RETTEW
We answer to you.
223 Windgate Drive, Chester Springs, PA 19425
Phone: (717) 394-3721 Fax: (717) 394-1063
E-mail: rettew@rettew.com · Web site: www.rettew.com

MEMORANDUM

TO: Chuck Dobson, PE- Earth Companies

FROM: Jonathan Kasitz

DATE: December 4, 2007

PROJECT NAME: Valhalla Site- Heim Property **PROJECT NO.:** 07-07489-002

SUBJECT: Vegetative Cover Investigation

A vegetative cover investigation of the proposed Valhalla Site - Heim Property was conducted by Jonathan Kasitz (RETTEW) in late November 2007. This site visit was supplemental to a tree survey that was conducted during the second and third weeks of November 2007. The approximately 285 acre site is situated in Wallace Township, Chester County, and consists of a mix of mature hardwood (deciduous) and successional scrub-shrub woods, and active agricultural fields. The surrounding area is dominated by mature woodland and light-density residential parcels. The Village of Glenmoore is situated just to the west of the site, across the East Branch of the Brandywine Creek. The Wallace Township Subdivision Ordinance requires a vegetative cover analysis of properties prior to subdivision or changes in land use. The vegetative cover of the site was delineated into several different vegetative cover types, based upon the site survey and numerous field investigations. The following information documents the general habitat found within each of these vegetative cover types. A spreadsheet listing the common, and/or dominant species found within each type, as well as representative photographs, is attached to this memo.

The locations of the cover types identified below are based upon the "Existing Conditions" plan, as prepared by Earth Design Group. The general boundaries of the site are the East Branch of the Brandywine Creek to the west, Fairview Road to the northwest, private parcels to the north and east, the Devereux Beneto School complex to the southeast, and more private parcels to the south. Devereux Road runs in generally a north-south direction through the middle of the site. A farmstead associated with the Heim Property lies on the east side of Devereux Road and a large agricultural complex lies on the west side of the site. These features are utilized to describe the general locations of the vegetative cover types identified below. Please refer to the "Existing Conditions" plan when reviewing this memo.

Mature Woodland (Deciduous) (Type A- labelled on "Existing Conditions" plan)
The majority of the wooded portions of the site were dominated by mature woodlands (deciduous). These areas included relative large stands on the northwest, southwest and northeast corners of the site and northcentral portion of the site. These woodlands were dominated by native hardwood species. The dominant tree species included *Carya ovata* (shagbark hickory), *Quercus rubra* (northern red oak), *Quercus alba* (white oak), *Liriodendron tulipifera* (tuliptree), *Fagus grandifolia* (American beech), *Carya* sp. (hickory), *Juglans nigra* (black walnut) and *Acer rubrum* (red maple). The dominant shrub was *Viburnum prunifolium* (blackhaw). *Alliaria petiolata* (garlic mustard) was the dominant herb. The mature woodland on the northwest corner of the site, on the hillside rising to the east from the East

Branch of the Brandywine Creek was the most undisturbed woodland on the property. A small stand of *Pinus strobus* (white pine) lies near the middle of this woodland. Portions of this woodland, as well as the other woodlands included areas that had been selectively logged in recent past. These areas were less diverse and more overgrown with invasive species. The edges of these mature woodlands also were characterized by more invasive species, including *Acer platanoides* (Norway maple), *Prunus avium* (sweet cherry), *Lonicera tatarica* (Tartarian honeysuckle), *Rosa multiflora* (multiflora rose), *Lindera benzoin* (northern spicebush), *Rubus idaeus* (red raspberry), *Rubus phoenicolasius* (wineberry), *Microstegium vimineum* (Nepalese browntop/stilt grass), *Phytolacca americana* (American pokeweed), *Verbascum thapsus* (common mullein), *Lonicera japonica* (Japanese honeysuckle) and *Celastrus orbiculatus* (Oriental bittersweet). All of the mature woodlands included many specimen trees over 18" in diameter-breast height (DBH). The approximate age of these woodlands is 30-50+ years (the oldest being the section described above as the most undisturbed).

Emergent Woodland (Type B)
A section of woodland situated on the eastern side of the site, south of a large corn field was identified as emergent woodland. These woods were characterized by a relatively young, deciduous overstory and thick shrub understory dominated by invasive species. The canopy was dominated by *Liriodendron tulipifera, Carya* sp. and *Acer platanoides*. *Rosa multiflora* and *Lonicera tatarica* were the dominant shrubs. The dominant herb was *Alliaria petiolata* and the dominant vine was *Lonicera japonica*. A few tree species over 18" DBH were located in this woodland. The high level of invasive species is most likely due to the high degree of disturbance this area has experienced and relative young age of the woodlands. The approximate age of these woods is 10-20 years.

Shrubs/Emergent Woodland (Type C)
Two small shrubs/emergent woodlands were located just west of Devereux Road, on the southern side of the site. These shrubs/emergent woodlands are surrounded by "Active Pasture Fields" (described below). The dominant trees found in these two small areas were *Juglans nigra*, *Prunus serotina* (black cherry), *Prunus avium* and *Gleditsia triacanthos* (honey-locust). The thick, dense shrub layer was dominated by *Rosa multiflora* and *Lonicera tatarica*. The dominant herb was *Alliaria petiolata* and the dominant vine was *Lonicera japonica*. The approximate age of these areas is 10-20 years.

Mature Wooded Pasture (Type D)
Several areas currently in pasture are dominated by a mature woodland overstory. The pastures just west of the farm building complex on the west side of the site are characteristic of this cover type. The dominant trees included *Liriodendron tulipifera* and *Fraxinus pennsylvanica* (green ash). The dominant herbaceous species found in these pastures are the same as are included in the "Active Pasture Fields" described below. The approximate age of the larger deciduous trees is 30-50+ years, and many trees were over 18" DBH.

Active Pasture Field (Type E)
The dominant vegetative cover type found throughout the site was active pasture fields. The large open fields situated just west of Devereux Road, or just east of Fairview Road on the northwest corner of the site are characteristic of this cover type. The vegetation in these fields is closely cropped by a large herd of beef cattle that are kept in the farm building complex. The herd is rotated between the many fields that are situated on the site. The dominate herbaceous species found in these fields included *Daucus carota* (Queen Anne's lace), *Setaria italica* (foxtail bristle grass), *Solidago* sp. (goldenrods), *Cirsium arvense* (Canada thistle), *Dactylis glomerata* (orchard grass), *Duchesnea indica* (mock strawberry), *Trifolium repens* (white clover), *Trifolium pratense* (red clover), *Taraxacum officinale* (common

dandelion) and *Andropogon virginicus* (broom-sedge). Most of these fields are bounded by hedgerows that include large deciduous trees, many of which are over 18" DBH.

Active Agricultural Field (Type F)
Several large fields on the site are currently under agricultural production. These fields most likely undergo a rotation of *Zea mays* (corn), *Triticum* sp. (wheat), *Medicago* sp. (alfalfa) and similar species common to local agricultural production. These fields may be put into pasture at times, but some, like the large field on the far eastern side of the site is used purely for agricultural production.

Forested Wetland (Type G)
Several forested wetlands were situated on the western side of the site. These wetlands form from local springs/seeps that drain to the west, into East Branch Brandywine Creek, and were surrounded by mature woodlands (see descriptions above). The dominant trees found in the wetlands included *Fraxinus pennsylvanica* and *Acer rubrum*. *Lindera benzoin* and *Ilex verticillata* (winterberry) were the dominant shrubs. *Impatiens capensis* (jewelweed) was the dominant herb. The approximate age was dependent upon the surrounding woodlands.

Emergent Wetland (Type E)
Several emergent wetlands were situated in the active pastures that dominate the site. The livestock have access to these wetlands and help maintain the emergent nature of the wetlands. The dominant herbaceous species found in the emergent wetlands included *Juncus effusus* (soft rush), *Impatiens capensis* and *Phalaris arundinacea* (reed canary-grass). The dominant vine was *Polygonum sagittatum* (tearthumb).

Note: The descriptions listed above include only the dominant plants identified in the different habitats during the mid November 2007 site visits. Most of the herbaceous species that would normally be common were either absent or non-distinguishable. A more comprehensive search for the herbaceous species present on the site should be conducted during the growing season. These descriptions are not meant to be an exhaustive list of all plants found within each habitat type. See the attached plant list, which lists other common species found in the different habitat types.