Appendix C.6

Analysis of Impacts to Natural Resources

NEW YORK CITY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF DRINKING WATER QUALITY CONTROL
WATER QUALITY IMPACT ASSESSMENT
M E M O R A N D U M

Date: 19 April 2004

To: Kurt Rieke, First Deputy Director, BWS
Kate Demong, Project Manager, OEPA

From: Charlie Cutietta-Olson, Supervisor, WQIA

Subject: Crosssroads Ventures LLC
Belleayre Resort at Catskill Park DEIS Review
Impacts to Natural Resources

Natural resources as discussed within the DEIS for the Resort at Belleayre Mountain include biota and features currently present at the site of the proposed development, and features that the development will bring to the site that do not currently exist there. After thorough review, DEP scientists believe that the DEIS fails to provide a complete and accurate assessment of what currently exists on the mountain, and of what the developer plans to bring to the landscape.

Wetlands Issues

Fourteen of the 32 wetlands delineated on the property were determined by both the applicant and USACOE to be isolated and therefore non-jurisdictional. Ten of these isolated wetlands, totaling 4.85 acres, would be impacted due to construction. These include wetlands CA, CB/CC, H, I, K/L, Y/Z, B/C, BK, BJ/BL/BM, and BN/BO. The total combined fill proposed for these 10 wetlands is 1.49 acres. Fills range from 0.6% to 100% of the individual wetlands.

DEP has contested to the USACOE that 7 of the 10 non-jurisdictional wetlands slated for impact may not be isolated based on the presence of outflow streams observed during field work. These include wetlands H, I, K/L, Y/Z, BK, BJ/BL/BM, and BN/BO. The USACOE has been asked to re-evaluate the jurisdictional determination of these systems due to the following disparate information:

DEP's field work of September 18, 2003 indicated that streams K/L and Y/Z originate from wetlands H and I and are tributary to Emory Brook. According to Appendix 17, (page 8) the applicant agrees that stream Y/Z emerges from wetlands H and I but contests that it then flows into stream K/L which appears to go subsurface before reaching Emory Brook.

DEP has also observed that wetland BK is connected to streams BJ/BL/BM and BN/BO which are tributary to Birch Creek and, therefore, not isolated. On page 11 of Appendix 17, the applicant states that stream BJ/BL/BM is approximately 4 feet wide and drains into stream BN/BO. However, the applicant contests that BN/BO goes subsurface before reaching Birch Creek.

DEP has not observed wetlands CA or CB/CC however they are described as groundwater seep areas and streams in Table 3-26, indicating that they are not isolated. The applicant does not provide a detailed description of wetlands CA and CB/CC in Appendix 17. Field work should be conducted to revisit the jurisdictional determination of these wetlands.

Regardless of whether the above systems are deemed jurisdictional, Chapter 3.5.2 should disclose impacts to both jurisdictional and non-jurisdictional wetlands as the goal of the EIS is to characterize and assess impacts to all wetland types, not just those regulated under section 404 of the Clean Water Act. The current description of existing conditions and project impacts on pages 3-91 through 3-94 of chapter 3.5.2 is limited to jurisdictional wetlands only. Given the important habitat, water storage and groundwater recharge functions of isolated wetlands, changes should be made to Chapter 3.5.2 in order to provide a thorough characterization of wetland types and impacts.

Page 3-91, para. 4 states that "Details regarding vegetation, soils, and hydrology of each wetland are described in Appendix 17". However, detailed delineation forms were included for only 7 wetlands. Furthermore, 6 of the 7 delineation provided were performed during the months of October and November. This would seriously limit the ability to fully characterize the herbaceous layer for wetland determinations, to detect the presence of threatened or endangered wetland plant species, and to assess hydrologic connectivity.

<u>Wetland Acreage Discrepancies</u>

The following discrepancies should be rectified so that impacts are accurately characterized:

Page 3-89 states that 5.91 acres of jurisdictional wetlands occur on the eastern portion, while Table 3.25 indicates exactly 6 acres of jurisdictional wetlands on the eastern property.

On page 3-92, para. 6, it is stated that up to 2.31 acres of selected hand removal of trees would be required in wetlands 16 and 23. However, according to Table 3-26A, vegetation clearing from these two wetlands would total 2.01 acres.

On page 3-94, bullet 7, it is stated that up to 0.28 acre of tree clearing will be conducted at wetland 32. However, according to Table 3-26 A, vegetation clearing will total 0.22 acre.

On page 3-94, bullet 9, it is stated that 0.35 acre of wetland 34 would be filled, however 0.36 acre of fill is indicated in Table 3-26A.

The wetland areas given in Tables 3 and 4 of Appendix 17 differ from those provided in Chapter 3.5.2. According to Appendix 17, there are a total of 21.43 acres of wetlands on the property. According to Tables 3-25 and 3-26 there are a total of 24.07 acres of wetlands on the property.

Both Table 3 of Appendix 17 and Table 3-26 summarize wetlands on the western property. However, there are discrepancies between the two tables. According to Table 3-26, there are 16.02 acres of wetlands on the western property, and according to Table 3 there are 15.10 acres. The acreage reported for wetlands AF/AG, AI/AJ, AL, M/N, HC, HD, K/L, Y/Z, and HN differ between the two tables. Table 3 (Appendix 17) does not include wetland 15 (HE) or wetlands 17 and 19 (CA and CB/CC). Also, CA and CB/CC should be included since they will be filled according to Table 3-26 A.

Both Table 4 of Appendix 17 and Table 3-25 summarize wetlands on the eastern property. However, there are discrepancies between the two tables. According to Table 3-25, there are 8.05 acres of wetlands on the western property, and according to Table 4 there are 6.33 acres. The acreage reported for wetlands B/C, D/E/F, BG/BH/BI, BJ/BL/BM, BN/BO, and BV/BW/BX/BY differ between the two tables. Table 4 (Appendix 17) does not include wetland 27 (Woodchuck Hollow Brook).

Mitigation and Selective Tree Removal

Overall this project will result in 1.59 acres of wetland fill (0.0993 jurisidictional, 1.49 non-jurisdictional). Preservation is proposed for the remainder of wetlands on the assemblage. However, no in-kind mitigation is required or proposed, therefore a net loss of wetlands will occur due to this project.

In addition to the 1.59 acres of wetland fill, an additional 2.76 acres will be impacted through vegetation clearing for playovers. More information is required to assess the impacts from the proposed selective tree felling. What is the desired canopy height? How will felled areas be maintained at this canopy height? Will cleared areas be planted with native shrub species, will herbicides be used, or will the playovers be repeatedly cut as needed to maintain the desired canopy height.

Felled trees will be removed from wetland edges with machinery operated from the adjacent upland. Prior to any tree-felling, wetland boundaries should be flagged so that the contractors are fully aware of the wetland boundary. Felled limbs and tops from the wetland center should be left in place or hand removed only.

Willow cuttings are proposed where upland vegetation is proposed to be disturbed in proximity to intermittent streams and wetlands. What species of Salix is proposed? Is this species typical of the impacted areas? Stream bank shrub species typical of Catskill headwater streams would be more appropriate.

Pre-Existing Landcover Description Issues

Generally, it is not clear what the source of the vegetation type information is or how it was derived. Neither here nor elsewhere in the document or on the maps themselves is any information provided regarding survey dates, who was involved in procuring the data, what survey methods were utilized, or what types of data were collected. Based on the scanty information provided, it is impossible to determine whether the numerical data is accurate or representative of current conditions. The age and condition of the stand is material to its ability to provide erosion and sediment control function on the site. This is nowhere presented in the document.

In the absence of data regarding plant communities in other parcels of similar size within the same physiographic province, any statement regarding diversity of plant communities misleading (see p. 3-84). In fact, the presence of more than 10 different habitats (which will be disturbed to varying degrees), with their inherent transitional zones, indicates a relatively high diversity of plant communities providing habitat for a variety of organisms. Although none of these habitats are rare, they are capable of supporting rare or threatened organisms, such as the pied-billed grebe in shallow emergent marsh. The species list for the site also indicates high diversity, with more than 100 species of plants. That some of the communities are small in acreage does not diminish their importance—rather, they provide necessary elements of beneficial habitat for many species of mammals, fish, amphibians, and so on—edges between open and forested land, cover, a wide variety of food sources, running water, pools of water, wood in various stages of decay, snags, etc. This rather conclusive-sounding statement has no apparent basis in fact and should not appear in the document unless it can be substantiated. In addition, from viewing the false-color aerial photos, it appears that at least one additional hardwood community may exist that is different from the Beech Maple community and similar to the Hemlock Hardwood community, but lacks a hemlock component. What is the source of the Ecological Community Map (Figure 3-18)? What was the methodology used to create it? When was the information gathered?

The document does not appear to include a true survey of the site for rare, threatened or endangered plant species. Performing a check of Natural Heritage Program and Department of Environmental Conservation records for rare, threatened or endangered species is adequate only when their surveys have occurred on the site, particularly when the area involved is as large as this project area. If the site has been properly surveyed, more data should be included in the EIS. If not, an independent group specializing in these types of surveys should be hired to complete one.

The Beech trees, particularly larger ones, comprising most of the project area provide a favored food source for black bears and are regionally threatened by a scale insect/disease complex. Likewise, the eastern hemlock provides a unique habitat, particularly when adjacent to streams, wetlands and waterbodies, that attracts a specialized assemblage of birds and amphibians. Hemlocks in New York State are threatened by an introduced insect species, the Hemlock Woolly Adelgid. No mention is made regarding these potential problems for retaining the major

vegetation communities on the site if the forest is faced with infestation. A plan should be in place for maintaining these forests. This might take the form of a forest plan drawn up by a professional forester or some similar document outlining the projected care and maintenance of the residual forest stands.

Although many stands in the Catskills are secondary growth less than 100 years old, what data was taken to support the statement on p. 3-84 that "all" forest stands observed are "secondary growth"? Were increment cores taken or were ages estimated based on the size of the trees? On sites that are steep and rocky, trees can achieve great age and not have large diameters. If ages were actually measured, these data should be shown somewhere in the document. Also, if logging activities are ongoing, ("current…logging activities") how have the stated acreages changed since they were calculated for this document? Will existing logging roads be closed and properly put to bed or is there a plan to re-use these roads for recreational activities (such as hiking, biking, horseback riding, cross-country skiing, or snowmobiling) as often occurs where such roads are pre-existing?

It should be noted that age and prior disturbance, though relevant to current functioning of the forest, are not, by themselves, a reasonable justification for continued disturbance. The forested area should be mapped according to stand ages and types, including disturbed areas and plans for their stabilization. Watershed studies have indicated that young forests may take up more nutrients and hold them on-site at a higher rate than older forests, so that periodic forest cutting may, in fact, be beneficial to water quality—provided logging is carried out properly. Forests are dynamic. Leaving them unmanaged will not guarantee continuous forest cover in perpetuity, nor will it guarantee a diversity of species and age groups that are beneficial for water quality, wildlife, or a variety of human activities.

Proposed Landscaping Issues

Forest clearing of the type proposed for this project represents a fairly permanent and rather large change of forest cover to pervious and impervious covers that have very different characteristics from natural forest stands. Impervious surface increases both the volume and velocity of precipitation runoff. Grass and landscaping plants do not possess the same ability to intercept precipitation, reduce raindrop impact effects, provide temperature attenuation, take up water via evapotranspiration, or stabilize streambanks. Landscaped soils tend to become compacted over time through trampling and mowing so that percolation is reduced. It is unlikely that any lands disturbed in the construction of this project will be returned to a condition approaching that of a native forest in terms of water quality maintenance.

A secondary impact that may occur is the introduction of non-native plant species into the forest area that is to be retained through their use in landscaping. There are already numerous non-native species listed as being present on the site, including Norway maple, Norway spruce, Japanese barberry, ground-ivy, purple loosestrife, bouncing bet, common chickweed, and speedwell. Many of these tend to become more widespread as areas are opened to more sunlight, particularly at forest edges. Some native species can also become problematic in the absence of a forest plan, particularly where deer populations are high. These include striped maple, hay-

scented fern and bracken fern. Landscaping plants typically used by homeowners, such as common privet, periwinkle, winged euonymus, shrub honeysuckles, and others, frequently take over the shrub layer in forests with heavy deer browsing. Homeowners and landscaping contractors often dispose of lawn and shrub clippings by throwing them into the woods, little realizing that, in the long run they may be harming the ecosystem. Again, a forest plan would be useful to assist with some of these problems and landscaping requirements for reducing or eliminating certain non-native species from landscaping designs would also be pertinent. Requirements for yard waste disposal and soil aeration should also be considered.

One should not assume that the limits of clearing on the ground at the outset of a project is equivalent to the area that will be devoid of trees at its maturity (see p. 3-86). Once clearing occurs, there is usually continuing mortality of trees along the edge of the clearing due to damage from equipment, soil compaction and rutting, piling of soil or construction materials around trees, sunscald, changes in moisture and temperature regimes, etc. When clearing occurs in relation to golf courses, additional potential for mortality is found where water hazards and sand traps are installed (change in moisture regimes), golf cart travel lanes are situated (soil compaction and mechanical damage), and any surface runoff of pesticides can occur (direct kill from herbicides).

The Developer proposes to replant over 4100 trees after construction. This may sound like a lot until it is considered on a per-acre basis. A typical forest will have somewhere between 100 to 300 trees per acre, depending on soil fertility, species, and individual tree size. In a healthy forest, there will also be seedlings, saplings, shrubs, and herbaceous plants under the forest canopy to provide a multi-layer cover. The tree planting proposed for this site is 4164 trees on 444 acres—less than 10 trees per acre. While 10 trees per acre is better than no trees on a 444 acre lawn, this type of landscaping does not provide the same water quality benefits as the native forest.

While in many cases the species proposed for new plantings is native to the northeastern U.S., the variety is peculiar to landscaping plants and does not usually appear in nature such as the "Weeping White Pine", "Hetz Midget Arborvitae", or "Dwarf White Pine". In addition, there are several non-native species on this list, including the following: Burkwood Viburnum (*Viburnum burkwoodii)*, Pink Turtlehead (*Chelone lyonii)*, Threadleaf Coreopsis (*Coreopsis verticillata)*, Purple Coneflower (*Echinacea purpurea)*, Day-lily (*Hemerocallis sp.)*, Crested Iris (*Iris cristata)*, Allegheny Pachysandra (*Pachysandra procumbens)*, Eastern Coneflower (*Rudbeckia fulgida)*, Kentucky Bluegrass (*Poa pratensis)*. Some of these could not be found on any native species list for the eastern U.S. Most are native only below the Mason-Dixon line. Some are introduced species that, though widely found, are not native.

Although some of these species are not known to escape from cultivation, it should be noted that native substitutes exist for many of these. Recommended substitutes are:

Non-native Species	**Recommended Substitution(s)**
Viburnum burkwoodii	Viburnum nudum var. cassinoides
Chelone lyonii	Chelone glabra Phlox paniculata or P. maculata
Coreopsis verticillata	Coreopsis tripteris Helianthus divaricatus or H. decapetalus

Echinacea purpurea	Monarda fistulosa Agastache scrophulariaefolia
Hemerocallis sp.	Lilium superbum Hypoxis hirsute Allium cernuum
Iris cristata	Iris versicolor
Pachysandra procumbens	No recommendation. Potential for invasiveness should be noted.
Rudbeckia fulgida	Rudbeckia hirta or R. laciniata
Poa pratensis	No. recommendation. Potential for invasiveness should be noted.

It appears that, for many plants (but not all), both scientific and common names are listed separately (rather than side-by-side) in the xeriscape plant list (Appendix 13) so it is longer than necessary. Some of the common names are unfamiliar to DEP staff and could not be found in fieldbooks and, therefore, could not be associated with their scientific names. Some scientific names could not be found in regional guidebooks, either, and must be assumed to be non-native. Some plants that might otherwise be acceptable for planting are unsuitable for xeriscaping, based on their habitat requirements.

Non-native species on this list include: *Achillea filipendula*, Sweet Alyssum *(Lobularia maritima), Amelanchier alnifolia, Artemisia absinthum, Artemisia ludoviciana, Aurinia saxitilis, Berberis thunbergii, Bergenia sp.*, Blanket-flower *(Gaillardia sp.), Buddleja davidii, Calamagrostis acutiflora, Campanula carpatica, Campsis radicans, Caryopteris x clandonensis (?),* Catmint *(Nepeta cataria), Cerastium tomentosum, Clematis paniculata, Coreopsis verticillata, Cotoneaster sp., Cytisus scoparius*, Daylily (*Hemerocallis sp.), Echinacea purpurea, Eschscholzia california, Euphorbia epithymoides, Festuca ovina*, Feverfew (*Chrysanthemum pathenium),* Flax (*Linum perenne),* Geranium (*Pelargonium sp.), Gomphrena globosa, Helictotrichon sempervirens, Heuchera micrantha, Hosta sp., Hypericum frondosum, Iris siberica, Juniperus scopuluorum, Juniperus squamata, Juniperus horizontalis, Kniphofia hybrida, Lavandula officinalis, Lavatera trimestris,* Mallow (*Malva),* Meadow Sage (*Salvia pratensis), Microbiota decussata, Miscanthus sinensis,* Nasturtium*, Oenothera missouriensis, Origanum onites, Pennisetum alopecuroides, Penstemon ambiguous, Perovski atriplicifolia,* Porcupine Grass (*Stipa spartea), Portulaca grandiflora, Rudbeckia fulgida, Salvia nemerosa, Salvia officinalis, Sanvitalia procumbens, Stachys byzantina, Tradescantia x andersonia, Tropaeolum majus,* Trumpet Vine (*Campsis radicans*), *Veronica spicata, Veronica longifolia,* Zinnia (*Zinnia sp.).* There exist native plants that are similar in form, foliage, flower, and fruit that could be substituted for many of these.

Proposed "Xeriscape" Issues

While the intent to create rooftop gardens that will blend the buildings into the landscape and create less visual impact is a laudable venture, it appears that certain technical issues need to be worked out and, perhaps, a trial made to determine whether xeriscaping will, in fact, be successful in the Catskills' climate. Xeriscaping works best in areas with low rainfall, moderate to warm

temperatures, and sandy soils and generally involves the use of desert plants. Use of such technology in this area seems dubious, at best, due to the cold climate, high rainfall and the likelihood of increased wind velocity across the large open areas created by the development. Although rooftop gardens have been successful in Manhattan and many European cities, most are not xeriscapes and many are accomplished with potted plants rather than applied soils. Rooftop gardens in cities are currently touted as being helpful in mitigating stormwater runoff and reducing heating and cooling bills. The plan presented in Appendix 13 is not a xeriscape plan so much as a rooftop garden plan. It is somewhat unclear whether the goal is to retain moisture in the rooftop garden or to shed it off the roof to enhance xeric plants. It appears that there are concerns about having the soils either too wet (where moisture could run back onto the roof where the roofline contacts the groundline) or too dry (during a drought period when irrigation may be required) and some aspects of the design appear to be untried (use of soil rather than gravel). It is also unclear whether there is a structure that will keep the soil and plants on the building in the event of a very heavy storm that could produce the equivalent of landslides around the edges of the building or whether the sloughing of materials during such storm events is a desirable component of the design.

Some of the plants selected for the xeriscape list are not only non-native to the region but also escape from cultivation easily and can become established in forested or open areas. These include, but may not be limited to: Japanese Barberry (*Berberis thunbergii)*, Mugworts *(Artemisia sp.)*, Daylilies (*Hemerocallis sp.)*, Speedwells (*Veronica sp.)*, and Stonecrop (*Sedum sp.)*. Some of these plants not only invade forested areas but, under the right conditions, can preclude the successful establishment of the native understory plants and tree regeneration. All non-native plants should specifically be listed according to their ability to escape from cultivation and become a nuisance in the natural environment. Suitable substitutes should be found for those that tend to escape. NYCDEP is attempting to prevent the incursion of invasive species on City-owned lands to the extent possible and expending significant funds to manage areas where these plants have already become established. It would be preferable not to plant these species, particularly on larger projects such as this, where environmental stewardship is reputedly a concern of the owners.

Some plants were apparently listed for Big Indian Resort only with common names. It is not possible to assess native origin or suitability for a xeriscape garden in the absence of a scientific name. Scientific names should be provided for the following: Basket of Gold, Beardtongue, Bellflower, Blazing Star, Blue Mist Shrub, Blue Fescue, Blue Oatgrass, Dwarf Fountaingrass, False Sunflower, Feather Reed Grass, Lamb's Ears, Maiden Grass, Purple Maiden Grass, Red Hot Poker, Russian Arborvitae, Russian Sage, Snow-in-Summer.

All plants in this list should be reviewed to ensure that their site requirements are suited to a xeriscape plan. All plants in both lists should be presented as a chart showing common and scientific names, ability to escape from cultivation, and requirements for sun and moisture.

Wildlife Inventory Issues

Regarding the bird surveys, there is no discussion of what a 'Random Search Method' is and how it qualifies as a standardized, systematic survey that would be required to truly assess what species are present. Rare, quiet and shy species, which are the species of most concern, will be under-represented by relying on a random walk through the woods. Systematic surveys (e.g., point counts) with targeted searches for certain species of interest are required if a true indication of the population is desired.

Breeding bird survey protocols used by the United States Fish and Wildlife Service for their North American Breeding Bird Survey call for surveys to begin one-half hour before local sunrise, which is 0520 in June. This is standard. Much of the most active singing will have stopped by 0600 and species could be missed.

How a species is using an area (breeding, brood rearing, foraging etc.) is just as important as what species are using an area. This is not addressed at all in the methodology or results.

It appears that an opportunistic survey was conducted for mammals. This is inadequate as many listed mammal species are scattered and not observed opportunistically. A real list of mammal species cannot be generated without a systematic trapping program.

Sending letters to the USFWS and New York Natural Heritage Program is not adequate for assessing the presence of Threatened or Endangered species in a given project area. These agencies rely on reports of listed species usually through chance encounters and not systematic surveys; therefore their database is incomplete for most areas. Little confidence should be afforded a negative response. The survey methods as reported in this DEIS are inadequate for detecting the presence of listed species.

According to the Nature Conservancy, the Catskills comprise one of the largest areas of contiguous forest in the Upper Allegheny Plateau Region, making the area crucial to many species whose habitats are threatened in other areas of the ecoregion. The concept that "edge" habitats are beneficial to wildlife was popular 30-40 years ago, but is being reconsidered as areas of contiguous forest decline. The assertion that golf course roughs and ponds may provide a net habitat benefit is unsubstantiated.

The theory behind the usefulness of creating habitat corridors is equivocal at best. Using the fact that wildlife corridors will be constructed or allowed to remain to show that there will be little or no effect on the wildlife is unsubstantiated. Most studies trying to show a positive effect of such corridors have methodological flaws and are inconsistent in the use of the term "corridor" (as habitat vs. route of passage between other habitat, for a review of this and other issues about corridors see Rosenberg et al, 1997 in Bioscience).