

## **DESCRIPTION OF LAND**

### **Exhibit VIII. C.1.e**

#### **Floodplain Areas**

According to the Federal Emergency Management Agency (FEMA), areas of the project site are located within the 100-year flood zone. These areas include a portion of Lot 95 in the northwest part of the site, a portion of Lot 75.2 in the southwest part of the site, and 14.6 acres of Lot 70.2. Approximately 46.9 acres of the project site lies within the 100 year floodplain. The site is not located within a floodway or a 500-year flood zone; see Figure VIII. C.1.e-1 FEMA Floodplains.

#### **Geological or Structural Defect**

At this time, there is no known geological or structural defect for the Resorts World Hudson Valley site. Two geotechnical investigations were performed on portions of the site in the past, in support of prior development proposals. A geotechnical investigation performed specifically in support of the proposed Resorts World Hudson Valley development is underway.

A geotechnical investigation was conducted in 1998 to obtain sufficient information so recommendations for the design and construction of feasible foundation types and earthworks could be incorporated into the final design of the Verticon Warehouse that was previously proposed on a portion of the project site. The following information was taken from the resulting report and presented here to provide an idea of the geological/geotechnical conditions on the corresponding Resorts World Hudson Valley project site parcels.

The proposed location of this facility included elements in the three southernmost project site parcels. This area is characterized by several rolling meadows with wooded hedgerows in between. Federal and New York State Department of Environmental Conservation (NYSDEC) wetlands are located to the north, east, and west of the area, and I-84 borders the area to the south. A pond with a small stream flowing in the northward direction is present at the center of the area, and a residence is located east of the pond. The Resorts World Hudson Valley parcel area included in this investigation is approximately 760 feet in length and 500 feet in width at its longest and widest areas, respectively. This investigation did include borings in two additional development parcels to the north, but these borings were not of a quantity or in locations suitable to determine the surface/subsurface conditions in either one.

No visual signs of contamination were observed during the investigation. Soil conditions in this area generally consisted of the following:

- **Stratum 1:** A thin layer of silty-sandy topsoil ranging from 0.2 to 2 feet thick.
- **Stratum 2:** A layer of sand with some silt or clayey silt, and a trace to some gravel. This layer had a thickness ranging from 2 to 8 feet, and is dense to very dense.
- **Stratum 3:** A layer composed of weathered shale, some sand, and trace amounts of silt with a general depth range of 2 to 10 feet was observed in some investigation locations.
- **Stratum 4:** A layer of sandy till with trace to some quantities of gravel and silt. This layer extends between 4 and 12 feet in depth, and is also very dense.
- **Stratum 5:** Weathered bedrock

At locations where the weathered shale stratum is not present, the sandy soil extends to a similar sandy till and then to weathered bedrock.

Refusal in shale bedrock was encountered at depths between 2 and 15 feet bgs, and in a few locations bedrock extends above the ground surface. The surface of the shale was described as very weathered and should be rippable in the upper 3 to 5 feet in general excavations.

Based on groundwater levels measured during the boring program and the moisture condition of the samples recovered from the boring locations, groundwater water is present in the overburden between the depths of 3.5 to 8 feet. In wetland areas, water was observed at or near the ground surface. Perched groundwater tables may be present at higher elevations in the soil profile due to retention by lenses or layers of silt or clay soils.

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The construction recommendations yielded by this investigation included recommendations for stabilizing the subgrade, the type and application of controlled fill, grading, building foundations, floor slabs, and dealing with construction procedures and problems.

Three options were suggested for subgrade stabilization:

- Proof-rolling with a ten ton or larger roller after all organic topsoil, vegetation, peat, organic silt or pond sediments, and uncontrolled fill have been removed from the site to identify soft spots, which should then be excavated and backfilled with controlled fill material;
- Roll in coarse fill such as cobbles or crushed rock materials, ensuring that all of the voids are filled completely with fines; and
- Place a reinforcement or separation type of geotextile on the subgrade and follow with lift of clean, granular fill with a thickness ranging from 1 to 2.5 feet, as necessary, to create a working mat upon which to construct the remainder of the controlled fill.

Investigation in these parcels showed the presence of large pieces of shale within the upper 2 to 8 feet of soil. Large pieces should be broken into pieces 1 foot in diameter or less and placed in the lower portions of the deeper fill areas. Nesting should not occur, and fill should be placed around each piece such that voids are not present. All controlled fill should be free of organic and/or frozen material, and free-draining controlled fill should have less than ten percent fines passing the #200 sieve. Options for controlled fill included:

- Relatively clean granular fill can be placed in lifts not exceeding 12 inches in loose thickness and should be compacted to a minimum of 95 percent of the maximum ASTM Specification D 1557-91 density, modified proctor.
- Material containing significant percentages of fine-grained soil or cohesive material should be placed in lifts not exceeding 9 inches in loose thickness and compacted to a minimum of 90 percent of the same density standard.

Factors to consider during fill work include:

- The ability to compact on-site material during wet weather or under poor drying conditions;
- The length of the construction schedule and the weather conditions (*i.e.*, winter or rainy conditions) expected during the placement of fill; and
- Placement of rock fill in the upper elevations to create a solid working mat for winter and spring construction, as the on-site soils may develop soft, wet areas and require additional work. This rock fill should not exceed 6 inches in diameter to allow for easier fine-grading and placement of footing and utilities.

The report recommended that cut or fill slopes composed of on-site materials be graded on a 3:1 slope or shallower. If groundwater is encountered in cut slopes, slope drains should be installed to lower the water level or the slope should be graded at 4:1 or shallower.

In the case of building foundations, it was recommended that the proposed structure be supported by spread-footing foundations resting on undisturbed, inorganic soils or on controlled fill which has been placed over the undisturbed material. The footings can be designed for a maximum net allowable soil-bearing pressure of 3,000 psf. Additional footing recommendations include:

- For load-bearing strip footings, a minimum width of 2 feet is recommended.
- Isolated footings should be at least 3 feet wide.
- A minimum of two #5 bars should be placed in strip footings resting on rock and soil, placed at the top and the bottom and separated by a minimum of 12 inches vertically or an equivalent amount of reinforcement from the foundation walls.
- Exterior footings or footings in unheated areas should be embedded a minimum of 4 feet for protection from frost action.
- Interior footings should be embedded a minimum of 2 feet below the finished grade to develop the bearing value of the soils.

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Like foundations, floor slabs should rest on undisturbed, inorganic soils or on controlled fill placed over the undisturbed material. A 6-inch layer of well-graded, free-draining granular material should be placed beneath the floor slab to provide drainage, act as a moisture barrier, and provide better and more uniform support. If vehicle loadings will be applied to the floor slab, the proposed slab and supporting soils should be treated as a pavement structure.

The following recommendations for construction procedure were included:

- Excavations more than a few feet should be sheeted and braced or laid back to prevent sloughing in of the sides.
- Sump-pit and sump-pump-style dewatering may be required in excavations or in low areas during wet weather, or if groundwater is encountered.
- Temporary paving may be required for moving around the site during wet or thaw weather. Suggested paving materials include coarse fill material or a combination of separation/reinforcement geotextile and coarse material.
- Subgrades should be kept from freezing during construction, and water, snow, and ice should not be allowed to collect and stand in excavations or low areas of the subgrade.
- Obstacles, including old foundations or building rubble, bedrock, and boulders may be encountered in excavations. Hydraulically-operated rippers, pneumatic tools, or drilling and blasting may be necessary to remove bedrock or large boulders.
- Design and construction procedures should include measures to limit the potential for slab curl through control of the shrinkage and curing properties of the concrete.

A second geotechnical assessment was conducted in 2007 to assess development potential for the proposed development by HIBC, which was planned for lots 70.2 and 89. The following information was taken from the resulting report and presented here to provide an idea of the geological/geotechnical conditions on the corresponding Resorts World Hudson Valley parcels.

The parcels are bounded by South Drury Lane and State Highway 747 to the east, Interstate 84 to the south, and additional Resorts World Hudson Valley parcels (described above) to the north and west.

The topography of the access parcels is defined by a north- to south-oriented drumlin located in the northern portion of both parcels; the access parcel area is approximately 750 feet in length and 650 feet in width at its longest and widest areas, respectively.

The 2007 investigation did not include any observations of bedrock, however the Geologic Maps of New York indicate that the bedrock beneath these parcels is part of the Normanskill Formation. The United States Geological Survey (USGS) indicates that the Normanskill Formation is a shale composed of minor mudstone and sandstone.

No visual signs of contamination were observed during the investigation. Soils were predominantly granular-glacial till visually classified as sandy-silt and silty sand with gravel. Occasional cobbles and/or boulders were encountered, and may be present in greater quantities in the soils of the area. Groundwater was observed in the overburden in the northeastern portion of the parcels investigated between 7.5 and 9 feet below the existing grade.

USGS soil survey maps indicated that soils within the boundaries of the access parcels is composed of gravelly silt loam and/or "very stony" soils, however "very stony" soils were not encountered at the test pit locations.

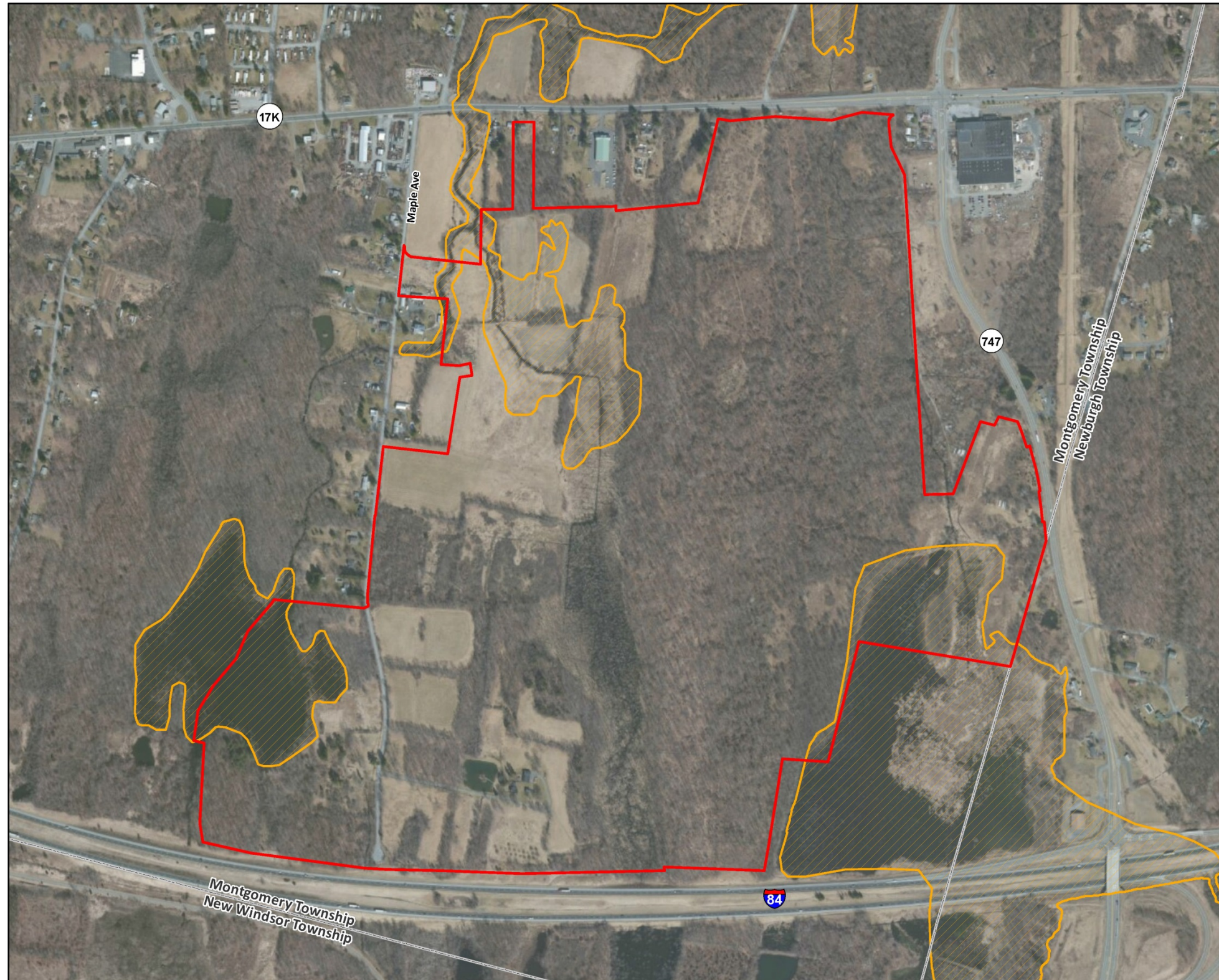
These subsurface conditions were considered favorable for the proposed HIBC development from a geological standpoint based on the available information reviewed and the preliminary subsurface investigation. The presence of predominantly granular soils and observed undisturbed glacial till should provide adequate bearing capacity for the installation of shallow, spread footings rather than deep foundations, depending on the anticipated structural loads. However, additional specific explorations were recommended by the study. These include a more comprehensive subsurface investigation, as the 2007 work was limited to the upper 12 feet and may not be adequate for design of the final structures, and an

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evaluation of settlement potential, as some of the observed subsurface soils contained high percentages of clay.

Figures VIII. C.1.e-2 and 3 show the boring/test pit locations for the 1998 and 2007 investigations, respectively. Site photos are provided in Figures VIII. C.1.e-4 through 7.

Figure VIII. C.1.e-1. Flood Plains

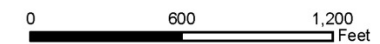


**Legend**

- Project Site
- 100 Year Flood Zone



Source: ESRI, BING Map Service, 2014.  
Flood Zone, Orange County GIS, 2009.



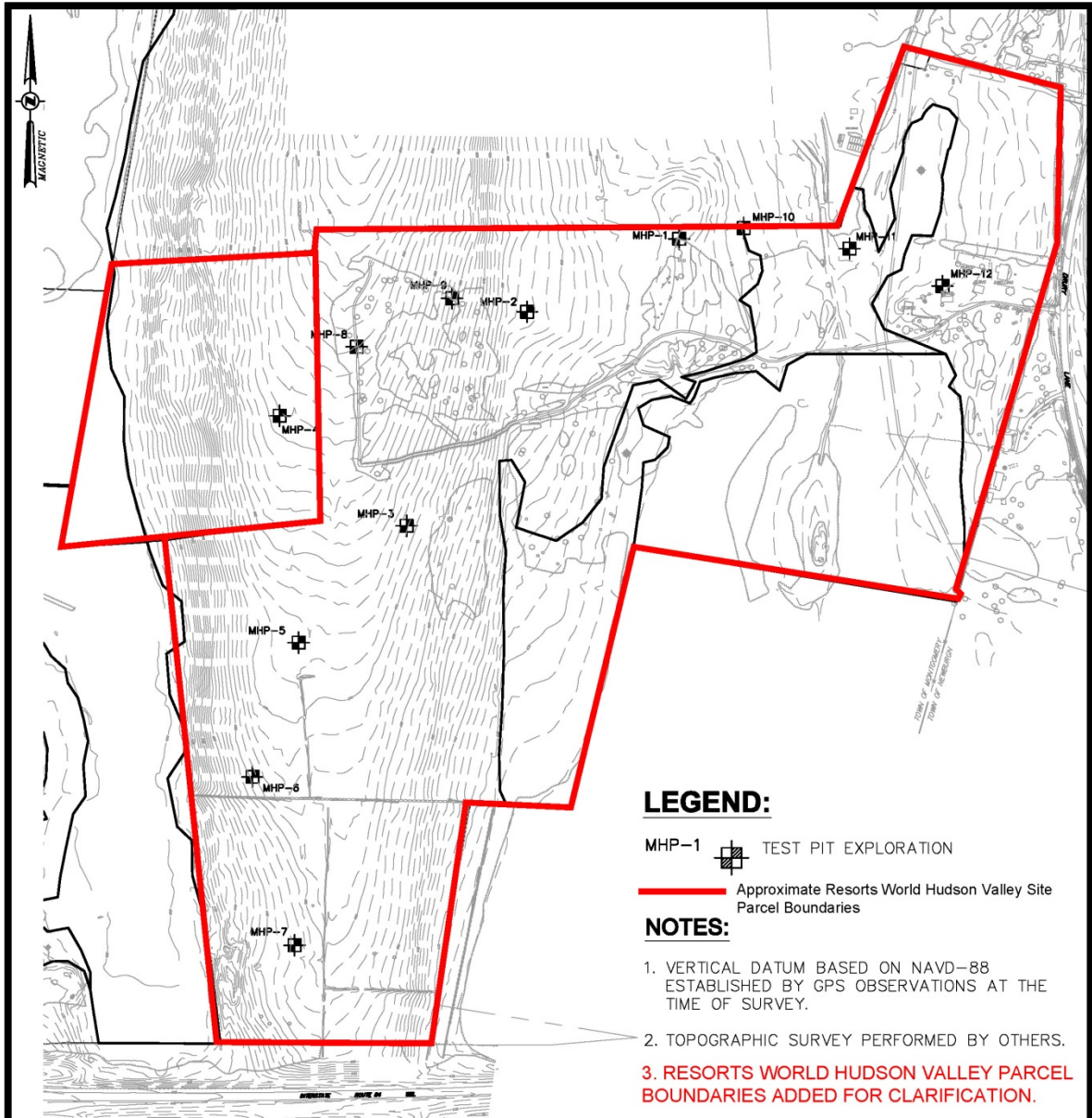
<b>Resorts World Hudson Valley</b>	
<b>Flood Plains</b> Montgomery Township Orange County, New York	
THE Louis Berger Group, INC.	

Figure VIII. C.1.e-2



**DESCRIPTION OF LAND**

**Figure VII. C.1.e-3. Unknown**



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<p><b>THE Chazen COMPANIES</b> Engineers/Surveyors Planners Environmental Scientists Landscape Architects</p>	<p><i>Dutchess County Office:</i> 21 Fox Street Poughkeepsie, NY 12601 Phone: (845) 454-3980</p>	<p><b>HABER PROPERTIES ASSESSMENT</b></p> <p><b>EXPLORATION LOCATION PLAN</b></p> <p><b>TOWN OF MONTGOMERY, ORANGE COUNTY, NEW YORK</b></p>	<p>drawn MAK</p>	<p>checked KBO</p>
	<p><i>Capital District Office:</i> 547 River Street Troy, NY 12180 Phone: (518) 273-0055</p>		<p>date 08/31/07</p>	<p>scale 1"=100'</p>
	<p><i>Orange County Office:</i> 356 Meadow Avenue Newburgh, NY 12550 Phone: (845) 567-1133</p>		<p>project no. 80730.00</p>	<p><b>FIG 1</b></p>
	<p><i>North Country Office:</i> 100 Glen Street Glens Falls, NY 12801 Phone: (518) 812-0513</p>		<p>sheet no.</p>	

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**Figure VIII. C.1.e-4**



The Lot 65.22 portion of the site facing north.

**Figure VIII. C.1.e-5**



The Lot 54.211 portion of the site facing south.



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**Figure VIII. C.1.e-6**



The Lot 54.211 portion of the site facing east.

**Figure VIII. C.1.e-7**



The Lot 54.211 portion of the site facing west.