MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Michael L. Parson
Governor

Dru Buntin
Director

RHD24017
Benton County

March 05, 2024

Gary Liles
28451 Northwood Drive
Lincoln, MO 65338

RE: Eagle Bay

Dear Gary Liles:

On January 23, 2024, the Missouri Geological Survey received a request to perform a geohydrologic evaluation for the above referenced project located in Benton County. Included with this letter is a report that details the geologic and hydrologic conditions at the site and the determination of minimum lot size based on groundwater contamination potential.

Thank you for the evaluation request. If you are in need of further assistance or have questions regarding the report, please contact our office at P.O Box 250, Rolla, Mo 65402-0250, by telephone at 573-368-2100 or gspeg@dnr.mo.gov.

Sincerely,

MISSOURI GEOLOGICAL SURVEY

Paityn Schlosser
Geologist
Environmental Geology Section

c: Gary Liles
WPP
Kansas City Regional Office

03/05/2024

Missouri Department Of Natural Resources
Missouri Geological Survey
Geological Survey Program
Environmental Geology Section

Project ID Number
RHD24017
County
Benton County

Request Details

Project: Eagle Bay

Legal Description: 31 T41N R20W
Quadrangle: LAKEVIEW HEIGHTS
Latitude: 38 17 9.79
Longitude: -93 10 40.9

Organization Official

Name: Gary Liles
Address: 28451 Northwood Drive
City: Lincoln
State: MO Zip: 65338
Phone: 816-616-7124
Email: eaglebaypoa@gmail.com

Preparer

Name: Erin Heidolph
Address: P.O. Box 176
City: Jefferson City
State: MO Zip: 65102
Phone: 573-751-8309
Email: erin.heidolph@dnr.mo.gov

Project Details

Report Date: 03/05/2024
Date of Field Visit: 02/22/2024
Project Exempt: No

Previous Reports: Not Applicable

Upper Bedrock

- [ ] 0.0 Surficial materials greater than 20 feet thick or bedrock generally displays low permeability
- [ ] 0.1 Bedrock has moderate to high near-surface relatively low permeability at depth
- [X] 0.4 Bedrock has persistent open fractures and/or moderate to high permeability
- [ ] 1.2 Bedrock displays well developed karst features

Surficial Materials Type

- [ ] 0.0 Clay: Glacial drift or residuum with low permeability
- [ ] 0.1 Silt/Sand, Loess, silty and sandy alluvium, moderate permeability
- [X] 0.4 Gravel: gravelly alluvium and residuum,
- [ ] 1.2 Macropore permeability: relict bedrock structure residuum

Water Supply

- [ ] 0.0 Community Public Water Supply
- [ ] 0.1 Non-community public water supply
- [ ] 0.4 Multi-family wells
- [X] 1.2 Individual Domestic Wells

Surficial Material Thickness

- [ ] 0.0 Greater than 20 feet
- [ ] 0.1 Greater than 10 feet but less than or equal to 20 feet
- [ ] 0.4 Greater than 5 feet but less than or equal to 10 feet
- [X] 1.2 Less than 5 feet

Approximate Groundwater Velocity

- [ ] 0.0 Low to moderate
- [X] 1.2 High

Watershed Hydrology

- [ ] 0.0 Limited recharge
- [X] 0.4 Local recharge
- [ ] 1.2 Regional recharge

This evaluation is not an approval under the current residential housing development rules and pertains only to groundwater contamination potential. This report is valid for one year only at the location specified.

Minimum Lot Size: **4.8 acres** Total of rating numbers for all categories equals minimum lot size in acres.

Missouri Department Of Natural Resources
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Remarks:

On February 22nd, 2024, geologists with the Missouri Geological Survey performed a geohydrologic evaluation for an existing residential housing development at 28451 Northwood Drive, Lincoln, Missouri 65338. This evaluation was conducted at the request of the Water Protection Program. The purpose of the site visit is to observe the geologic and hydrologic characteristics of the site and to determine the minimum lot size necessary to protect groundwater quality from contamination in the event of wastewater treatment failure.

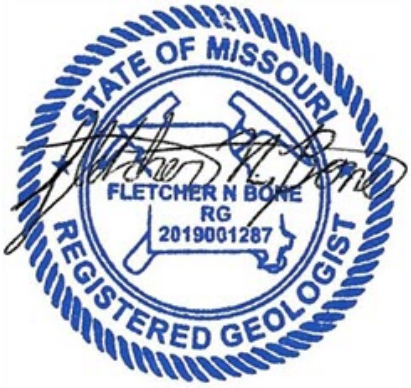
Surface water runoff from the site drains to the west into a tributary of Brickley Hollow, to the southeast into Flat Rock Creek, and to the east into a tributary of Brushy Creek. The tributary of Brickley Hollow, tributary of Brushy Creek, and Flat Rock Creek have not been formally classified but exhibit losing characteristics due to a lack of well-developed stream channels, erratic longitudinal gradient, unsorted chert substrate, and dense vegetation.

Surficial materials have variable organic matter content but are routinely very gravelly. clayey silt loam, and sandy silt loam. These residual materials developed in place from weathering of bedrock. The surficial materials are less than two feet in thickness across most of the site, with five feet or less of materials in streambanks. Surficial materials display moderate to high permeability. Due to thinness and high permeability of the surficial materials, the potential for effluent perching on the lower permeability bedrock and surfacing is high.

Bedrock was observed in multiple locations at the site, including hillslopes, stream banks, and on ridge crests. The uppermost bedrock at the site includes both the Ordovician-age Jefferson City-Cotter Dolomite and Roubidoux formations. The Jefferson City-Cotter Dolomite typically exhibits low to moderate primary permeability and high secondary permeability along fractures and bedding planes. The Roubidoux Formation typically exhibits high primary permeability. Outcrops of the Quarry Ledge, a massive, competent, and laterally extensive marker bed of the Jefferson City-Cotter Dolomite, are typically exposed near 846 ft above means sea level, in elevation; at this elevation, groundwater perching commonly occurs. Numerous instances of solution-enlarged joints and bedding planes were observed in the Jefferson City-Cotter Dolomite which may allow for rapid, turbulent, water transmission into the subsurface.

No springs, sinkholes, or geologic structures occur within 1 mile of the development.

The minimum required lot size for this development to utilize individual domestic wells is 4.8 acres. In the event of wastewater treatment failure, permeability of surficial materials and bedrock in the area may result in adverse impacts to the local, shallow groundwater, as well as the surface waters of the tributary of Brickley Hollow, the tributary to Brushy Creek, and Flat Rock Creek.



03/05/2024