

### **3.4 Vegetation**

#### **3.4.1 Existing Conditions**

A Natural Resources Survey was conducted at Depot Hill Farm between May 3, 2007 and July 27, 2007; refer to Appendix Q for the complete Natural Resources Survey Report, including the survey methods employed and the results of each survey. It should be emphasized that while the survey focused on documenting ecological communities or plants, each site foray provided an opportunity to discover and record all elements of the Depot Hill Farm site's natural resources. For example, many interesting, locally uncommon plants were discovered while conducting surveys for pool breeding amphibians, such as the shining ladies tresses orchid (*Spiranthes lucida*), the rattlesnake fern (*Botrychium virginianum*), the broad beech fern (*Thelypteris hexagonoptera*) and the silvery spleenwort (*Deparia acrostichoides*). Consequently, varied plant elements of project site biodiversity were observed and recorded during each field survey, not just those species or elements that were the focus of the intended survey.

##### **3.4.1.a Ecological Communities**

The survey identified seventeen (17) distinct ecological communities on the project site. These communities, grouped within their respective "system", include the following:

###### *Terrestrial System*

- Successional Oldfield
- Successional Shrubland
- Pastureland
- Successional Northern Hardwoods
- Hemlock-Northern Hardwood Forest
- Croplands/Row Crops
- Spruce/Fir Plantation
- Mown Lawn with Trees
- Tree/Shrub Row

###### *Aquatic System*

- Perennial Stream
- Intermittent Stream
- Farm Pond/Artificial Pond
- Shallow Emergent Marsh
- Rich Shrub Fen
- Cobble Shore Wet Meadow
- Red Maple Hardwood Swamp
- Vernal Pool

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All of the on-site ecological communities, with the exception of the Vernal Pool, Cobble Shore Wet Meadow and Rich Shrub Fen aquatic systems, are relatively common in this area of the Town of Amenia and the rest of Dutchess County. In addition, the majority of the on-site ecological communities are ranked either “S4,” denoting the ecological community as apparently being secure in New York State, “S5” denoting the ecological community as demonstrably secure in New York State, or, like the Tree/Shrub Row, are unlisted by the NYSDEC Natural Heritage Program (NYSDEC NHP) in the publication *Ecological Communities of New York State*<sup>1</sup>. This publication ranks ecological communities according to their rarity in New York State, using the following scale:

S1 – Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.

S2 – Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.

S3 – Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.

S4 – Apparently secure in New York State

S5 – Demonstrably secure in New York State

The following ecological communities are considered to be “rare” or “very rare” in New York State. Note that the communities listed below are all on the cusp of one ranking or another:

#### Rare Ecological Communities in New York State

##### *Cobble Shore Wet Meadow*

Cobble Shore Wet Meadow occurs in a narrow band at the easterly ends of Upper and Lower Central Ponds. Its vegetation is strikingly similar to that of Rich Shrub Fen community, discussed below. Though small, approximately 0.7 acre, this vegetative community supports a high diversity of relatively uncommon plants, including the native orchid shining ladies’ tresses (*Spiranthes lucida*), found nowhere else on the project site. Cobble Shore Wet Meadow is ranked “S2/S3” indicating that its occurrence is limited and that it is considered vulnerable to extirpation.

##### *Vernal Pool*

Two Vernal Pool communities are located in the southeastern forested portion of the Depot Hill Farm project site, well away from areas of proposed development. These communities and

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<sup>1</sup> Reschke, C. 1990. *Ecological Communities of New York State*. New York Natural Heritage Program. New York State Department of Environmental Conservation. Latham, N.Y. and Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2002. *Ecological Communities of New York State. Second Edition*. A revised and expanded edition of Carol Reschke’s *Ecological Communities of New York State*. (Draft for review). New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

nearby uplands support amphibians of conservation concern, refer to Section 3.5 Wildlife for a discussion. The Vernal Pool community is ranked "S3/S4" indicating that its occurrence is limited statewide, but that it is not considered vulnerable to extirpation in New York State.

### Very Rare Ecological Communities in New York State

#### *Rich Shrub Fen*

The Rich Shrub Fen community on-site is a very small area, approximately 0.28 acre within Wetland A, which is the on-site portion of NYSDEC Wetland AM-10. Widely scattered vegetative indicators of Rich Shrub Fen, such as shrubby cinquefoil (*Potentilla fruticosa*), grass-of-Parnassus (*Parnassia glauca*) and yellow sedge (*Carex flava*), evident in the surrounding wetland are being shaded out by taller-growing cattails (*Typha* spp.) and reed canary grass (*Phalaris arundinacea*) which suggests that much of this community has been replaced by large areas of Shallow Emergent Marsh. Rich Shrub Fen is ranked "S1/S2" indicating that there are very few occurrences statewide, and that this community is very to especially vulnerable to extirpation in the state.

#### 3.4.1.b Flora

Approximately 355 species of vascular plants were recorded on the project site, most of which are flowering plants, among them trees, shrubs and many herbaceous species. Thirteen (13) species of conifers are present on the project site, with eastern hemlock and white pine being the most common species. The fern flora is quite rich with eighteen (18) species recorded, including some relatively uncommon species, such as rattlesnake fern, silvery spleenwort, broad beech fern and maidenhair fern, all of which were found in the Hemlock-Northern hardwoods community on the project site where little or no development is proposed.

No endangered, threatened or rare plant species of State or Federal regulatory concern, such were found on the project site. Twenty-three (23) species State-listed exploitably vulnerable (mostly ferns), and nine (9) species considered to be regionally rare or scarce were recorded on the project site, all either in wetlands or in the Hemlock-Northern Hardwood Forest community, where little or no development is proposed.

#### 3.4.1.c Project Site Floral Biodiversity

The seventeen (17) ecological community types identified on the project site are integrated components of a topographically varied landscape, which encompass a wide range of soil and microclimatic conditions and support a moderately rich floral biodiversity. The number of plant and animal species recorded on the project site comprise a broad array of biological species, which include:

##### Flora: 355 species

- 323 species of flowering plants (trees, shrubs, vines and herbaceous species);
- 13 species of conifers (pines, spruces, hemlock, fir, junipers and yew);
- 18 species of ferns; and,
- 1 species of fern allies.

As testament to the richness of the project site's flora, the 355 species of vascular plants recorded on the property of less than 500 acres represents about 30% of the flora reported by the New York Flora Association for all of Dutchess County.

### 3.4.2 Potential Impacts

Development of limited portions of the Depot Hill Farm project site will result in the clearing and permanent removal of existing vegetation within the site's ecological communities. Development of the project site will not remove any substantial portion of existing ecological communities, because it has been largely restricted to relatively common ecological communities that have been subject to agricultural usage, which support a high proportion of non-native plant species. Areas of the project site, such as wetlands, woodlands, and the rare or very rare ecological communities noted in 3.4.1, that support the greatest numbers of native, development-sensitive plants, are largely avoided.

Development on the project site involves the removal or disturbance of portions of Pastureland (28.9 acres), Tree/Shrub Row (3.12 acres), Successional Oldfield (1.09 acres), Hemlock Northern Hardwood Forest (0.35 acre) and Perennial Stream (0.017 acre). Direct impacts will result from vegetation removal, conversion of potential row-crop cultivated fields to residential uses and restored meadow, and grading of the underlying soils associated with these communities. Approximately 88% of the total of all ecological communities on the project site will remain undisturbed, including 97% of Hemlock-Northern Hardwood Forest community which supports the greatest number of plants of conservation concern.

Refer to Table 3-19 for the existing acreage of each on-site ecological community, the proposed extent of removal (in acres) and the percentage of each ecological community to remain.

**Table 3-19  
Proposed Disturbance to Ecological Communities**

ECOLOGICAL COMMUNITY	EXISTING AREA (ACRES)	PROPOSED REMOVAL (ACRES)	REMAINING COMMUNITY (ACRES %)
Successional Oldfield	24.00	1.09	22.91 96%
Successional Shrubland	9.62	0.00	9.62 100%
Hemlock-Northern Hardwood Forest	114.09	0.35	113.74 97%
Successional Northern Hardwoods	6.28	0.00	6.28 100%
Tree/Hedge Row	7.56	3.12	4.44 59%
Croplands/Row Crops	101.69	19.10	82.59 81%
Spruce/Fir Plantation	13.92	0.00	13.92 100%
Mowed Lawn with Trees*	8.68	4.67	4.01 46%
Pastureland	167.16	28.69	138.47 82%
Perennial Stream	1.20	0.017	1.18 98%
Intermittent Stream	0.59	0.00	0.59 100%
Cobble Shore Wet Meadow	0.70	0.00	0.70 100%
Farm Pond/Artificial Pond	0.80	0.00	0.80 100%
Red Maple Hardwood Swamp	1.98	0.00	1.98 100%
Rich Shrub Fen	0.28	0.00	0.28 100%
Shallow Emergent Marsh	9.34	0.00	9.34 100%
Vernal Pool	0.22	0.00	0.22 100%
Developed areas**	13.29	Undetermined	Undetermined
<b>TOTAL</b>	<b>481.40</b>	<b>57.04</b>	<b>424.36 88%</b>

*Note: All calculations are approximate.*

\* Mowed Lawn with Trees is not expected to increase following development of the project site; only the existing Mowed Lawn with Trees to be disturbed is indicated in Table 3.

\*\* Developed areas include paved driveways and disturbed area in the northwest corner of the project site.

Disturbance to Pastureland, Row Crops, Tree/Shrub Rows, Successional Oldfield, Hemlock-Northern Hardwoods and Perennial Stream areas will not result in significant habitat fragmentation or isolation of ecological communities. Substantial areas of these communities occur nearby and in other areas of the project site. Consequently, their use by area wildlife will continue. In addition, no significant aquatic vegetation in site streams will be impacted by the proposed construction of culverts and roadways. No development is proposed within 100 feet or more of Cobble Shore Wet Meadow, Rich Shrub Fen and Vernal Pool communities. Rich Shrub Fen and Vernal Pools are located approximately 350 feet and 900 feet, respectively, away from the nearest area of proposed site construction. Proposed impacts to Perennial Stream include channel alteration and installation/replacement of one or more culverts for road crossings.

None of the ecological communities or to be removed, or portions thereof, support endangered, threatened or rare plant species or other plants that could be considered of conservation concern. In most areas where development is proposed, essentially Tree/Shrub Row, Pastureland and Successional Oldfield communities, the flora is comprised of a high proportion of non-native shrubs and herbs. Native plants to be removed are plentiful in other similar

communities of the project site. Despite the rich biodiversity of the project site, project impacts are considered relatively moderate to negligible and can be offset by appropriate and reasonable mitigation measures.

### 3.4.3 Mitigation Measures

Depot Hill Farm's proposed design of residential unit clusters and use of existing interior roads and facilities is intended to result in the near complete avoidance of sensitive natural resources found on the project site. All site wetlands, including those consisting partially or entirely of Rich Shrub Fen, Cobble Shore Wet Meadow and Vernal Pool communities, as well as the more species-diverse Hemlock-Northern Hardwood Forest community, have been substantially avoided by the proposed project.

During site construction, the implementation and maintenance of proposed erosion and sedimentation controls and temporary stormwater drainage features, as well as appropriate sequencing and management of site clearing and grading activities, will minimize adverse impacts on project site natural resources.

Related long-term impacts will be mitigated following construction by soil stabilization, maintenance of permanent stormwater management controls and establishment of new landscaping in areas of site disturbance not proposed as buildings, roads or other impervious surfaces. New landscaping areas will be vegetatively reclaimed using a planting palette of largely native plant species. Additional areas of hayfields and wildflower meadow will also be created to expand and enhance habitat for grassland-associated fauna.

Because no State-listed endangered, threatened, rare or exploitably vulnerable species, or regionally rare or regionally scarce plant species will be removed, mitigation is not considered necessary. The kinds of plants that will be removed are common and well-represented elsewhere in many locations on the project site that will remain undisturbed. However, it is recommended that mitigation to enhance biodiversity be considered. The following mitigation measures have been recommended, and are being considered to offset the potential limited adverse impacts to the site's ecological communities:

- Develop and implement a native tree and shrub planting plan comprised of native wildlife-valuable vegetation, particularly fruit trees and shrubs for birds, around residential units to mitigate the removal of portions of Tree/Shrub Row community. The long-term hedgerow maintenance plan will focus on removing invasives and replacing them with native species, and on maintaining or improving the structure and function of the hedgerow for wildlife shelter and food sources.
- Develop a tree and shrub planting plan for the perimeter of cluster units to be constructed mainly in Pastureland or similar communities.
- Improve the condition of the southern Tree and Shrub community by removing the highly invasive non-native tree-of-heaven stand and dumped material located there and planting native trees to replace the removed tree-of-heaven.

- Following construction of the stream crossing, stabilize the streambanks using bioengineering techniques, which employ plant materials, such as native shrub wattles, rather than hardscape and manmade materials, such as rip-rap and concrete, to stabilize disturbed land and waterways.
- Remove the dumped materials from the ravine area of the Central Stream and stabilize and densely replant the disturbed banks with native shrubs and trees.
- Remove exotic species, such as Amur cork tree and Japanese barberry from forest edges, and replace with native species, such as gray dogwood and native viburnums.
- Avoid construction of new riding trails in less disturbed areas of Hemlock-Northern Hardwood forest communities, where most of the NYSDEC NHP exploitably vulnerable species occur on the project site.
- Limit soils disturbance to the extent practicable to avoid creating disturbed conditions which favor invasive species.
- Avoid the use of herbicides and pesticides.

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