



GREENBAUM ASSOCIATES, INC.
GEOTECHNICAL & MATERIALS ENGINEERS

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March 19, 2020

Mr. Jack Howell
c/o Ion Energy Solutions
323 South Hubbards Lane
Louisville, KY 40207

Re: Karst Survey
1300 East Washington
Louisville, Kentucky 40206
Project Number 20-057G

Dear Mr. Howell:

At the request of Mr. Alex Rosenberg of AL Engineering, Inc., I performed a karst survey of the above referenced property. This area is not one that is prone to development of subsidence features as a result of karst development in the underlying bedrock. Though the underlying bedrock is limestone, the glacial outwash that covers it is permeable with a water table above the bedrock. This groundwater protects the underlying bedrock from karst development. Karst development is a result of solutioning of the limestone by acidic water such as rainwater, which becomes acidic from exposure to carbon dioxide in the atmosphere and from contact with organics in the topsoil layer as it percolates downward to the bedrock. This percolating water is diluted by the large volume of groundwater present in the outwash, protecting the underlying limestone from solutioning. The geology of the site is described in the paragraphs that follow.

This site is covered by glacial outwash, soils that were deposited as alluvium by glacial meltwater and the end of the Wisconsin Glaciation. These soils are described by the Kentucky Geological Survey as:

Sand, gravel, silt, and clay, intermixed and interbedded: Sand, very fine to coarse, and gravel are light brownish gray to light reddish brown, well to poorly sorted, subangular to well rounded, commonly crossbedded. Gravel includes pebbles and cobbles of limestone, siltstone, sandstone, dolomite, quartz, chert, quartzite, granite, gneiss, schist, and finely crystalline igneous and metamorphic rocks; most cobbles are less than 0.3 foot in diameter. Silt and clay are gray to olive gray below water table, yellowish brown above water table, weather yellowish gray. Unit deposited as alluvium by river of low gradient following release of glacial meltwater. The outwash plain generally lies between 455 and 465 feet. Pleistocene channel of Ohio River is deepest beneath south ends of Kennedy Memorial and New York Central Railroad bridges where bottom is at elevations of 329 and 328 feet, respectively; at least two wells penetrated more than 125 feet of outwash above bedrock in the vicinity of

Downstream Facilities Capacity Request Submittal Assistance Document

The Downstream Facilities Capacity Request (DFCR) is submitted for the purpose of determining if capacity exists for your Lateral Extension Project. Included with the submittal of the DFCR must be a Site Location Map with the parcel(s) to be served noted.

MSD seeks to provide a prompt definitive determination of capacity on your project. Diligent submittal of information on the DFCR and Site Location Map documents is essential. Submittals that include omissions and/or erroneous information can lead to delayed determination of capacity on your project. Anywhere there is information requested on the DFCR form, and that information does not apply to your project, at a minimum insert "NA". A short explanation of why information is not included on the DFCR maybe helpful in making a prompt capacity determination on your project.

Below is information that will help you provide the essential information needed to determine capacity for your project.

Date - is the date that the form is completed for submittal to MSD. (MSD will stamp the document with the received date upon reception of the submittal at MSD).

Name of Development - if the development does not currently have a name, or will not be named, reference the development by street name accompanied with the word which best describes the development type. For instance, East Broadway Commercial Development, Grandview Apartments, Bardstown Road Condos, etc.

Address/Tax Block/ Lot of Development – please provide both the property address, and Tax Block / Lot number. If a valid address does not exist, tax block and lot will suffice. If the project will exist on more than one address, please provide those addresses also.

Owner/Developer's Name –include an owner or developer contact name. Inclusion of the Owner/Developer name will assist MSD in communications that may eliminate delays.

Owner/Developer's Address – address where Owner/Developer contact name will receive mail.

Owner/Developer's Tel. No. – include the telephone number that will most likely lead to immediate contact of Owner/Developer Contact Name. Inclusion of more than one telephone number is welcomed.

Closest Sewer Connection:

Record Number

Manhole Number

MSD Atlas Page

Wastewater Treatment Plant Service Area

This information is readily attainable in the MSD Sewer Atlas. For information on how to attain a MSD Sewer Atlas, call MSD Customer Relations at 587-0603. The Closest Sewer Connection information is also attainable by calling MSD Customer Relations at 587-0603 and speaking to a Customer Relations agent.

Amount of Flow – the MSD Design Manual, pages 8-18 through 8-20, include the information needed to calculate the amount of flow from the development to the MSD system. The Design Manual Information can be retrieved from MSD's website at <http://www.msdlouky.org/insidemsd/pdfs/designmanual02/Chap08-2000.pdf>.

Pump Station needed – the designation of whether a pump station is needed is required to assess if your project can be developed.

Recapture Area – if you do not know whether your project resides in a recapture area, you may call MSD Customer Relations at 587-0603 to get the answer.

Downstream Facilities Capacity Request Site Location Map

The Site Location Map (SLM) is used to determine the general location of the project for which sanitary sewer capacity is sought. The SLM may be a copy of a USGS map, Sewer Atlas map, Topographical map, MapsCo map, or any similar map which can easily depict the location of your project in MSD's service area.

The SLM must include a North arrow designation and drawn boundaries of the development site.

FILENAME DownstreamFacilitiesCapRequest-6.dot
Form Rev. 3/1/2011

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