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February 10, 2014

Ms. Lisa Masi
NYSDEC – Wildlife Biologist
21 South Putt Corners Road
New Paltz, NY 12561

*Re: Eastern Timber Rattlesnake
Quartararo Property – Chestnut Ridge Road
Town of Dover, Dutchess County, New York*

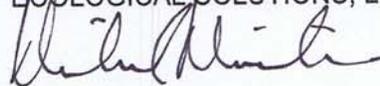
Dear Lisa:

As per your email dated January 28, 2014 to AKRF, Inc. attached are site photographs, key map, and soils map for the proposed lots. As per my assessment report and the photographs I did not observe any potential dens or basking areas. The potential for use of the property for foraging especially in the wooded areas remains. Based on the potential for foraging the project plans have been revised to add avoidance notes (seasonal restrictions, barrier) from the Habitat Assessment Report and a limit of disturbance line for each of the three lots.

If you need any additional information, please contact me 203-910-4716.

Sincerely,

ECOLOGICAL SOLUTIONS, LLC



Michael Nowicki
Biologist

cc: Jean McAvoy

*Eastern Timber Rattlesnake
Habitat Assessment Report*

Quartararo Property
Town of Dover,
Dutchess County, NY

November 27, 2013
Revised February 10, 2014

Prepared by:

Michael Nowicki
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Photograph Location Plan, sheet 1 of 1, dated 2/3/14

1.0 INTRODUCTION

The property owner, John Quartararo, proposes to construct three single family residences, driveways and individual septic systems on 3 lots totaling approximately 97.679 acres (Lot #2 = 68.882, Lot #3 = 15.989, and Lot #4 = 12.808 acres) located on Chestnut Ridge Road in the Town of Dover, Dutchess County, NY. The remaining property identified as Lot #1 is 92.166 acres and contains an existing residence, driveway, and septic system (*Figure 1*).

As part of the environmental review for the project, New York State Department of Environmental Conservation (NYSDEC) Natural Heritage Program via correspondence dated October 9, 2013 confirmed that a New York State threatened species, Eastern Timber Rattlesnake (*Crotalus horridus*), or suitable habitat exists within 1.5 miles of the property.

The property was surveyed on November 24 and 25, 2013 for potential habitat. For this species dens and basking area are critical to the species survival. Forested habitat within 2.5 miles of den sites are used for foraging. Requirements for timber rattlesnake dens generally include a southeast to southwest facing rock formation of either fractured ledge or talus with a nearby open basking area with sufficient rock cover for gestating females and post-emergence basking.

The property is a large tract of generally densely wooded land with fields located along Chestnut Ridge Road and wetlands located throughout the property (*Figure 2*). There were no areas or conditions on the property that were identified as ledges or apparent basking area. However, it is known that timber rattlesnakes, particularly females, may move considerable distances overland (generally migrate from 1.3 to 2.5 miles (2 to 4 km) from their den each summer) and may utilize any open sunny or upland mixed forest area during the summer season for foraging.

2.0 KNOWN TIMBER RATTLESNAKE HABITATS

There is a property about 1.5 miles northeast of the Quartararo property that has a north/south running ridge and it is along this steep ridge on the western edge of Route 22 just west of the MTA railroad tracks where three confirmed dens are located and others suspected. The ridge is part of one long north-south geological feature comprised of Everett Schist. This increases the probability that other dens or den pockets may be found in the ridge. The ridge runs parallel to State Route 22 and is clearly visible from the road. There is suitable basking habitat that could be used as post-emergent basking for the snakes from those dens or by gestating females. This critical habitat tends to concentrate the snakes in those areas during basking and gestating periods.

Two additional dens off the property have been documented by the NYSDEC. One is located approximately 0.5 miles southeast of the southernmost tip of the property referenced above, and the other, a little over one mile south of that property. They are within the same geological feature. All of these dens are within 2.5 miles of the Quartararo property and therefore within travel distance for timber rattlesnakes especially for foraging. Rattlesnake movements, however, are dependent upon availability of suitable basking/gestating areas, successful foraging, and mating activity.

Other known Dutchess County dens are located to the east several miles away and on the east side of Route 22 which is a physical barrier to rattlesnake movements, so they are not being considered for any potential activity on this project.

3.0 TIMBER RATTLESNAKE HABITAT SURVEYS

The Quartararo property was assessed for potential timber rattlesnake habitat (dens, basking area, foraging area) by walking through all parts of the property to view the hillsides, valleys, and wooded terrain. In addition to the ground surveys, various aerial photographs were used to help identify potential basking areas. Dens and basking areas are the most critical habitat for this species. The property is mostly a maturing second growth deciduous forest (maples, oaks, hickory) and secondary species ranging in size from young to mature woods which was most likely logged many decades ago. Approximately 10% of the property is open field area located along Chestnut Ridge Road with one field within the interior of the property. There were no observed areas on the property that offered potential den or basking locations since there are no suitable ledges or talus slides.

Requirements for timber rattlesnake dens generally include a southeast to southwest facing rock formation of either fractured ledge or talus with a nearby open basking area with sufficient rock cover for gestating females and post-emergence basking. There were no areas of the property identified that had ledges or apparent basking area. The majority of the property is densely wooded including areas of both gentle and steep slopes. The wooded areas do offer potential foraging habitat because of the cover offered by the canopy and abundance of prey (rodents) located here.

4.0 RECOMMENDATIONS

The Quartararo property is located within 1.5 miles of known or potential den and basking areas. The property was assessed on two occasions and no areas of the property were identified that had potential den or basking habitat. However, since the property is generally wooded in generic terms it is potentially useable as a travel corridor or as habitat for foraging although there are no unique features on this property that make it more suitable for these activities than many of the properties in the area.

Although the land will not be significantly altered except for light construction activities some mitigation measures are appropriate and are often required by the NYSDEC especially if clearing for the residences is conducted during the summer months. The following will be applied to development on this property to avoid impacts:

Seasonal restrictions

Disturbance activities, including movement of construction vehicles, excavation, and alteration of vegetation, should be conducted during the period when the snakes would be expected to be hibernating and are less likely to be directly impacted by above-ground disturbances. The acceptable work period is November 1st through March 31st.

Temporary barrier

When ground disturbance is likely to occur from land clearing activities occurring outside of the work periods, a temporary restrictive (Stechert, 2001) barrier will be installed around the perimeter of the disturbance footprint of small projects (< 1 acre). The barrier should be: 1) installed before the end of the acceptable work period and maintained until the end of the construction phase of the project or until the beginning of the next acceptable work period, whichever occurs first, 2) inspected daily and, if necessary, repaired immediately to a fully functional condition¹, and 3) constructed in accordance with the following design specifications:

- made of ¼ inch square hardware cloth or wire mesh;
- a minimum of 48" high;
- anchored into the ground with reinforcement bars placed on the "disturbance side" of the barrier and spaced between 6 – 8 feet apart;
- secured at the base (barrier/ground interface) with at least 6" of fence material covered with soil backfill.

¹ The effectiveness of the barrier will be diminished and snakes may be able to gain access to the disturbance area if debris (e.g. tree limbs, soil) is allowed to overtop or pile up along side of the barrier.

Figure 1 Location Map

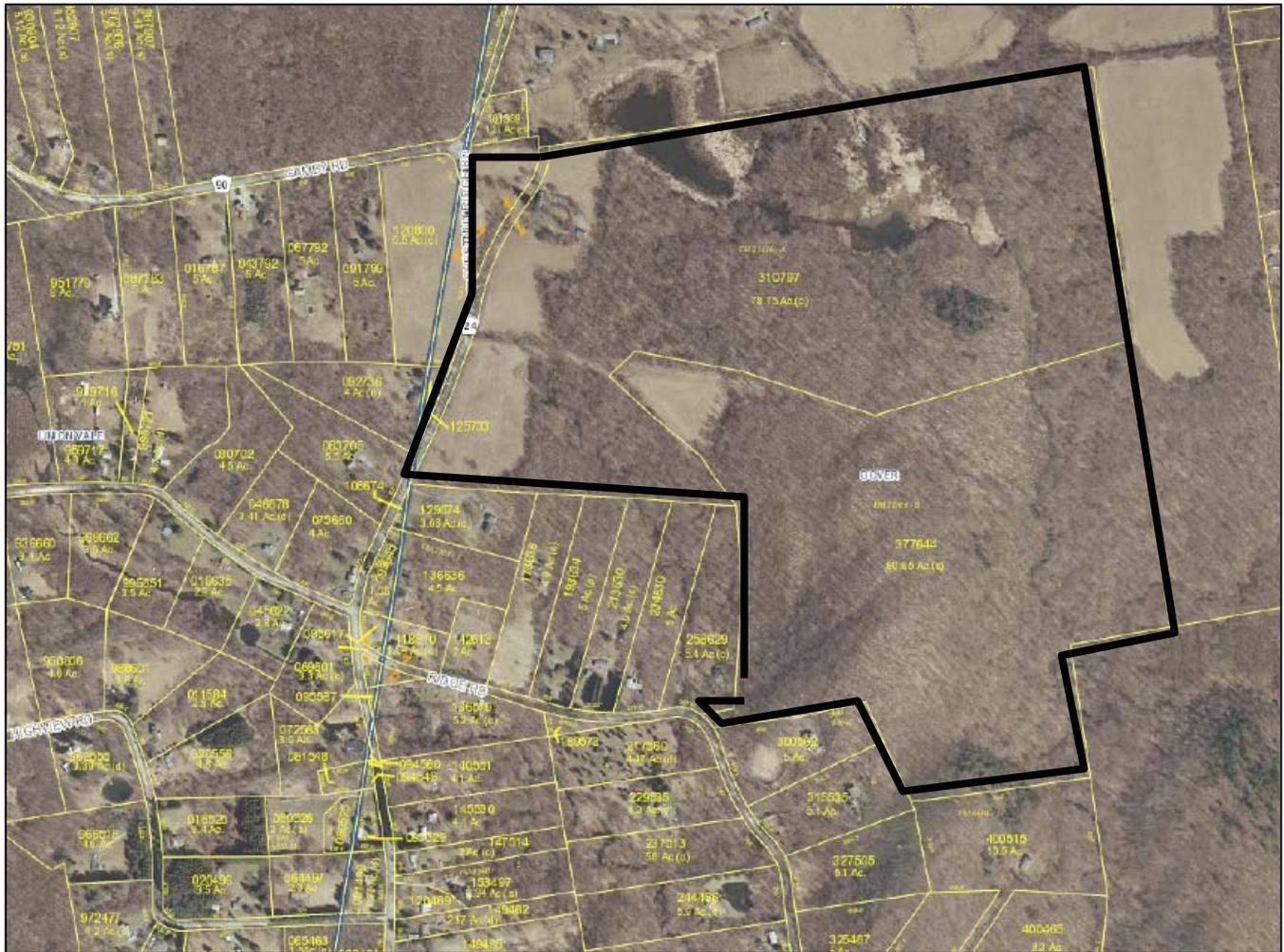
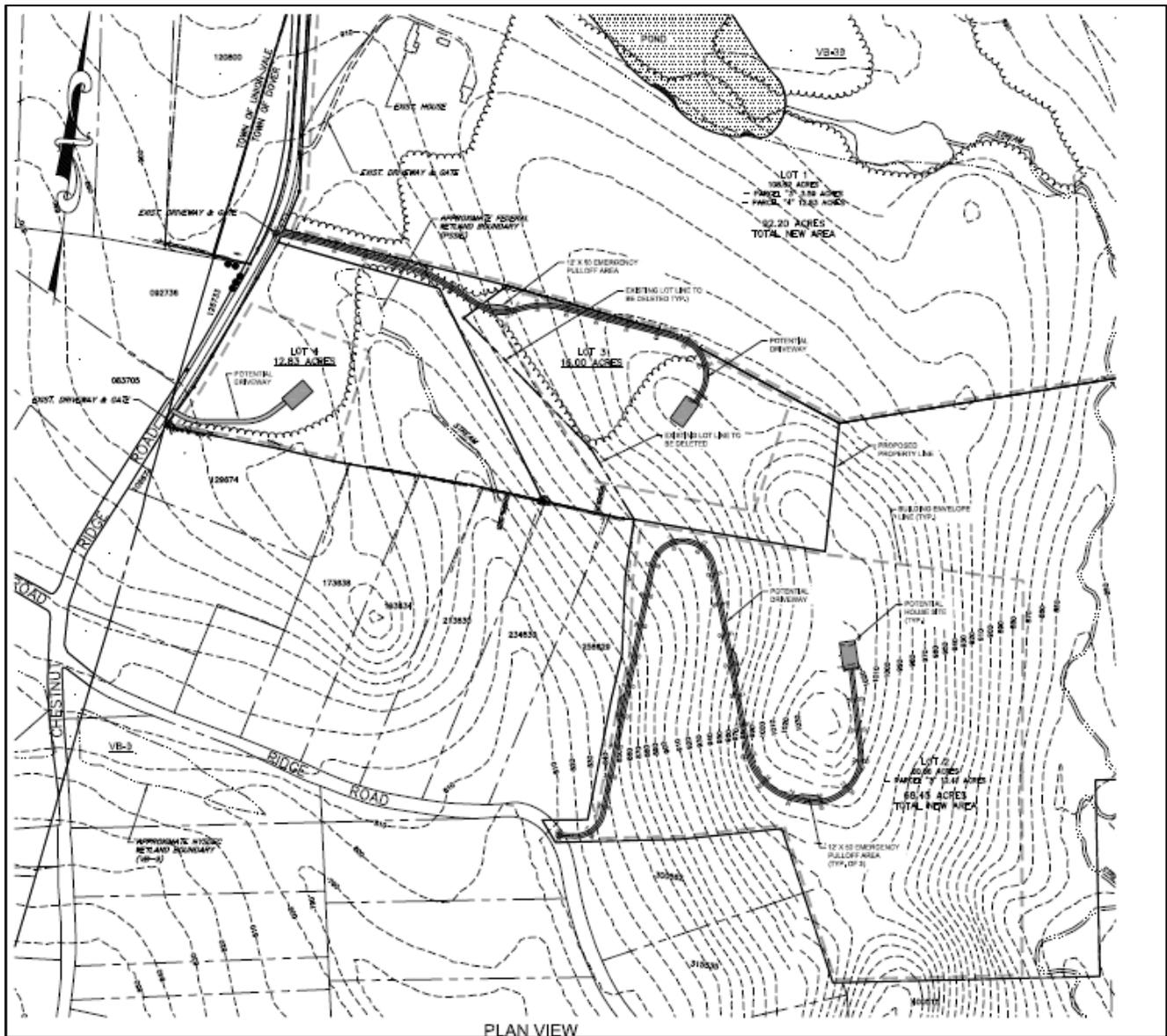


Figure 2 Limits of Observation



APPENDIX

Site Photographs, 1 - 48, dated 2/3/14

Photograph Location Plan, sheet 1 of 1, dated 2/3/14

RENNIA ENGINEERING DESIGN, PLLC
CIVIL & ENVIRONMENTAL ENGINEERING

6 Dover Village Plaza, Suite 5, P.O. Box 400, Dover Plains, NY 12522
Tel: (845) 877-0555 Fax: (845) 877-0556

Inspection Date: 2/3/14
Project: Quartararo Property
Chestnut Ridge Road
Town of Dover, NY



Photo #1 – Lot 4 - Driveway



Photo #2 – Lot 4 – facing East

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Photo #3 – Lot 4 - facing Southeast



Photo #4 – Lot 3 – Existing Driveway facing East

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Photo #5 – Lot 3 – Existing Driveway facing East



Photo #6 – Lot 2 – Rear lot view facing Southwest

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Photo #7 – Lot 3 – Existing Field facing East



Photo #8 – Lot 3 – House Site facing East

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Photo #9 – Lot 3 – House Site facing West



Photo #10 – Lot 3 – House Site facing East

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Photo #11 – Lot 3 – Rear Lot facing South



Photo #12 – Lot 4 – facing East (property corner)

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Photo #13 – Lot 4 – facing South



Photo #14 – Lot 4 – facing South

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Photo #15 – Lot 4 – facing North



Photo #16 – Lot 4 – facing Southwest

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Photo #17 – Lot 4 – facing South



Photo #18 – Lot 4 – facing Southwest

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Photo #19 – Lot 4 – facing Northeast



Photo #20 – Lot 4 – facing East

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Photo #21 – Lot 4 – facing West



Photo #22 – Lot 4 – facing West

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Photo #23 – Lot 4 – facing South



Photo #24 – Lot 4 – facing Southwest

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Photo #25 – Lot 4 – facing Northwest



Photo #26 – Lot 4 – facing Northwest

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Photo #27 – Lot 4 – facing Northwest



Photo #28 – Lot 4 – facing Northwest

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Photo #29 – Lot 4 – facing North



Photo #30 – Lot 4 – facing North

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Photo #31 – Lot 4 – facing North



Photo #32 – Lot 4 – facing East

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Town of Dover, NY



Photo #33 – Lot 4 – facing North



Photo #34 – Lot 4 – facing East

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Town of Dover, NY



Photo #35 – Lot 4 – facing North



Photo #36 – Lot 4 – facing East (potential house site)

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Town of Dover, NY



Photo #37 – Lot 4 – facing South (Sewage Disposal Area)



Photo #38 – Lot 4 – facing Southeast (Sewage Disposal Area)

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Photo #39 – Lot 4 – facing West (Potential Driveway Area)



Photo #40 – Lot 4 – facing South (Potential Driveway Area)

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Photo #41 – Lot 4 – facing South (Potential Driveway Area)



Photo #42 – Lot 4 – facing Southeast

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Photo #43 – Lot 4 – facing West



Photo #44 – Lot 4 – facing North

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Photo #45 – Lot 4 – facing Southeast



Photo #46 – Lot 3 – facing East

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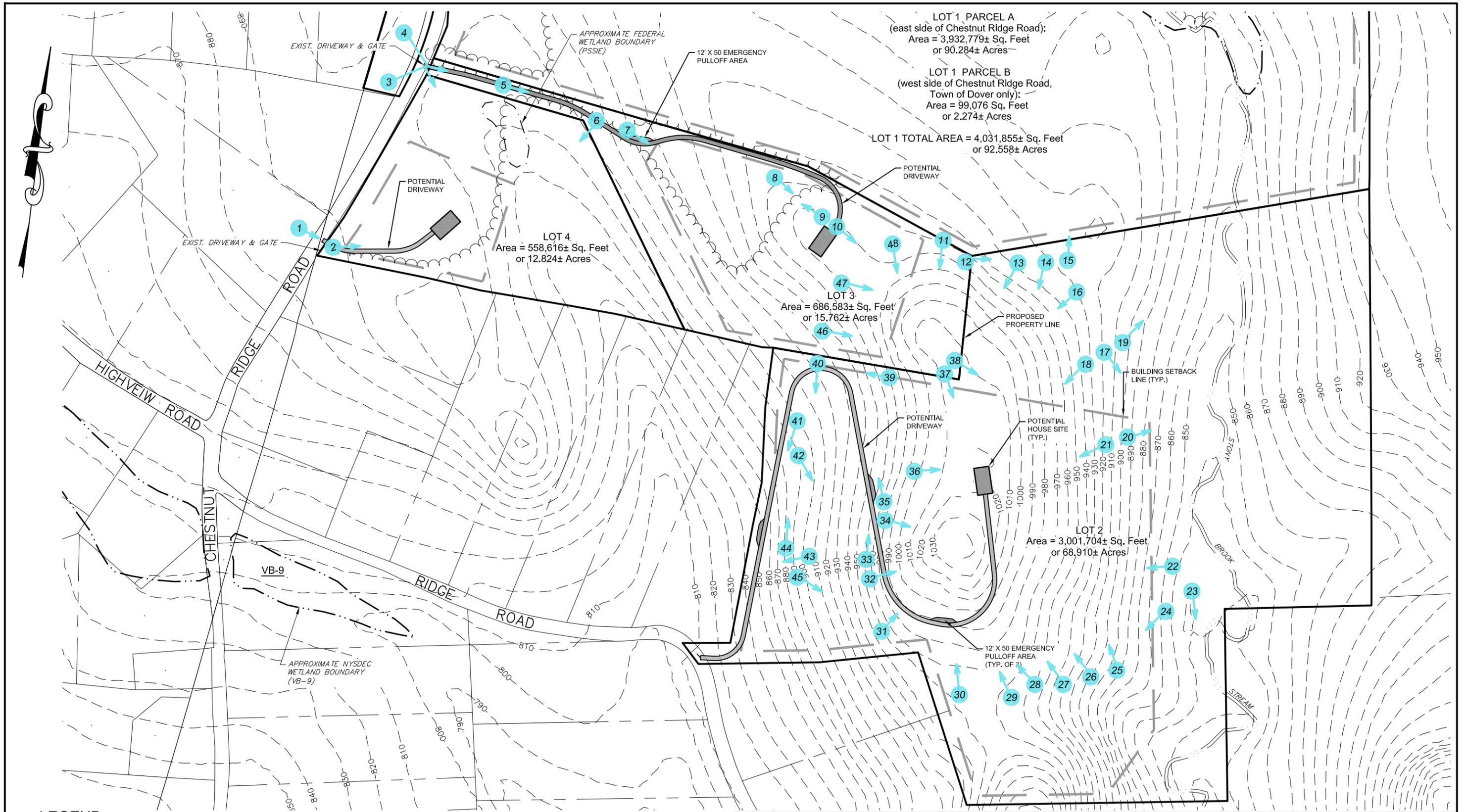
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Photo #47 – Lot 3 – facing East

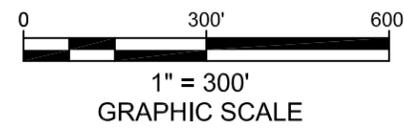


Photo #48 – Lot 3 – facing South



LEGEND

PROPERTY LINE	
10 FT. CONTOUR	
TREE LINE	
STREAM	
PROPOSED BUILDING ENVELOPE LINE	
PHOTO LOCATION / DIRECTION	



ENGINEERING, DESIGN, & PLANS PREPARED BY:

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LANDS OF QUARTARARO

TOWN OF DOVER DUTCHESS COUNTY, NY

PHOTOGRAPH LOCATION PLAN

DATE	SCALE	DESIGNED BY:	DRAWN BY:	CHECKED BY:	JOB NO.	SHEET NO.
2/3/14	1"=300'	RAR	RED	RAR	13-013	1 of 1