

MID-HUDSON GEOSCIENCES
1003 Route 44/55
P.O. Box 32
Clintondale, NY 12515-0032
Phone (845) 873-7821

rockdoctor@optonline.net
April 30, 2025

Town of Cairo Planning Board
P. O. Box 728
Cairo, NY 12413

RE: Application before Town of Cairo Planning Board: Blackhead Mountain Lodge

It is my understanding that the Blackhead Mountain Lodge has an application before the Town of Cairo with a plan to bond neighboring properties to protect their water supply wells with respect to quantity and quality of the water. "Quantity" is the water to supply sufficient well yield in gallons per minute for normal household use. "Quality" of water relates to contamination of water which could include any deleterious chemical or bacteria in the water which can be removed through a standard procedure. Other chemicals, such as PFAS, PFOS, 1,4-Dioxane, or Chlorinated Volatile Organics, which may require special treatment to clean drinking water. The question at hand is to determine the actual area which should be covered by a bond. In the March 3, 2025 report, there are two maps which provide information to help identify the area to be bonded. Maps 3 and 4 outline the areas of the overlapping cones of depression identified from the data provided in the Sterling Report defining pumping tests.

Based on the conclusions my report provided from the Sterling Report testing, I am reminding the Board and Applicant that 32 gallons per minute was not proven to be available from either well 4, well 5, or the combination of both wells.

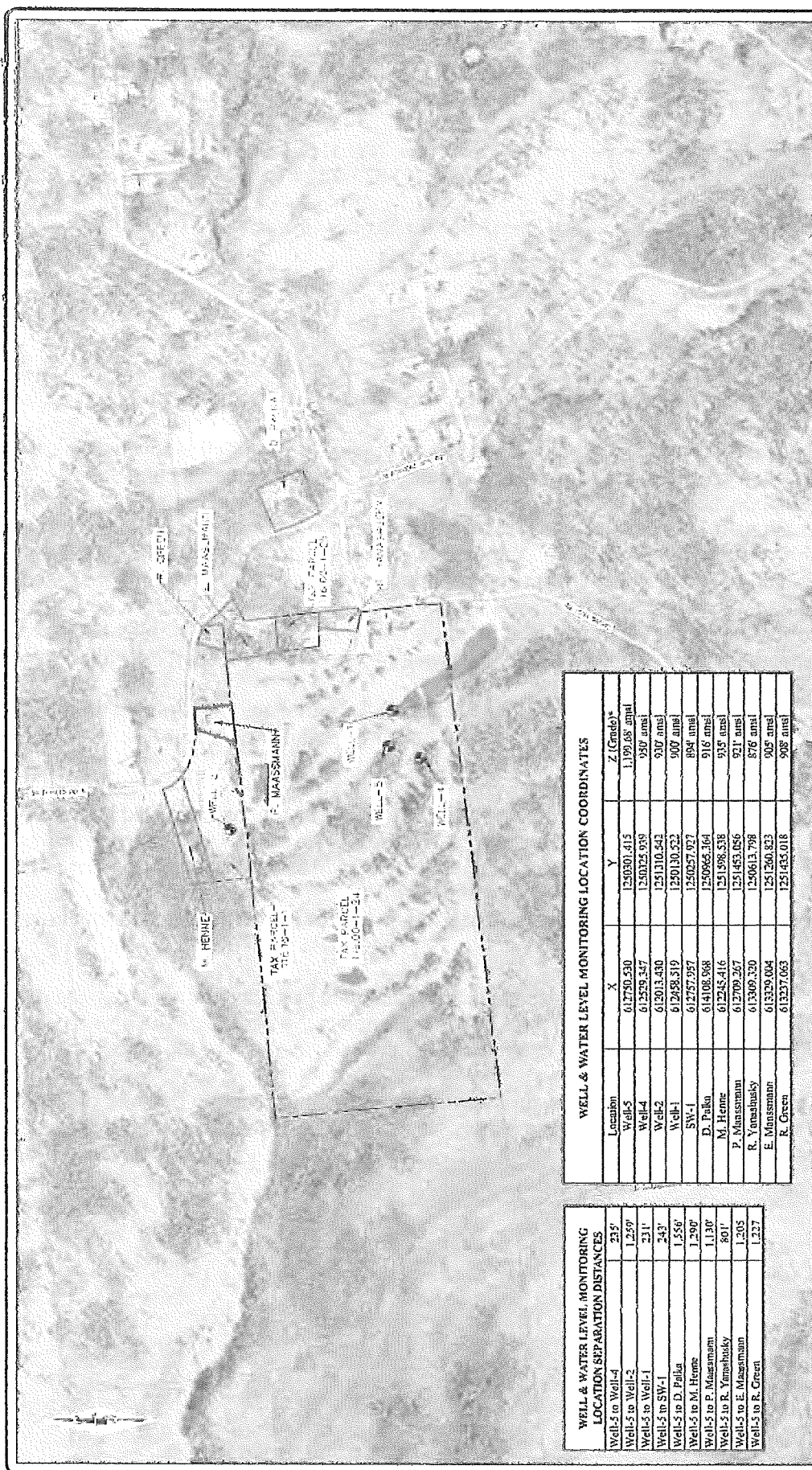
MAP 3 shows an oval cone of depression from pumping Well 5. From Well 5 the radius of influence is 5460 feet to the north-northwest and by symmetry 5460 feet to the south-southeast. The radius of influence to the northeast of Well 5 is 1205 feet and by symmetry 1205 feet to the southwest. On MAP 4, a circular cone of depression is around Well 4 with a radius of 1900 feet. Because Well 4 and Well 5 are very close together (235 feet), their cones of depression overlap. Because these two wells are so close together, they are competing for water from the same area.

The difference in shape, (oval versus circle) and size most likely related to porosity, permeability, and directions of fractures, where groundwater is drawn to the well through the fractures in the bedrock. The area to bond may be an area with a radius of 6000 feet around Well 4 or Well 5 since they are quite close together.

Another possible place to drill new wells might be on the western end of the property outlined on MAP 1 where there are no other wells and no indication of housing either. Such a suggestion might seem inappropriate since I have never seen the site plan.

Yours truly,

Katherine J. Beinkafner, Ph.D.
NYS Professional Geologist #1176



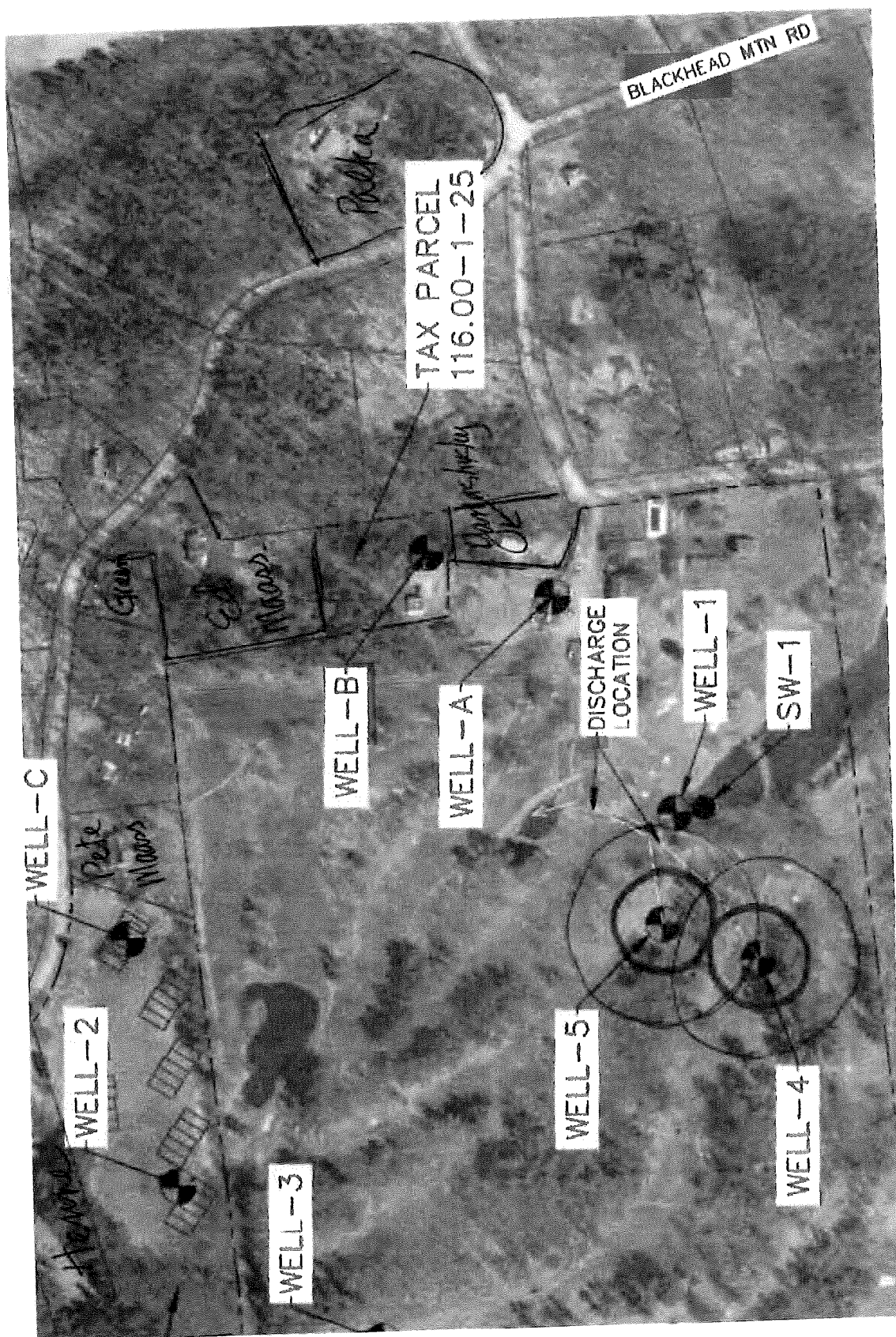
MAP 1. Blackhead Mountain Lodge Area with Well Locations and Tables with Distances between Wells and X, Y, Z Locations for All Wells by Sterling (Figure 3)

WELL & WATER LEVEL MONITORING LOCATION SEPARATION DISTANCES	
Well-5 to Well-4	235'
Well-5 to Well-2	1,259'
Well-5 to Well-1	231'
Well-5 to SW-1	243'
Well-5 to D. Pulla	1,556'
Well-5 to M. Home	1,290'
Well-5 to P. Magarum	1,130'
Well-5 to R. Ymalukky	801'
Well-5 to E. Magarum	1,205'
Well-5 to R. Green	1,227'

Location	X	Y	Z (Grade)*
Well-5	612730.230	1250301.415	1,199.68' amsl
Well-4	612579.547	1250325.019	930' amsl
Well-2	612013.430	1251310.542	910' amsl
Well-1	612458.519	1251310.523	900' amsl
SW-1	612757.957	1250257.027	895' amsl
D. Pelkon	614108.568	1250965.164	916' amsl
M. Herme	612243.416	1251598.518	913' amsl
P. Maassarmui	612709.267	1251453.656	921' amsl
R. Yanashaky	613309.320	1250613.798	878' amsl
E. Maassmann	613279.004	1251260.033	905' amsl
N.G.	613257.624	1251454.418	909' amsl

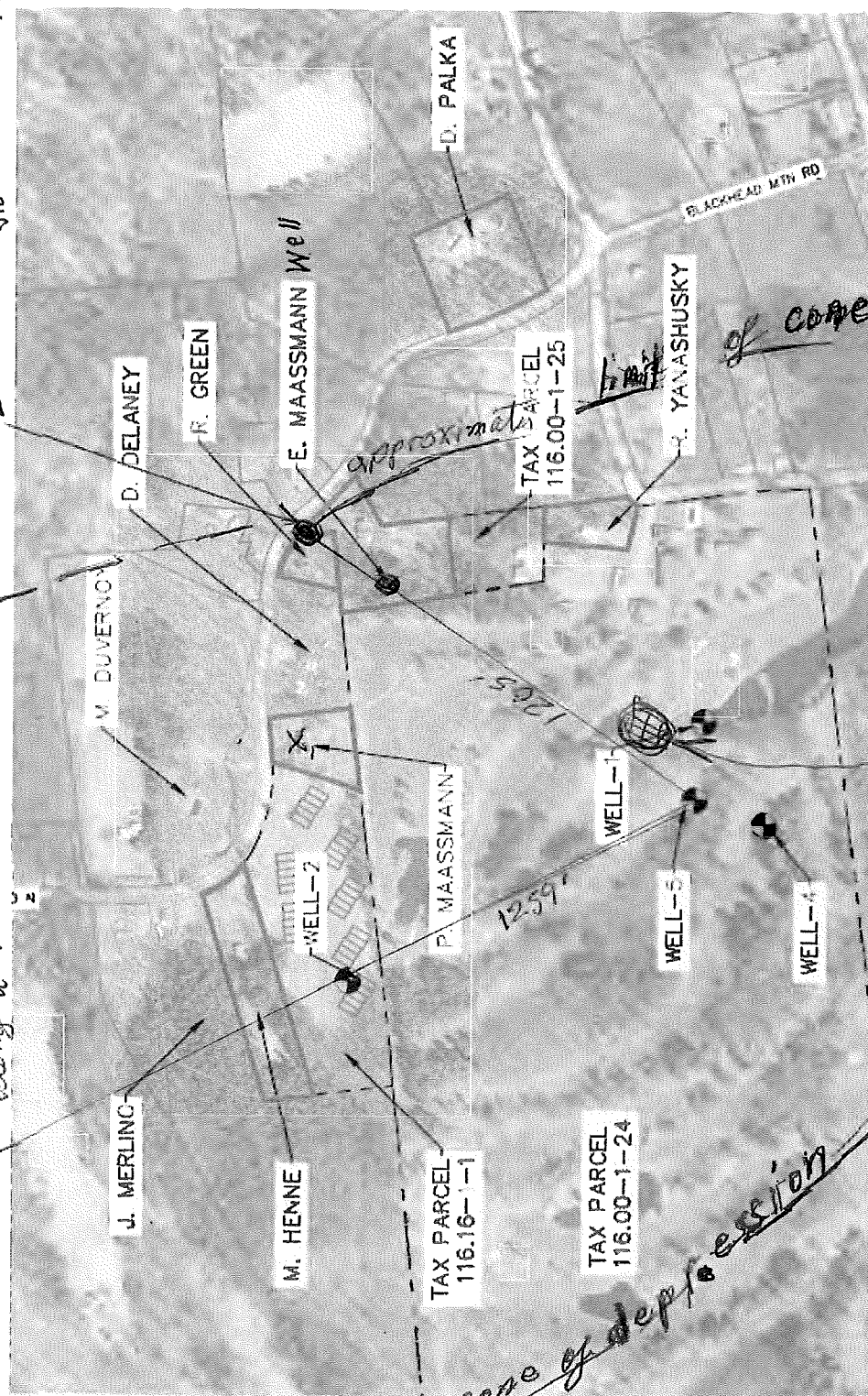
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 24 West 24th St., New York, NY 10011
 (212) 255-1111



MAP 2. Blackhead Mountain Lodge Map showing Discharge Locations for Pumping Tests for Well 5 and Well 4. Discharge for Well 5 is north of discharge for Well 4. Discharge points are 300 feet northeast of the pumping wells.

outer limit of cone of depression from pumping well 5 is 5400 feet north north west of pumping well 5 along a line extending from well 5 to well 2



MAP 3. Blackhead Mountain Lodge Area showing Area of Discharge and Approximate Cone of Depression for 72-hour Pumping Test of Well 5.

Area of Discharge lies within huge cone of depression
Pumping Well E is recirculating pumped water

MAP 4. Blackhead Mountain Lodge Area showing Area of Discharge & Approximate Cone of Depression for 73-hour Pumping Test of Well 4.

