May 20, 2022

Mr. Joseph Waldman
Highgates Management
119 Park Glen Avenue
Toronto, Ontario, Canada M6B2C6

Reference: **Preliminary Slope Evaluation & Karst Survey – Johnson Road Residential**
1614 Johnson Road
Louisville, Jefferson County, Kentucky 40245
ECS Project No. 61-2735

Dear Mr. Waldman:

ECS Southeast, LLP (ECS) conducted a preliminary slope evaluation and karst survey for the referenced site in accordance with ECS Proposal No. 61-P2677, dated March 31, 2022. This evaluation included the following elements: a review of provided drawings; a review of soil survey information; a review of geologic maps; a review of topographic maps; a visual reconnaissance of site conditions for the karst geologic features defined in the Metro Louisville Land Development Code (LDC); a review of current and historical aerial photographs; a visual reconnaissance of indicated steeper slope areas that would be disturbed by new construction; and evaluate the reviewed information and prepare a report of our findings and recommendation.

Project Information

The proposed development on-site includes 124 single-family residential lots, 4 multi-family residential buildings, and associated roadways. There is approximately 100 feet of fall across the entire site, with up to approximately 22 feet of fall across a single proposed residential development lot. The existing topography generally sloped down from east to west and north to south towards the existing stream.

The existing site consisted approximately 61.09 acres of open rolling hills, densely wooded areas, several drainage swales and small streams, ponds, with relatively flat areas followed by steep slopes near the existing stream (Floyds Fork). Residential buildings (house, barn, and shed) were present in the northeast portion of the site at 1614 Johnson Road in Louisville, Kentucky. The "3622 - PREPLAN - 3-30-2022-with slopes" provided by Kathy Linares of Mindel Scott via email, dated March 30, 2022, identified existing 20-30% slopes and >30% slopes on the property. A reduced copy of this drawing is attached to this report.

The current LDC section 4.7.5 includes requirements for land disturbing activities on slopes greater than 20%. Item B.3 of section 4.7.5 states "Land disturbing activities on slopes greater than 20% and less than 30% shall be required to prepare a geotechnical survey report if the staff of the USDA Natural Resources Conservation Service (NRCS) determines such a study is warranted, given the site's soil and geologic characteristics. A geotechnical survey report shall be submitted for land disturbing activities on slopes greater than 30%." We understand that at present the NRCS is not making the determination of the need for a geotechnical survey report. Accordingly, ECS Southeast, LLP (ECS) was retained to conduct an initial slope evaluation of the site and to determine if additional geotechnical exploration/analyses would be required. Our evaluation consisted of the following tasks:

- Review the Plan
- Review USGS Geologic Quadrangle Map information
- Review USDA NRCS Soil Survey information
- Conduct a visual reconnaissance of indicated steeper slope areas that would be disturbed by new construction
- Evaluate the reviewed information and prepare a report of our findings and recommendations

Geology

The following geologic information is based on the review of: the Crestwood, 24K Quadrangle, Geologic Map, Kentucky, published by the United States Geological Survey (USGS); information (aerial photos, geologic maps, and topographic maps, etc.) obtained from the Kentucky Geological Survey (KGS) Geologic Information Service website; and Google Earth Satellite Imaging.

The Kentucky Geologic Map Information Service website indicated that the majority of the proposed development area was underlain Drakes Formation and was overlain by Alluvium deposits in the flatter/lower lying southwestern portion of the site. The majority of the steep slope areas were underlain directly by Drakes Formation (roughly above ~EL 610 to ~EL 620), with the remainder of the site underlain by Alluvium (roughly below ~EL 610 to ~EL 620).

Above	~EL 610 – 620	Drakes Formation
Below	~EL 610 – 620	Alluvium

Figure 1: Reported Site Geology

Alluvium (Floyds Fork Depositional Plain)
Total Reported Thickness: 0 – 15 feet
Karst Potential: Non-Karst

Primarily Silt and clay. Alluvium of flood plains is mainly brown to dark grayish brown silty sand and clayey silt, contains lenses, stringers, and a persistent basal layer of sand and gravel. Sand and granules are mostly limonite pellets derived from soil; coarser pebbles, cobbles, and slabby boulders are from local bedrock. Common thickness along Floyds Fork is 8 to 10 feet; less along smaller streams. Floyds Fork and Long Run flow mainly on bedrock, except for small point bars, even where bordered by alluvium. Older alluvium on terraces 30 to 45 feet above Floyds Fork.

Drakes Formation (Uplands and Most Slope Areas)
Total Reported Thickness: ± 140 feet
Karst Potential: Low
Primary Lithology: Limestone, dolomite, and/or shale.
Members: Hitz Limestone Bed; Saluda Dolomite Member; Bardstown Member; and Rowland Member.

Hitz Limestone Bed: Primarily limestone, dolomite, and shale. Limestone and dolomite are dark gray to olive gray, weather light gray to grayish orange, locally with reddish brown cast; very fine to medium grained, silty; laminated in part; sub-conchoidal to hackly fracture; inter-bedded and inter-graded. Shale, greenish-gray to brownish black, calcareous, in part carbonaceous, as partings or interbeds as much as 0.3 foot thick.

Saluda Dolomite Member: Primarily dolomite, dolomitic mudstone, with minor shale and limestone. Dolomite is greenish gray to olive gray, weathers same to yellowish gray and dark yellowish orange. Shale, light gray to olive black, locally carbonaceous; as persistent parting 0.1 to about 1 foot thick in lower part of laminated dolomite, generally 12 to 16 feet above base of unit. Limestone is bluish gray, weathers olive gray to brownish gray; dense, micritic; conchoidal fracture; commonly as a single bed immediately below or above shale marker bed and as one or two thin beds in lower part of unit.

Bardstown Member: Primarily limestone and shaly mudstone. Limestone, medium to olive gray, is of two main types: shaly limestone and coquinoidal limestone. Shaly limestone is fine to very fine grained, contains sparse to abundant coarse grains and fossil fragments, grades locally to calcareous shale. Coquinoidal limestone is characterized by fossils fragments in a sparry to muddy matrix; bluish cast common where fresh, weathers yellowish gray, dark yellowish orange, and light olive gray. Shaly mudstone, thin bedded, mainly calcareous, olive gray to greenish gray; locally dark brownish gray to olive black where carbonaceous.

Rowland Member: Primarily limestone and shale. Dominant limestone is medium and greenish gray to medium bluish gray calcisiltite; weathers pale olive to yellowish gray; dolomitic and argillaceous; streaked with irregular burrows filled with dusky yellowish-green glauconitic material which weathers out readily to form holes and pitted bed surfaces; thin to thick bedded in continuous but poorly defined planar beds. Dominant shale is olive gray, light olive gray, greenish gray, and dark greenish gray; weathers yellowish gray to light gray; calcareous; in beds as much as 3 feet thick near upper and basal contacts. Small ponds for livestock and recreation are common in areas underlain by the Waldron Shale and by shale of the Osgood Formation and the Bardstown and Rowland Members of the Drakes Formation

Karst Potential
According to the KGS Karst Potential Classification definitions, formations designated with a "Low" karst potential are where the development of karst features are poorly developed or absent with the formations described as "siliciclastic units with minor limestone beds or units primarily composed of dolomite". Formations designated with a "Non-Karst" karst potential are described as "Consolidated or unconsolidated siliclastic units. Karst features are rare or absent." The karst potential is based on the tendency for the site to develop or have karst features as shown on the Kentucky Geologic Map Information Service and is not necessarily indicative of the actual presence or absence of karst activity at the site.

No sinkholes were mapped on the site by the Kentucky Geologic Map Information Service. However, several sinkholes were reported approximately 1,000 to 1,500 feet north and west from the site. A water well was reported approximately 150 feet northeast of the existing barn in the north central portion of the site. No remaining information (e.g. depth to rock, static water level, etc.) was reported for the water well. Refer to attached **Karst Potential Map(s)** for approximate location of mapped features.

A site reconnaissance was conducted on May 4-5, 2022, by William "Grant" Hess, P.G. of ECS. Rock outcropping was encountered along the base of the north and east bank of Floyds Fork (~ EL 600 to ~EL 610). No definitive closed

depressions related to karst activity (several apparent animal burrows were encountered) were observed at the time of this evaluation. However, flowing water was observed near the reported well water and was labeled for the purposes of this report as an apparent spring. The apparent spring area consisted of a "collapsed" area where flowing water was observed at the base and continued along a drainage swale. Refer to the attached **Site Reconnaissance Plan** for the approximate locations.

Soil Conservation Service Soil Survey

The USDA Natural Resources Conservation Service "Web Soil Survey" website indicated 9 general soil types (excluding water unit "W") at the site as shown in **Figure 2**. Descriptions of these soil types are summarized below.

NRCS CUSTOM SOIL RESOURCE REPORT				
Map Unit Symbol	**Map Unit Name**	**Parent Material**	**Acres in AOI (Approximate)**	**Percent of AOI (Approximate)**
BeB	Beasley silt loam, 2 to 6 percent slopes.	Clayey residuum weathered from calcareous shale.	3.2	5.4%
BeC	Beasley silt loam, 6 to 12 percent slopes.	Clayey residuum weathered from calcareous shale and/or calcareous siltstone.	4.6	7.8%
EoB	Elk silt loam, 2 to 6 percent slopes, occasionally flooded.	Mixed fine-silty alluvium.	11.0	18.8%
FaD	Faywood silt loam, 12 to 25 percent slopes.	Clayey residuum weathered from limestone and shale.	19.6	33.5%
FsF	Faywood-Shrouts-Beasley complex, 25 to 50 percent slopes.	Clayey residuum weathered from limestone and shale.	0.1	0.1%
NhB	Nicholson silt loam, 2 to 6 percent slopes.	Fine-silty noncalcareous loess over clayey residuum weathered from limestone.	0.0	0.1%
No	Nolin silt loam, 0 to 2 percent slopes, occasionally flooded.	Mixed fine-silty alluvium.	15.5	26.5%
OwC	Otwood silt loam, 6 to 12 percent slopes, occasionally flooded.	Mixed fine-silty alluvium over mixed loamy alluvium.	2.4	4.1%
UkC	Urban land-Alfic Udarents-Beasley complex, 0 to 12 percent slopes	Clayey residuum weathered from calcareous shale and/or calcareous siltstone.	0.1	0.2%
W	Water.	Water.	2.0	3.5%

Figure 2: Reported Soil Data

Site Reconnaissance

Based on our review of the provided drawing, the north and east portions of the site included either 20-30% slopes or >30% slopes that may be disturbed during development. A site reconnaissance was conducted on May 4-5, 2022, by William "Grant" Hess, P.G. of ECS. Refer to the attached **Site Reconnaissance Plan** for the approximate locations. Steep slopes with numerous displaced gravel, cobbles, and/or and boulder-sized rock, eroded/mounded soil, and various indications of minor slope instability were observed along the northern and eastern portions of the site and typically became more prevalent within 100 feet of the existing drainage swales and streams. A relatively flat depositional plain was observed in the southwest portion of the site with steep slopes encountered along Floyds Fork.

Surface drainage generally was directed to the south and west across the site by the existing topography and drainage swales and small streams. An existing stream approximately 10 to 30 feet wide, located in the center of the site, and extended north to south for the length of the site to Floyds Fork. Several drainage swales were observed intersecting the central stream and/or Floyds Fork. Indications of erosion were observed primarily along the swales including occasional patches of bare soil and gullies. Three ponds with associated apparent man-made berms were observed in the northern portion of the site.

Some visual indications of minor slope instability and evidence of creep were observed in the north and east portions including: displaced rock fragments (gravel, cobbles, and/or boulders); unusual tilting, bowed, and fallen trees; minor eroded soil; and mounding of the eroded soil at the slope base and upslope of larger trees. No indications of large, wide-scale or deep seated slope movements were noted. However, minor slope movements (wedge, bowl, or disk shaped failures) were observed in isolated areas (typically at slope areas > 20%). For the remainder of the site (low lying portion), the slopes appeared to be stable (excluding stream and drainage swale banks). In general, signs of slope failure became rare or absent in areas south and west of the steep slopes. See below for photos at each area observed as shown on the attached **Site Reconnaissance Plan.**

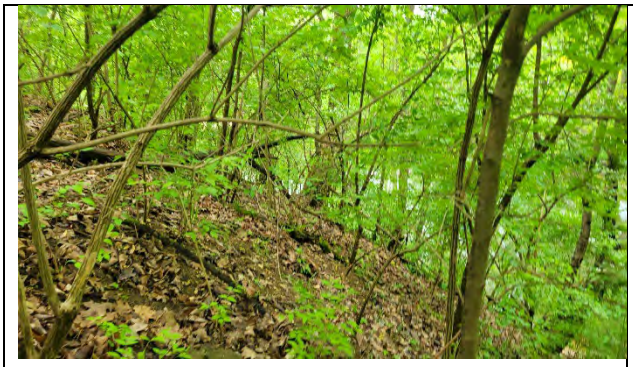


Photo 1: View of slope and tilted trees (Slope Area 1).

Photo 2: View of drainage swale (Slope Area 1).

Photo 3: View of displaced cobbles (Slope Area 2).

Photo 4: View of slope and tilted trees (Slope Area 2).

Photo 5: View of slope and outcropping (Slope Area 3).

Photo 6: View of outcropping and Floyds Fork (Slope Area 4).

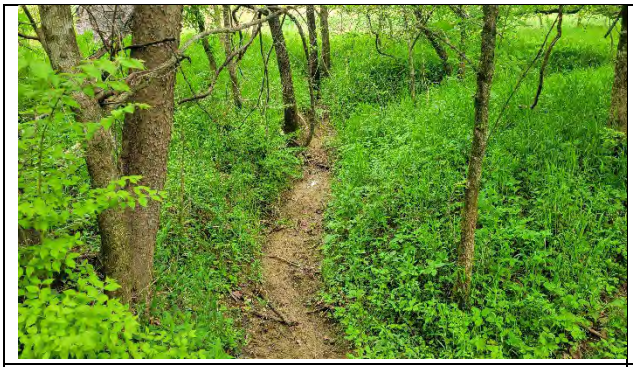


Photo 7: View of drainage swale (Slope Area 5).

Photo 8: View of drainage swale (Slope Area 5).

Photo 9: View of pond (Slope Area 6).

Photo 10: View of soil mounding (Slope Area 6).

Photo 11: View of soil mounding, displaced cobbles, and minor erosion (Slope Area 7).

Photo 12: View of soil mounding and slope (Slope Area 7).

Photo 13: View of displaced cobbles (Slope Area 7).

Photo 14: View of tilted trees and slope (Slope Area 8).

Photo 15: View of soil mounding (Slope Area 8).

Photo 16: View of bowed trees and slope (Slope Area 8).

Photo 17: View of drainage swale and slope (Slope Area 8).

Photo 18: View of soil mounding and minor erosion (Slope Area 9).

Photo 19: View of minor erosion and slope failure "wedge shaped" (Slope Area 9).

Photo 20: View of minor erosion and tree tilting (Slope Area 9).

Photo 21: View of pond (Slope Area 9).

Photo 22: View of slope (Slope Area 10).

Photo 23: View of soil mounding, displaced cobbles, and minor erosion (Slope Area 10).

Photo 24: View of soil mounding, displaced cobbles, and minor erosion (Slope Area 10).

Photo 25: View of soil mounding (Slope Area 10).

Photo 26: View of minor erosion, mounding, and "wedge shaped" slope failure (Slope Area 10).

Photo 27: View of soil mounding, displaced cobbles, and minor erosion (Slope Area 10).

Photo 28: View of culvert and drainage swale (Slope Area 11).

Photo 29: View of bowed trees and slope (Slope Area 11).

Photo 30: View of slope (Slope Area 12).

Photo 31: View of culvert and drainage swale (Slope Area 12).

Photo 32: View of "bowl shaped" slope failure (Slope Area 13).

Photo 33: View of "bowl shaped" slope failure (Slope Area 13).

Photo 34: View of tilted trees and drainage swale (Slope Area 13).

Photo 35: View of slope (Slope Area 13).

Photo 36: View of soil mounding and minor erosion (Slope Area 13).

Photo 37: View of drainage swale (Slope Area 13).

Photo 38: View of drainage swale (Slope Area 13).

Photo 39: View of slope (Slope Area 14).

Photo 40: View of apparent spring (upslope).

Photo 41: View of apparent spring (downslope).

Photo 42: View of central stream (upstream).

Photo 43: View of central stream (downstream).

Photo 44: View of central stream (downstream).

Based on our review of the above reference observations and information, and on our past experience with site development for similar conditions in Jefferson County, our opinion is that most of the on-site slopes (excluding small, localized erosion features along swales and streams) in the observed areas were generally stable at the time of our reconnaissance. Evidence of minor instability was observed in isolated areas in the north and east portions of the site (Slope Areas).

The current, on-site localized slope instability observed likely is related to the following factors:

- Relatively thin depths of soil in slope areas
- Cohesive (clayey) soil matrix
- Rocky soil texture
- Limestone, dolomite, and or shale bedrock
- Numerous trees and other vegetation

Based on the conditions observed, our opinion is that additional geotechnical exploration/analyses including soil/rock test borings/coring, shear strength tests of soils, etc. are not required for most of the evaluated on-site slopes, provided that the planned subdivision is designed and constructed utilizing the guidelines included in this report.

The north and east portions of the site, as shown in the shaded ("Observed Slope Areas" and "Minor Failure Areas") where minor instability was observed should be further investigated during the construction phase of the project once the location and planned elevation of the proposed structures and related improvements are known.

The following guidelines should be used to help maintain the stability of the existing and planned slopes during the design and construction of the new subdivision, and over the life of the new homes. These guidelines include:

- Plan grading to minimize changes to existing topography along slopes.
- Minimize disturbance to slopes and vegetation outside new construction areas.
- Avoid significant transverse cuts along face or at the toe of existing slopes.
- Avoid significant embankments on the face, or along or at the crest of existing slopes.
- Avoid placing new construction at or within 10 feet of the crest of existing slopes.
- Maintain the following limits for new embankments without additional geotechnical exploration and analysis:
  - 3:1 (horizontal: vertical) or flatter slopes.
  - Properly strip all vegetation, topsoil, etc. where fill will be placed.
  - Construct embankments with controlled fill compacted to at least 98 percent of the Standard Proctor maximum dry density and within 2 percent of the optimum moisture content.
  - Maximum fill embankment height – 5 feet.
  - Horizontally bench new fill into existing slopes in maximum one-foot vertical steps.
- Maintain the following limits for new cuts in soil without additional geotechnical exploration and analysis:
  - 3:1 (horizontal: vertical) or flatter slopes.
  - Maximum cut height – 5 feet.
- Provide adequate erosion and surface water drainage control during construction and over the life of the subdivision.
- Establish permanent vegetative cover as soon as practical.

Closing

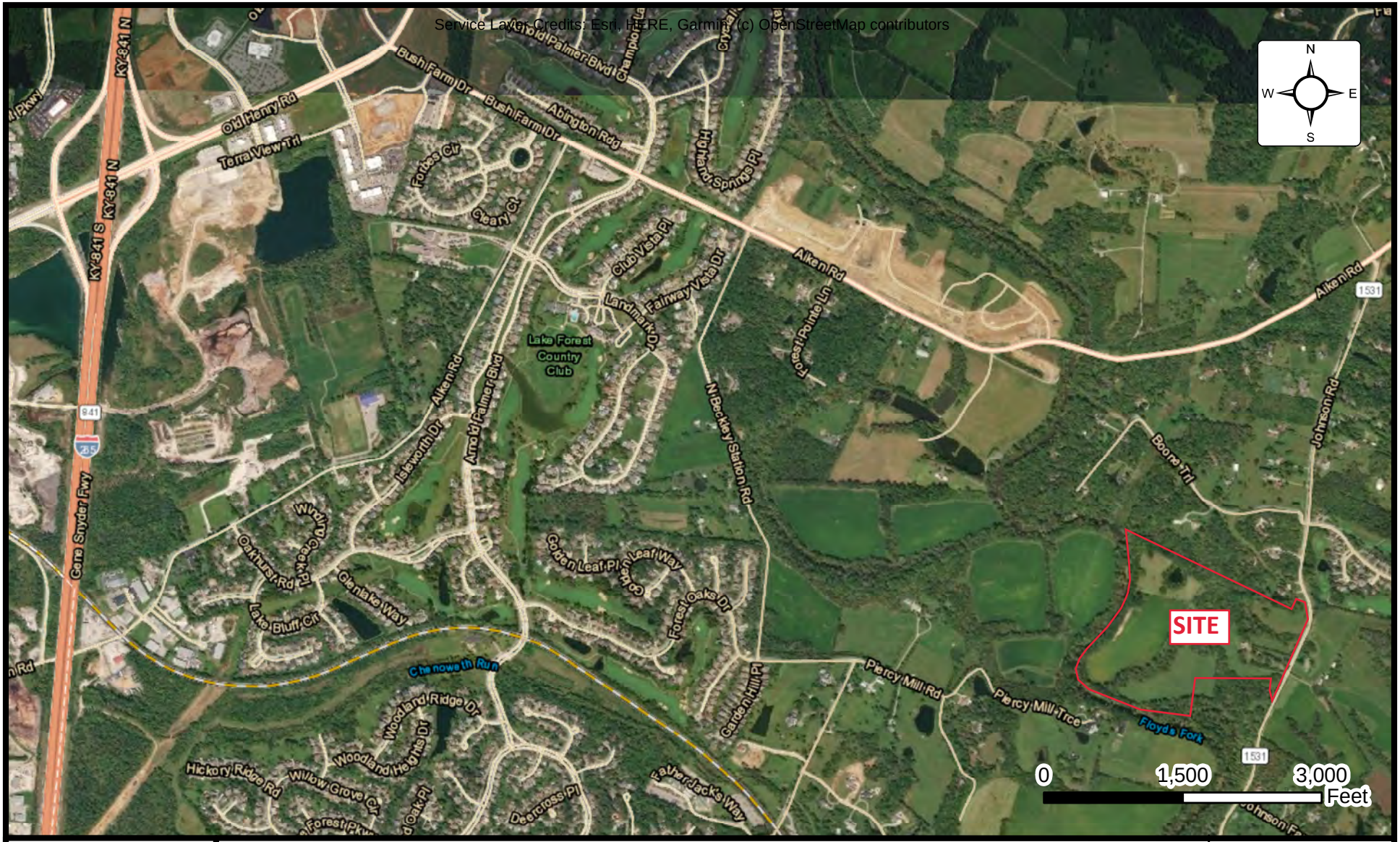
We appreciate the opportunity to serve as your geotechnical consultants for this project. We look forward to future association with you on this and other projects.

Respectfully submitted,
ECS Southeast, LLP

William "Grant" Hess, P.G.
Project Geologist
ghess@ecslimited.com

Liz Blandford Newcomb, P.E.
Principal Engineer
lnewcomb@ecslimited.com

Attachments: Site Vicinity Diagram
Geology Location Plan
Karst Potential Map – 1
Karst Potential Map – 2
Site Reconnaissance Plan
3622 - PREPLAN - 3-30-2022-with slopes



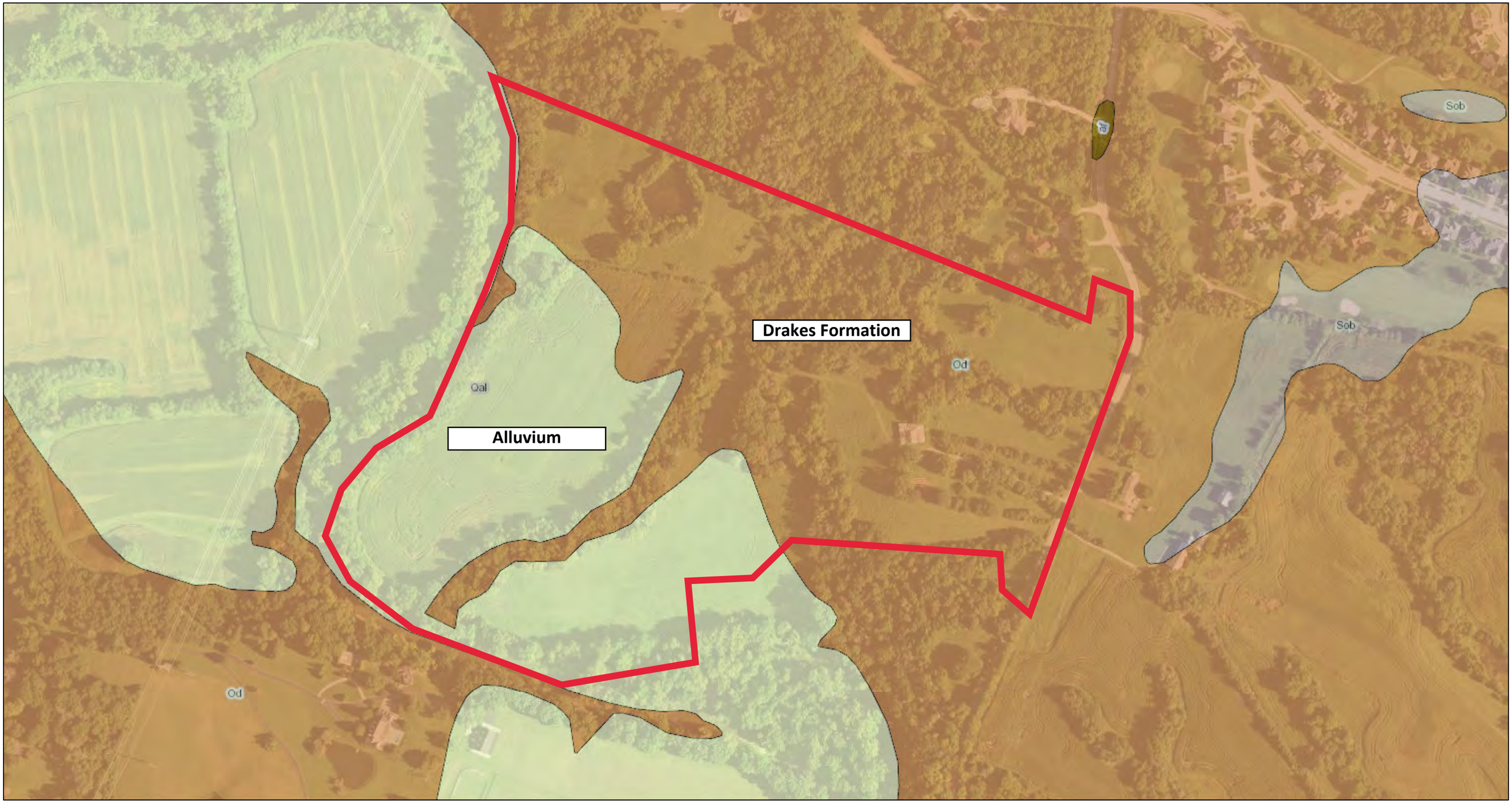
SITE LOCATION DIAGRAM

PRELIMINARY SLOPE EVALUATION & KARST SURVEY
JOHNSON ROAD RESIDENTIAL

1614 JOHNSON RD, LOUISVILLE, KENTUCKY

ENGINEER	FEN
SCALE	AS NOTED
PROJECT NO.	61-2735
SHEET	1 OF 1
DATE	5/12/2022

Kentucky Geologic Map Information Service - Geology Location Diagram



May 12, 2022

1:4,514

0 0.05 0.1 0.2 mi
0 0.075 0.15 0.3 km

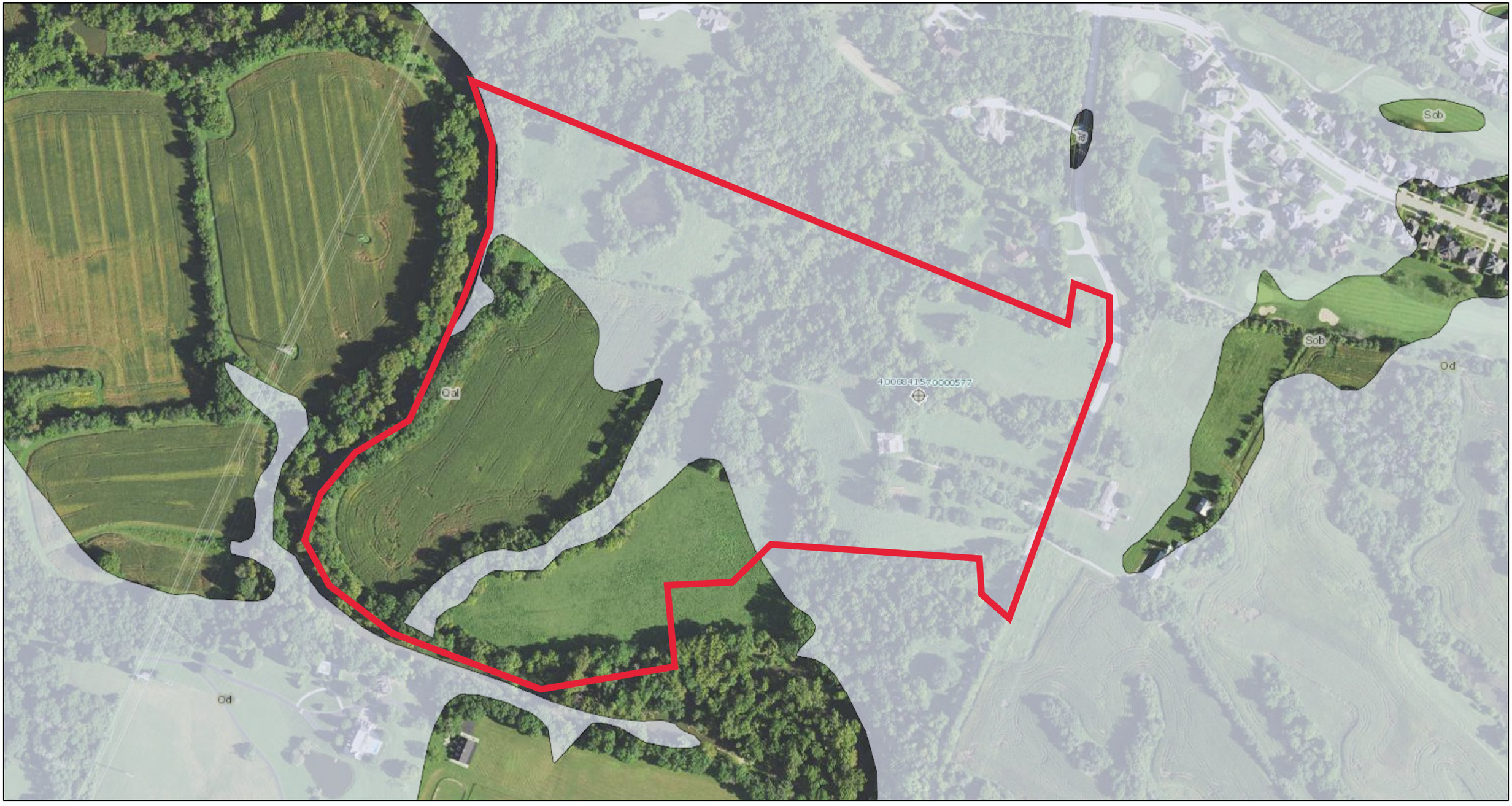
Kentucky Geological Survey

1:24,000 scale data (detailed geology)
This legend includes all units from the 1:24,000 quadrangles in the current view. Some units on the legend may not appear on the map.

Qal **Alluvium**
(Quaternary - Quaternary)

Od **Drakes Formation**
(Upper Ordovician - Upper Ordovician)

Karst Potential Map - 1



May 12, 2022

1:4,514

0 0.05 0.1 0.2 mi

0 0.075 0.15 0.3 km

Kentucky Geological Survey

Karst Potential Units

- very high
- high
- medium
- low
- non-karst

LiDAR Sinkholes

KGS Sinkholes

Kentucky Sinkhole Outlines

- Sinkhole

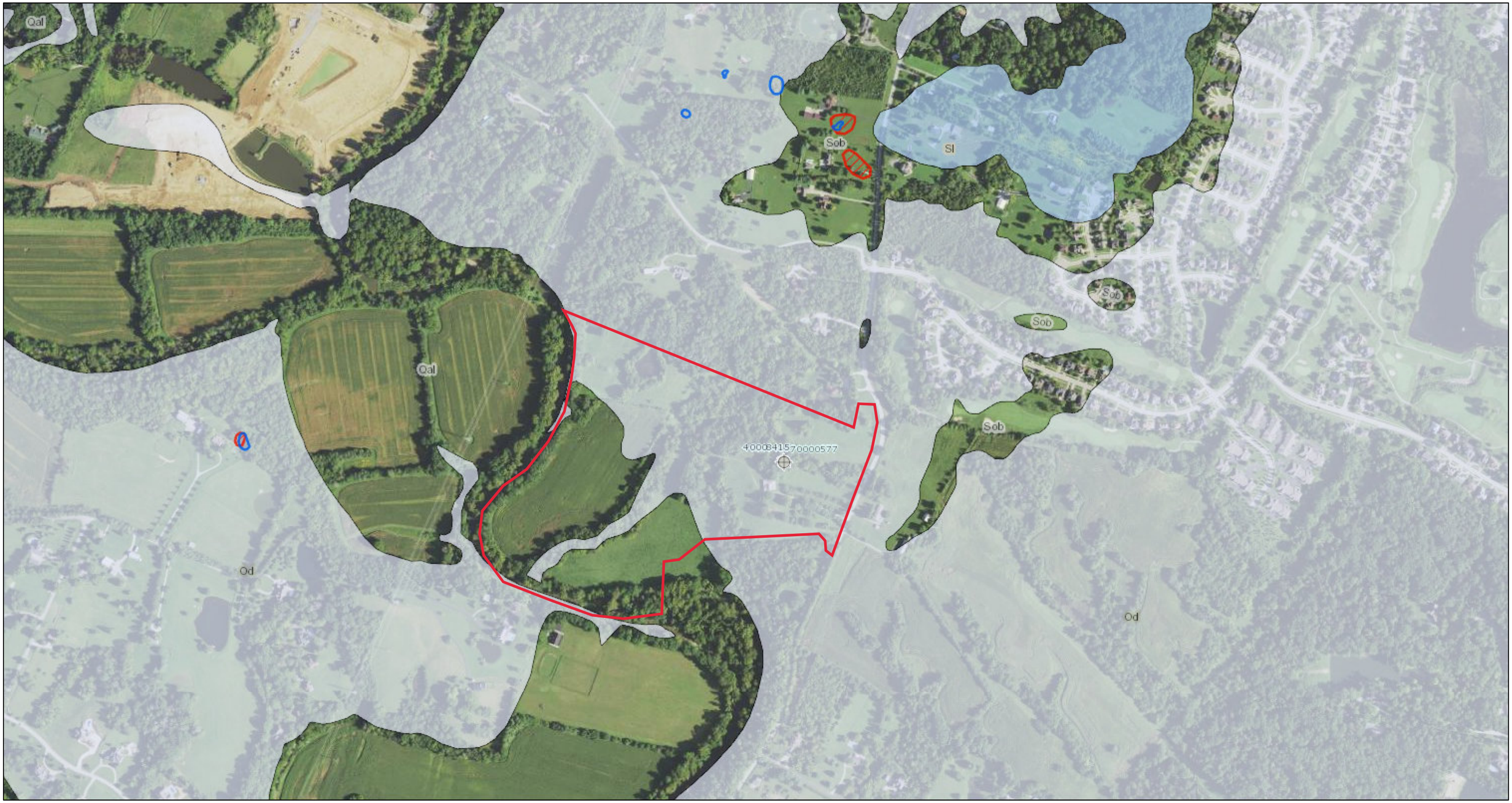
Kentucky Water Wells

- Other

Kentucky Springs

- Spring

Karst Potential Map - 2



May 19, 2022

1:9,028

0 0.1 0.2 0.4 mi

0 0.175 0.35 0.7 km

Kentucky Geological Survey

Karst Potential Units

- very high
- high
- medium
- low
- non-karst

LiDAR Sinkholes

KGS Sinkholes

Kentucky Sinkhole Outlines

- Sinkhole

Kentucky Water Wells

- Other

Kentucky Springs

- Spring

LEGEND

- 1 - Observed Slope Areas
- - Minor Failure Areas
- - Central Stream
- - Drainage Swale
- - Apparent Spring
- - Existing Pond
- - Rock Outcropping

Notes:
Locations are approximate.

Some location numbers are duplicated due to proximity and/or observed consistency.

Graphic Scale
0' 200' 400'

Based on a drawing "3622 - PREPLAN - 3-30-2022-with slopes" provided by Kathy Linares of Mindel Scott via email, dated March 30, 2022 .

Site Reconnaissance Plan
Preliminary Slope Evaluation & Karst Survey
Johnson Road Residential
1614 Johnson Road
Louisville, Jefferson County, Kentucky 40245

Drawn By: WGH
Checked By: FEN
Scale: As Shown

Project No.: 61-2735
Drawing No.: 2735
Date: 05/12/2022

ECS Southeast, LLP
1762 Watterson Trail
Louisville, Kentucky 40299
Tel. (502) 493-7100

GENERAL NOTES:

1. DOMESTIC WATER SUPPLY:
   SUBJECT SITE CAN BE SERVED BY THE LOUISVILLE WATER COMPANY. THE NECESSARY WATER SYSTEM IMPROVEMENTS REQUIRED TO SERVICE THE DEVELOPMENT SHALL BE AT THE OWNER/DEVELOPER'S EXPENSE.
2. TREE PRESERVATION:
   A TREE PRESERVATION PLAN SHALL BE PROVIDED TO THE PLANNING COMMISSION'S STAFF LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES ON THE SITE.
3. PROTECTION OF TREES TO BE PRESERVED:
   CONSTRUCTION FENCING SHALL BE ERECTED PRIOR TO ANY GRADING OR CONSTRUCTION ACTIVITIES–PREVENTING COMPACTION OF ROOT SYSTEMS OF TREES TO BE PRESERVED. THE FENCING SHALL ENCLOSE THE AREA BENEATH THE DRIP LINE OF THE TREE CANOPY AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IS COMPLETE. NO PARKING, MATERIAL STORAGE OR CONSTRUCTION ACTIVITIES SHALL BE PERMITTED WITHIN THE FENCED AREA.
4. A LANDSCAPE AND TREE CANOPY PLAN PER CHAPTER 10 OF THE LDC SHALL BE PROVIDED AS REQUIRED PRIOR TO ISSUANCE OF BUILDING PERMIT.
5. THE DEVELOPMENT LIES IN THE ANCHORAGE MIDDLETOWN FIRE DISTRICT.
6. IF PROPOSED, SIGNATURE ENTRANCE WALLS SHALL BE SUBMITTED TO AND APPROVED BY THE PLANNING STAFF PRIOR TO CONSTRUCTION PLAN APPROVAL AND THEY SHALL MEET THE REQUIREMENTS OF CHAPTER 4.4.3 OF THE LDC.
7. ALL LUMINAIRES SHALL BE AIMED, DIRECTED OR FOCUSED SUCH AS TO NOT CAUSE DIRECT LIGHT FROM THE LUMINAIRE TO BE DIRECTED TOWARDS RESIDENTIAL USES OR PROJECTED OPEN SPACES (IE. CONSERVATION EASEMENTS, GREENWAYS OR PARKWAYS) ON ADJACENT OR NEARBY PARCEL'S, OR TO CREATE GLARE PERCEPTIBLE ON PUBLIC STREETS AND RIGHT–OF–WAYS PER CHAPTER 4.1.3. OF THE LDC.
8. MITIGATION MEASURES FOR DUST CONTROL SHALL BE IN PLACE DURING CONSTRUCTION TO PREVENT FUGITIVE EMISSIONS REACHING EXISTING ROADS AND NEIGHBORHOODS.
9. ALL EXISTING STRUCTURES AND EXISTING ENTRANCES SHALL BE REMOVED, EXCEPT AS NOTED ON THE PLAN.
10. IN ACCORDANCE WITH CHAPTER 4.9 OF THE LDC, A KARST SURVEY WILL BE PERFORMED.

MSD NOTES:

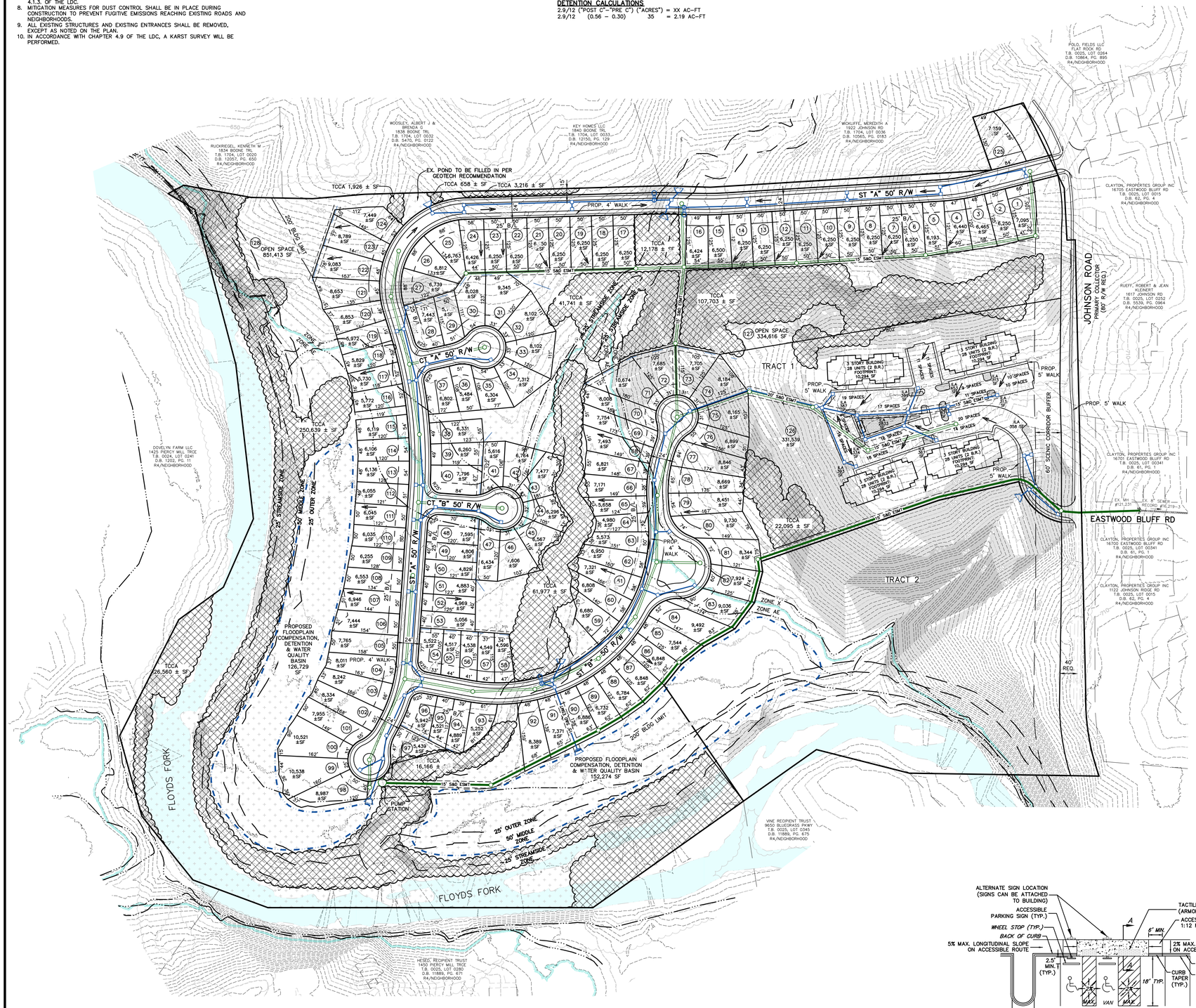
1. CONSTRUCTION PLANS & DOCUMENTS SHALL COMPLY WITH LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT'S DESIGN MANUAL AND STANDARD SPECIFICATIONS.
2. WASTEWATER:
   SANITARY SEWER WILL CONNECT TO THE FLOYD'S FORK WASTEWATER TREATMENT PLANT BY LATERAL EXTENSION AGREEMENT, SUBJECT TO FEES. SANITARY SEWER CAPACITY TO BE APPROVED BY METROPOLITAN SEWER DISTRICT.
3. DRAINAGE/STORMWATER DETENTION:
   DETENTION TO BE PROVIDED ON SITE AS DEPICTED ON THE PLAN. POST–DEVELOPMENT PEAK FLOWS WILL NOT EXCEED PRE–DEVELOPED PEAK FLOWS FROM DEVELOPMENT FOR THE 2, 10, 25, AND 100 YEAR STORMS OR TO DOWNSTREAM CAPACITY, WHICH IS MORE RESTRICTIVE. DRAINAGE PATTERN (DEPICTED BY FLOW ARROWS) IS FOR THE CONCEPT PURPOSES ONLY. FINAL CONFIGURATION AND SIZE OF DRAINAGE PIPES AND CHANNELS SHALL BE DETERMINED DURING THE CONSTRUCTION PLAN DESIGN PROCESS. DRAINAGE FACILITIES SHALL CONFORM TO MSD REQUIREMENTS.
4. EROSION AND SILT CONTROL:
   A SOIL AND SEDIMENTATION CONTROL PLAN SHALL BE DEVELOPED AND IMPLEMENTED IN ACCORDANCE WITH MSD AND THE USDA NATURAL RESOURCES CONSERVATION SERVICE RECOMMENDATIONS.
5. A PORTION OF THE SUBJECT PROPERTY LIES WITHIN A FLOOD HAZARD AREA PER FEMA'S FIRM MAPPING (21111C0 035E).
6. THE FINAL DESIGN OF THIS PROJECT MUST MEET ALL MS4 WATER QUALITY REGULATIONS ESTABLISHED BY MSD. SITE LAYOUT MAY CHANGE AT DESIGN PHASE DUE TO PROPER SIZING OF GREEN BEST MANAGEMENT PRACTICES.

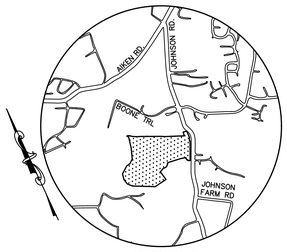
PUBLIC WORKS AND KTC NOTES:

1. NO LANDSCAPING AND COMMERCIAL SIGNS SHALL BE PERMITTED IN STATE AND METRO WORKS RIGHT–OF–WAY.
2. RIGHT–OF–WAY DEDICATION BY DEED OR MINOR PLAT MUST BE RECORDED PRIOR TO SITE CONSTRUCTION APPROVAL BY PUBLIC WORKS OR WITH ASSOCIATED RECORD PLAT AS REQUIRED BY METRO PUBLIC WORKS.
3. COMPATIBLE UTILITY LINES (ELECTRIC, PHONE, CABLE) SHALL BE PLACED IN A COMMON TRENCH UNLESS OTHERWISE REQUIRED BY APPROPRIATE AGENCIES.
4. STREET TREES SHALL BE PLANTED IN A MANNER THAT DOES NOT AFFECT PUBLIC SAFETY AND MAINTAINS PROPER SIGHT DISTANCE. FINAL LOCATION WILL BE DETERMINED DURING CONSTRUCTION APPROVAL PROCESS.
5. AN ENCROACHMENT PERMIT AND BOND MAY BE REQUIRED BY METRO PUBLIC WORKS FOR ROADWAY REPAIRS ON ALL SURROUNDING ACCESS ROADS TO THE SITE DUE TO DAMAGES CAUSED BY CONSTRUCTION TRAFFIC ACTIVITIES.
6. THE DEVELOPER IS RESPONSIBLE FOR ANY UTILITY RELOCATION ON THE PROPERTY.
7. TREES AND SHRUBBERY SHALL BE TRIMMED OR REMOVED TO PROVIDE SIGHT DISTANCE AS REQUIRED PER METRO PUBLIC WORKS STANDARDS.
8. ALL SIDEWALK RAMPS SHALL CONFORM TO A.D.A. STANDARD SPECIFICATION, THE "SPECIAL NOTE FOR DETECTABLE WARNING FOR SIDEWALK RAMPS" PER KTC STANDARD DRAWING FOR SIDEWALKS AND PER "KENTUCKY STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," LATEST EDITION.

DETENTION CALCULATIONS

2.9/12 ("POST C"–"PRE C") ("ACRES") = XX AC–FT
2.9/12 (0.56 – 0.30) 35 = 2.19 AC–FT





LOCATION MAP
NO SCALE

SITE DATA:

FORM DISTRICT		NEIGHBORHOOD
EXISTING ZONING		R4
EXISTING LAND USE		SINGLE FAMILY RESIDENTIAL/AGRICULTURAL
PROPOSED LAND USE		SINGLE & MULTI–FAMILY RESIDENTIAL (MRDI)
GROSS LAND AREA		72.54± AC
TRACT 1		61.09± AC
TRACT 2		11.45± AC (NOT INCLUDED IN PROPOSED DEVELOPMENT)
NET LAND AREA		54.8± AC
TOTAL NUMBER OF UNITS		237 UNITS
SINGLE–FAMILY		125 LOTS
MULTI–FAMILY		112 UNITS
GROSS DENSITY		3.87 D.U./AC
NET DENSITY		4.32 D.U./AC*
TOTAL OPEN SPACE PROVIDED		27.23± AC (44%)
AVERAGE LOT SIZE CALCULATION:		
TOTAL BUILDABLE LOT AREAS/TOTAL BUILDABLE LOTS		
1,193,973± SF/126(INCLUDES MULTI–FAMILY LOT)		9,476± SF

MIXED RESIDENTIAL DEVELOPMENT INCENTIVE (MRDI) POINTS:

% MULTI–FAMILY UNITS:	47%	2 POINTS
% AFFORDABLE UNITS:	12 (5%)	1 POINT
% COMMON OPEN SPACE	44%	3 POINTS
> 15% BELOW POVERTY LEVEL	6.03%	2 POINTS
TOTAL		8 POINTS

*8 POINTS = 5% DENSITY BONUS = 5.08 DU/AC ALLOWED IN R–4

SITE DATA: SINGLE–FAMILY RESIDENTIAL

BUILDABLE LOTS	125
NON–BUILDABLE LOTS	2
DIMENSIONAL STANDARDS:	
MINIMUM LOT SIZE	4,500 SF (9,000 SF AVG)
MINIMUM LOT WIDTH	40'
FRONT YARD & STREET SIDE YARD	15' (25' IF GARAGE FACING STREET)
SIDE YARD	5'
REAR YARD MIN.	25'

SITE DATA: MULTI–FAMILY RESIDENTIAL

NUMBER OF DWELLING UNITS	112
PARKING REQUIRED	
MINIMUM (1 SPACE/D.U.)	112 SPACE
MAXIMUM (2 SPACE/D.U.)	224 SPACES
PARKING PROVIDED	
CAR PARKING	188 SPACES (INCLUDES 6 ADA SPACES)
PARKING AREA RATIO	1.67 SP./UNIT
LANDSCAPE DATA:	
V.U.A.	59,487 SF
I.L.A. REQUIRED	4,461 SF (7.5%)
I.L.A. PROVIDED	6,821 SF

SITE DATA TREE CANOPY:

GROSS SITE AREA	61.09± AC (2,661,157± SF)
PROPOSED LAND USE	SINGLE & MULTI–FAMILY RESIDENTIAL (MRDI)
EXISTING TREE CANOPY	910,757± SF (34%)
*TREE CANOPY TO BE PRESERVED	544,859± SF (21%)
TOTAL TREE CANOPY REQUIRED	1,064,463± SF (40%)
TREE CANOPY TO BE PLANTED	519,604± SF (19%)

TREE CANOPY DEPICTED ON PLAN PER MSD LOJIC MAPPING, AERIAL PHOTO OR FIELD SURVEY. TREE CANOPY CALCULATIONS BASED UPON TREE AREAS SHOWN. *IF DRIPLINE IS PLOTTED/FIELD LOCATED THE AREA OF CANOPY TO BE PLANTED MAY BE REDUCED BY THE EXISTING CANOPY TO BE PRESERVED PER 10.1.5.A.2 OF THE LDC.

LEGEND

- EXISTING CONTOUR
- EXISTING TREE MASS
- EXISTING TREE
- EXISTING FENCE
- EXISTING SANITARY MANHOLE W/PIPE
- PROPOSED TREE MASS
- PROPOSED HANDICAP SPACE
- PROPOSED CATCH BASIN & YARD DRAIN W/PIPE
- PROPOSED STORM MANHOLE W/PIPE
- PROPOSED HEADWALL W/PIPE
- PROPOSED WATER QUALITY UNIT W/PIPE
- PROPOSED DITCH/SWALE
- PROPOSED SANITARY MANHOLE W/PIPE
- PROPOSED FORCEMAIN
- TCCA — PROPOSED TREE CANOPY CREDIT AREA
- PROPOSED DRAINAGE ARROW
- INTERIOR LANDSCAPE AREA (ILA)
- OPEN SPACE AREA
- EXISTING SLOPES 20–30%
- EXISTING SLOPES 30–100%

PLAN VIEW

TYPICAL ACCESSIBLE PARKING SPACES
NO SCALE

GRAPHIC SCALE 1"=100'
0 50 100 200

CASE NUMBER: ––––––––
MSD WM # XXXX

MINDEL SCOTT
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502-485-1508 ▶ MindelScott.com

DEVELOPER
HIGHGATES MANAGEMENT
7301 MONSEY CIRCLE
LOUISVILLE, KY 40219

OWNER
JEAN RUEFF
1617 JOHNSON ROAD
LOUISVILLE, KY 40245

PRELIMINARY SUBDIVISION PLAN
(MIXED RESIDENTIAL DEVELOPMENT INCENTIVE)

JOHNSON ROAD RESIDENTIAL

1614 JOHNSON ROAD
LOUISVILLE, KY 40245
T.B. 0025, LOT 0068
D.B. 6403, PG. 0333

Revisions

Vertical Scale: N/A
Horizontal Scale: 1"=100'
Date: 03/07/22
Job Number: 3622

Sheet 1 of 1

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