in adverse effects.

Table 5.3.2 Effects pathway for tree removal, loss of roost trees

Activity: Construction	
Stressor: Tree removal, loss of roost trees	
Exposure (time)	During construction phase, any time of year
Exposure (space)	38.51 acres (26.46 permanent, 12.05 temporary) within the project site
Resource affected	Habitat (roost trees), used by individuals (adults)
Individual response	Searching for new, suitable habitat can cause extra energy expenditure, decreased fitness, decreased chances of survival, decreased reproductive success, and colony fragmentation
Effect	Adverse
Conservation Measures	Avoidance and minimization of clearing within forested areas where possible. Completion of mitigation for impacts through contribution to the KNLT Imperiled Bat Conservation Fund
Interpretation	Potential roost trees may be impacted during construction. Roost trees cleared while bats are absent may lead to bats expending increased energy to search for new roost trees.

Table 5.3.3 Effects pathway for tree removal, forest loss and fragmentation

Activity: Construction, then throughout maintenance period	
Stressor: Tree removal, loss of roost trees	
Exposure (time)	During construction phase and afterward, any time of year
Exposure (space)	38.51 acres (26.46 permanent, 12.05 temporary) within the project site
Resource affected	Forested habitat, used by individuals (adults)
Individual response	Alteration of behavior
Effect	Insignificant; discountable
Conservation Measures	Avoidance and minimization of clearing within forested areas where possible. Completion of mitigation for impacts with the consultation of the USFWS Kentucky Field Office. Contribution to the KNLT Imperiled Bat Conservation Fund.
Interpretation	The proposed tree removal is not anticipated to significantly impact bat behavior in the area. The final maintained corridor width of 50 feet is not a significant gap or would prohibit dispersal or foraging behavior. We expect that Indiana bat that currently use this area would continue to do so. The pipeline will follow existing utility right-of-way where possible to limit creating new gaps in forested areas.

Table 5.3.4 Effects pathway for aquatic resource loss and degradation

Activity: Construction	
Stressor: Aquatic resource loss and degradation; water quality degradation/sedimentation	
Exposure (time)	During construction phase, any time of year
Exposure (space)	Aquatic foraging habitat in and downstream of the project site
Resource affected	Prey (aquatic insects), used by adults and juveniles
Individual response	Increased foraging effort that could result in extra energy expenditure and associated decreased fitness
Effect	Insignificant; discountable
Conservation Measures	BMPs associated with the 404 authorization to limit impacts to streams on site and downstream aquatic resources; restoration measures on temporarily impacted streams and wetlands to restore temporary loss in function
Interpretation	Based on the temporary and minimal nature of the activity and implementation of the conservation measures, we expect any impacts of aquatic resource loss and degradation to the Indiana bat to be insignificant.

Table 5.3.5 Effects pathway for noise and vibration

Activity: Construction	
Stressor: Noise and vibration	
Exposure (time)	During construction phase, April 1 – September 30
Exposure (space)	Roosting and foraging habitat near project disturbance limits
Resource affected	Individuals (juveniles and adults)
Individual response	Flushing from roost trees resulting in extra energy expenditure and associated decreased fitness and increased chances of predation
Effect	Insignificant; discountable
Conservation Measures	Avoidance and minimization of clearing within forested areas where possible. Attempting to clear trees between October 1 and March 31 where possible
Interpretation	Bats may be come startled by the noise and vibration and flush from their roosts. Tree clearing and construction noise and vibration during periods when bats are present may cause them to flush from adjacent roost trees. It is anticipated that the number of individuals roosting immediately adjacent to the active construction site would be small once construction is ongoing. Bats near residential areas or roadways may be accustomed to daytime noise and vibration.

Table 5.3.6 Summary of stressors and effects on the Indiana bat

Stressors	Adverse	Insignificant/ Discountable	Beneficial
Tree removal, bat mortality	X		
Tree removal, loss of roost trees	X		
Tree removal, forest loss and fragmentation		X	
Aquatic resource loss and degradation		X	
Noise and vibration		X	

5.4 Northern Long-Eared Bat

Direct impacts to hibernating NLEB or their hibernacula will not occur as a result of this project, as there are no caves or other likely hibernacula within the action area. There is no designated critical habitat for the NLEB within the action area. Furthermore, this project is not within 0.25 mile of any known NLEB hibernacula or 150 feet of any known NLEB maternity roost trees. These conditions are consistent with and addressed via the NLEB final 4(d) rule and the USFWS's January 5, 2016 Intra-Service Programmatic Biological Opinion on the final 4(d) rule for the NLEB.. Further detailed analysis is not proposed, because NLEB consultation will proceed under the 4(d) rule framework.

5.5 Mussel Species

Three mussel species were listed in the species list returned by the USFWS. Each of these species have similar life histories and potential impacts to these species were minimized through construction means and methods. The waterways within the action area with potential habitat available for the listed mussels are Cox Creek and Rocky Run. These are tributaries to the Salt River, and have silty, sand, and clay substrates. The listed species require perennial streams with these substrates as habitat. These streams will not be directly impacted during the project because of the utilization of horizontal directional drilling methods to construct these segments. The majority of the streams present in the project corridor are small, ephemeral, and intermittent, and have substrates dominated by bedrock and cobble. These stream characteristics make for unsuitable habitat for the listed mussel species. Thus, Cardno does not expect the listed mussel species to be affected by the proposed project.

6 Conservation Measures

6.1 Kentucky Glade Cress

Cardno biologists identified nine populations of Kentucky glade cress within the proposed project corridor. The populations range in quantity and quality. LG&E plans to use erosion prevention and sediment controls in accordance with state's general permit per Kentucky Division of Water, Stormwater Discharge, the Hydrostatic Discharge, Pollutant Discharge Elimination System (KPDES) General Permits (401 KAR Chapter 5), during construction activities to prevent sedimentation and will restore the affected areas. It is LG&E's plan to work with the regulatory agencies to use best management practices to complete the project. In addition, to the extent possible, LG&E will avoid impacting populations of Kentucky glade cress

during soil removal and other construction activities. Topsoil will be stockpiled and re-spread in areas where glade cress was identified. Care will also be taken during herbicide application and re-vegetating mowed areas to reduce impacts on this species. Herbicide application will occur after Kentucky glade cress fruits have matured and fallen and before seeds germinate. Furthermore, mowing will not occur until after seed has been released. A modified seed mix will be used for re-vegetation in glade cress population areas, as recommended by the USFWS, which can help reduce the potential for aggressive species that may outcompete Kentucky glade cress. LG&E will continue to work closely with the USFWS to develop a mutually agreed upon mitigation proposal for the Kentucky glade cress and will finalize this proposal prior to the start of construction.

6.2 Gray Bat

Although limited potential foraging habitat was identified within the action area, there were no gray bat roosting sites or hibernacula found. Therefore, it is anticipated that no adverse effects will occur to this species and conservation measures for the disturbance of potential foraging habitat is not warranted.

6.3 Indiana Bat

Critical habitat for the Indiana bat will not be adversely modified or impacted, therefore conservation measures for critical habitat are not warranted.

LG&E anticipates tree clearing within the potential and known habitat ranges for this species and expects to complete mitigation for impacts to the habitats for this species. The mitigation will be completed with ongoing consultation with the USFWS Kentucky Field Office. LG&E will also provide a contribution to the KNLT Imperiled Bat Conservation Fund, which supports the reforestation and restoration of Indiana bat habitat within the area. LG&E will evaluate the total area cleared on the project and the required total Imperiled Bat Conservation Fund contribution amount on a quarterly basis and report this evaluation to the USFWS on the same schedule. Within one parcel on the project area (the Bernheim property), LG&E will provide twice the contribution amount specified in the June 2016 Revised Conservation Strategy for Forest-Dwelling Bats as compensation for clearing impacts on this property, because the property was previously used to compensate for bat clearing impacts. Best management practices associated with the Section 404 authorization and KPDES permit will also be implemented to limit impacts to aquatic resources that may serve as foraging habitat for the Indiana bat.

Table 6.3 LG&E Bullitt County Transmission Pipeline Bat Habitat Conservation Fund Mitigation Calculation

Summer Habitat West							
Dates of Tree Clearing	**Multiplier**	**Acres Temporary**	**Cost Per AC***	**Temp Cost**	**Acres Permanent**	**Perm Cost***	**Total Temp+Perm**
8/1-8/15	2	4.31	$ 3,820.00	$ 32,928.40	16.49	$ 125,983.60	$ 158,912.00
8/16-3/31	1.5	4.31	$ 3,820.00	$ 24,696.30	16.49	$ 94,487.70	$ 119,184.00
4/1-5/30	2	4.31	$ 3,820.00	$ 32,928.40	16.49	$ 125,983.60	$ 158,912.00
6/1-7/31	3	4.31	$ 3,820.00	$ 49,392.60	16.49	$ 188,975.40	$ 238,368.00
Summer Habitat Bernheim Property							
	Multiplier	**Acres Temporary**	**Cost Per AC***	**Temp Cost**	**Acres Permanent**	**Perm Cost***	**Total Temp+Perm**
8/1-8/15	2	2.37	$ 7,640.00	$ 36,213.60	3.3	$ 50,424.00	$ 86,637.60
8/16-3/31	1.5	2.37	$ 7,640.00	$ 27,160.20	3.3	$ 37,818.00	$ 64,978.20
4/1-5/30	2	2.37	$ 7,640.00	$ 36,213.60	3.3	$ 50,424.00	$ 86,637.60
6/1-7/31	3	2.37	$ 7,640.00	$ 54,320.40	3.3	$ 75,636.00	$ 129,956.40
Potential Habitat East							
	Multiplier	**Acres Temporary**	**Cost Per AC***	**Temp Cost**	**Acres Permanent**	**Perm Cost***	**Total Temp+Perm**
10/15-3/31	0.5	5.37	$ 3,820.00	$ 10,256.70	6.67	$ 12,739.70	$ 22,996.40
4/1-5/30	1	5.37	$ 3,820.00	$ 20,513.40	6.67	$ 25,479.40	$ 45,992.80
6/1-7/31	2	5.37	$ 3,820.00	$ 41,026.80	6.67	$ 50,958.80	$ 91,985.60
8/1-10/14	1	5.37	$ 3,820.00	$ 20,513.40	6.67	$ 25,479.40	$ 45,992.80
		Total Acres Temp+Perm			**38.51**		

*Cost per acre using the 2020 value, but will be updated if mitigation occurs in 2021

6.4 Northern Long-Eared Bat

As mentioned, LG&E will utilize avoidance and minimization of clearing within forested areas where possible. However, tree clearing is still anticipated to occur within the potential habitat ranges for the NLEB. The conservation measures described for the Indiana bat will likely benefit the NLEB, however because consultation for NLEB is proceeding under the 4(d) rule, no additional conservation measures are proposed.

6.5 Mussel Species

LG&E will use the horizontal directional drilling construction method at the locations of Cox Creek and Rocky Run within the action area. This method will avoid significant impacts to the potential mussel habitat and, as a result, prevent the proposed project from affecting the listed mussel species. Therefore, no further conservation measures are proposed for these species.

7 Determination of Effects

7.1 Kentucky Glade Cress

LG&E has conducted due diligence in order to avoid and minimize impacts to this species. The proposed corridor has been planned around the designated critical habitat areas, and will avoid all of these areas. LG&E had a survey for Kentucky glade cress performed for the project area to identify suitable habitat and populations within the corridor. LG&E will continue to work with the USFWS to develop measures to help protect and preserve glade cress populations in these identified population areas.

Based on consultation with the USFWS and the USACE, the formal impacts determination for Kentucky glade cress is proposed to be **"may affect, likely to adversely affect."** It is LG&E's plan to work with the regulatory agencies to use best management practices to complete the project and to the extent possible, avoid impacting populations of Kentucky glade cress during construction activities. LG&E will also continue to work closely with the USFWS to develop a mutually agreed upon mitigation proposal for the Kentucky glade cress prior to the start of construction.

7.2 Gray Bat

The proposed project will result in the degradation of gray bat foraging corridors, however, there are no gray bat roosting sites or hibernacula present within the action area. No other impacts are expected to occur. Thus, the formal effects determination for the gray bat is proposed to be **"may affect, but not likely to adversely affect."**

7.3 Indiana Bat

The proposed project will result in adverse effects to the Indiana bat. Loss of both potential foraging and roosting habitat will occur within the action area. The formal effects determination for the Indiana bat is proposed to be **"may affect, likely to adversely affect."** Mitigation for the incidental take associated with the above conservation measures will be implemented.

7.4 Northern Long-Eared Bat

The proposed project will result in adverse effects to the NLEB. Loss of both potential foraging and roosting habitat will occur within the action area. In accordance with the USFWS 4(d) rule on the NLEB, the project will not result in a prohibited take of NLEB. The formal effects determination for the NLEB is proposed to be **"may affect, likely to adversely affect but take is not prohibited."** Consultation is expected to be finalized though the NLEB 4(d) Streamlined Consultation Process. Mitigation for the incidental take associated with the above conservation measures will be implemented.

7.5 Mussel Species

The proposed project will not result in any effects to the listed mussel species. The proposed construction method of horizontal directional drilling will help avoid possible impacts to Cox Creek and Rocky Run, which are the only waterways providing potential habitat for these species. The formal effects determination for the pink mucket, orangefoot pimpleback, and sheepnose mussel is proposed to be **"no effect"**.

7.6 Conclusion

The biological assessment determined whether the proposed project may affect Kentucky glade cress, gray bats, Indiana bats, NLEB, and mussel species; or these species' critical habitats.

Adverse effects are not expected for the gray bat, because no roosting habitat or hibernacula are present. Thus, an effects determination of "may affect, not likely to adversely affect" for the gray bat has been proposed. LG&E has developed the project alignment to avoid critical Kentucky glade cress habitat within the vicinity. Furthermore, LG&E will work with regulatory agencies to avoid and minimize impacts to populations of Kentucky glade cress during construction activities. It is assumed that potential summer roosting and foraging habitat occurs for the Indiana bat and NLEB within the action area. Critical habitat for these species does not occur within the action area and will not be impacted. LG&E anticipates tree clearing within the potential and known habitat ranges for the Indiana bat and NLEB. Since clearing may take place during the summer, and it is presumed that these bat species and their summer roosts are present in the action area, an effects determination of "may affect, likely to adversely affect" for the Kentucky glade cress and the Indiana bat has been proposed. In accordance with the USFWS 4(d) rule on the NLEB, the project will not result in a prohibited take of NLEB. Thus, an effects determination of "may affect, likely to adversely affect but take is not prohibited" has been proposed for the NLEB. LG&E will mitigate the adverse impacts through continued consultation with the USFWS Kentucky Field Office and will utilize avoidance and minimization of clearing within forested areas where possible. Tree clearing will be performed during winter months (October 1 to March 31) where possible. LG&E will also contribute to the KNLT Imperiled Bat Conservation Fund, which supports the reforestation and restoration of Indiana bat habitat within the area. In addition, best management practices will be implemented to limit impacts to aquatic resources that may serve as foraging habitat for these bat species.

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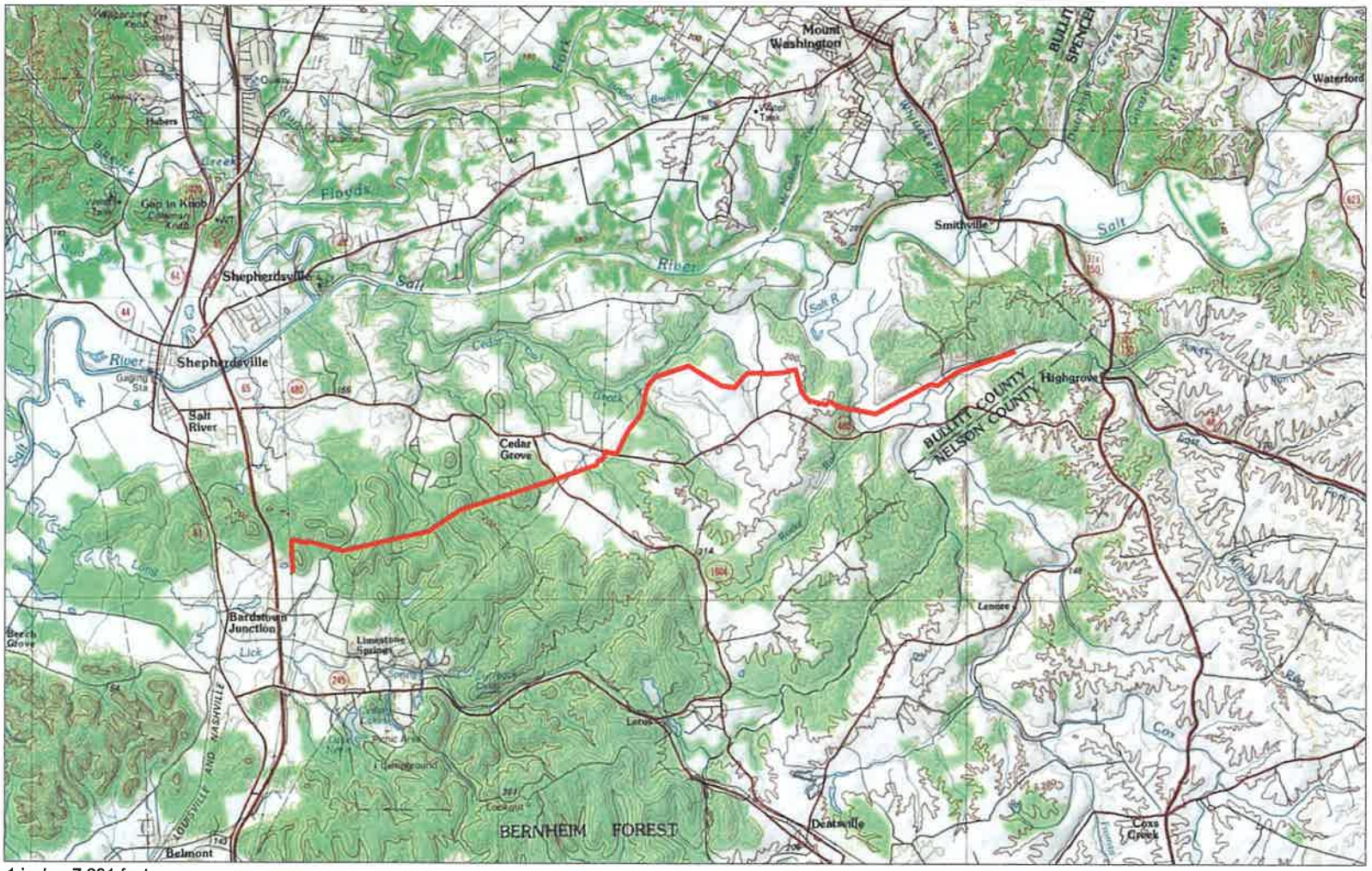
LG&E Bullitt County
Transmission Pipeline Project

APPENDIX A

FIGURES



Legend

Proposed Pipeline

1 inch = 7,231 feet

0 3,625 7,250 14,500 Feet

Project No. J164404800

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Drawn By: hwickstez

Figure 1a. Project Location

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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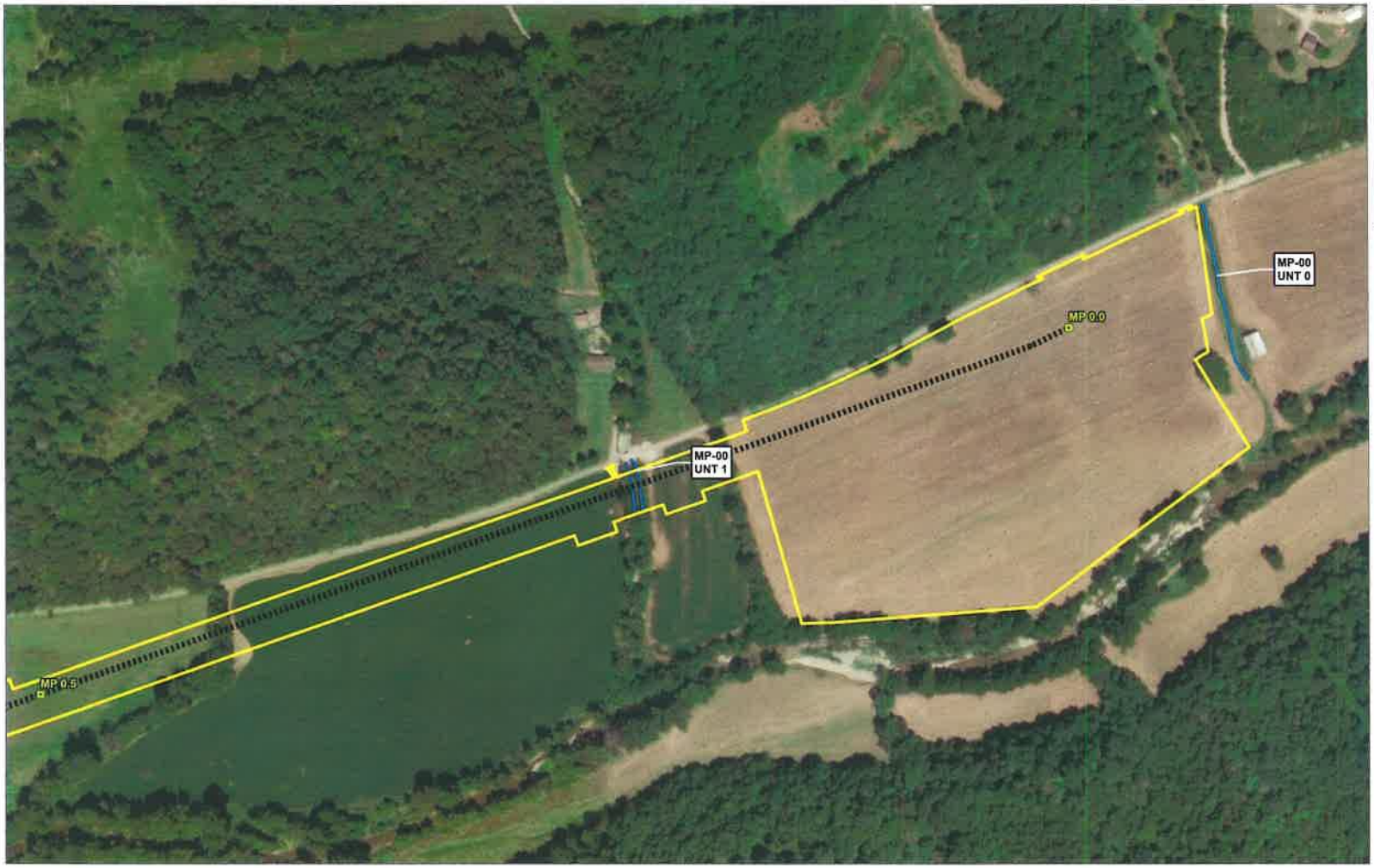
708 Roosevelt Road Walkerton, IN 46574 USA
Phone (+1) 574 586-3400 Fax (+1) 574 586-3405
www.cardno.com



Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
- Federally Designated Critical Habitat Area
- Maximum Disturbance Limits

1 inch = 250 feet

0 125 250 500 Feet

N W E S

Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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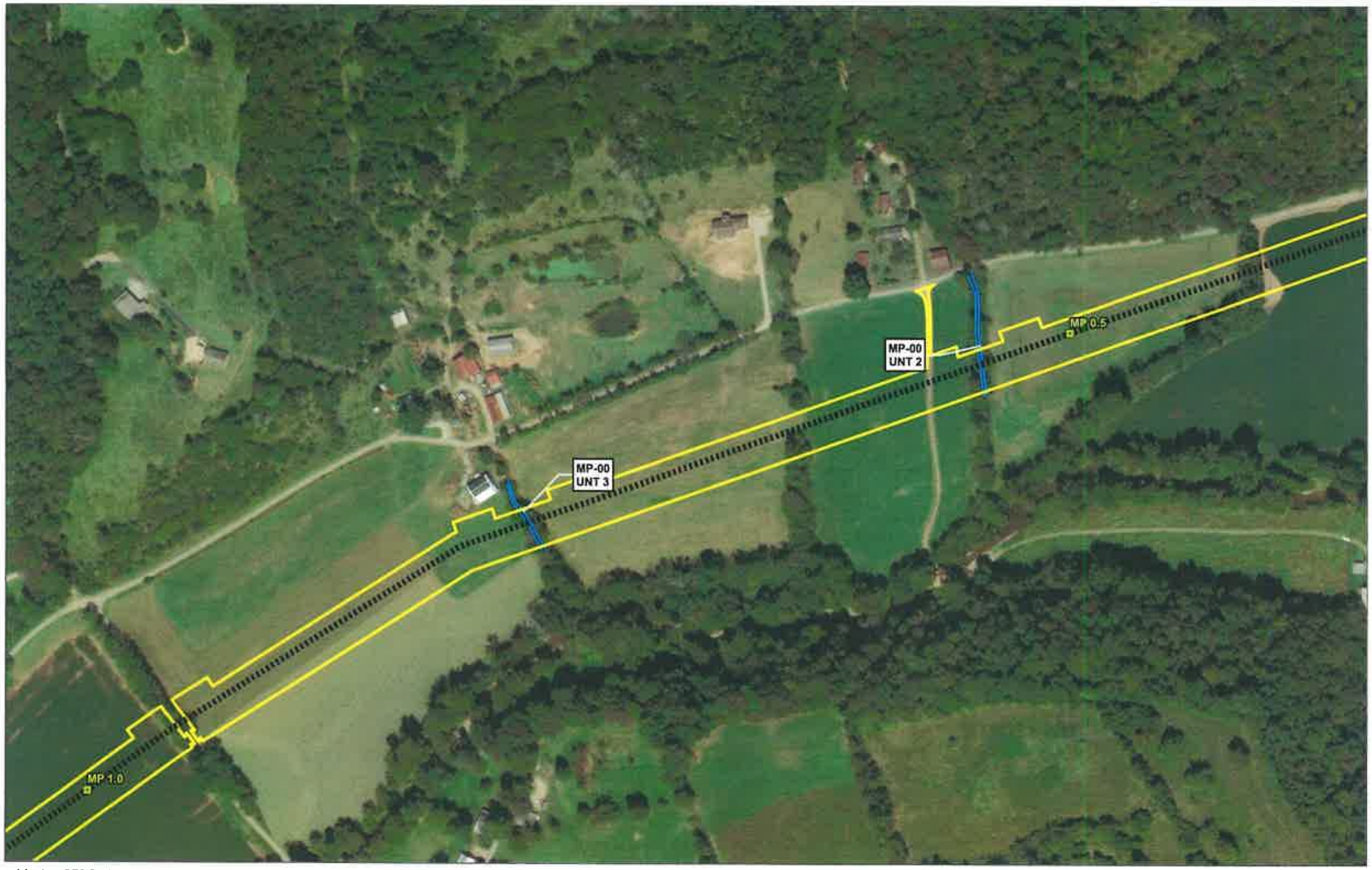

Legend
Proposed Pipeline
Mile Posts
Ephemeral Stream
Intermittent Stream
Perennial Stream
Existing Wetland
Open Water
Federally Designated Critical Habitat Area
Maximum Disturbance Limits

1 inch = 250 feet
0 125 250 500 Feet

N W E S

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Figure 1b. Overall Project Limits
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Page 2 of 27

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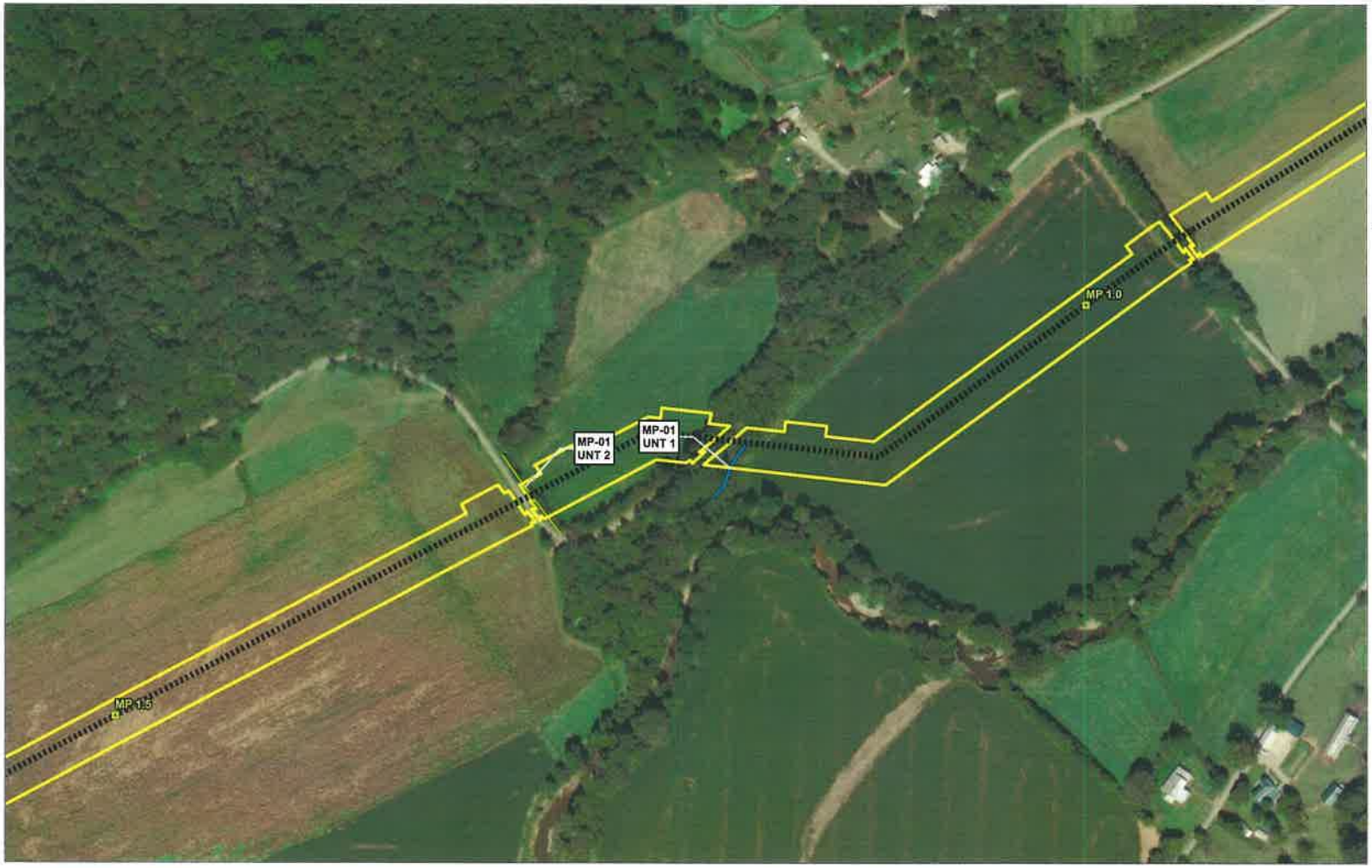
Date: 1/31/2020



Legend

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Project No. 215404855

Date: 1/31/2020

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Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project

EN Engineering LLC

Bullitt County, Kentucky

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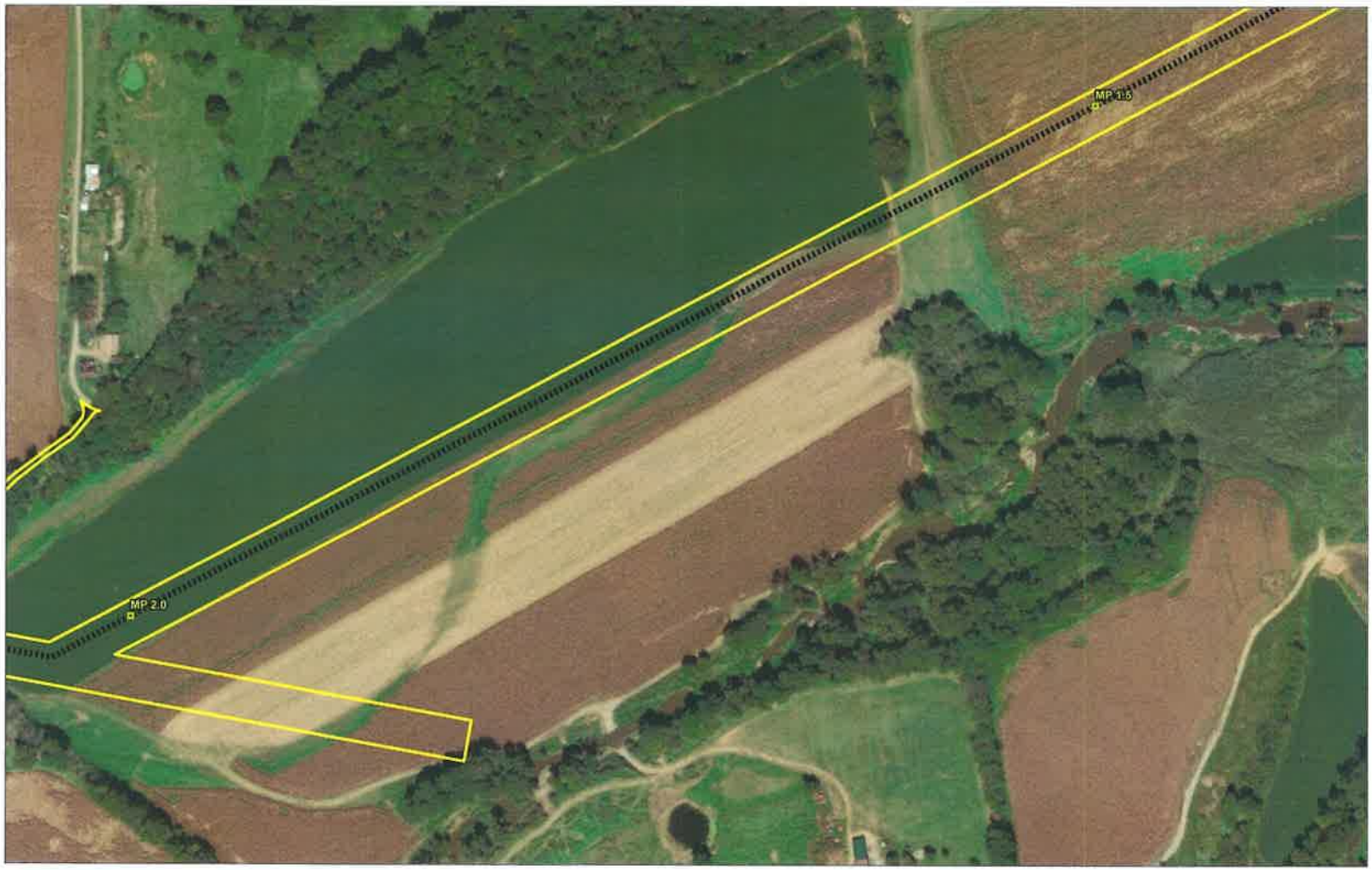

Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
- Federally Designated Critical Habitat Area
- Maximum Disturbance Limits

1 inch = 250 feet

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Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project

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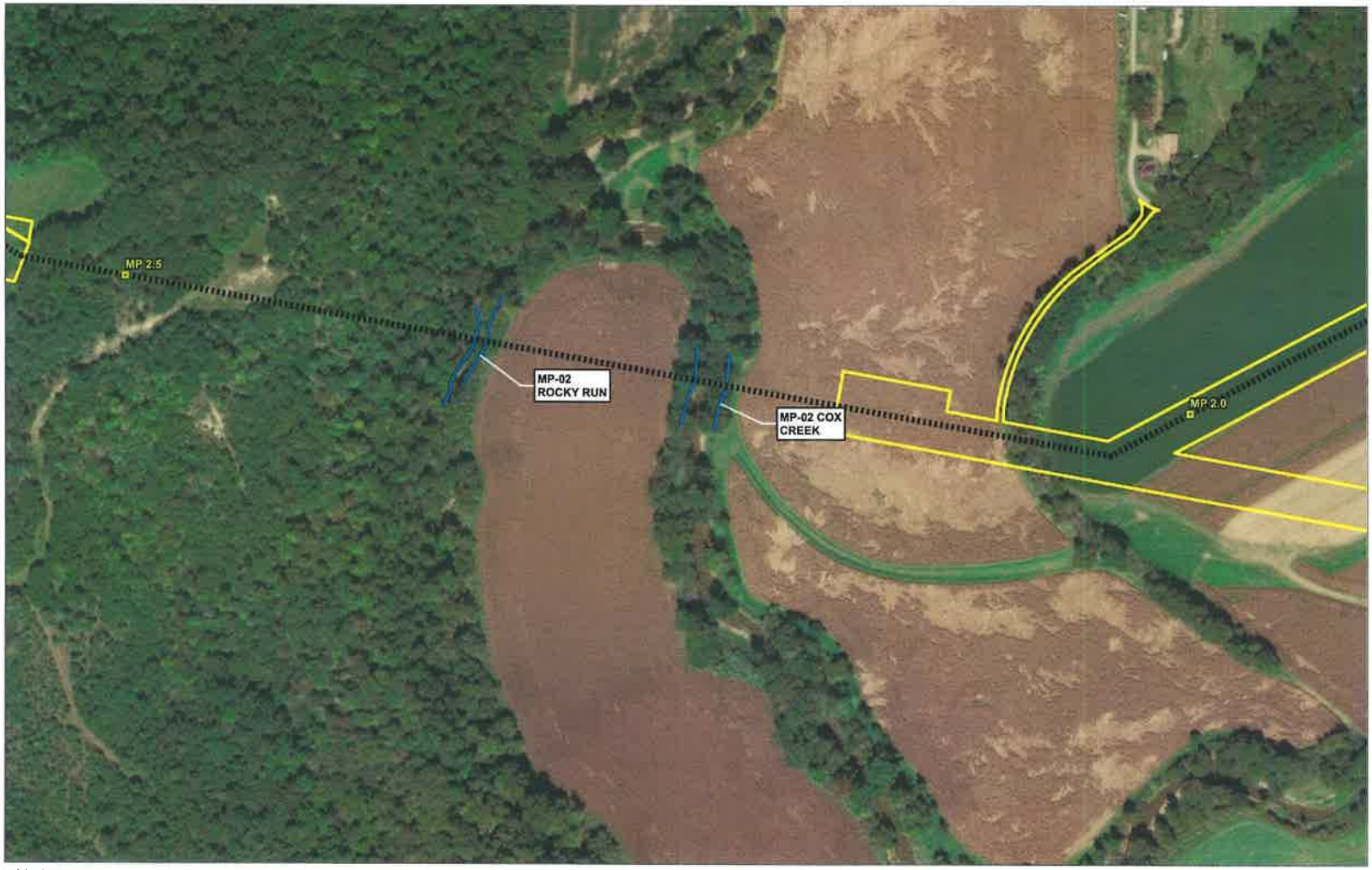

Legend

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Project No. J164404000

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Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project
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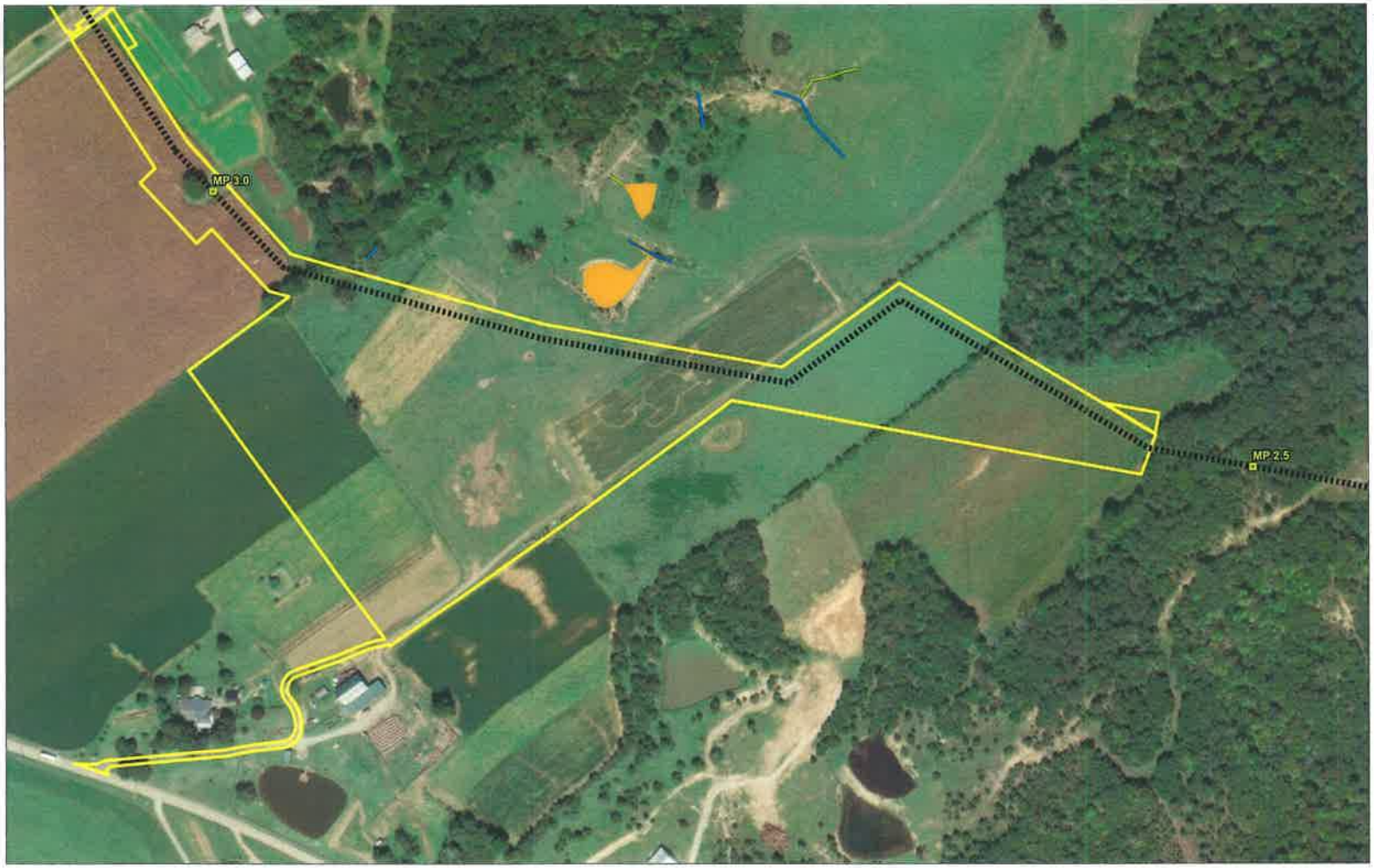

Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
- Federally Designated Critical Habitat Area
- Maximum Disturbance Limits

1 inch = 250 feet

0 125 250 500 Feet

N W E S

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Project No. J1K844600

Date: 1/31/2020

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Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
- Federally Designated Critical Habitat Area
- Maximum Disturbance Limits

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0 125 250 500 Feet

Figure 1b. Overall Project Limits
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Date: 1/31/2023

Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
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Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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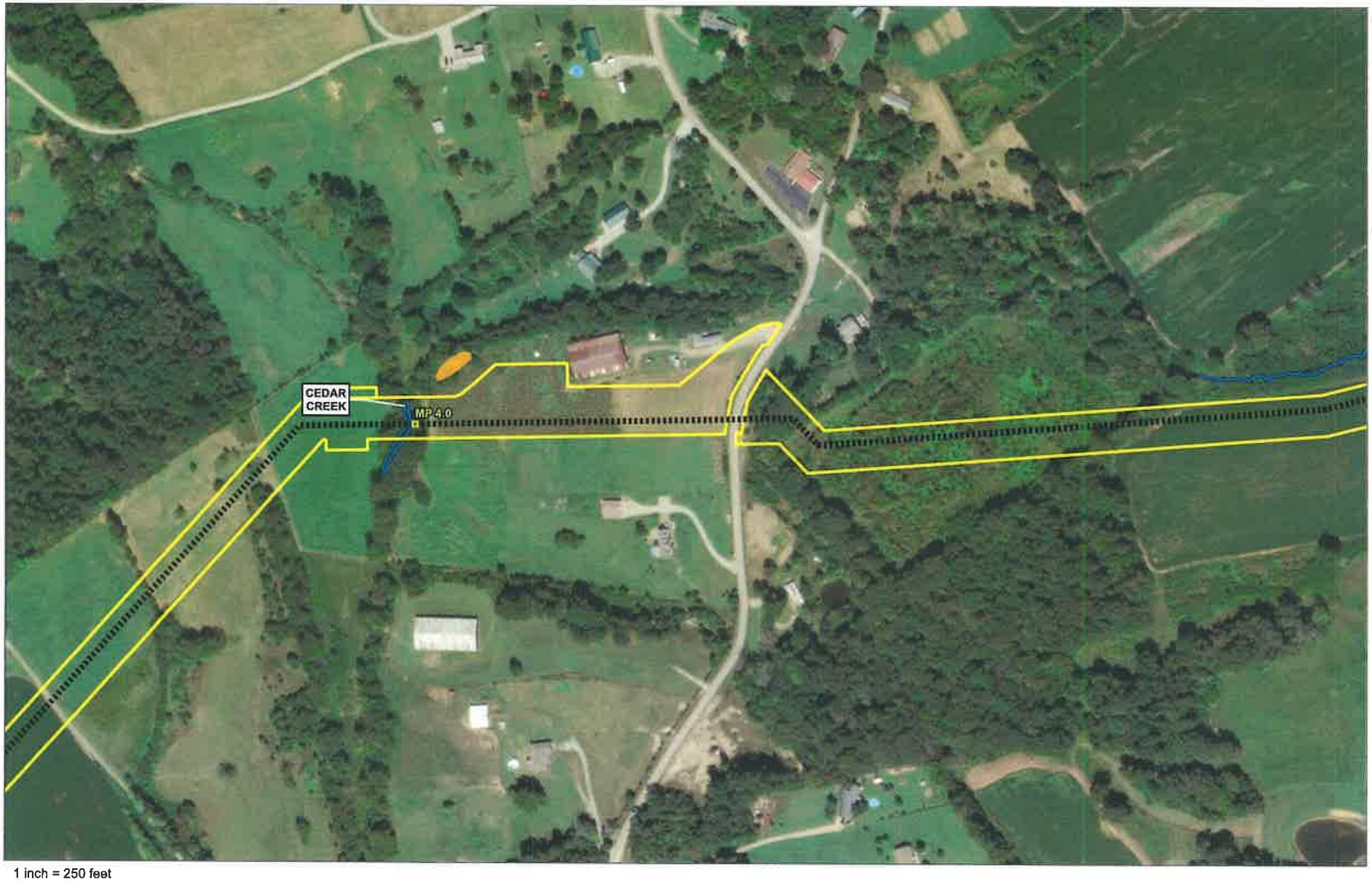
Date: 1/31/2020



Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
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Project No. J16X404800

Date: 1/31/2020

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Figure 1b. Overall Project Limits
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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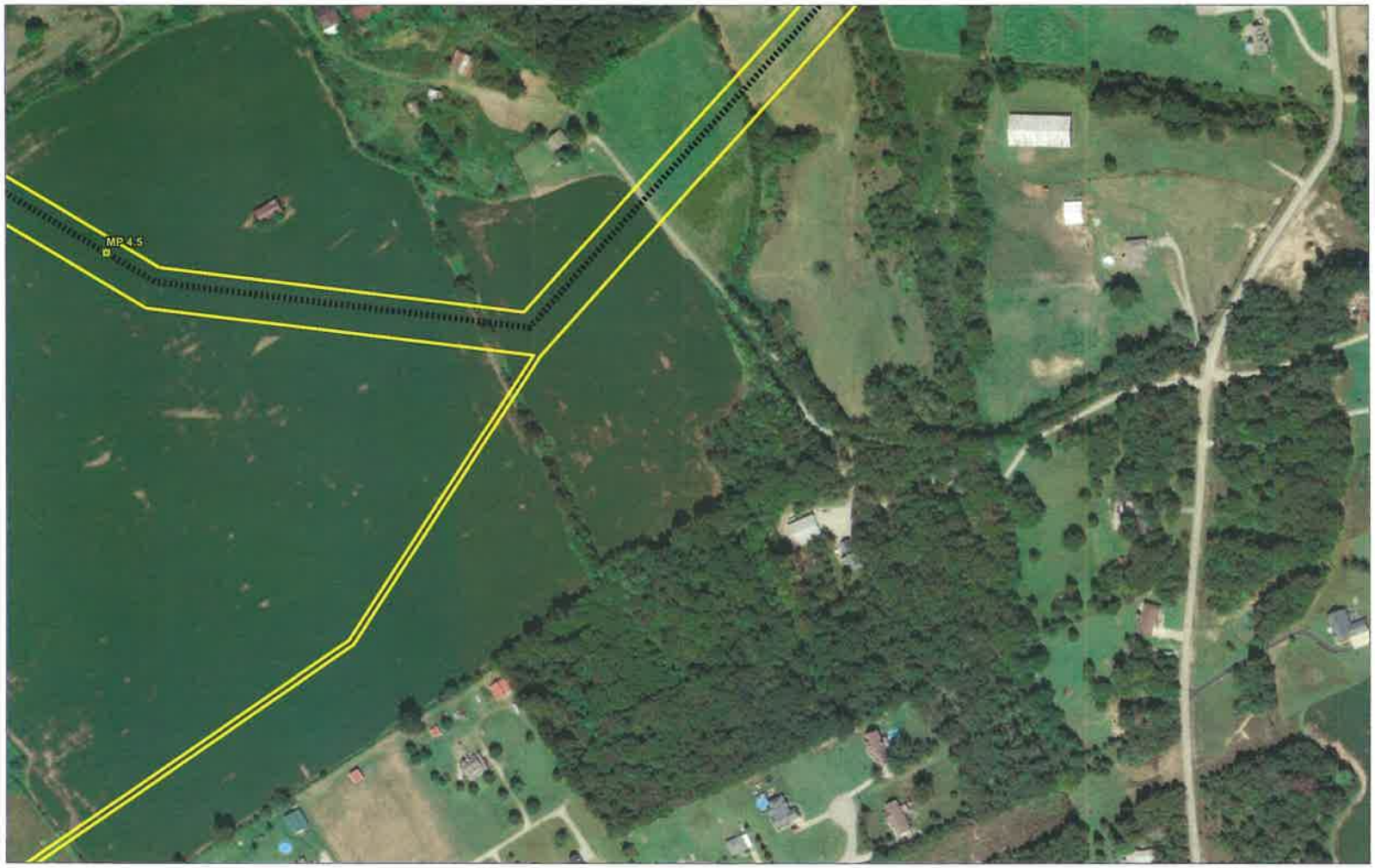

Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
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0 125 250 500 Feet

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Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Project No. JT004004000

Date: 1/31/2020

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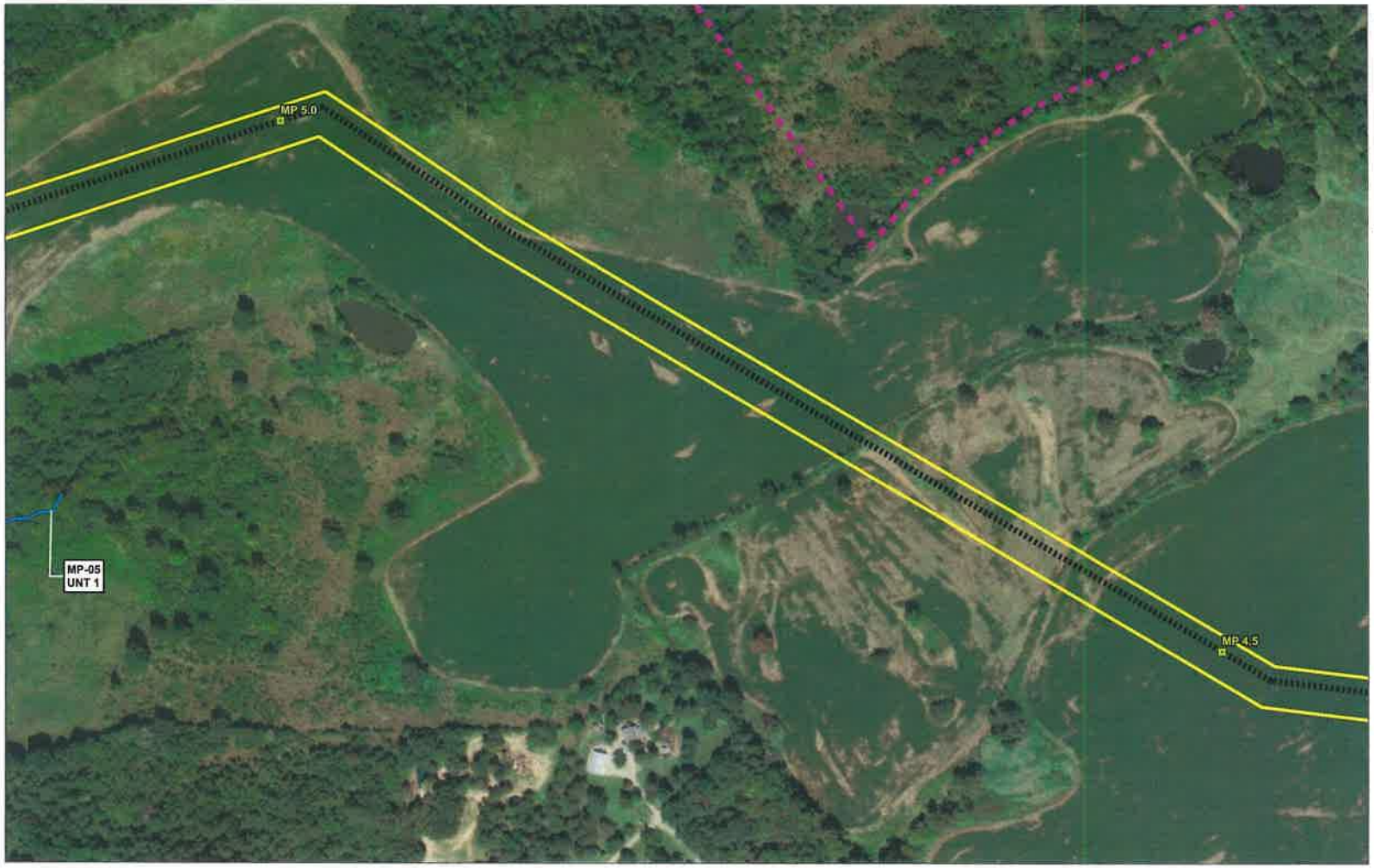

Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
- Federally Designated Critical Habitat Area
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0 125 250 500 Feet

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Project No. J183404550

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Figure 1b. Overall Project Limits
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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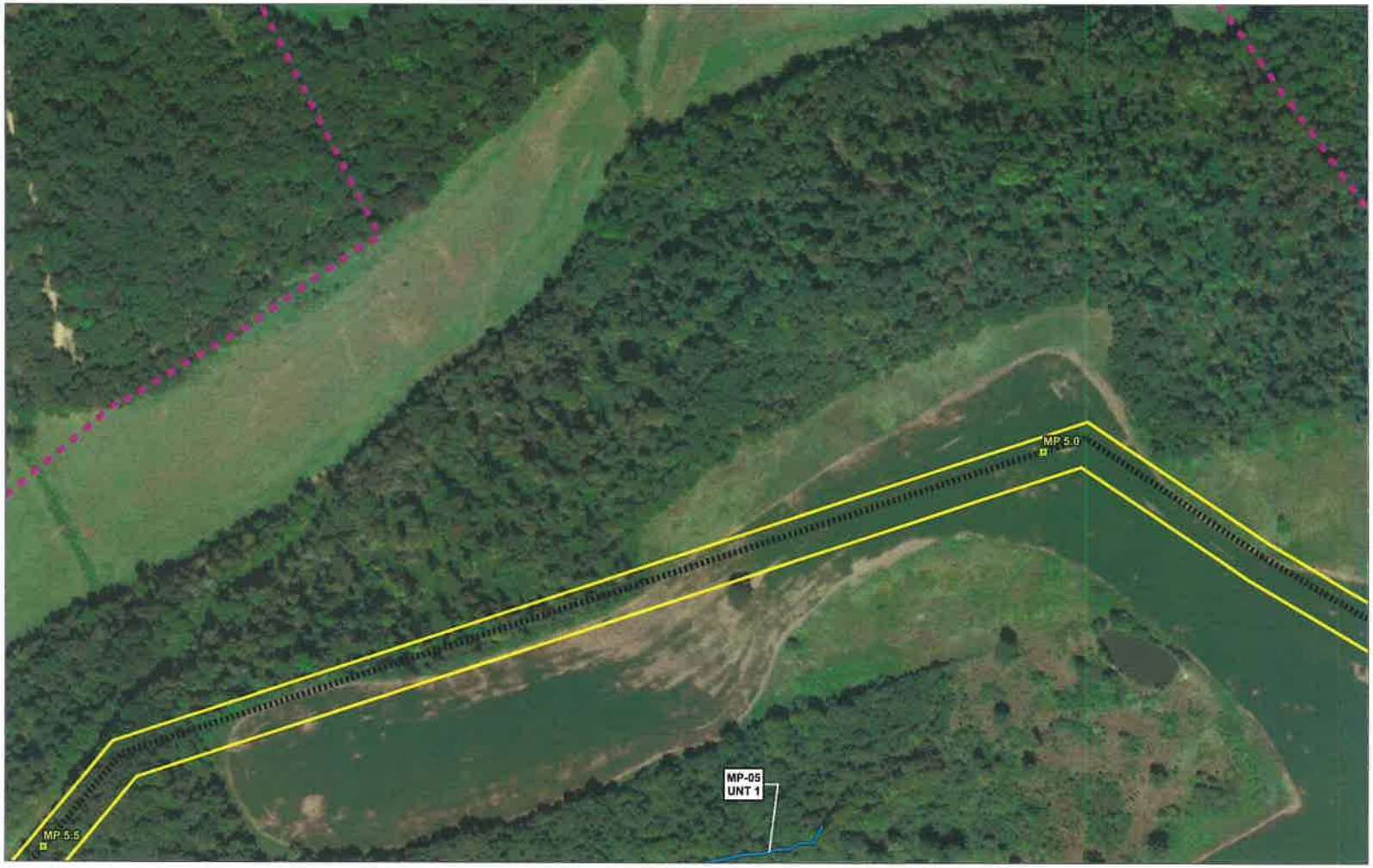

Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
- Federally Designated Critical Habitat Area
- Maximum Disturbance Limits

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0 125 250 500 Feet

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Project No. JTEX404800

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Figure 1b. Overall Project Limits
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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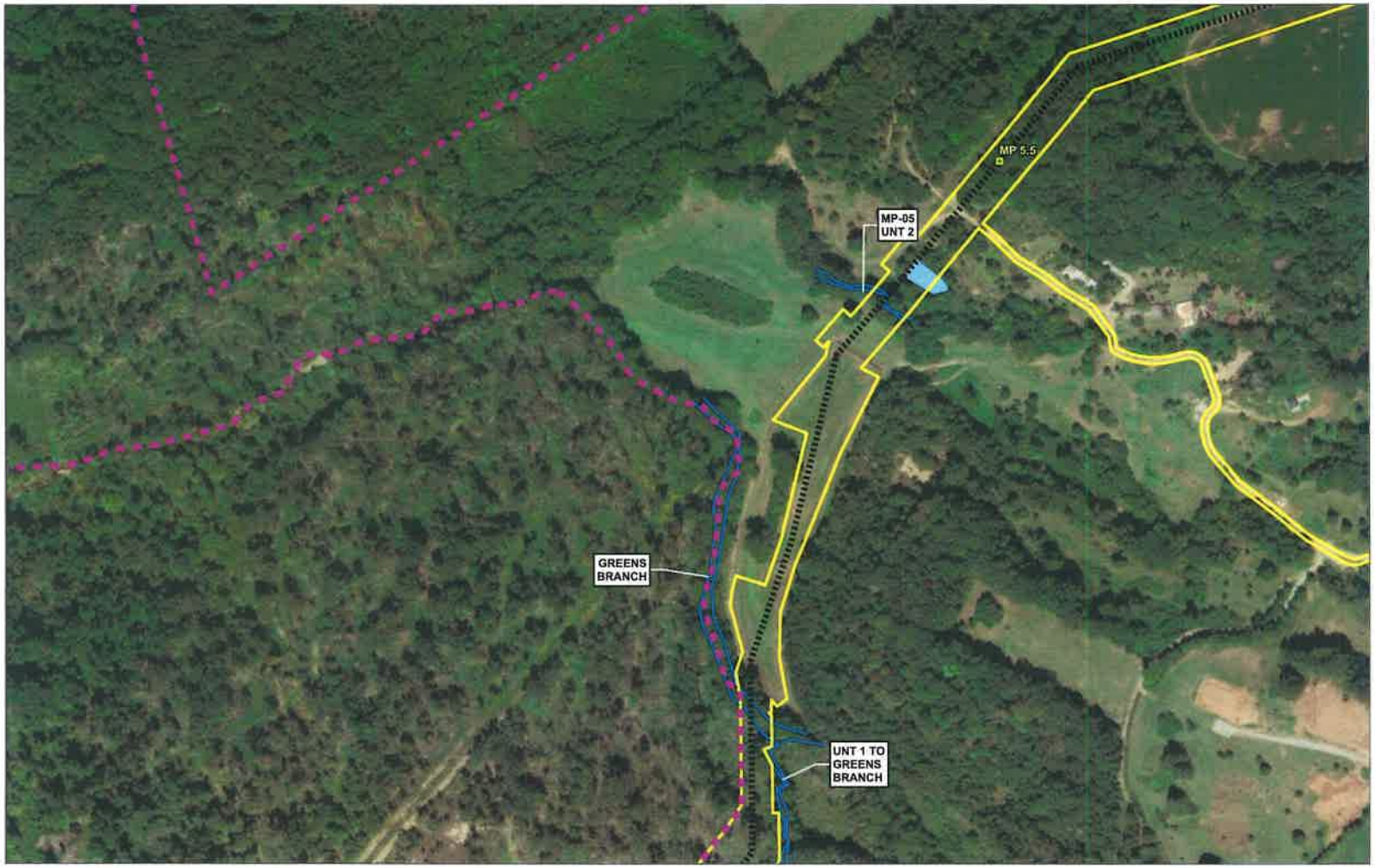

Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
- Federally Designated Critical Habitat Area
- Maximum Disturbance Limits

1 inch = 250 feet

0 125 250 500 Feet

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Project No. J16K404800

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Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project

EN Engineering LLC

Bullitt County, Kentucky

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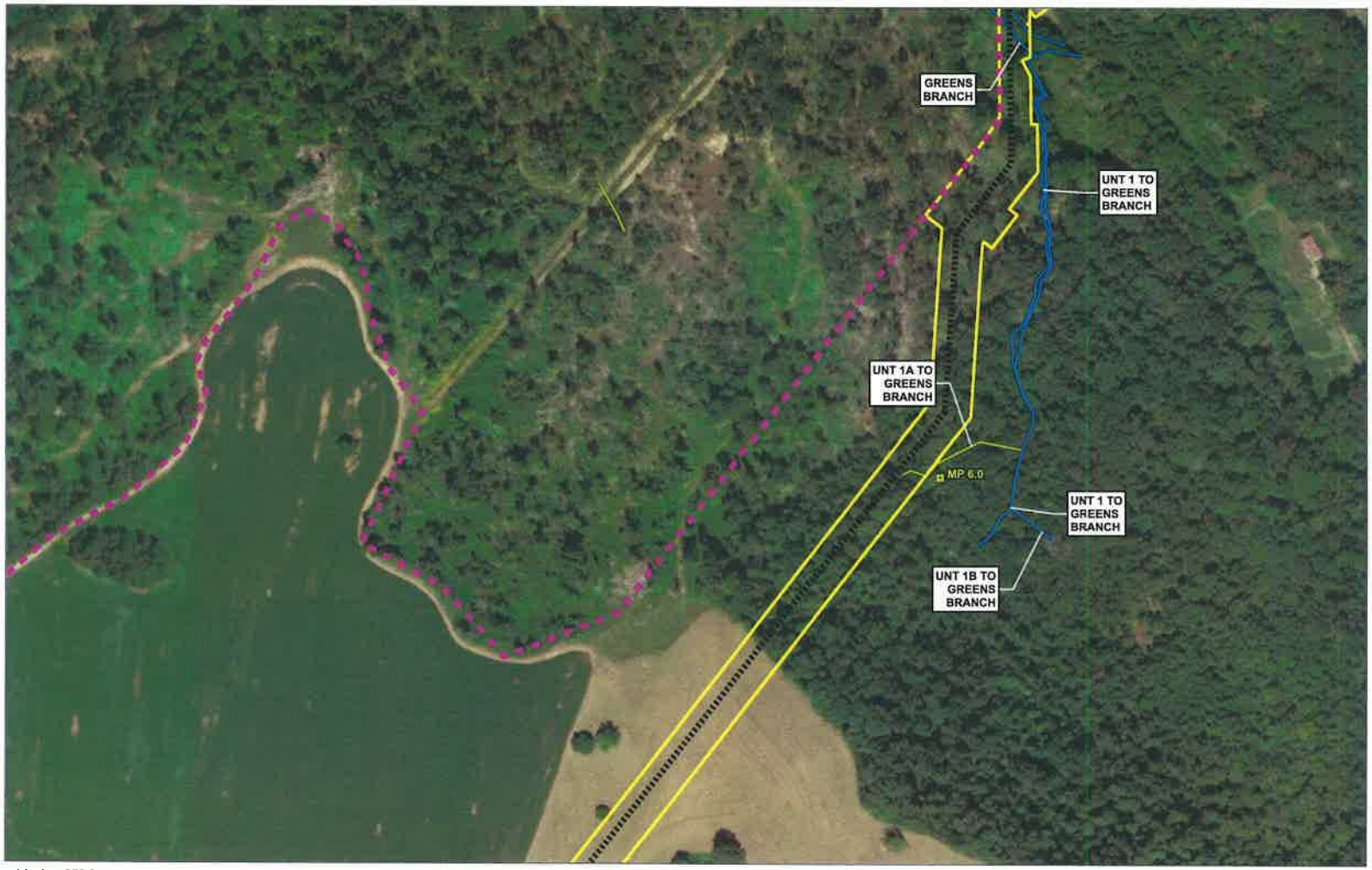

Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
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1 inch = 250 feet
0 125 250 500 Feet

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Project No. 21EX004839

Date: 1/31/2020

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Figure 1b. Overall Project Limits
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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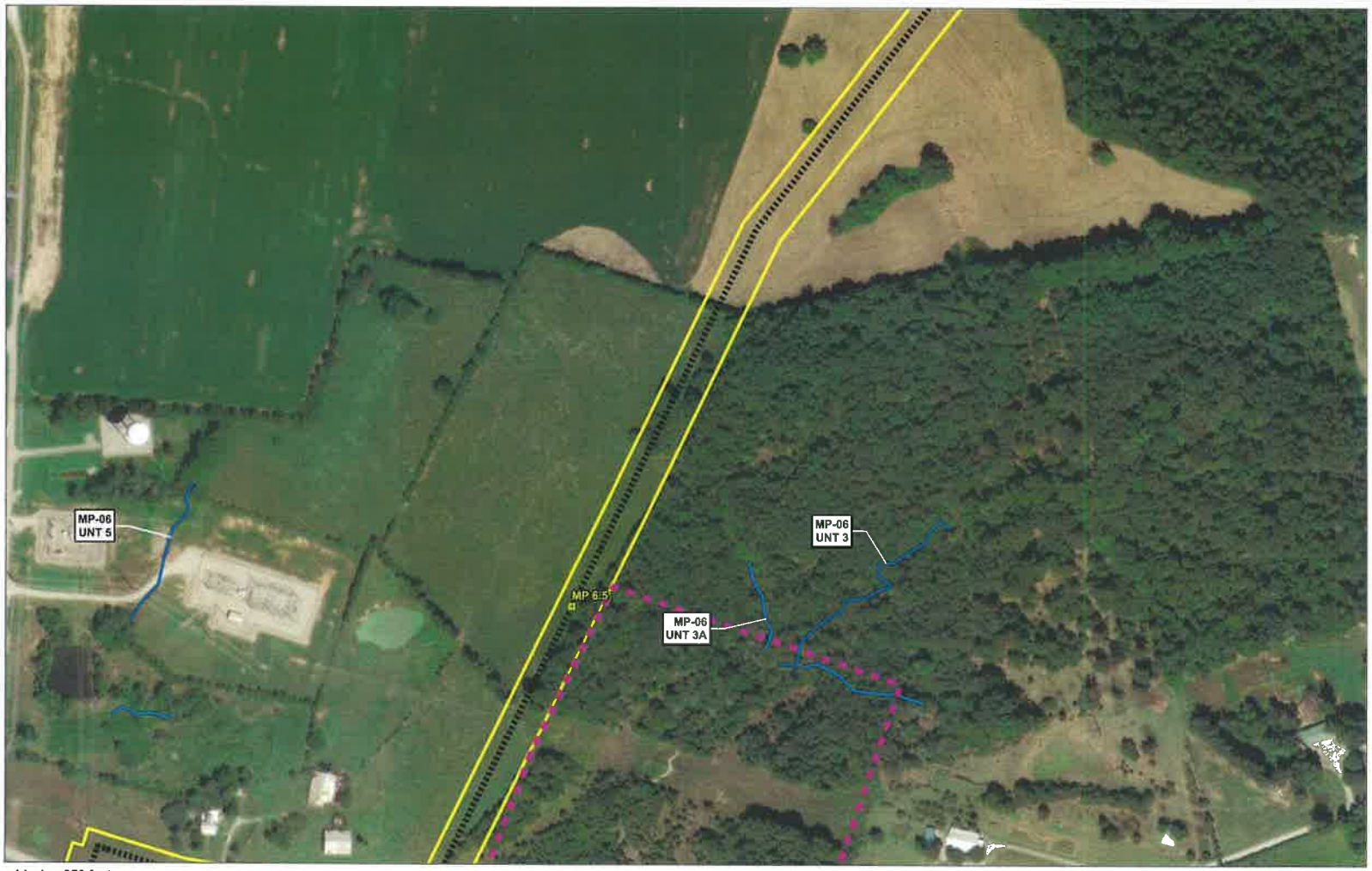

Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
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- Perennial Stream
- Existing Wetland
- Open Water
- Federally Designated Critical Habitat Area
- Maximum Disturbance Limits

1 inch = 250 feet

0 125 250 500 Feet

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Project No. 3163404550

Date: 1/31/2023

Figure 1b. Overall Project Limits

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Bullitt County, Kentucky

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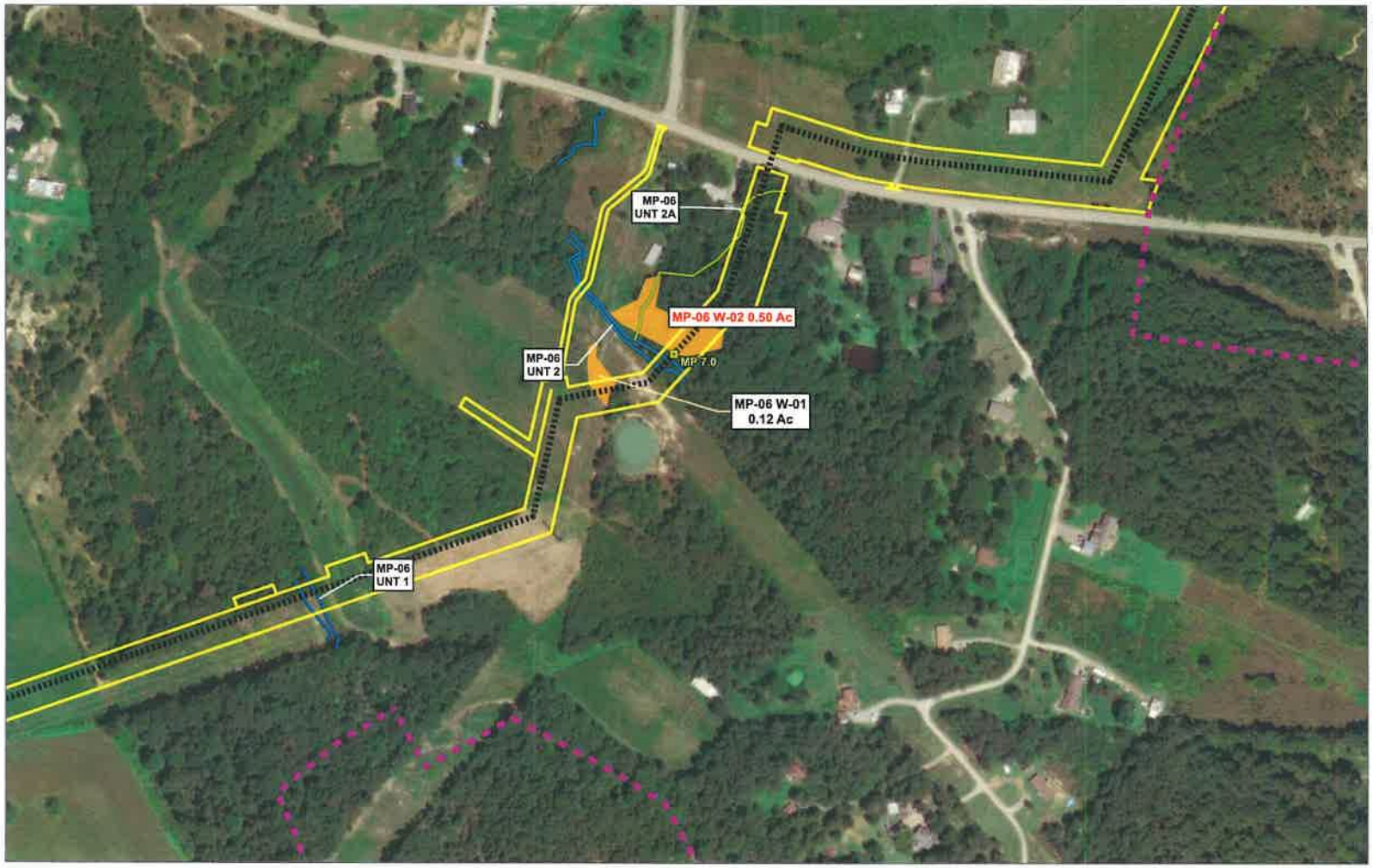

Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
- Federally Designated Critical Habitat Area
- Maximum Disturbance Limits

1 inch = 250 feet

0 125 250 500 Feet

Project No. 316404800

Date: 1/31/2020

Figure 1b. Overall Project Limits
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
- Federally Designated Critical Habitat Area
- Maximum Disturbance Limits

1 inch = 250 feet

0 125 250 500 Feet

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Project No. J168404500

Date: 1/31/2020

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Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project

EN Engineering LLC

Bullitt County, Kentucky

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Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
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- Open Water
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Project No. J163404830

Date: 1/31/2020

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Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
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- Perennial Stream
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- Open Water
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Project No: 71XE404888

Date: 1/31/2020

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Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
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Project No. J16X404800

Date: 1/31/2020

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Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
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Figure 1b. Overall Project Limits
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Legend

- Proposed Pipeline
- Mile Posts
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Bullitt County Gas Transmission Line Pipeline Project
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Bullitt County, Kentucky

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Legend

- Proposed Pipeline
- Mile Posts
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Project No. J16X404800

Date: 1/31/2020

Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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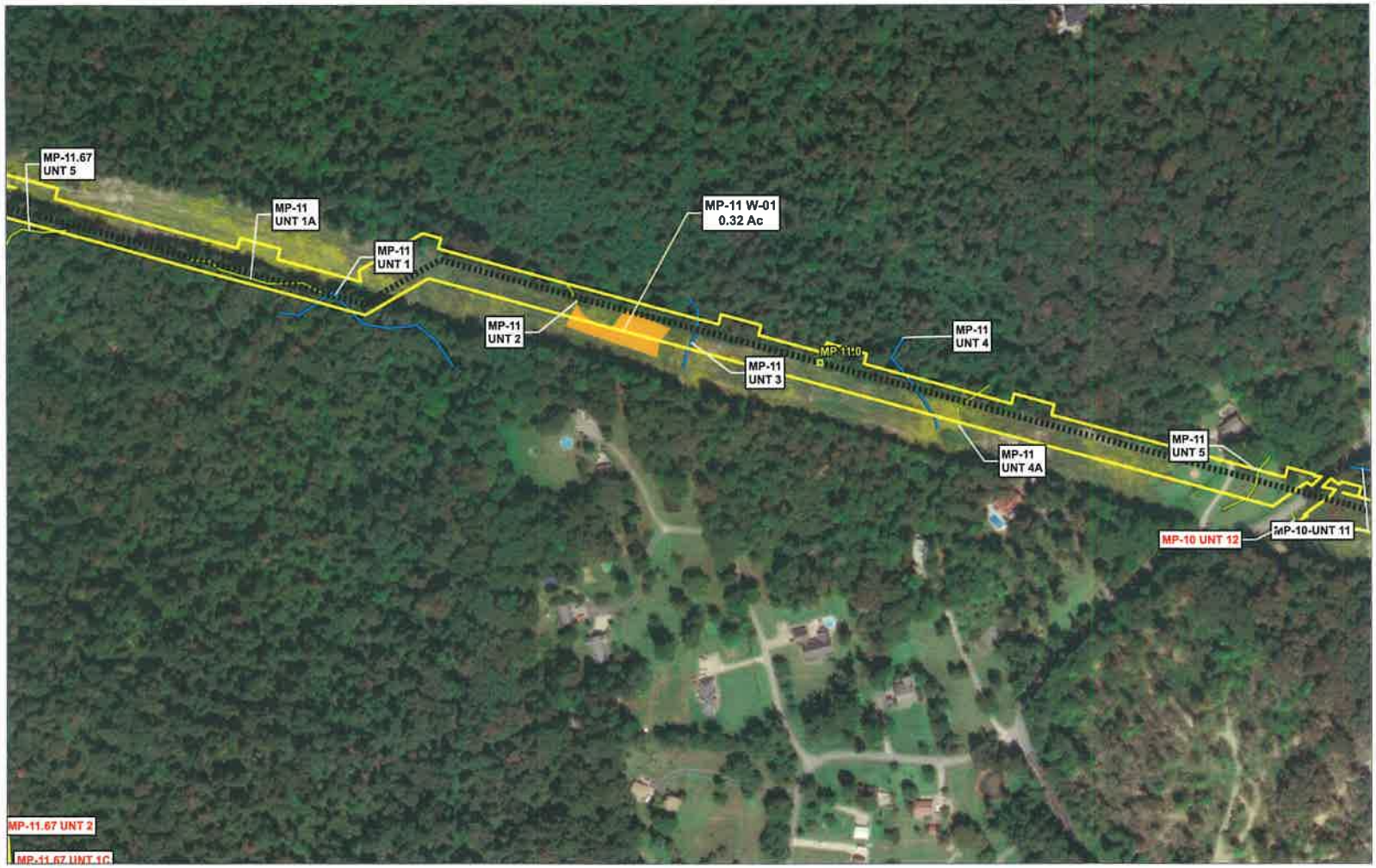

Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
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Project No. J183404869

Date: 1/31/2020

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Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
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1 inch = 250 feet

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Project No. J16X404800

Date: 1/31/2020

Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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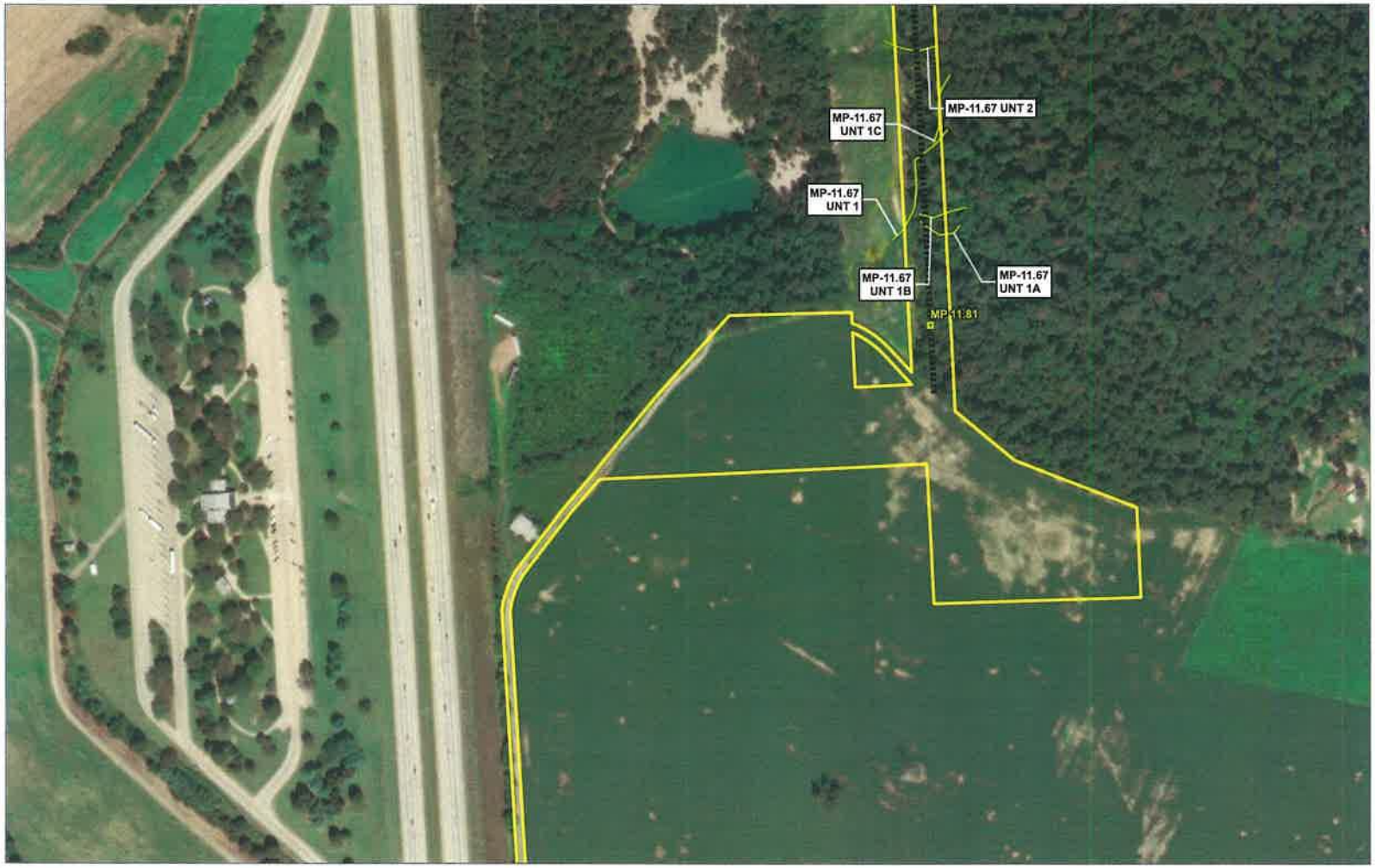

Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
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Project No. JT6X434606

Date: 10/1/2020

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Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
Shaping the Future
703 Roosevelt Road, Walkerton, IN 46574 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3405
www.cardno.com

Legend

- Proposed Pipeline
- Mile Posts
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
- Federally Designated Critical Habitat Area
- Maximum Disturbance Limits

1 inch = 250 feet

0 125 250 500 Feet

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Project No. J16X404800

Date: 1/31/2020

Figure 1b. Overall Project Limits

Bullitt County Gas Transmission Line Pipeline Project

EN Engineering LLC

Bullitt County, Kentucky

Cardno
Shaping the Future
703 Roosevelt Road Walkerton IN 46574 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3446
www.cardno.com

1 inch = 4,000 feet

0 2,000 4,000 8,000 Feet

Sheet Index — Proposed Pipeline — Federally Designated Critical Habitat Area — County Boundary

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Project No. 215834880

Data: 6/20/2019

Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 2. Kentucky Glade Cress Survey Area Key

Bullitt County Gas Transmission Line Pipeline Project

EN Engineering LLC

Bullitt County, Kentucky

Cardno

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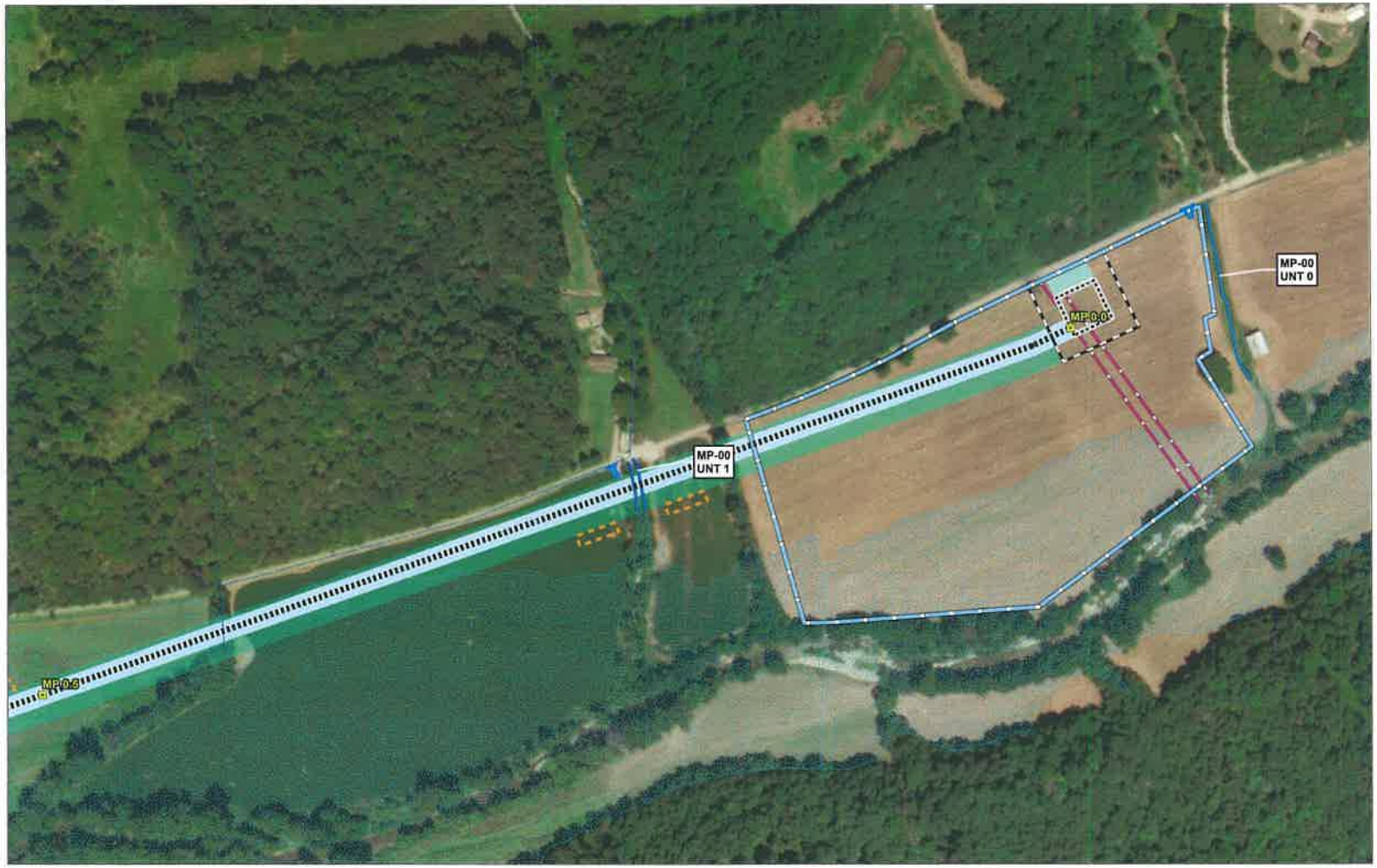

Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
- Glade Cress Observed
- Glade Cress Population Area
- Proposed Pipeline
- ATWS
- Mile Posts
- Construction Entrance
- Proposed Fence
- Cox Creek Drill Points
- Proposed Regulator Station
- Construction Storage Yard
- Temporary Access Road
- Permanent Access Road
- Existing LGE Easement
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
- Proposed Easement
- Temporary Work Space
- Federally Designated Critical Habitat Area
- Property Lines

1 inch = 250 feet

0 125 250 500 Feet

Project No. J16X404800

Date: 8/20/2019

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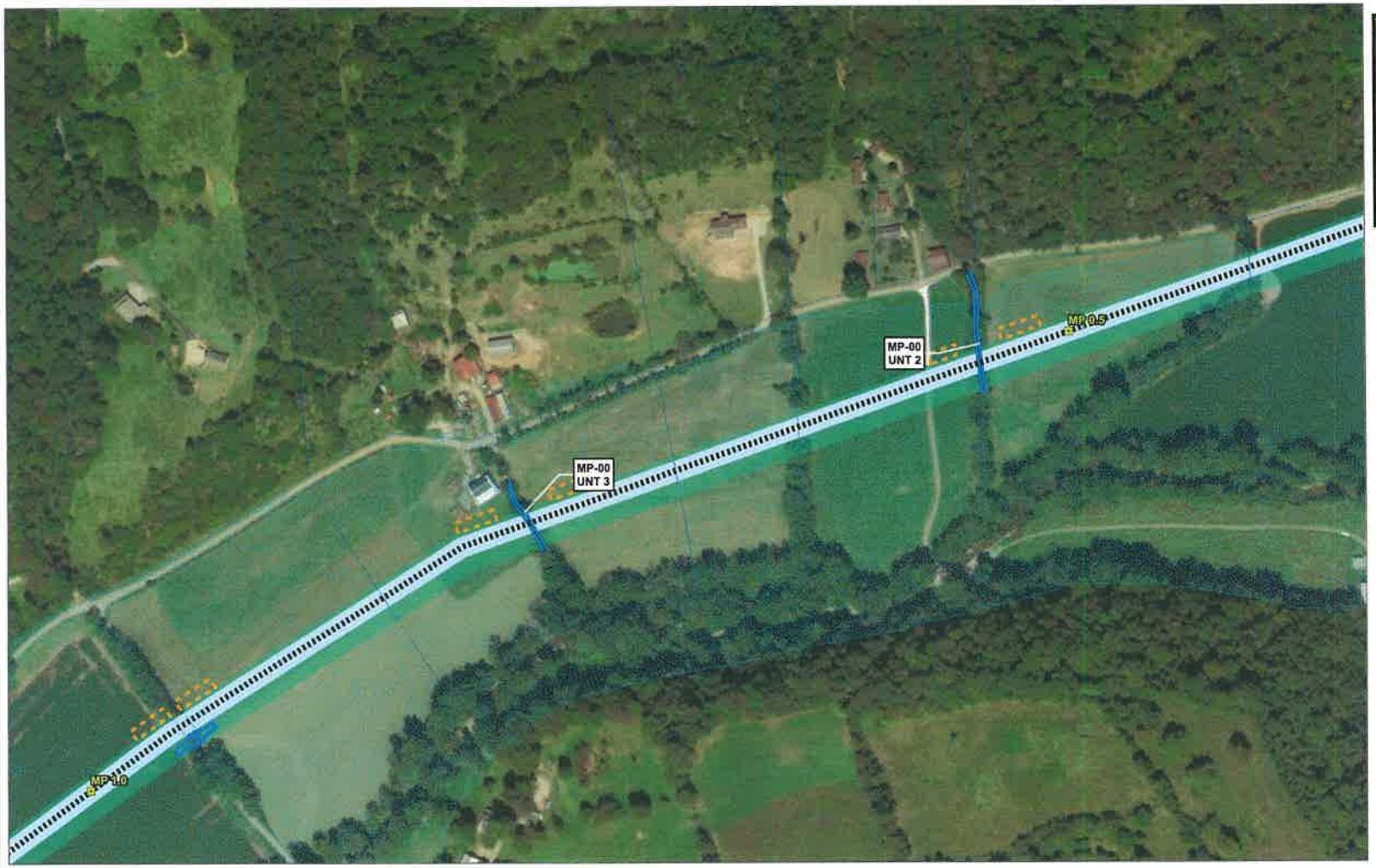
Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
703 Roosevelt Road Walkerton, IN 46574 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3446
www.cardno.com



Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
- Glade Cress Observed
- Glade Cress Population Area
- Proposed Pipeline
- ATWS
- Mile Posts
- Construction Entrance
- Proposed Fence
- Cox Creek Drill Points
- Proposed Regulator Station
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- Open Water
- Proposed Easement
- Temporary Work Space
- Federally Designated Critical Habitat Area
- Property Lines

1 inch = 250 feet

0 125 250 500 Feet

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Project No. 213A54805

Date: 8/20/2019

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno

Phone (+1) 574 968 3400 Fax (+1) 574 968 3448
www.cardno.com

Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
- Glade Cress Observed
- Glade Cress Population Area
- Proposed Pipeline
- ATWS
- Mile Posts
- Construction Entrance
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- Property Lines

1 inch = 250 feet

0 125 250 500 Feet

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Project No. 2168404850

Date: 8/20/2019

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
703 Rockwell Road Wakarusa IN 46573 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3445
www.cardno.com

Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
- Glade Cress Observed
- Glade Cress Population Area
- Proposed Pipeline
- ATWS
- Mile Posts
- Construction Entrance
- Proposed Fence
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- Construction Storage Yard
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- Federally Designated Critical Habitat Area
- Property Lines

1 inch = 250 feet

0 125 250 500 Feet

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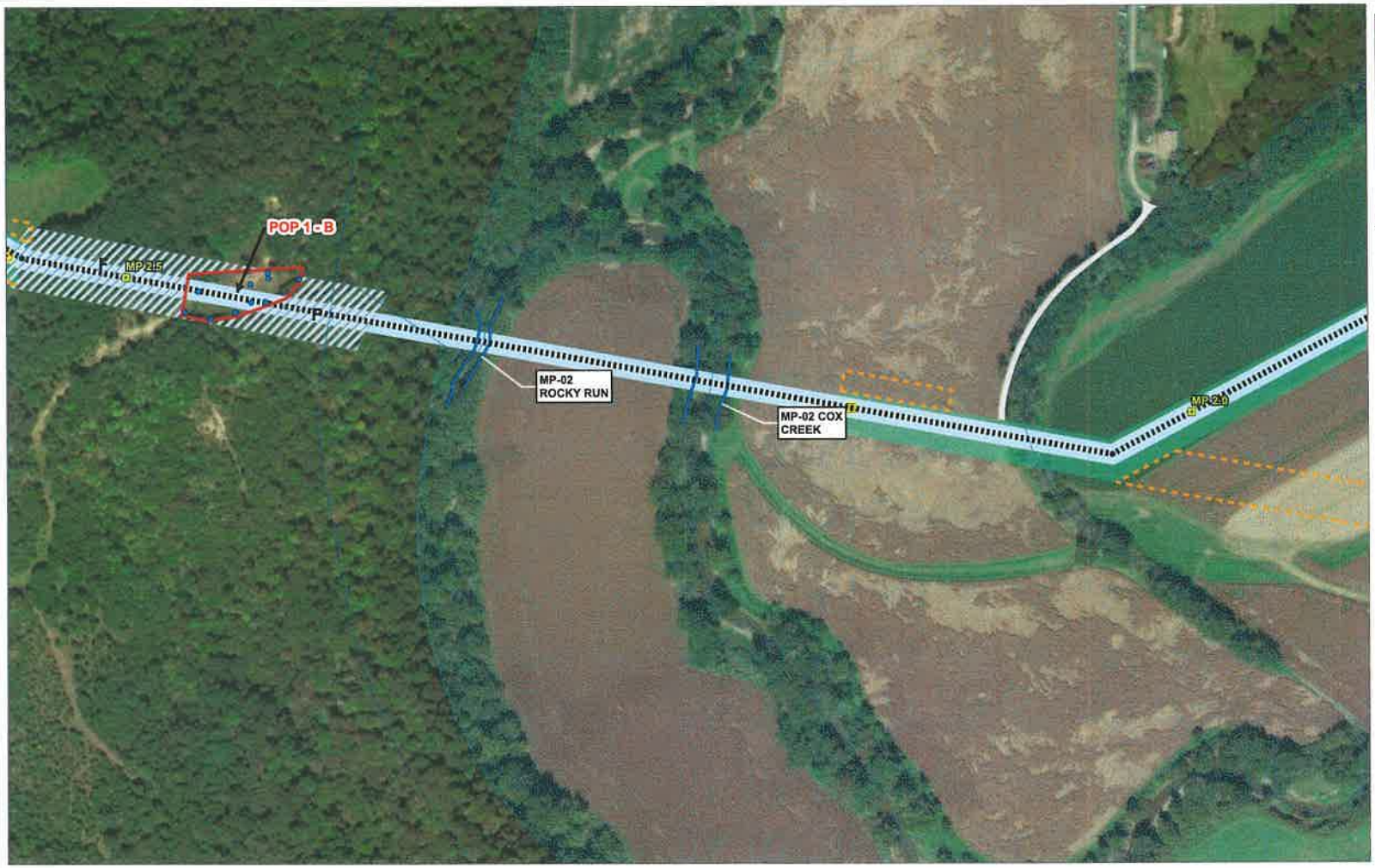
Figure 3. Kentucky Glade Cress Survey Area
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
738 Roosevelt Road Walkerton, IN 46574 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3448
www.cardno.com

Project No. J193404800

Date: 8/20/2019



Legend

- 100 Yr Floodway
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- Glade Cress Observed
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- Proposed Pipeline
- ATWS
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1 inch = 250 feet

0 125 250 500 Feet

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Project No. J16X404800

Date: 8/20/2019

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
708 Roosevelt Road Walkerton, IN 46574 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3446
www.cardno.com

Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
- Glade Cress Observed
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1 inch = 250 feet

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Project No. 116P404800

Date: 8/23/2018

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Phone (+1) 574 586 3400 Fax (+1) 574 586 3405
www.cardno.com

Legend

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1 inch = 250 feet

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Project No: J16K404800

Data: 8/20/2019

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
708 Roosevelt Road, Walkerton, IN 46574 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3446
www.cardno.com

Legend

- 100 Yr Floodway
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0 125 250 500 Feet

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Project No. J1EK454800

Date: 8/20/2018

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
716 Rockwell Road, Wexford, PA 15090 USA
Phone (+1) 724 935 2420 Fax (+1) 724 935 3448
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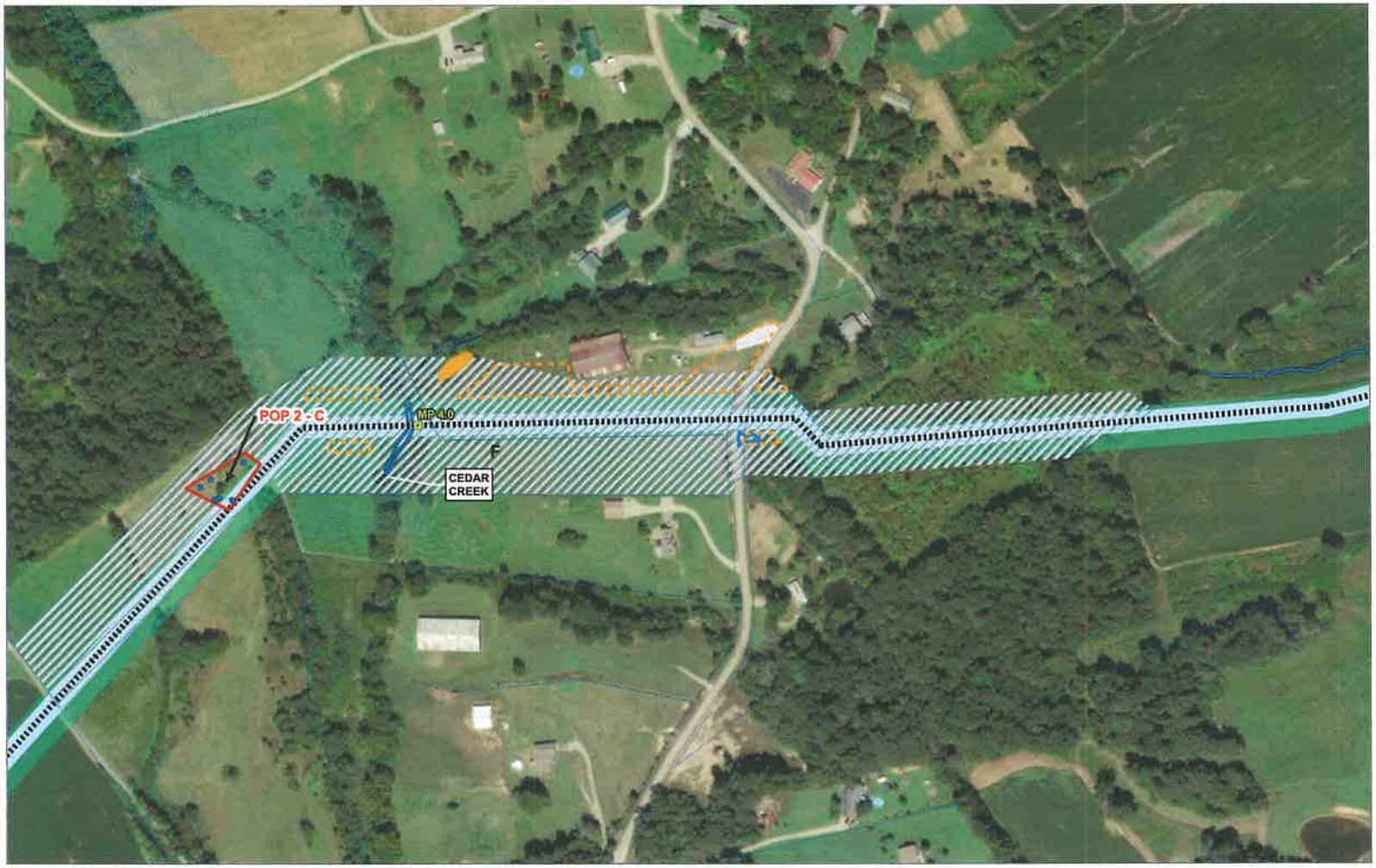

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Project No. J16X404800

Date: 8/30/2019

Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
709 Roosevelt Road Walkerton IN 46574 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3446
www.cardno.com

Legend

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1 inch = 250 feet

0 125 250 500 Feet

Project No. J16X404800

Date: 8/20/2019

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project

EN Engineering LLC

Bullitt County, Kentucky

Cardno

703 Rockwell Road, Wakefield, MA 01880 USA

Phone (+1) 978 586 3400 Fax (+1) 978 586 3446

www.cardno.com

Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
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1 inch = 250 feet

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Project No. J183004000

Date: 8/20/2019

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Figure 3. Kentucky Glade Cress Survey Area
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno

Legend

- 100 Yr Floodway
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- Property Lines

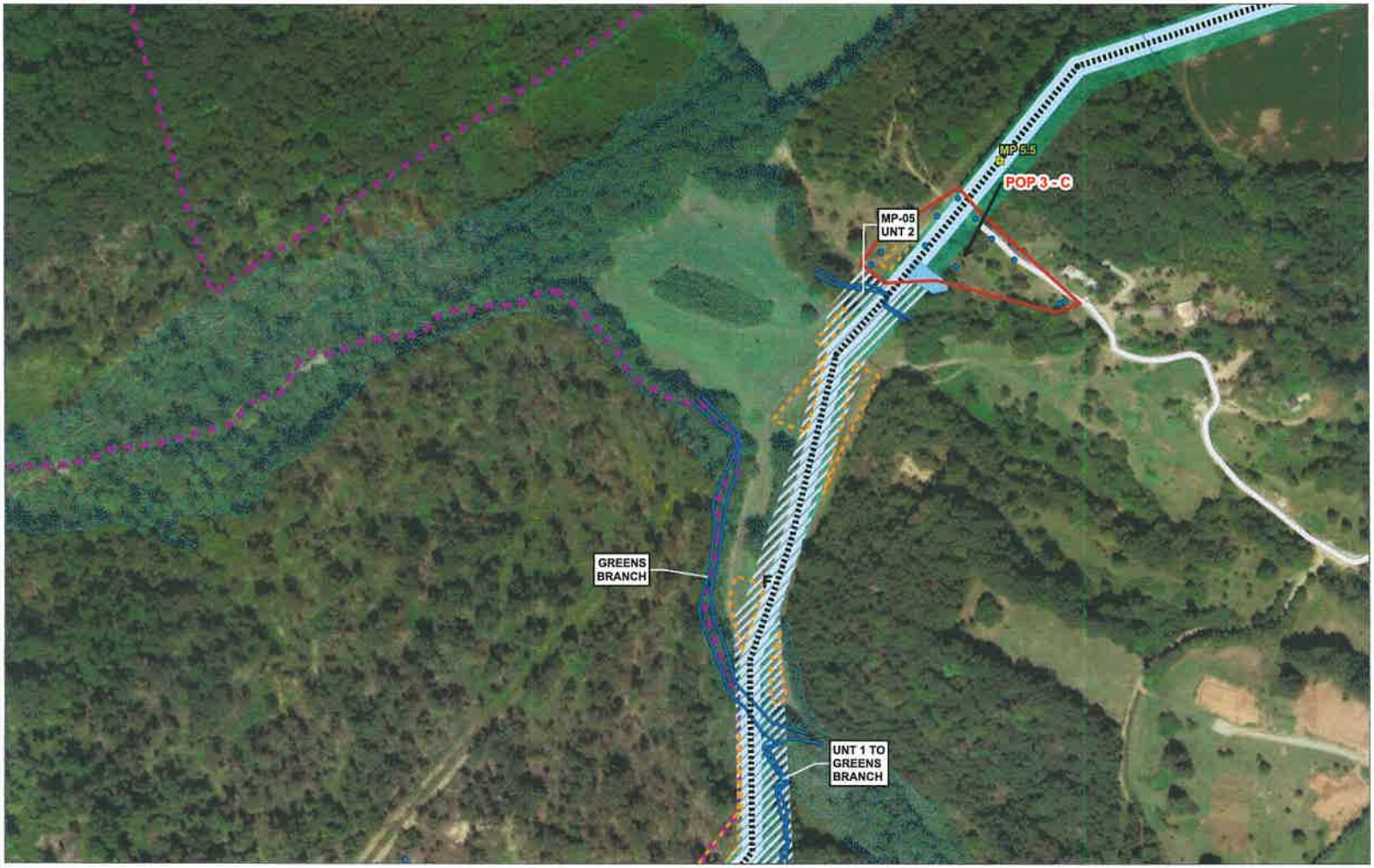
1 inch = 250 feet

0 125 250 500 Feet

Figure 3. Kentucky Glade Cress Survey Area
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno

Date: 8/20/2019



Legend

- 100 Yr Floodway
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- Existing Wetland
- Open Water
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- Temporary Work Space
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- Property Lines

1 inch = 250 feet

0 125 250 500 Feet

Project No: J103404800

Date: 8/20/2019

Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
704 Roosevelt Road, Walkerton, IN 46574 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3446
www.cardno.com

Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
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Project No. J16X404800

Date: 8/20/2019

Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project

EN Engineering LLC

Bullitt County, Kentucky

Cardno

205 Roosevelt Road, Walkerton, IN 46574 USA

Phone: (+1) 574 586 3400 Fax: (+1) 574 586 3445

www.cardno.com

Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
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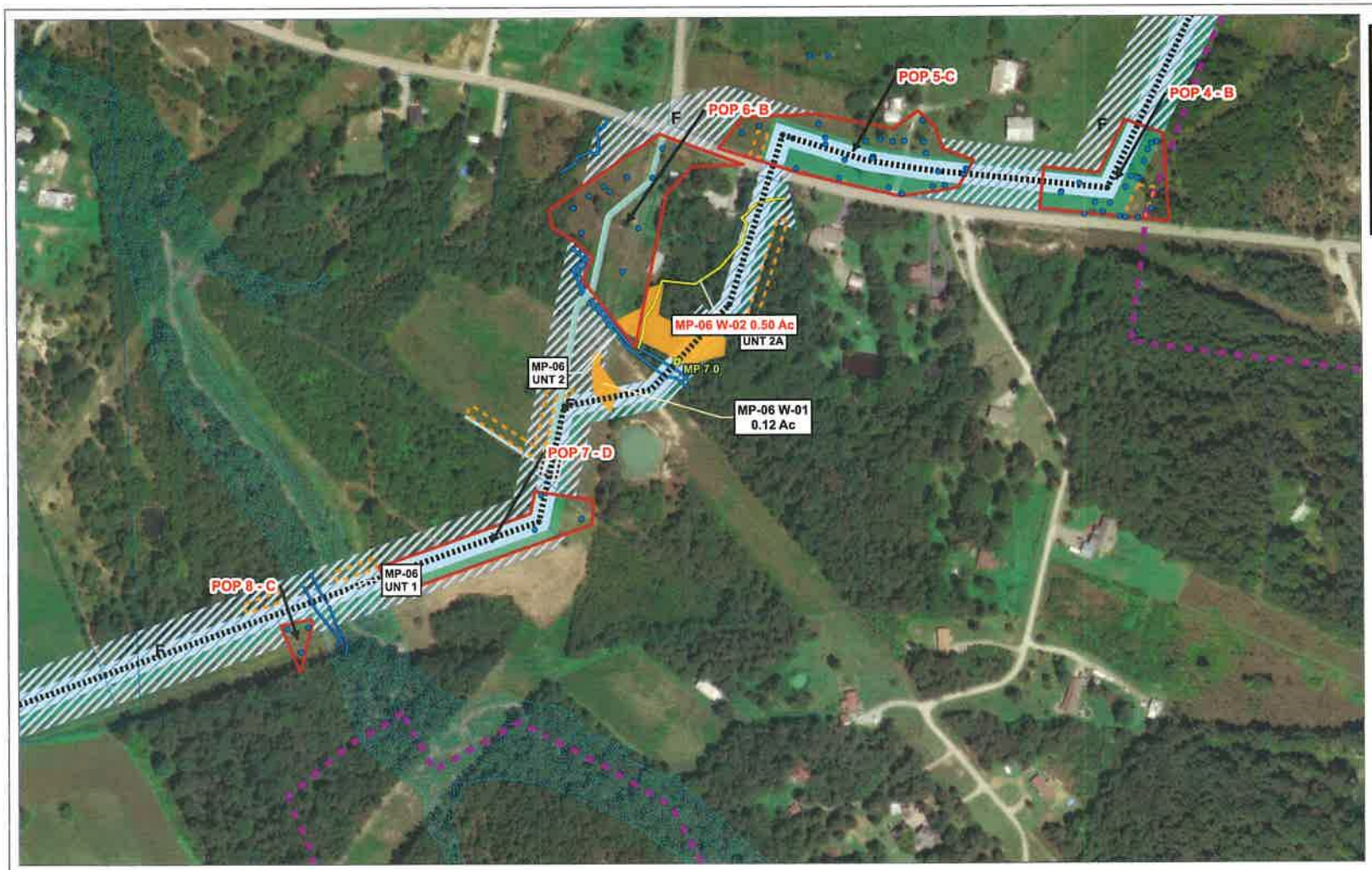
Figure 3. Kentucky Glade Cress Survey Area
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
Phone (+1) 574.586.3400 Fax (+1) 574.586.3446

Project No. 116404800
Date: 8/20/2018



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0 125 250 500 Feet

N W E S

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Project No. J16X404100

Data: 8/20/2019

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
709 Roosevelt Road Walkerton IN 46574 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3446
www.cardno.com

Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
- Glade Cress Observed
- Glade Cress Population Area
- Proposed Pipeline
- ATWS
- Mile Posts
- Construction Entrance
- Proposed Fence
- Cox Creek Drill Points
- Proposed Regulator Station
- Construction Storage Yard
- Temporary Access Road
- Permanent Access Road
- Existing LGE Easement
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
- Proposed Easement
- Temporary Work Space
- Federally Designated Critical Habitat Area
- Property Lines

1 inch = 250 feet

0 125 250 500 Feet

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Project No. J168404800

Date: 8/30/2019

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
703 Rosenwald Road, Walkerton, IN 46574 USA
Phone (+1) 574.586.3400 Fax (+1) 574.586.3446
www.cardno.com

Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
- Glade Cress Observed
- Glade Cress Population Area
- Proposed Pipeline
- ATWS
- Mile Posts
- Construction Entrance
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1 inch = 250 feet

0 125 250 500 Feet

Project No: J16X404800

Date: 8/20/2018

Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
715 Rockwell Road, Wilkesboro, NC 28697 USA
Phone (+1) 574 936 3400 Fax (+1) 574 936 3446
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Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
- Glade Cress Observed
- Glade Cress Population Area
- Proposed Pipeline
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0 125 250 500 Feet

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Project No. 3168454888

Date: 8/20/2019

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
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Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
- Glade Cress Observed
- Glade Cress Population Area
- Proposed Pipeline
- ATWS
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Project No: J16X404800

Date: 8/20/2019

Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
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www.cardno.com

Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
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Date: 8/20/2019

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
703 Roosevelt Road, Walkerton, IN 46574 USA
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www.cardno.com

Legend

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
703 Roosevelt Road, Walkerton, IN 46574 USA
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Legend

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Project No. J16X404800

Date: 8/20/2019

Figure 3. Kentucky Glade Cress Survey Area
Bullitt County Gas Transmission Line Pipeline Project
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Bullitt County, Kentucky

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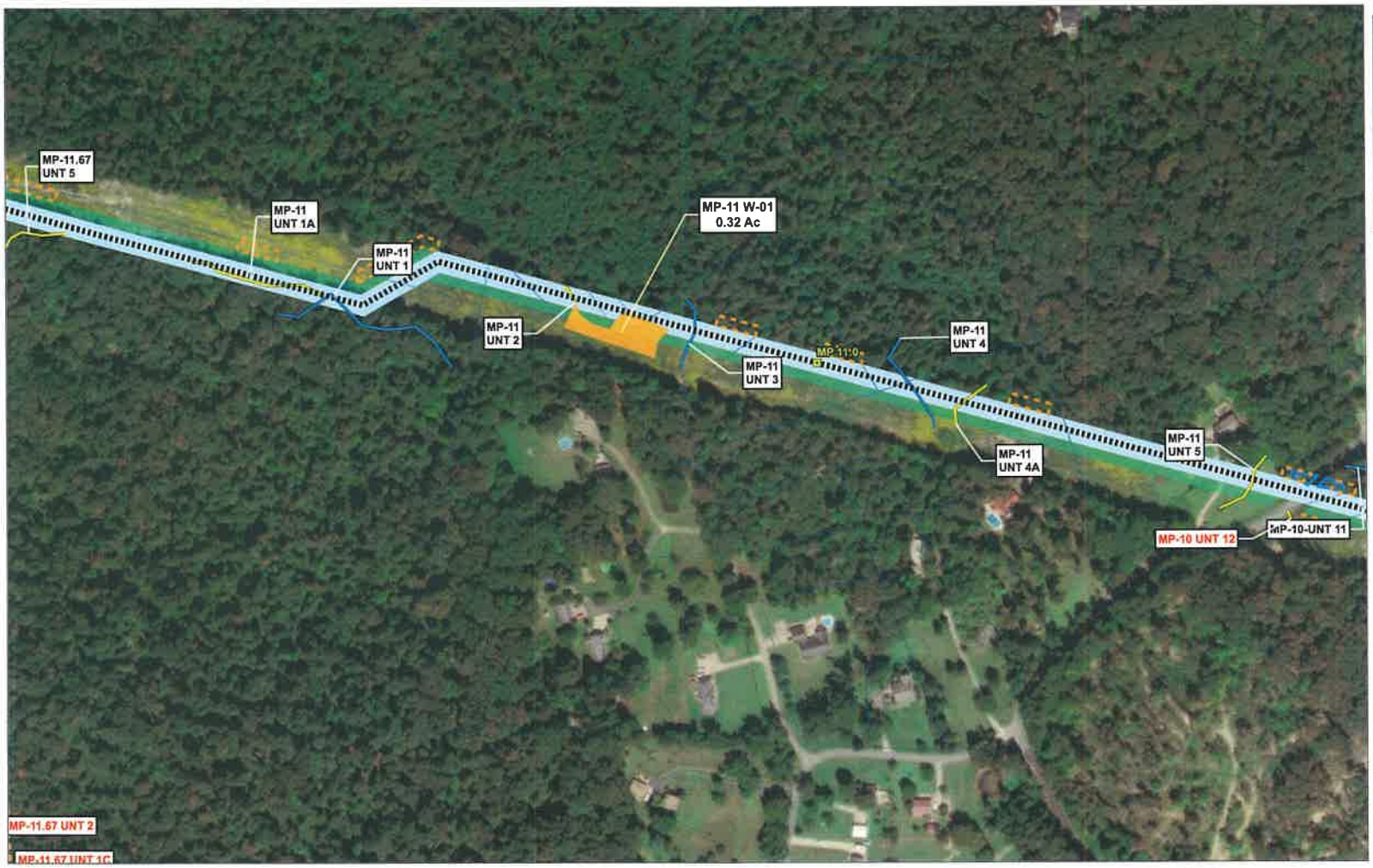

Legend

- 100 Yr Floodway
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1 inch = 250 feet

0 125 250 500 Feet

Project No. J16X404800

Date: 8/20/2018

Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Date: 8/30/2019

Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
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1 inch = 250 feet

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Project No. J16X404800

Date: 8/20/2018

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno

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Phone: (+1) 574.586.3400 Fax: (+1) 574.586.3446
www.cardno.com

Legend

- 100 Yr Floodway
- Areas Glade Cress surveyed was not observed
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- Glade Cress Population Area
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1 inch = 250 feet

0 125 250 500 Feet

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Project No. J16X404800

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Figure 3. Kentucky Glade Cress Survey Area

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
703 Roosevelt Road Walkerton IN 46574 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3448
www.cardno.com

Legend

- 100 Yr Floodway
- Glade Cress Population Area
- Areas Glade Cress surveyed was not observed
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1 inch = 100 feet

0 50 100 200 Feet

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Project No. J168404800

Date: 2/7/2020

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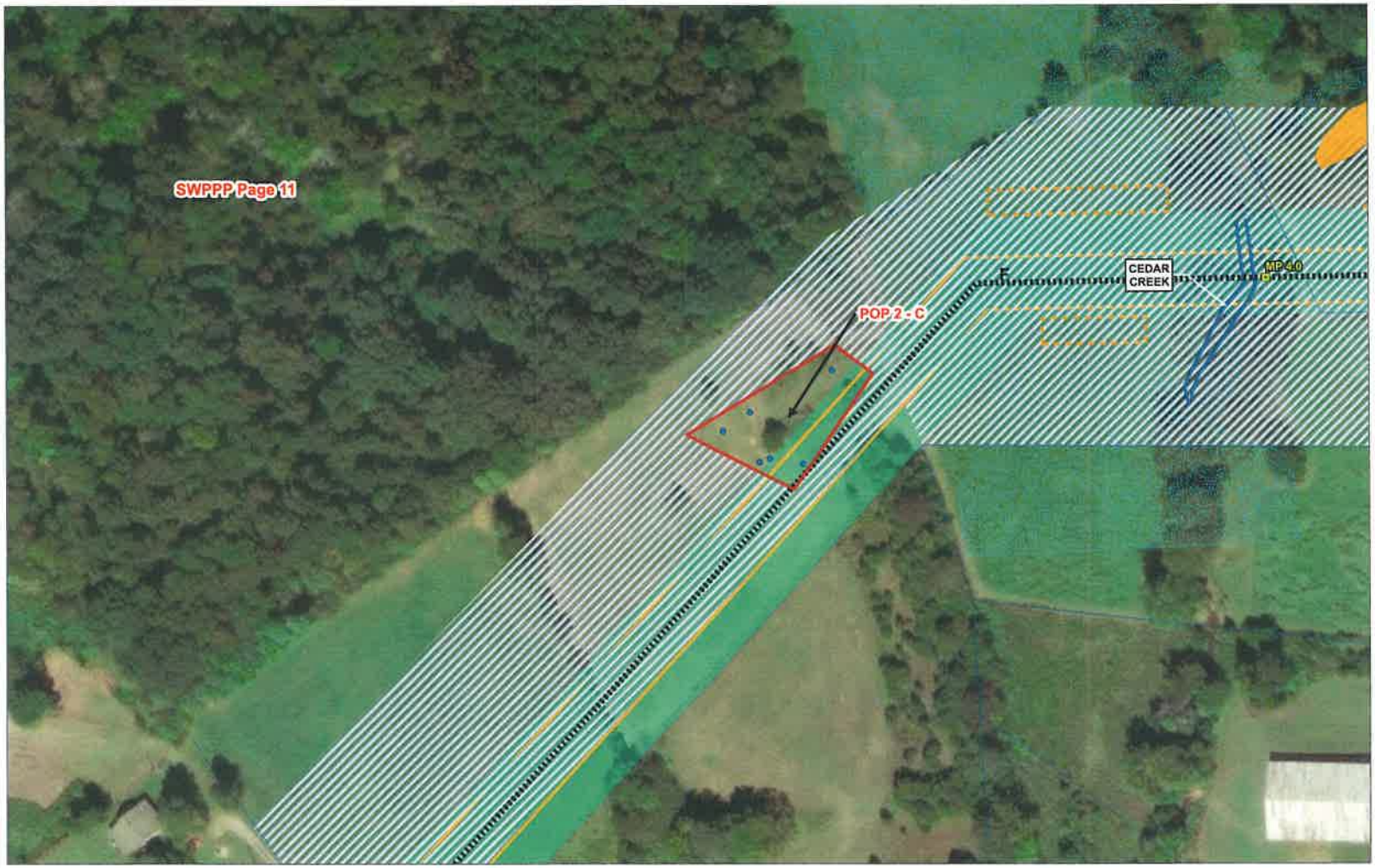
Figure 4. Kentucky Glade Cress Population Areas **Page 1 of 7**

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
703 Roosevelt Road Walkerton, IN 46574 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3446
www.cardno.com



Legend

- 100 Yr Floodway
- Glade Cress Population Area
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1 inch = 100 feet

0 50 100 200 Feet

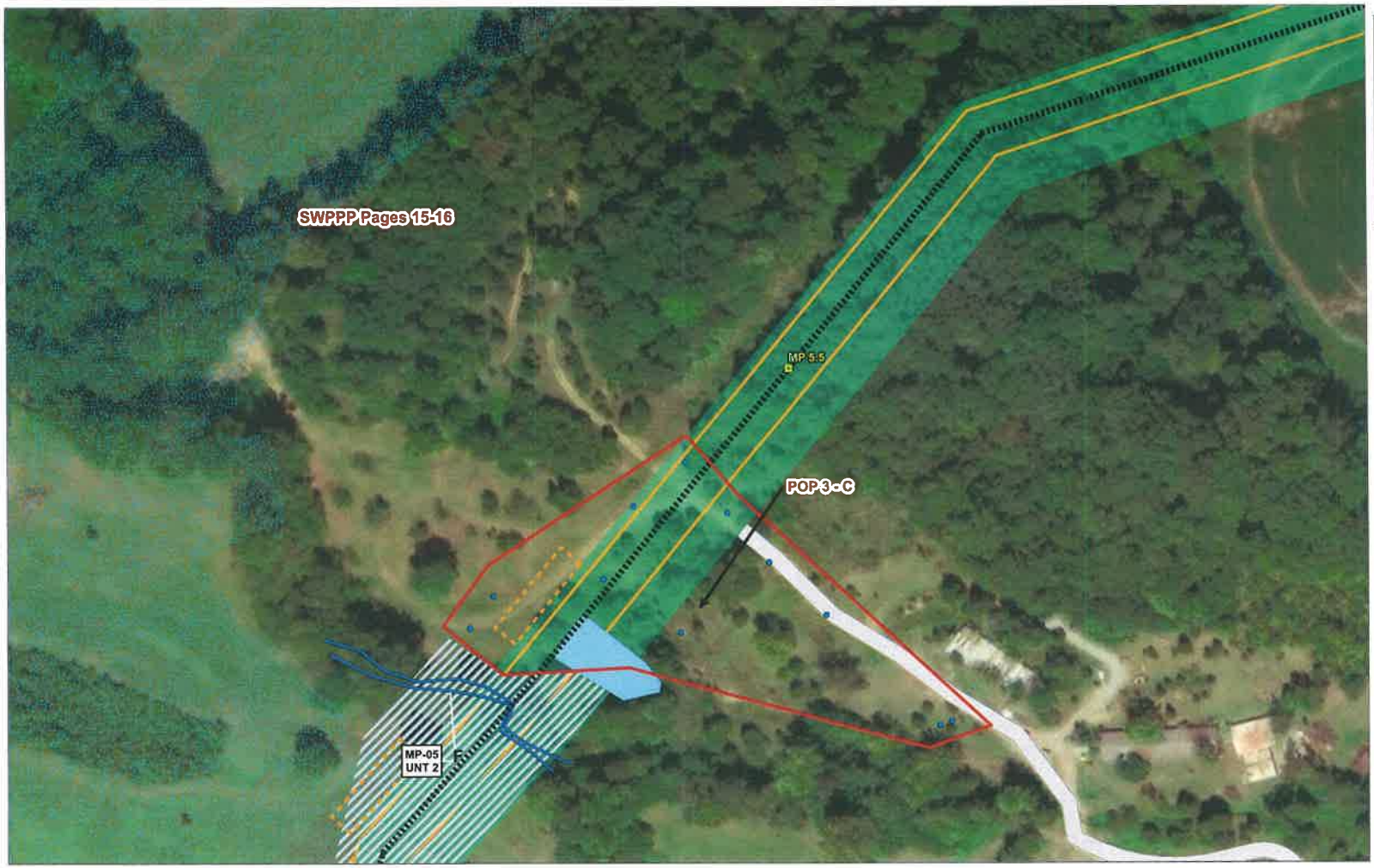
Project No J16X404800

Date: 2/7/2020

Figure 4. Kentucky Glade Cress Population Areas

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
728 Roosevelt Road Walkerton, IN 46574 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3446
www.cardno.com



Legend

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1 inch = 100 feet

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Project No. J16X404700

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Figure 4. Kentucky Glade Cress Population Areas **Page 3 of 7**

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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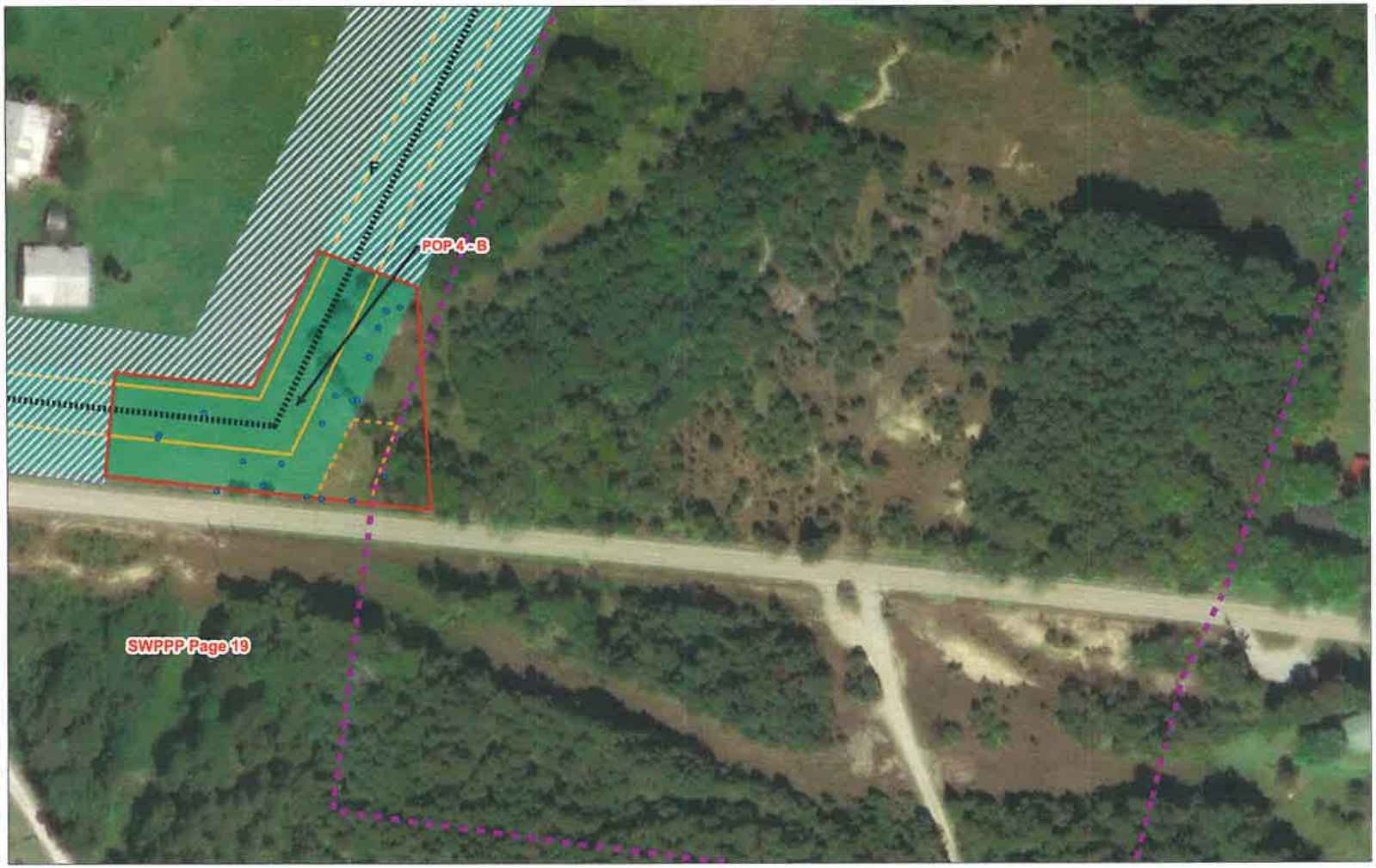

Legend

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- Glade Cress Population Area
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Figure 4. Kentucky Glade Cress Population Areas

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Project No. JHK404888

Date: 2/7/2020

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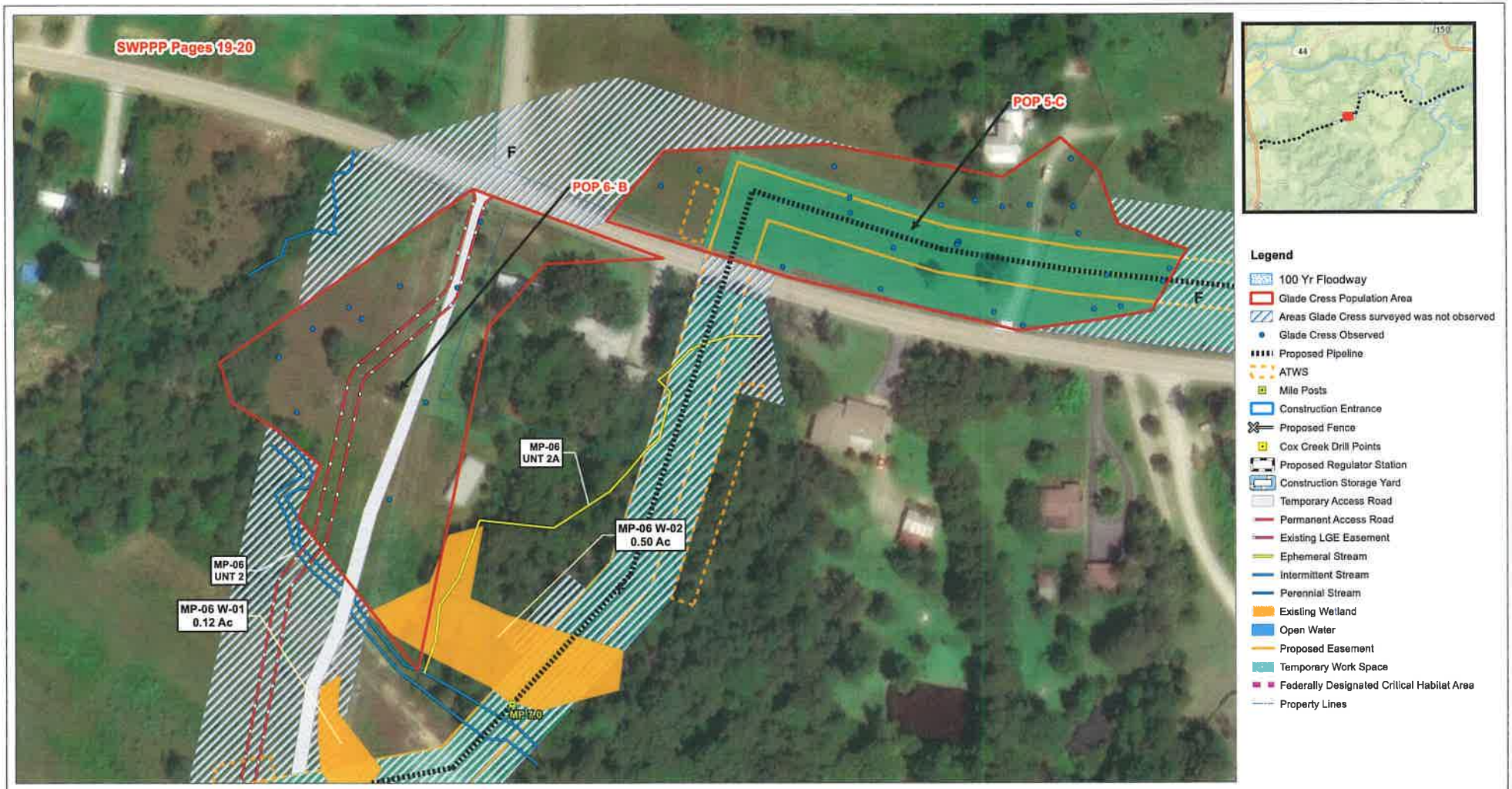

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Figure 4. Kentucky Glade Cress Population Areas

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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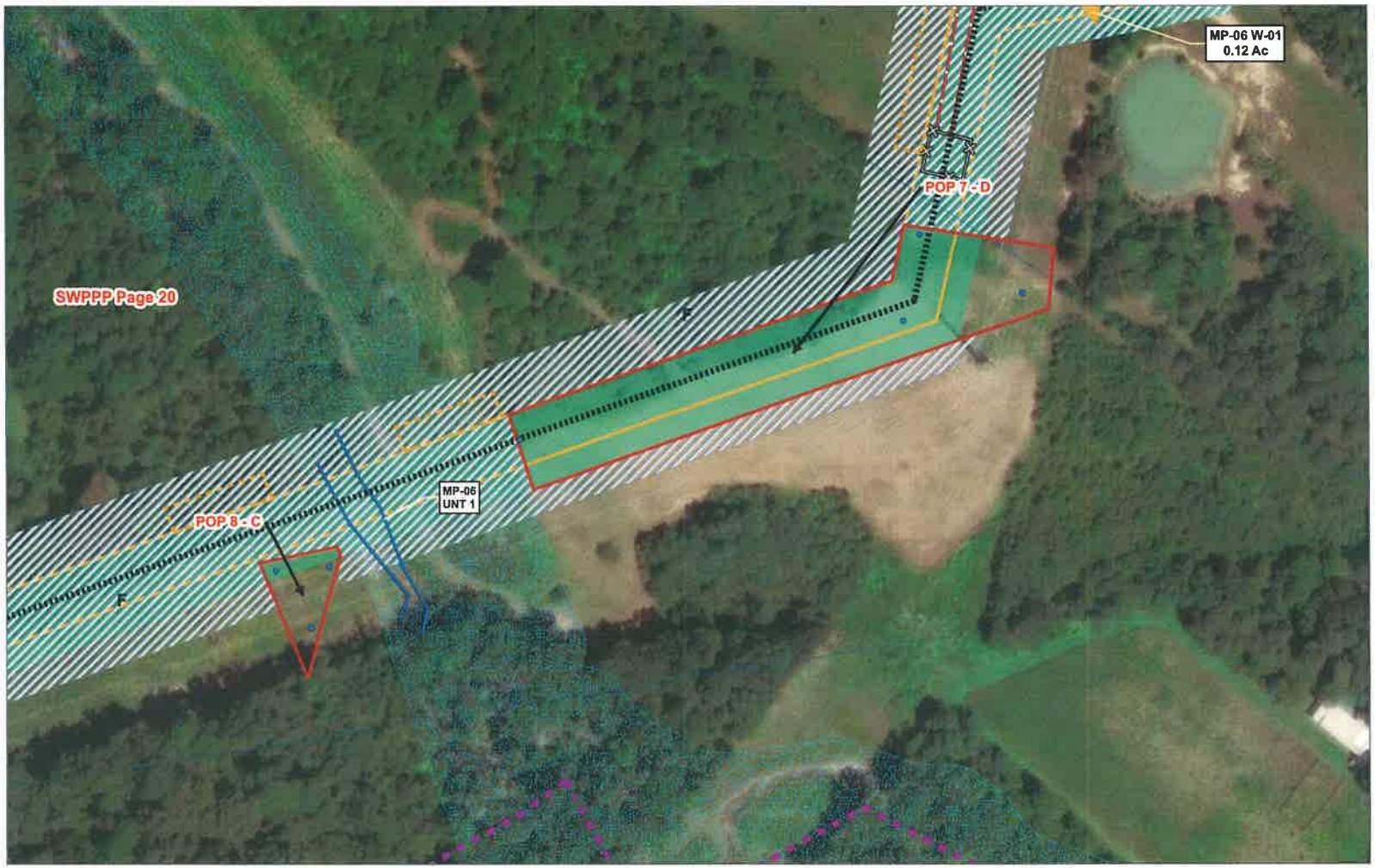

Legend

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1 inch = 100 feet

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Project No. J163404800

Date: 2/7/2020

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Figure 4. Kentucky Glade Cress Population Areas **Page 6 of 7**

Bullitt County Gas Transmission Line Pipeline Project
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Bullitt County, Kentucky

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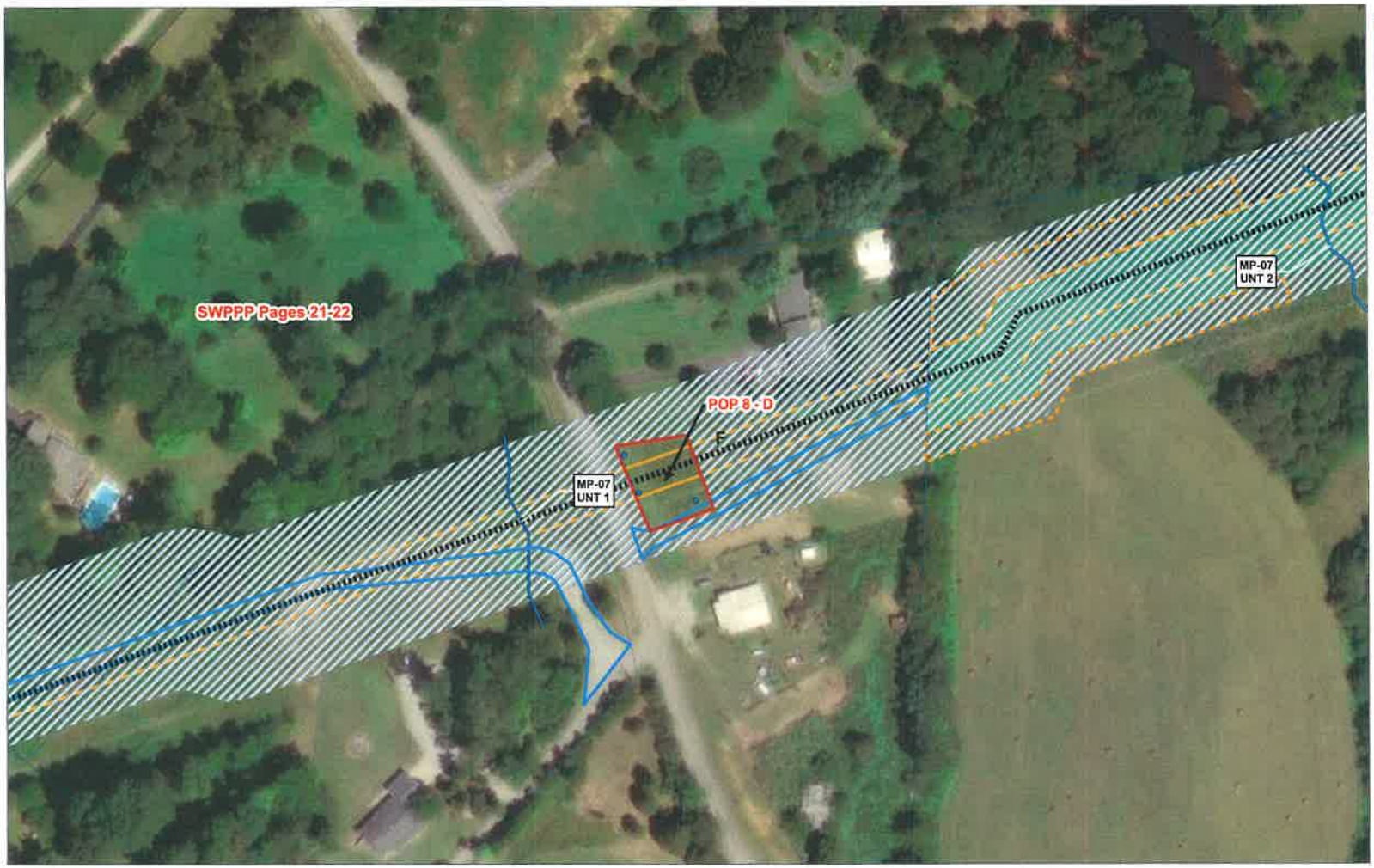
Phone (+1) 574 566 3400 Fax (+1) 574 566 3446
www.cardno.com



Legend

- 100 Yr Floodway
- Glade Cress Population Area
- Areas Glade Cress surveyed was not observed
- Glade Cress Observed
- Proposed Pipeline
- ATWS
- Mile Posts
- Construction Entrance
- Proposed Fence
- Cox Creek Drill Points
- Proposed Regulator Station
- Construction Storage Yard
- Temporary Access Road
- Permanent Access Road
- Existing LGE Easement
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Existing Wetland
- Open Water
- Proposed Easement
- Temporary Work Space
- Federally Designated Critical Habitat Area
- Property Lines

1 inch = 100 feet

0 50 100 200 Feet

N W E S

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Project No. 115040800

Date: 2/7/2020

Basemap: Current map may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, Increment P Corp., Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 4. Kentucky Glade Cress Population Areas **Page 7 of 7**

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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723 Rosscraft Road Walkerton IN 46574 USA
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Figure 4b: Kentucky Glade Cress Area Best Management Practices

a PPL company

LOUISVILLE GAS & ELECTRIC

12" BULLITT COUNTY PIPELINE
STORM WATER POLLUTION PREVENTION PLAN

Table 1: Slope Mitigation Best Management Practices

BMP Number	Station (approx.) From	Station (approx.) To	Reason for BMP: Stream or Wetland Crossing	Reason for BMP: Steep Slope Area	Reason for BMP: Side Slope Area	Reason for BMP: High Soil Slippage Area	Recommended Surface BMP: Trench Breakers (linear ft, 50 ft. each)	Recommended Surface BMP: Slope Breakers (linear ft, 50 ft. each)	Recommended Surface BMP: Temporary Drainage Ditch (linear ft)	Recommended Subsurface BMP: French Drain (linear ft)	Detailed Exhibit (Appendix C)
1	11+00	11+25	X				100	100			Exhibit-02 & Exhibit-03 Shts 1 & 2
2	28+60	28+80	X				100	100			
3	40+20	40+40	X				100	100			
4	62+15	62+35	X				100	100			
5	114+40	114+50	X				50	50			
6	134+50	134+60	X				50	50			
7	160+00	160+10		X			50	50			
8	186+25	194+00			X				775		Exhibit-04
9	198+40	198+50		X			50	50			Exhibit-02 & Exhibit-03 Shts 1 & 2
10	203+60	203+55		X			50	50			
11	204+60	204+70		X			50	50			
12	212+75	212+95	X				100	100			
13	216+50	216+60		X			50	50			
14	258+80	258+90		X			50	50			
15	274+40	274+50		X			50	50			
16	277+30	281+50			X				420		Exhibit-04
17	279+00	279+10		X			50	50			Exhibit-02 & Exhibit-03 Shts 1 & 2
18	292+30	292+40		X			50	50			
19	293+30	293+40		X			50	50			
20	294+70	294+80	X				100	100			
21	295+60	295+70	X				100	100			
22	296+00	296+20	X				100	100			
23	306+80	307+10	X				100	100			
24	308+40	308+50		X			50	50			
25	310+20	310+30		X			50	50			
26	312+40	316+90			X				450		Exhibit-04

NOTES:

1. ALL SILT FENCE AND CONSTRUCTION FENCE PLACEMENT SHOWN IN THE SWPPP IS APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR CORRECT PLACEMENT OF ALL ENVIRONMENTAL BMPs PER THE SWPPP DRAWINGS AND ALL ASSOCIATED REFERENCED AND NON-REFERENCED EXHIBITS.

2. CONTRACTOR MAY NEED TO ADJUST THE LOCATION OR TYPE OF BMPs IN THE FIELD. HOWEVER, CONTRACTOR SHALL NOT MAKE ANY BMP FIELD MODIFICATIONS, ESPECIALLY IN GLADE CRESS HABITAT AREAS, WITHOUT PRIOR APPROVAL FROM COMPANY.

3. WHERE SUBSURFACE SEEPS OR SPRINGS ARE ENCOUNTERED IN THE FIELD, ENHANCED SUBSURFACE DRAINAGE TECHNIQUES MAY BE REQUIRED, SUCH AS GERMAN DRAINS OR TARGETED SEEP DRAINS.
(SEE APENDIX C, EXHIBITS 06 AND 07)

4. THE COMPANY REPRESENTATIVE SHALL DETERMINE FINAL PLACEMENT OF SUBSURFACE DRAINAGE BMPS.

REV	DESCRIPTION	DATE
3	GENERAL REVISIONS	12/23/2019
2	REVISED BMPs	11/4/2019
1	REVISED ROUTE	5/19/2019
0	ISSUED FOR BID	1/15/2019

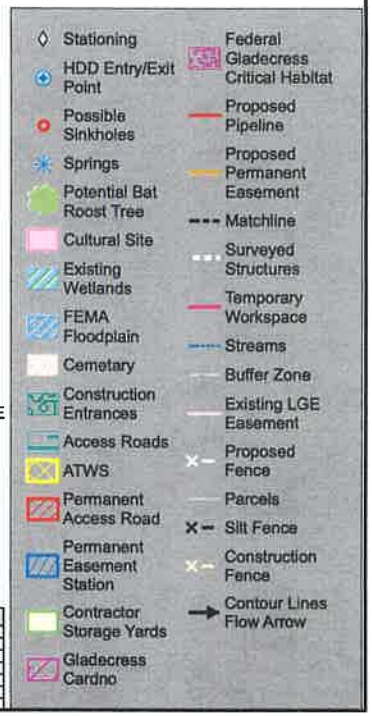


Figure 4b: Kentucky Glade Cress Area Best Management Practices

Table 1: Slope Mitigation Best Management Practices

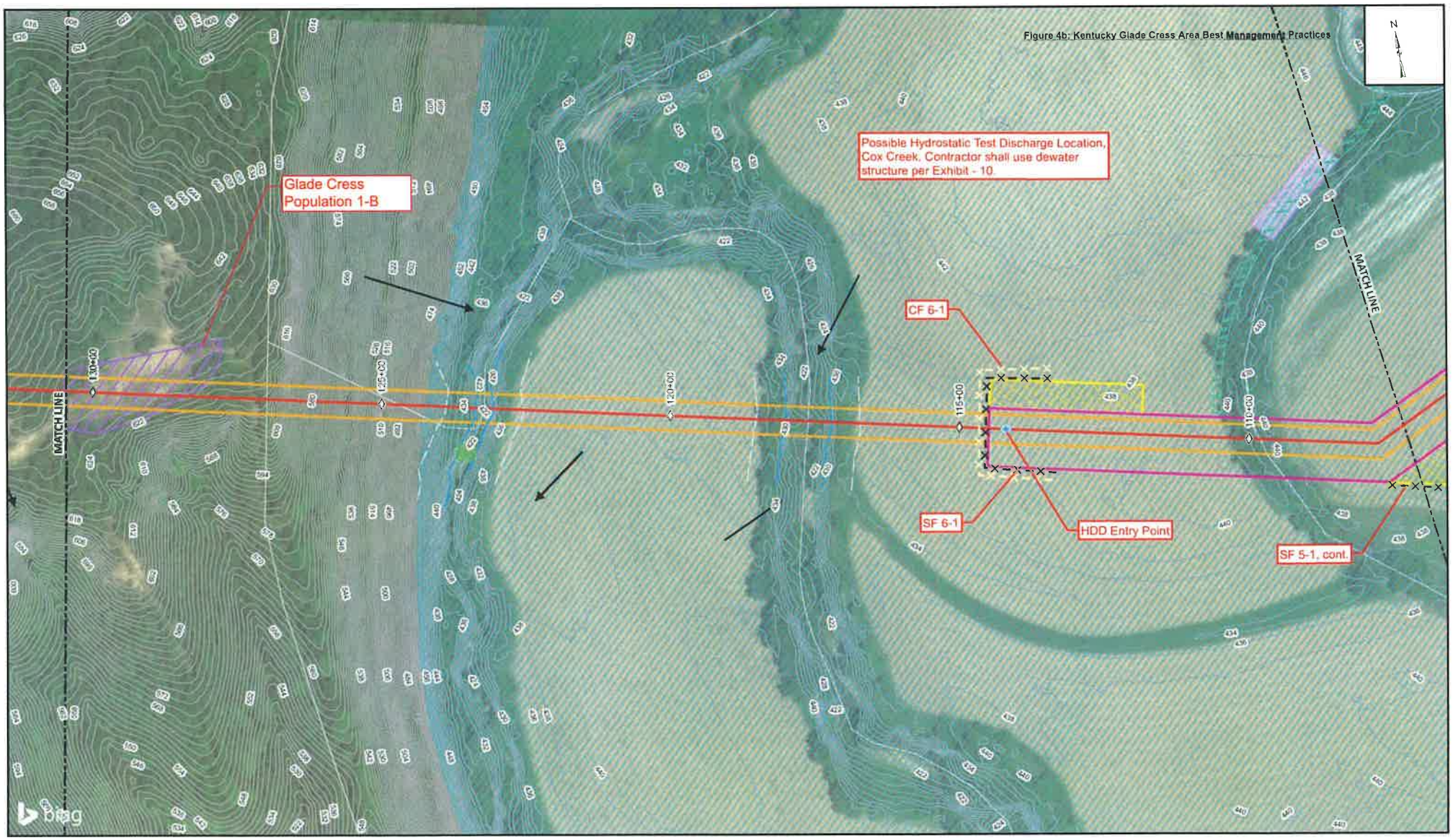
BMP Number	Station (approx.)		Reason for BMP				Recommended Surface BMP			Recommended Subsurface BMP	Detailed Exhibit (Appendix C)
	From	To	Stream or Wetland Crossing	Steep Slope Area	Side Slope Area	High Soil Slippage Area	Trench Breakers (linear ft., 50 ft. each)	Slope Breakers (linear ft., 50 ft. each)	Temporary Drainage Ditch (linear ft)	French Drain (linear ft)	
27	318+40	318+60	X				100	100			
28	320+20	320+20		X			50	50			Exhibit-02 & Exhibit-03 Shts 1 & 2
29	322+10	322+20		X			50	50			
30	328+00	328+10		X			50	50			
31	335+00	338+50			X				350		Exhibit-04
32	348+30	348+40		X			50	50			
33	359+95	360+05	X				100	100			
34	363+40	365+10	X				100	100			
35	366+20	366+80	X				100	100			Exhibit-02 & Exhibit-03 Shts 1 & 2
36	376+05	376+40	X				100	100			
37	378+25	378+35		X			50	50			
38	410+00	410+10		X			50	50			
39	413+00	413+10		X			50	50			
40	414+30	418+75			X				445		Exhibit-04
41	415+00	415+10		X			50	50			Exhibit-02 & Exhibit-03 Shts 1 & 2
42	416+80	433+30				X				1,650	Exhibit-05
43	417+30	417+40		X			50	50			
44	418+35	418+45		X			50	50			
45	420+30	420+40		X			50	50			
46	422+30	422+40		X			50	50			
47	423+30	423+40		X			50	50			
48	425+80	425+90		X			50	50			
49	426+80	426+90		X			50	50			Exhibit-02 & Exhibit-03 Shts 1 & 2
50	428+80	428+90		X			50	50			
51	430+80	430+90		X			50	50			
52	431+80	431+90		X			50	50			
53	432+80	432+90		X			50	50			
54	433+80	433+90		X			50	50			
55	434+80	434+90		X			50	50			
56	435+90	436+00		X			50	50			
57	436+10	447+70				X				1,160	Exhibit-05
58	438+40	438+60	X				100	100			Exhibit-02 & Exhibit-03 Shts 1 & 2
59	439+00	443+00			X				400		Exhibit-04
60	443+10	443+30	X				100	100			
61	446+10	446+20		X			50	50			Exhibit-02 & Exhibit-03 Shts 1 & 2
62	449+20	449+40	X				100	100			

Table 1: Slope Mitigation Best Management Practices

BMP Number	Station (approx.)		Reason for BMP				Recommended Surface BMP			Recommended Subsurface BMP	Detailed Exhibit (Appendix C)
	From	To	Stream or Wetland Crossing	Steep Slope Area	Side Slope Area	High Soil Slippage Area	Trench Breakers (linear ft, 50 ft. each)	Slope Breakers (linear ft., 50 ft. each)	Temporary Drainage Ditch (linear ft)	French Drain (linear ft)	
63	449+70	451+15				X				145	Exhibit-05
64	457+70	457+90	X				100	100			Exhibit-02 & Exhibit-03 Shts 1 & 2
65	453+90	454+00		X			50	50			
66	461+15	469+50				X				835	Exhibit-05
67	464+30	464+40		X			50	50			
68	466+30	466+40		X			50	50			Exhibit-02 & Exhibit-03 Shts 1 & 2
69	467+30	467+40		X			50	50			
70	473+60	482+40				X				880	Exhibit-05
71	475+25	475+35		X			50	50			
72	477+25	477+35		X			50	50			
73	478+25	478+35		X			50	50			
74	479+25	479+35		X			50	50			
75	481+25	481+35		X			50	50			Exhibit-02 & Exhibit-03 Shts 1 & 2
76	482+25	482+25		X			50	50			
77	484+00	484+10		X			50	50			
78	484+95	485+05	X				100	100			
79	488+10	488+30	X				100	100			
80	490+00	491+00			X				100		Exhibit-04
81	491+45	491+65	X				100	100			Exhibit-02 & Exhibit-03 Shts 1 & 2
82	492+20	493+45			X				125		Exhibit-04
83	493+50	500+70				X				720	Exhibit-05
84	493+70	493+90	X				100	100			Exhibit-02 & Exhibit-03 Shts 1 & 2
85	494+95	496+30			X				135		Exhibit-04
86	496+70	496+90	X				100	100			
87	498+40	498+60	X				100	100			
88	506+85	507+05	X				100	100			Exhibit-02 & Exhibit-03 Shts 1 & 2
89	512+00	513+60	X				100	100			
90	516+90	517+10	X				100	100			
91	519+60	527+40				X				780	Exhibit-05
92	519+65	519+75		X			50	50			
93	521+65	521+75		X			50	50			
94	523+65	523+75		X			50	50			Exhibit-02 & Exhibit-03 Shts 1 & 2
95	524+65	524+75		X			50	50			
96	525+65	525+75		X			50	50			
97	533+30	549+40				X				1,610	Exhibit-05
98	535+70	535+90	X				100	100			Exhibit-02 & Exhibit-03 Shts 1 & 2
99	536+05	538+85			X				280		Exhibit-04
100	538+90	540+70	X				100	100			Exhibit-02 & Exhibit-03 Shts 1 & 2
101	540+80	544+80			X				400		Exhibit-04

REV	DESCRIPTION	DATE
3	GENERAL REVISIONS	12/23/2019
2	REVISED BMPs	11/4/2019
1	REVISED ROUTE	3/19/2019
0	ISSUED FOR BID	1/15/2019

Figure 4b: Kentucky Glade Cress Area Best Management Practices



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3	12/23/2019	PV	General Revisions
2	11/4/2019	PV	Revised BMPs
1	10/15/2019	PV	Revised Route
0	10/10/2019	PV	Issued for Bid

REVISION TABLE

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LG&E 12" BULLITT COUNTY PIPELINE SWPP PLAN

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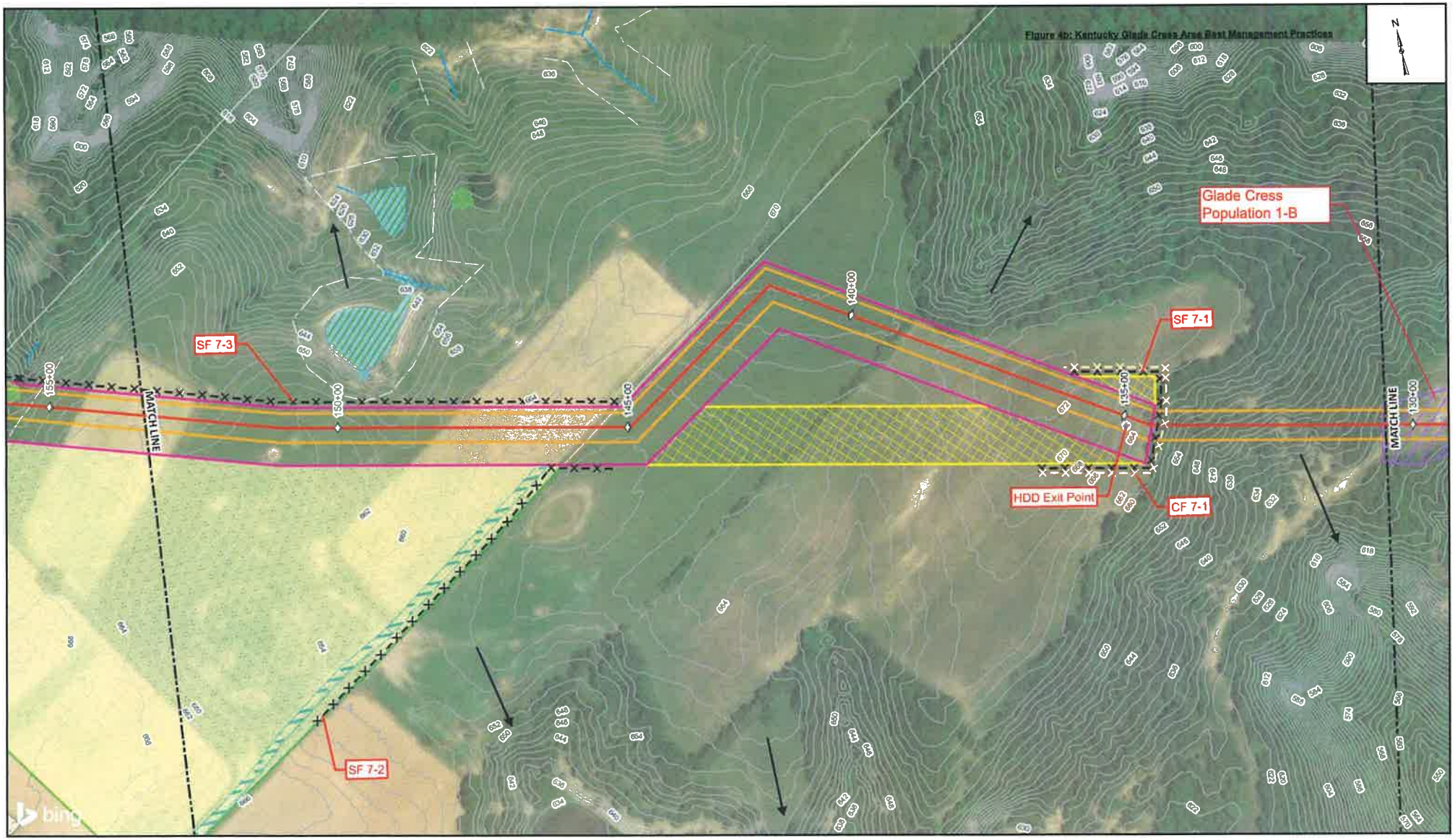

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0	1/15/2019	PV	Issued for Bid

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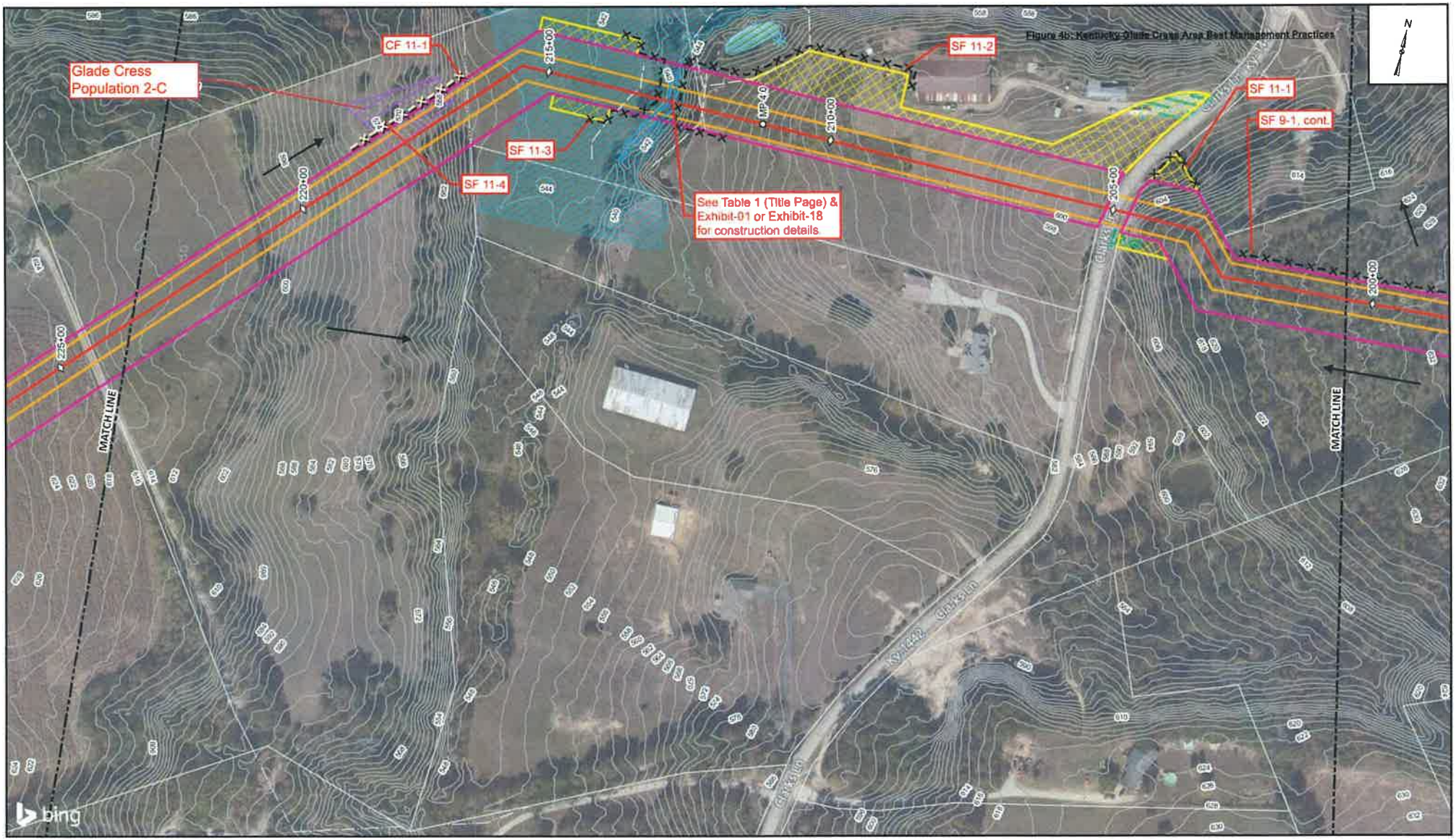

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1	3/15/2019	PV	Revised Route
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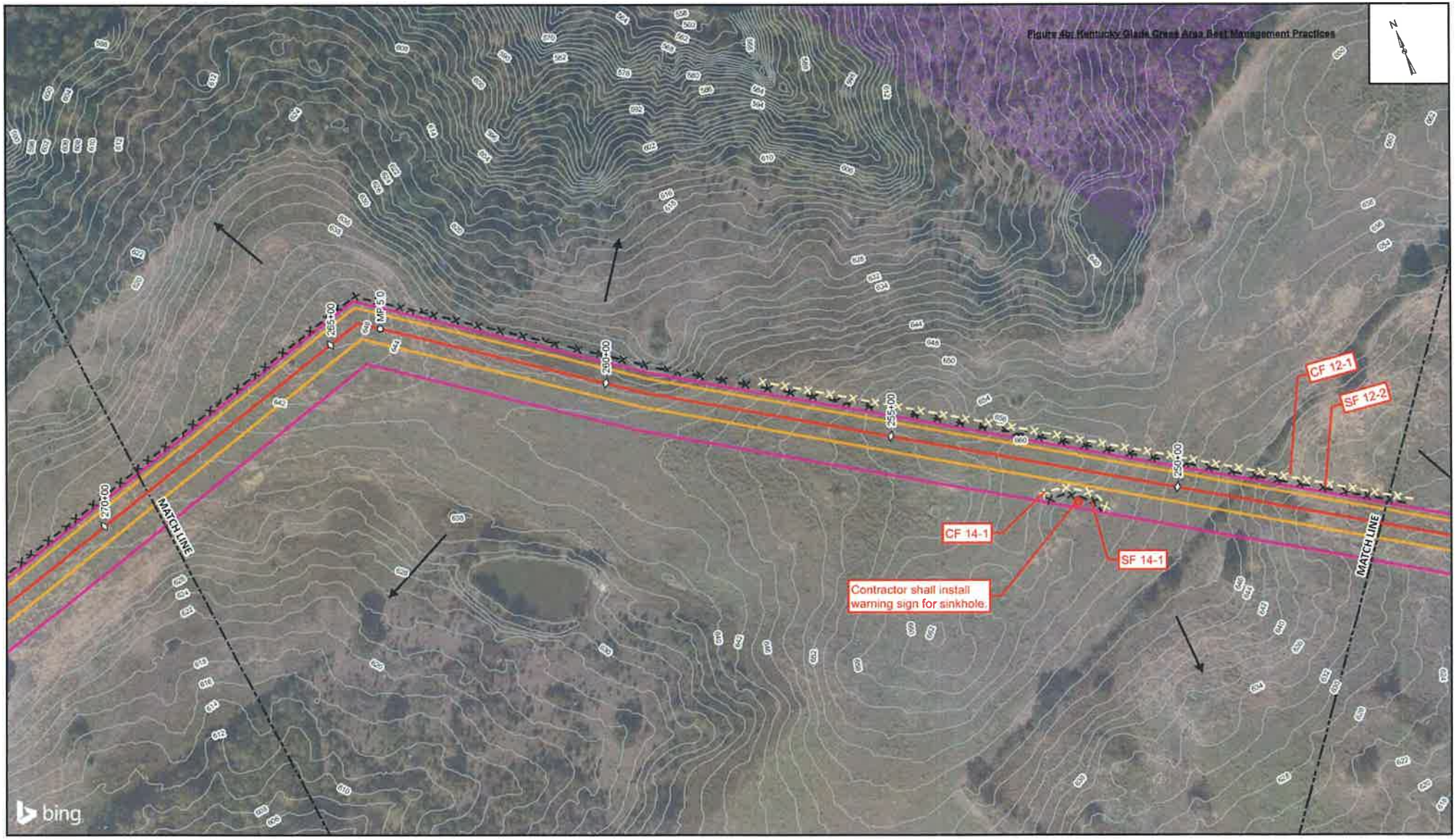

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1	3/18/2019	PV	Revised Route
0	1/15/2019	PV	Issued for Bid

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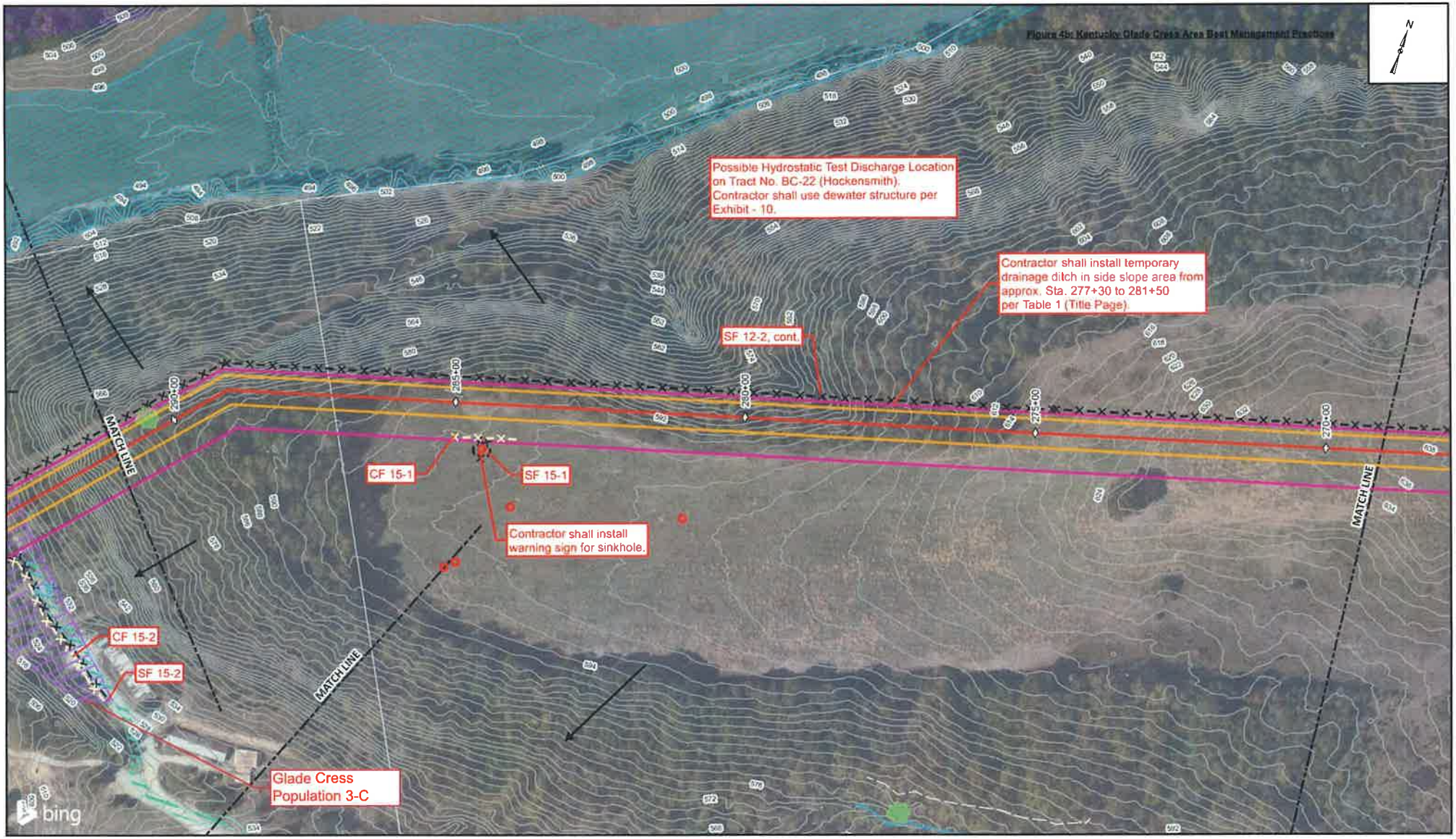

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1	3/18/2019	PV	Revised Route
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LG&E 12" BULLITT COUNTY PIPELINE SWPP PLAN

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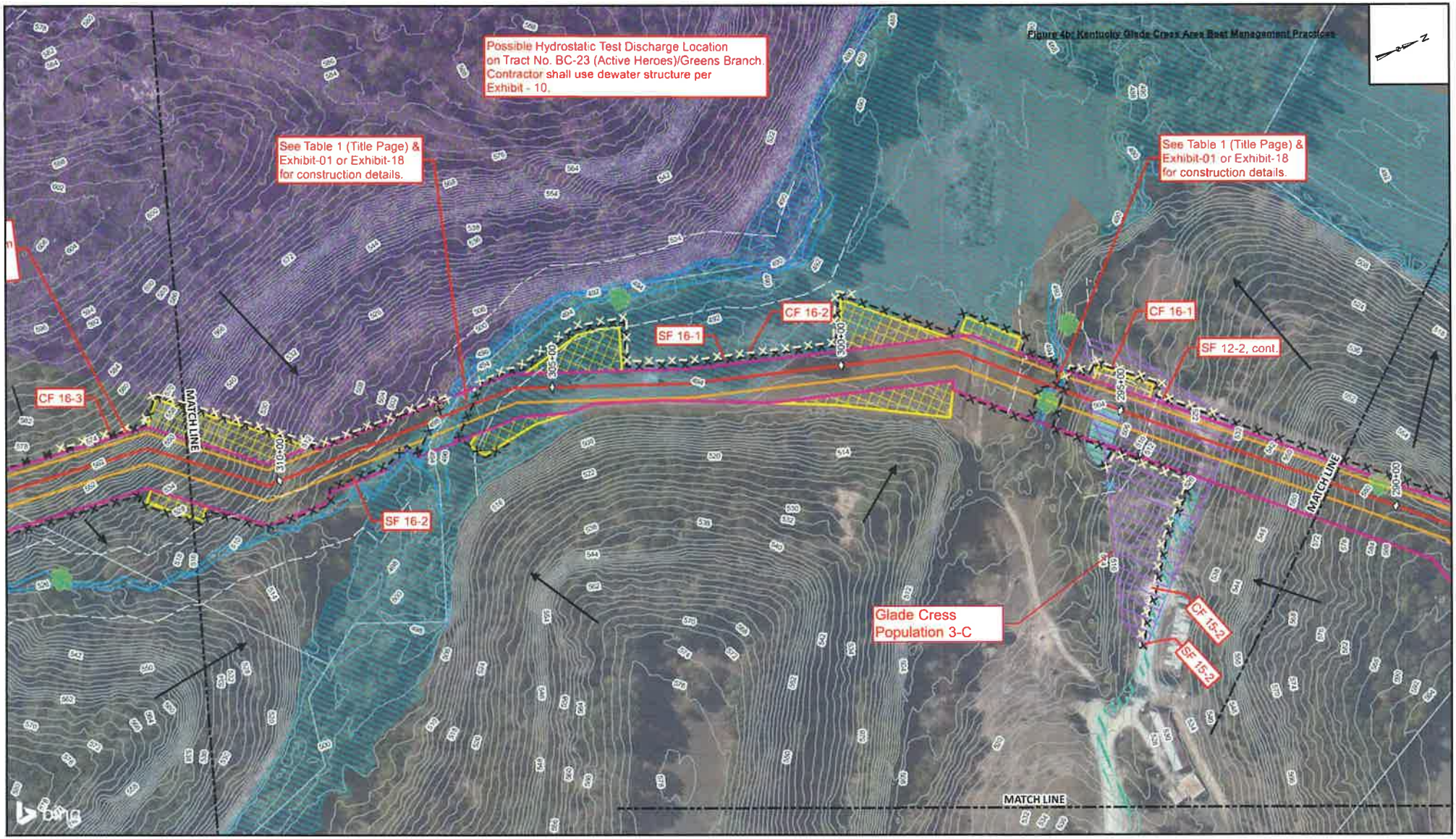

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LG&E 12" BULLITT COUNTY PIPELINE SWPP PLAN

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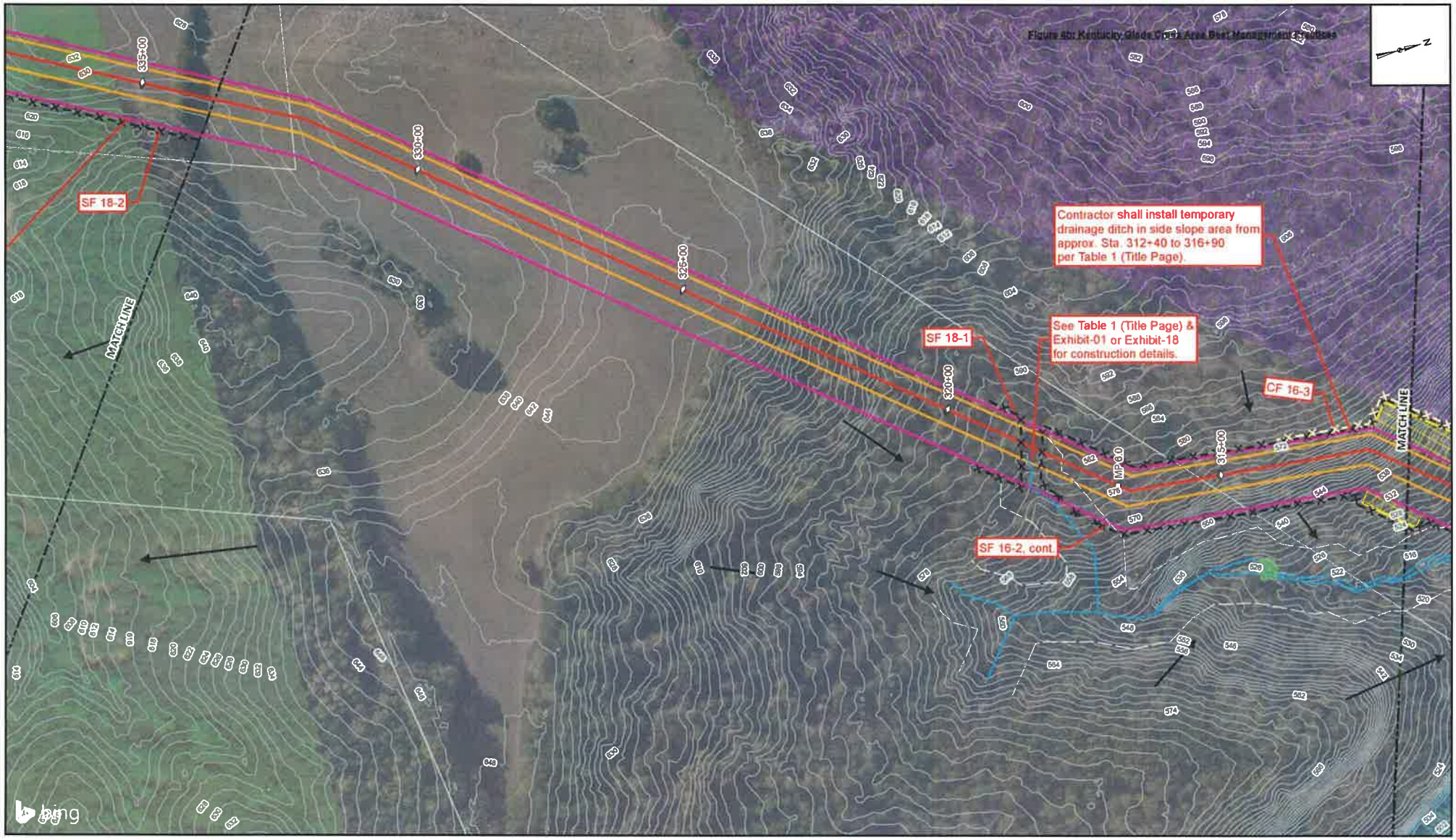

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1	3/19/2019	PV	Revised Route
0	1/15/2019	PV	Issued for Bid

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LG&E 12" BULLITT COUNTY PIPELINE SWPP PLAN

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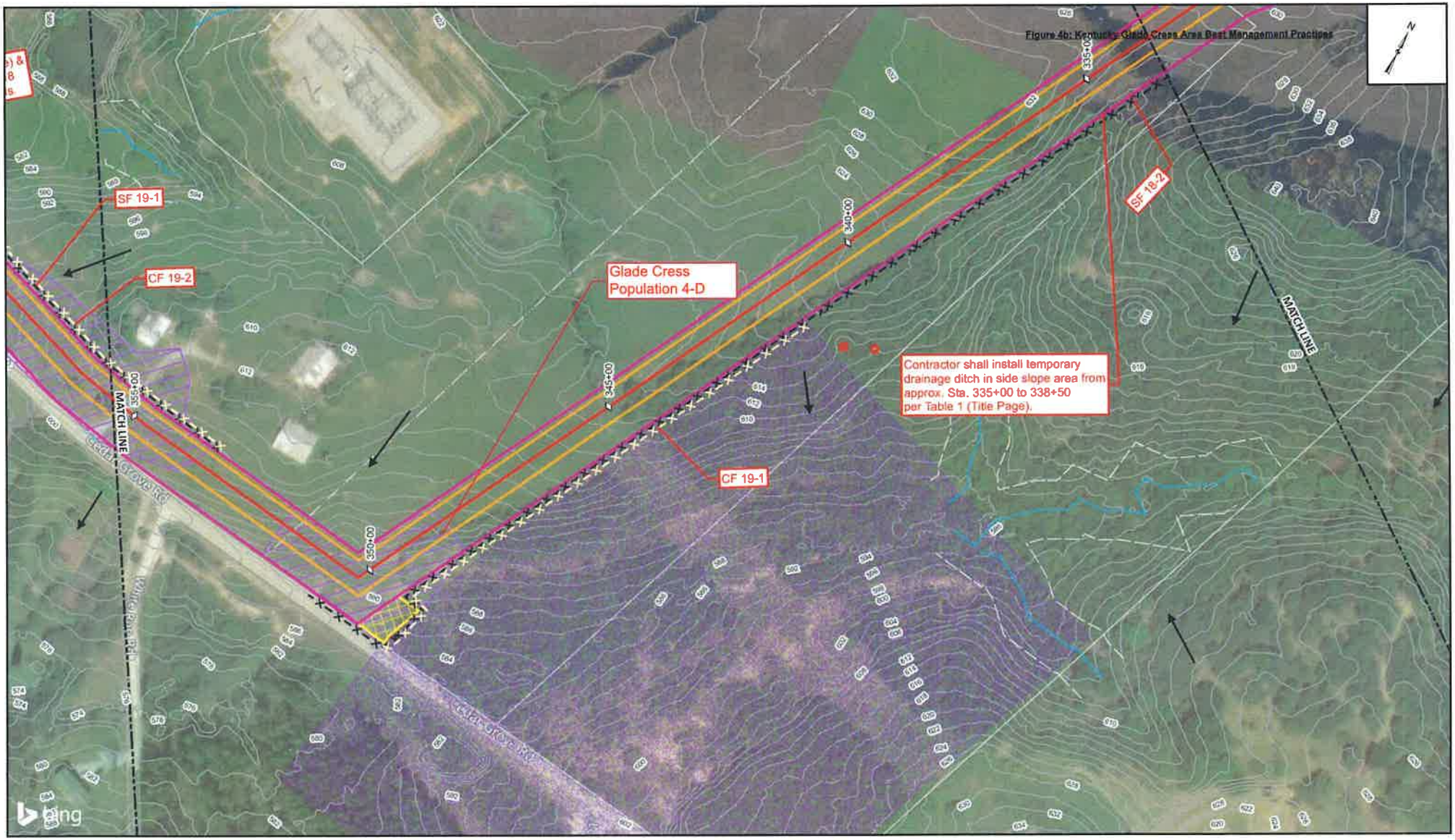

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1	3/19/2019	PV	Revised Route
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LG&E 12" BULLITT COUNTY PIPELINE SWPP PLAN

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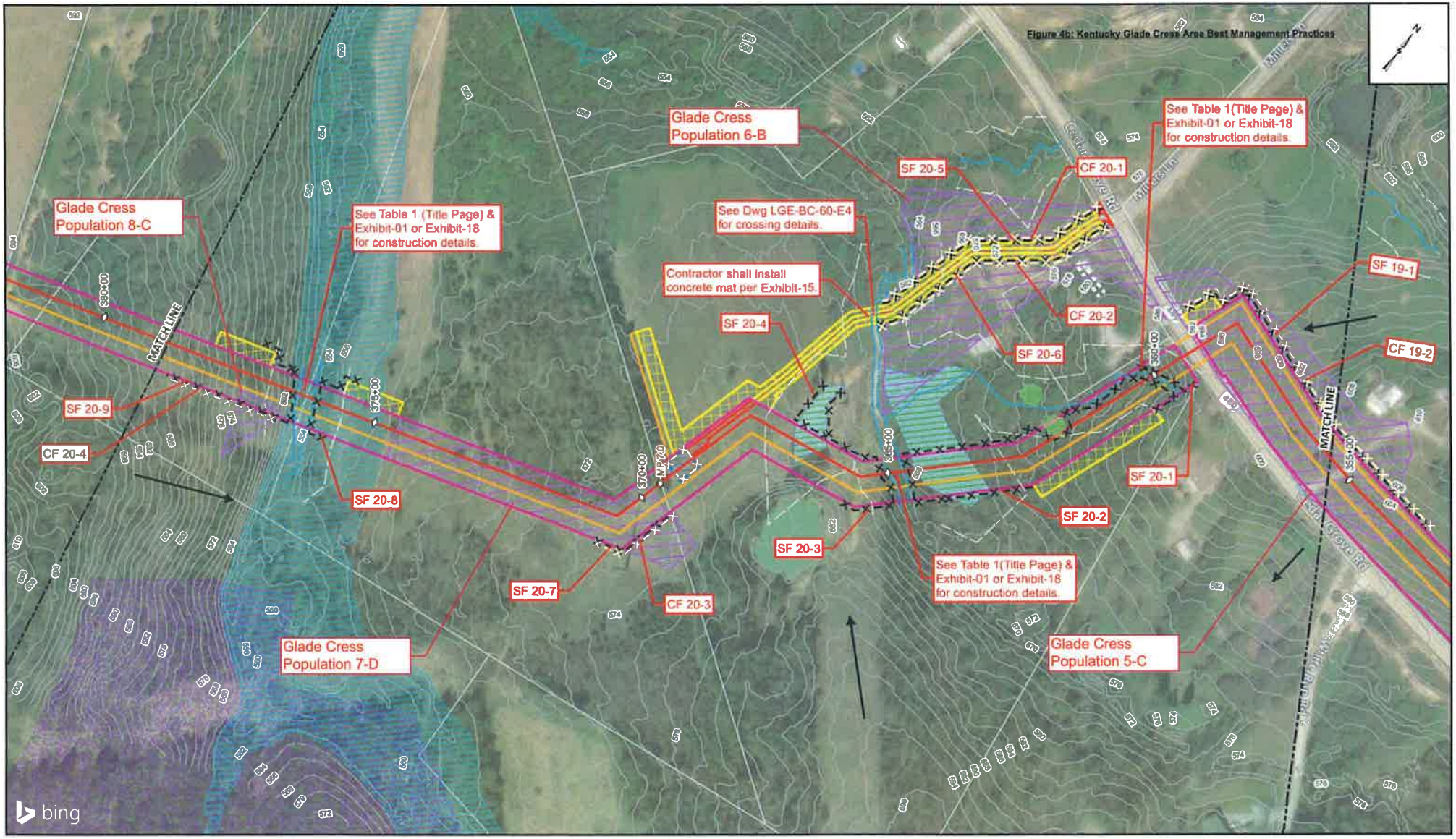

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1	3/19/2019	PV	Revised Route
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LG&E 12" BULLITT COUNTY PIPELINE SWPP PLAN

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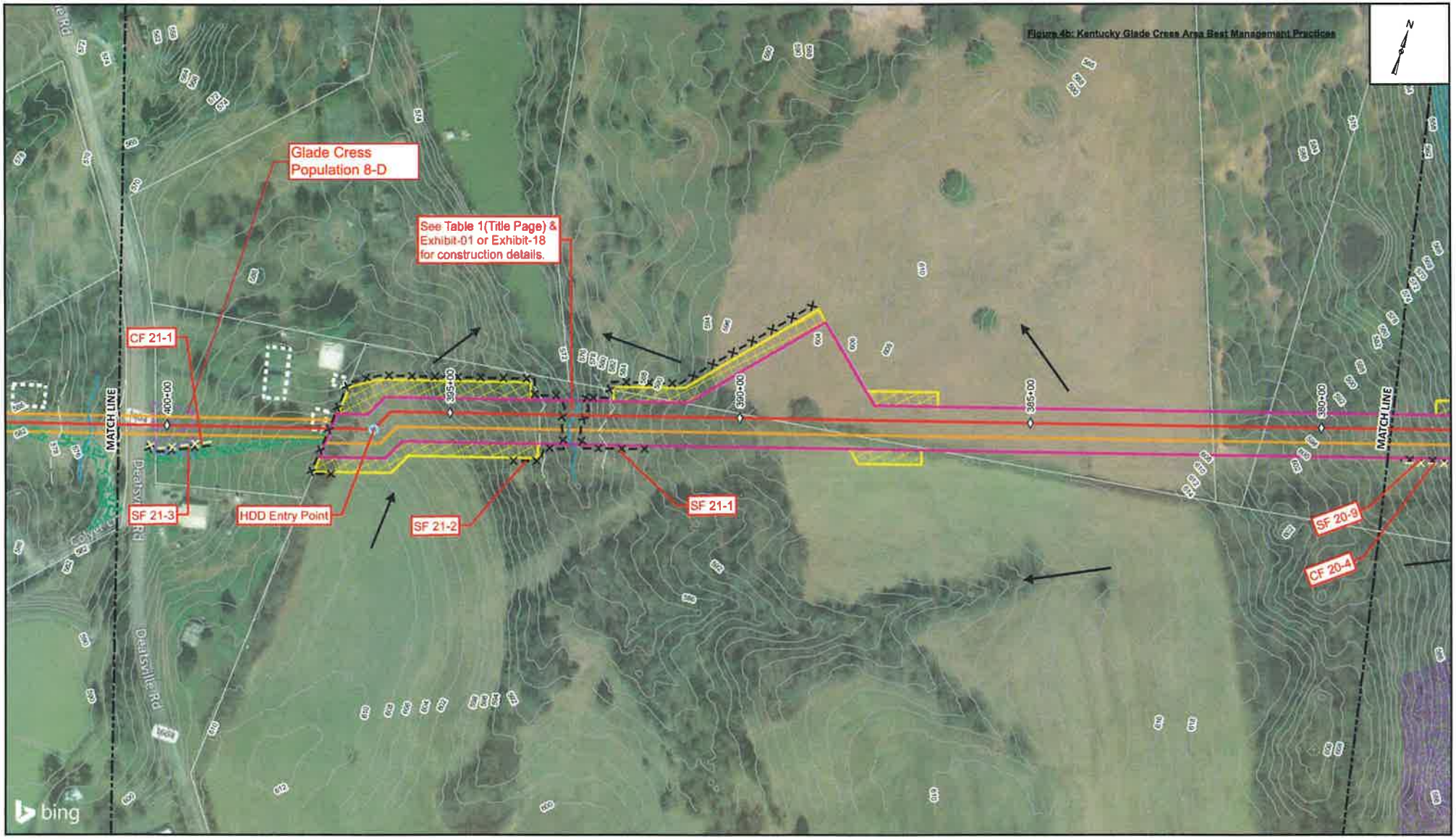

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1	3/19/2019	PV	Revised Route
0	1/15/2019	PV	Issued for Bid

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LG&E 12" BULLITT COUNTY PIPELINE SWPP PLAN

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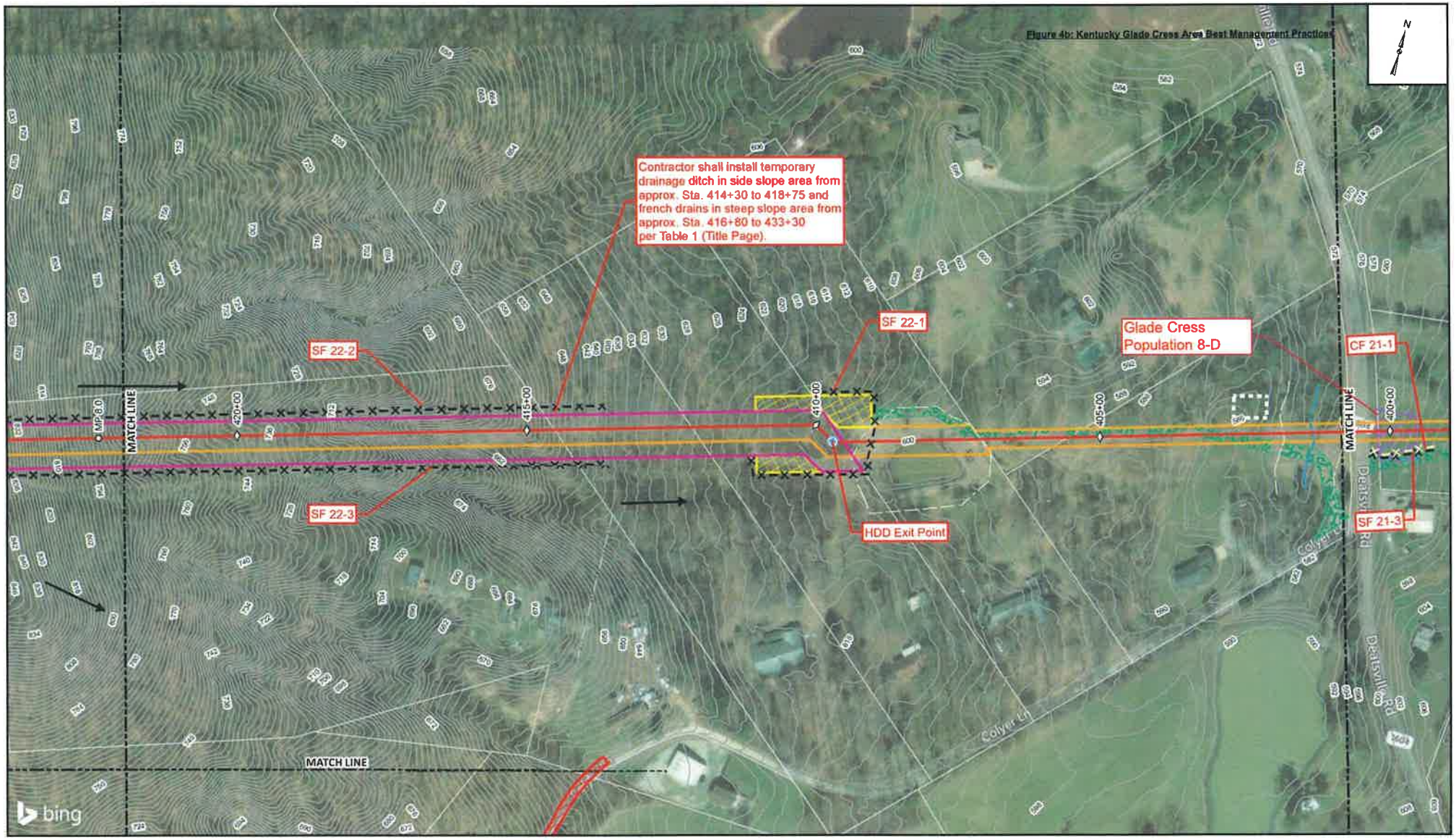

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REV/M	DATE		DESCRIPTION
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1	3/19/2019	PV	Revised Route
0	1/13/2019	PV	Issued for Bid

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LG&E 12" BULLITT COUNTY PIPELINE SWPP PLAN

ENengineering.

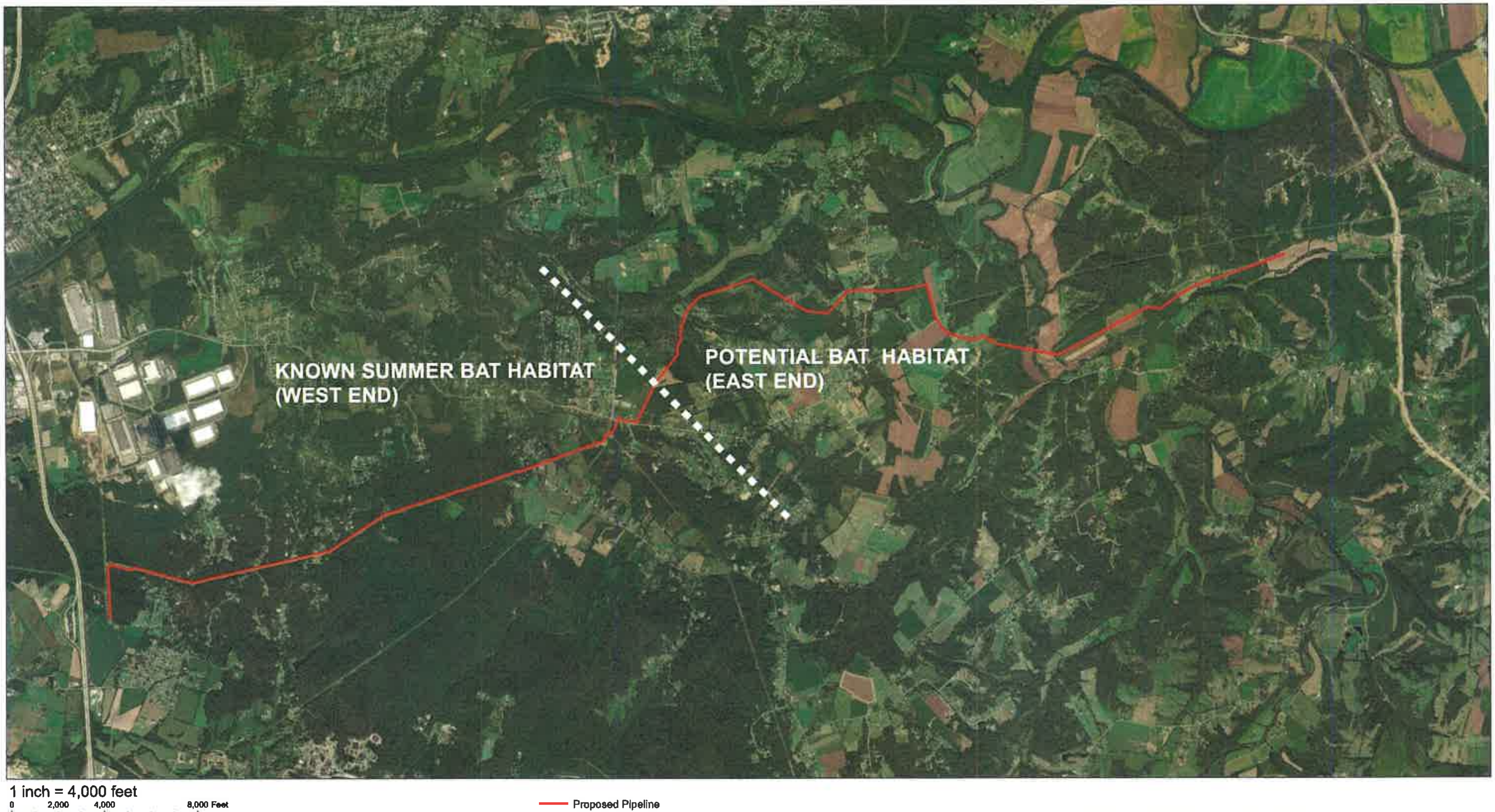

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Figure 5. Bat Habitat Map

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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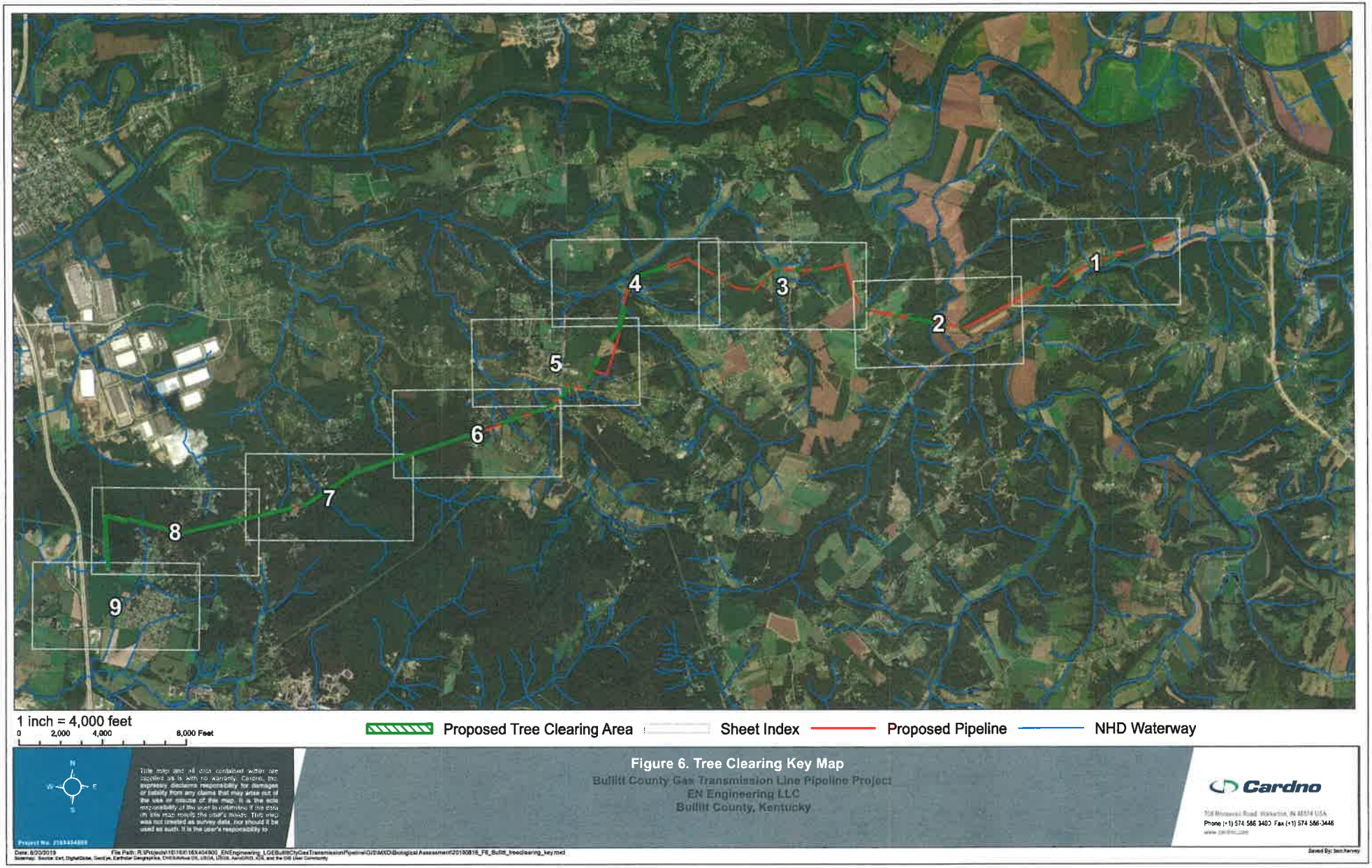
www.cardno.com


1
2
3
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9
1 inch = 4,000 feet
0
2,000
4,000
8,000 Feet
Proposed Tree Clearing Area
Sheet Index
Proposed Pipeline
NHD Waterway
N
W
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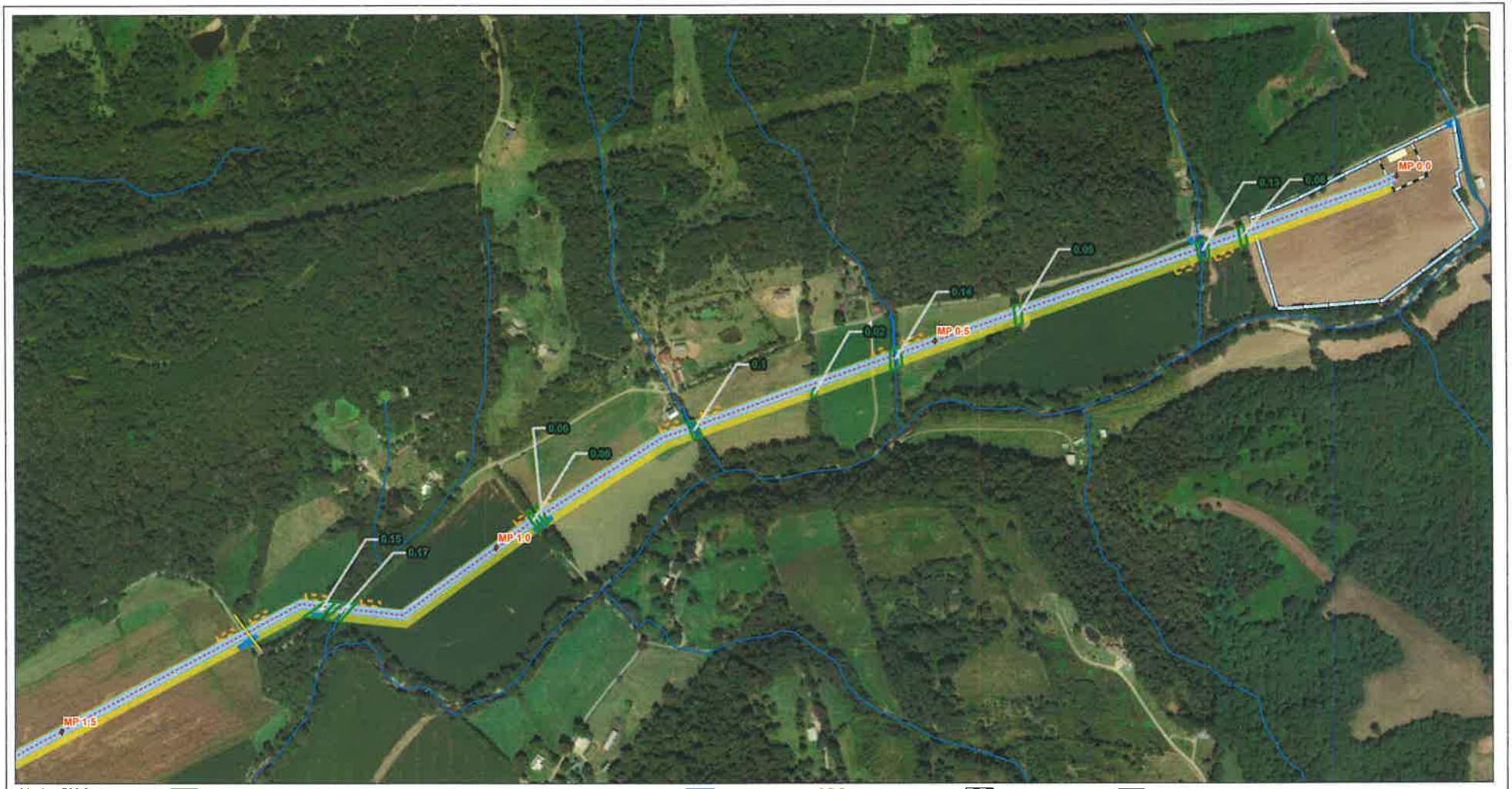
Figure 6. Tree Clearing Key Map
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky
Cardno
Phone (+1) 574 586 3400 Fax (+1) 574 586 3446



1 inch = 500 feet
0 125 250 500 Feet

Proposed Tree Clearing Area
Mile Posts
Ephemeral Stream
Intermittent Stream
Perennial Stream
NHD Waterway
Proposed Pipeline
Proposed Easement
Construction Entrance
Temporary Work Space
ATWS
Construction Storage Yard
Proposed Regulator Station
Permanent Access Road
Temporary Access Road

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Project No. J16X404800

Data: 1/31/2020
File Path: R:\Projects\16160X16X404800_ENEngineering_LGEBullittCtyGasTransmissionPipeline\GIS\MXD\Tree Clearing\J0160604_F7_Bullitt_treeclearing_pages.mxd
Basemap: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Saved By: ben.harvey

Figure 7. Tree Clearing Areas

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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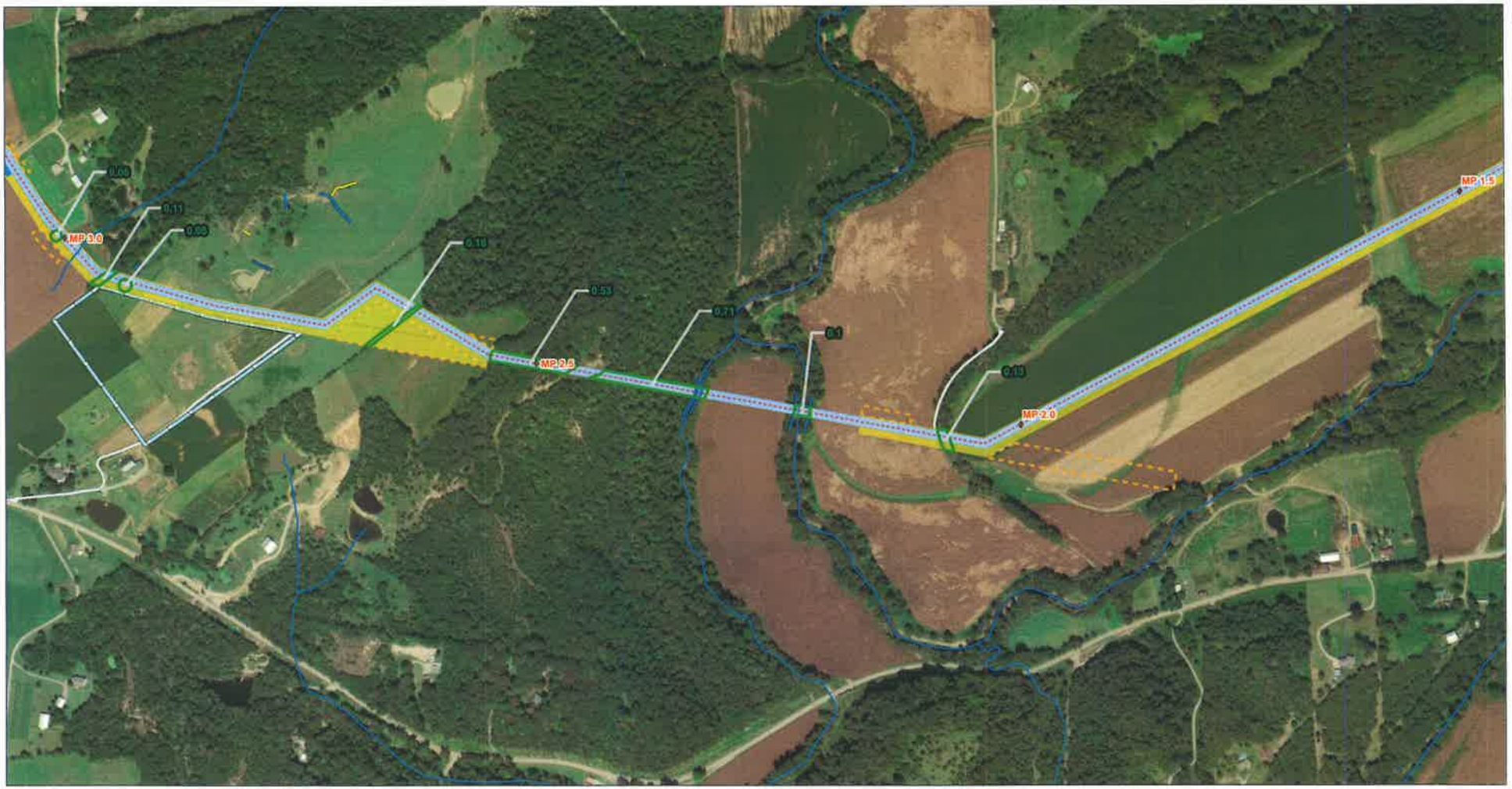
Shaping the Future
Phone (+1) 574 586 3400 Fax (+1) 574 586 3446



1 inch = 500 feet
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Proposed Tree Clearing Area
Mile Posts
Ephemeral Stream
Intermittent Stream
Perennial Stream
NHD Waterway
Proposed Pipeline
Proposed Easement
Construction Entrance
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ATWS
Construction Storage Yard
Proposed Regulator Station
Permanent Access Road
Temporary Access Road

Project No. 2154404680

Figure 7. Tree Clearing Areas

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Date: 1/31/2025 File Path: R:\Projects\19165\416\404800_ENEngineering_LGEBullittCityGasTransmissionPipeline\GIS\MXD\Tree Clearing\20180904_P7_Bullitt_treeclearing_pages.mxd
Basemap: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Saved By: ben.harvey

1 inch = 500 feet
0 125 250 500 Feet

Proposed Tree Clearing Area
Mile Posts
Ephemeral Stream
Intermittent Stream
Perennial Stream
NHD Waterway
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Temporary Access Road

N W E S

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Project No. J16X404800

Figure 7. Tree Clearing Areas
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Phone (+1) 574-586-3400 Fax (+1) 574-586-3445
www.cardno.com

Date: 1/31/2020 File Path: R:\Projects\16\16515\404800_ENGngineering_LGEBullitCtyGasTransmissionPipeline\GIS\MXD\Tree Clearing\20180604_F7_Bullitt_treeclearing_pages.mxd
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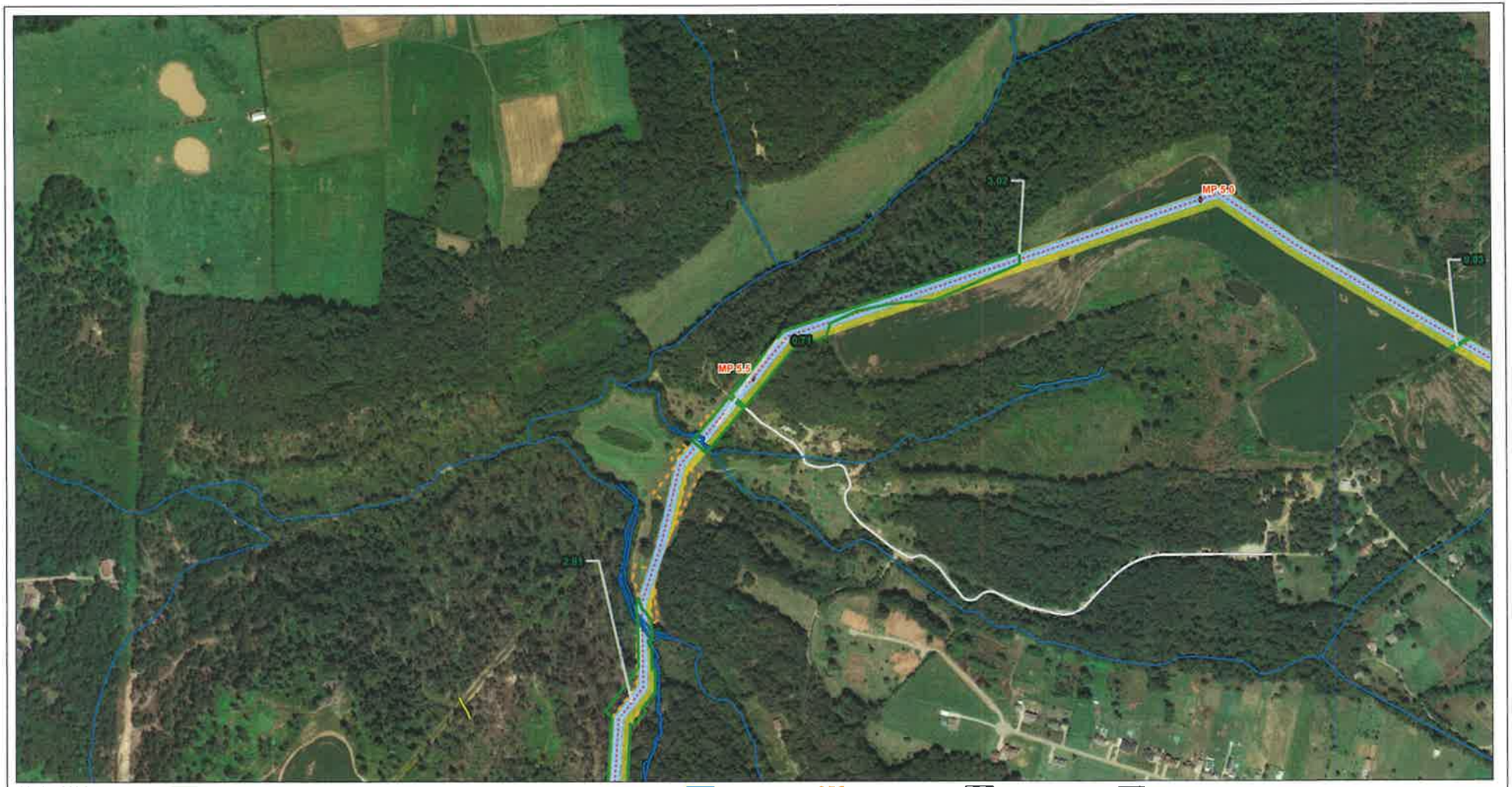

1 inch = 500 feet
0 125 250 500 Feet

Proposed Tree Clearing Area
Mile Posts
Ephemeral Stream
Intermittent Stream
Perennial Stream
NHD Waterway
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Project No. 21684404800

Date: 1/31/2020 File Path: R:\Projects\161\6416\404800_ENEngineering_LGEBullittCtyGasTransmissionPipeline\GIS\MXD\Tree Clearing\20180604_F7_Bullitt_treeclearing_pages.mxd
Basemap: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Saved By: ben.harvey

Figure 7. Tree Clearing Areas

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Phone (+1) 574-586 3400 Fax (+1) 574-586 3446
www.cardinc.com

1 inch = 500 feet
0 125 250 500 Feet

Proposed Tree Clearing Area
Mile Posts
Ephemeral Stream
Intermittent Stream
Perennial Stream
NHD Waterway
Proposed Pipeline
Proposed Easement
Construction Entrance
Temporary Work Space
ATWS
Construction Storage Yard
Proposed Regulator Station
Permanent Access Road
Temporary Access Road

Figure 7. Tree Clearing Areas
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

Cardno
Shaping the Future
Phone (+1) 574 586-3400 Fax (+1) 574 586 3446

Date: 1/31/2020 File Path: R:\Projects\18115\018X404800_ENEngineering_LGEBullittCityGasTransmissionPipeline\GIS\MXD\Tree Clearing\20180604_F7_Bullit_treeClearing_pages.mxd
Saved By: ben.barney

1 inch = 500 feet
0 125 250 500 Feet

Proposed Tree Clearing Area | Ephemeral Stream | Perennial Stream | Proposed Pipeline | Construction Entrance | ATWS | Proposed Regulator Station | Temporary Access Road
Mile Posts | Intermittent Stream | NHD Waterway | Proposed Easement | Temporary Work Space | Construction Storage Yard | Permanent Access Road

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Figure 7. Tree Clearing Areas

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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708 Roosevelt Road, Walkerton, IN 46574 USA
Phone (+1) 574 586 3400 Fax (+1) 574 586 3446
www.cardno.com

Date: 1/31/2020

1 inch = 500 feet
0 125 250 500 Feet

Proposed Tree Clearing Area
Mile Posts
Ephemeral Stream
Intermittent Stream
Perennial Stream
NHD Waterway
Proposed Pipeline
Proposed Easement
Construction Entrance
Temporary Work Space
ATWS
Construction Storage Yard
Proposed Regulator Station
Permanent Access Road
Temporary Access Road

Figure 7. Tree Clearing Areas

Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Phone (+1) 574 936 3400 Fax (+1) 574 936 3446
www.cardno.com

Project No. 2183434800

Date: 1/31/2020
File Path: R:\Projects\18\18X\18X404800_ENEngineering_LGEBullittCtyGasTransmissionPipeline\GIS\MXD\Tree Clearing\20180604_F7_Bullitt_treeclearing_pages.mxd
Basemap: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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1 inch = 500 feet
0 125 250 500 Feet

Proposed Tree Clearing Area
Mile Posts
Ephemeral Stream
Intermittent Stream
Perennial Stream
NHD Waterway
Proposed Pipeline
Proposed Easement
Construction Entrance
Temporary Work Space
ATWS
Construction Storage Yard
Proposed Regulator Station
Permanent Access Road
Temporary Access Road

Project No. 219950855

Figure 7. Tree Clearing Areas
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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www.cardno.com

Date: 1/31/2020 File Path: R:\Projects\161\EX\15\XA04500_ENEngineering_LGEBullittCityGasTransmissionPipeline\GIS\MXD\Tree Clearing\20160804_F7_Bullitt_treeclearing_pages.mxd
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Saved By: ben.harvey

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Project No. J18X404800

Figure 7. Tree Clearing Areas
Bullitt County Gas Transmission Line Pipeline Project
EN Engineering LLC
Bullitt County, Kentucky

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Date: 1/31/2020 File Path: R:\Projects\18\18X\18X404800_ENEngineering_LGEBullittCtyGasTransmissionPipeline\GIS\MXD\Tree Clearing\20180604_F7_Bullitt_treeclearing_pages.mxd
Basemap: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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LG&E Bullitt County
Transmission Pipeline Project

APPENDIX B

AGENCY CORRESPONDENCE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670
Phone: (502) 695-0468 Fax: (502) 695-1024
http://www.fws.gov/frankfort/

In Reply Refer To:
Consultation Code: 04EK1000-2019-SLI-1302
Event Code: 04EK1000-2020-E-00321
Project Name: LG&E Bullitt County Transmission Pipeline Project

November 08, 2019

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

Your concern for the protection of endangered and threatened species is greatly appreciated. The purpose of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.) (ESA) is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. The species list attached to this letter fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the ESA to provide information as to whether any proposed or listed species may be present in the area of a proposed action. This is not a concurrence letter; additional consultation with the Service may be required.

The Information in Your Species List:

The enclosed species list identifies federal trust species and critical habitat that may occur within the boundary that you entered into IPaC. For your species list to most accurately represent the species that may potentially be affected by the proposed project, the boundary that you input into IPaC should represent the entire "action area" of the proposed project by considering all the potential "effects of the action," including potential direct, indirect, and cumulative effects, to federally-listed species or their critical habitat as defined in 50 CFR 402.02. This includes effects of any "interrelated actions" that are part of a larger action and depend on the larger action for their justification and "interdependent actions" that have no independent utility apart from the action under consideration (e.g.; utilities, access roads, etc.) and future actions that are reasonably certain to occur as a result of the proposed project (e.g.; development in response to a new road). If your project is likely to have significant indirect effects that extend well beyond the project footprint (e.g., long-term impacts to water quality), we highly recommend that you

coordinate with the Service early to appropriately define your action area and ensure that you are evaluating all the species that could potentially be affected.

We must advise you that our database is a compilation of collection records made available by various individuals and resource agencies available to the Service and may not be all-inclusive. This information is seldom based on comprehensive surveys of all potential habitats and, thus, does not necessarily provide conclusive evidence that species are present or absent at a specific locality. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please note that "critical habitat" refers to specific areas identified as essential for the conservation of a species that have been designated by regulation. Critical habitat usually does not include all the habitat that the species is known to occupy or all the habitat that may be important to the species. Thus, even if your project area does not include critical habitat, the species on the list may still be present.

Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, 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 associated information. To re-access your project in IPaC, go to the IPaC web site (https://ecos.fws.gov/ipac/), select "Need an updated species list?", and enter the consultation code on this letter.

ESA Obligations for Federal Projects:

Under sections 7(a)(1) and 7(a)(2) of the ESA and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

If a Federal project (a project authorized, funded, or carried out by a federal agency) may affect federally-listed species or critical habitat, the Federal agency is required to consult with the Service under section 7 of the ESA, pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). Recommended contents of a Biological Assessment are described at 50 CFR 402.12. For projects other than major construction activities, the Service suggests that a biological evaluation

similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat.

ESA Obligations for Non-federal Projects:

Proposed projects that do not have a federal nexus (non-federal projects) are not subject to the obligation to consult under section 7 of the ESA. However, section 9 of the ESA prohibits certain activities that directly or indirectly affect federally-listed species. These prohibitions apply to all individuals subject to the jurisdiction of the United States. Non-federal project proponents can request technical assistance from the Service regarding recommendations on how to avoid and/or minimize impacts to listed species. The project proponent can choose to implement avoidance, minimization, and mitigation measures in a proposed project design to avoid ESA violations.

Additional Species-specific Information:

In addition to the species list, IPaC also provides general species-specific technical assistance that may be helpful when designing a project and evaluating potential impacts to species. To access this information from the IPaC site (https://ecos.fws.gov/ipac/), click on the text "My Projects" on the left of the black bar at the top of the screen (you will need to be logged into your account to do this). Click on the project name in the list of projects; then, click on the "Project Home" button that appears. Next, click on the "See Resources" button under the "Resources" heading. A list of species will appear on the screen. Directly above this list, on the right side, is a link that will take you to pdfs of the "Species Guidelines" available for species in your list. Alternatively, these documents and a link to the "ECOS species profile" can be accessed by clicking on an individual species in the online resource list.

Next Steps:

Requests for additional technical assistance or consultation from the Kentucky Field Office should be submitted following guidance on the following page http://www.fws.gov/frankfort/PreDevelopment.html and the document retrieved by clicking the "outline" link at that page. When submitting correspondence about your project to our office, please include the Consultation Tracking Number in the header of this letter. (There is no need to provide us with a copy of the IPaC-generated letter and species list.)

Attachment(s):

- Official Species List

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:

Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670
(502) 695-0468

Project Summary

Consultation Code: 04EK1000-2019-SLI-1302

Event Code: 04EK1000-2020-E-00321

Project Name: LG&E Bullitt County Transmission Pipeline Project

Project Type: OIL OR GAS

Project Description: Proposed construction of a new natural gas pipeline in Bullitt County

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.967327781375566N85.61024512078652W

Counties: Bullitt, KY

Endangered Species Act Species

There is a total of 7 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. Note that 5 of these species should be considered only under certain conditions.

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.

---

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
General project design guidelines:
https://ecos.fws.gov/ipac/guideline/design/population/21/office/42431.pdf

Indiana Bat *Myotis sodalis*	Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.
This species only needs to be considered under the following conditions:

- The project area includes 'potential' habitat. All activities in this location should consider possible effects to this species.
- The project area includes known 'summer 1 (outer-tier)' habitat.

Species profile: https://ecos.fws.gov/ecp/species/5949
General project design guidelines:
https://ecos.fws.gov/ipac/guideline/design/population/1/office/42431.pdf

Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:

- The specified area includes areas in which incidental take would not be prohibited under the 4(d) rule. For reporting purposes, please use the "streamlined consultation form," linked to in the "general project design guidelines" for the species.

Species profile: https://ecos.fws.gov/ecp/species/9045
General project design guidelines:
https://ecos.fws.gov/ipac/guideline/design/population/10043/office/42431.pdf

Clams

NAME	STATUS
Orangefoot Pimpleback (pearlymussel) *Plethobasus cooperianus*	Endangered

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:

- The species may be affected by projects that significanlty impact, directly or indirectly, the following rivers: Green, Ohio, Salt, or Tennessee.

Species profile: https://ecos.fws.gov/ecp/species/1132
General project design guidelines:
https://ecos.fws.gov/ipac/guideline/design/population/340/office/42431.pdf

Pink Mucket (pearlymussel) *Lampsilis abrupta*	Endangered

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:

- The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Green, Licking, Rolling Fork, or Salt.

Species profile: https://ecos.fws.gov/ecp/species/7829
General project design guidelines:
https://ecos.fws.gov/ipac/guideline/design/population/331/office/42431.pdf

Sheepnose Mussel *Plethobasus cyphyus*	Endangered

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:

- The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Barren, Green, Kentucky, Licking, Ohio, Salt, or Tennessee.

Species profile: https://ecos.fws.gov/ecp/species/6903
General project design guidelines:
https://ecos.fws.gov/ipac/guideline/design/population/7816/office/42431.pdf

Flowering Plants

NAME	STATUS
Kentucky Glade Cress *Leavenworthia exigua laciniata*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/698

Critical habitats

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

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670
Phone: (502) 695-0468 Fax: (502) 695-1024
http://www.fws.gov/frankfort/

In Reply Refer To:
Consultation Code: 04EK1000-2019-TA-1302
Event Code: 04EK1000-2020-E-00323
Project Name: LG&E Bullitt County Transmission Pipeline Project

November 08, 2019

Subject: Verification letter for the 'LG&E Bullitt County Transmission Pipeline Project' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Heidi Klotz:

The U.S. Fish and Wildlife Service (Service) received on November 08, 2019 your effects determination for the 'LG&E Bullitt County Transmission Pipeline Project' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Gray Bat, *Myotis grisescens* (Endangered)
- Indiana Bat, *Myotis sodalis* (Endangered)
- Kentucky Glade Cress, *Leavenworthia exigua laciniata* (Threatened)
- Orangefoot Pimpleback (pearlymussel), *Plethobasus cooperianus* (Endangered)
- Pink Mucket (pearlymussel), *Lampsilis abrupta* (Endangered)
- Sheepnose Mussel, *Plethobasus cyphyus* (Endangered)

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

LG&E Bullitt County Transmission Pipeline Project

2. Description

The following description was provided for the project 'LG&E Bullitt County Transmission Pipeline Project':

> Proposed construction of a new natural gas pipeline in Bullitt County

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.967327781375566N85.61024512078652W

Determination Key Result

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service's PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   No

3. Will your activity purposefully **Take** northern long-eared bats?

   No

4. Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

5. Is the project action area located within 0.25 miles of a known northern long-eared bat hibernaculum?

   Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency

   Automatically answered
   No

6. Is the project action area located within 150 feet of a known occupied northern long-eared bat maternity roost tree?

   Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency

   Automatically answered
   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

38.71

2. If known, estimated acres of forest conversion from April 1 to October 31

38.71

3. If known, estimated acres of forest conversion from June 1 to July 31

38.71

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

Please Respect the Environment

About Cardno

Cardno is an ASX-200 professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage, and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD].

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Cardno ZERO HARM EVERY JOB. EVERY DAY.

At Cardno, our primary concern is to develop and maintain safe and healthy conditions for anyone involved at our project worksites. We require full compliance with our Health and Safety Policy Manual and established work procedures and expect the same protocol from our subcontractors. We are committed to achieving our Zero Harm goal by continually improving our safety systems, education, and vigilance at the workplace and in the field. Safety is a Cardno core value and through strong leadership and active employee participation, we seek to implement and reinforce these leading actions on every job, every day.

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Informal Transcript

Excerpt from the Opening Statement by Atty. Monica Braun:

Not only does LG&E have [the] statutory right to do so, this pipeline is sorely needed in Bullitt County as there are two problems currently facing LG&E's natural gas system in Bullitt County. The first is reliability and the second is capacity. I'll begin with reliability and this will be described further by LG&E witness Mr. Bellar. LG&E operates a transmission line that runs from Shepherdsville south until it terminates in Boston and there are roughly 95 hundred customers served off that pipeline. That is their single source of gas supply. And should there be an outage which can occur for any number of reasons, thousands of customers would be without natural gas which for many is their heating source. The second problem is capacity. There is a significant growth along that line especially in the area around 480 and around the new I-65 interstate exchange. And as there is continued growth, LG&E has reached the point where it cannot push any additional gas through this line and that will be testified to by Mr. Reith later today. And because of that there has already been 450 denials of service to homes and businesses in Bullitt County. This is not a forecasted problem. This is a current problem and a problem that we expect to continue until the pipeline is constructed. The pipeline that LG&E is preparing to construct will solve both of these problems.

2021-03-11_10.30.53.260 at approximately 01:27-03:07

Excerpt from the Closing Statement by Atty. Monica Braun:

Here is what has been unrebutted over two days of testimony. That at present there are 450 homes and businesses in Bullitt County that have been denied their request for natural services. Mr. Reith testified that if there is an outage along the existing distribution line that serves most of Bullitt County, thousands of Bullitt County customers could have service interruptions. That has been the unrebutted testimony over these two days. The focus of the Defendants has been on LG&E's decision making in 2015 and 2016, what projections did LG&E consider, what forecast did is consider, how did it talk to. But what we have testified is that in 2021, LG&E is denying service to customers because there is no additional capacity on this pipeline. Those are the facts today. And until this pipeline is constructed your Honor, the number of denials of gas service will continue to grow and the risk of an outage for current customers will continue to exist.

2021-03-12_14.49.56.998 at approximately 21:00-22:20