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Comments on Yukiguni Maitake Mushroom Manufactory, Mamakating, NY.

I have reviewed the following documents regarding this project:

- 1) Letter from Richard J. Calogero (Cornerstone Engineering) to Douglas Gaugler (NYSDEC Region 3) of August 22, 2008 (re: Freshwater Wetland Permit);
- 2) Letter from Richard J. Calogero (Cornerstone Engineering) to John Piazza (Town of Mamakating Planning Board Chair) of August 26, 2008 (re: Response to YMMCA Site Plan Comments);
- 3) PROCESS WASTEWATER INFILTRATION BASIN SYSTEM ENGINEER'S REPORT, August 2008, prepared by Cornerstone Engineering

My comments on each of the three enumerated documents follow.

- 1) There is a substantial body of scientifically supported opinion and ecologically-based design practice that strongly recommends against placement of stormwater control facilities in wetlands and wetland buffers [cite]

The description of the wetland adjacent to Basin 1 (p. 2 of letter) as a "wetland 'finger'" is inadequate to assess impacts on this wetland. What is the hydrology? Has the wetland been surveyed to determine the potential for, or presence of rare plant and animal species? Neither is there any ecological description of the wetland adjacent to Basin 1. In considering permit applications NYSDEC is responsible for assessing project impacts. A thorough and accurate description of the area to be affected should accompany the application.

Although the letter describes the disturbances of regulated areas as "small," the total of 20,776 square feet of disturbance is larger than a rectangle of 200 x 100 feet. This is a substantial area of disturbance, by no means small.

In paragraph 6 of the letter, the vertical drop of the drainage is only 1 foot (525 ft to 524 ft). I am not an engineer, but in a landscape containing wetlands, and acknowledged to be nearly level, this seems to me that the potential for flooding is probably greater than anticipated, and that stormwater control and containment could be a difficult problem to solve. The letter to DEC does not even mention potential impacts of peak stormwater input to the two wetlands, and to the Basha Kill wetlands system, only impacts of ground disturbance. I would recommend that the Town commission an independent engineering analysis of the project's stormwater management design.

Before considering this permit application, NYSDEC should require more complete information from the applicant on the abovementioned impacts.

- 2) This letter is essentially a list of minor changes to the Site Plan submitted to the Mamakating Planning Board. I have reviewed these changes and agree that they are minor, but I do have questions about six of the sheets.

Sheets 4, 6, 7 & 8 (also, Sheet 10, below) depict the changes to the design of stormwater basins 1 & 2, which I addressed above

Sheet 9 names the planting species replacing Norway Spruce as Atlantic Red Cedar, a common name not associated with any tree species. It appears to be an error, and refers either to Atlantic White Cedar or Eastern Red Cedar. Atlantic White cedar is a NYS Endangered species. Eastern Red Cedar is very common in the region. I am assuming that Eastern Red Cedar is the species intended.

Sheet 10 depicts changes in design of stormwater facilities, and grading around the infiltration basin. These changes may seem minor, but their impacts would be different from those of the previous plan, and so should be analyzed carefully. Sufficient time (at least 30 days) for a thorough impact analysis should be granted by the Planning Board.

- 3) The Engineer's Report on the Infiltration Basin (Knight 2008) attempts to demonstrate that the basin will handle daily water releases from the manufactory of approximately 340,000 gallons per day, and simultaneously, water from a 100-year storm event.

Again, I am not a hydroengineer. My concern as a biologist is the potential impacts of daily releases of heated groundwater on soils beneath and surrounding the basin, with consequent impacts to biota. I have presented these concerns, which still stand unanswered, in comments for the August 27, 2008 Public Hearing on the Yukiguni project.

The Infiltration Basin report provides one bit of information pertaining to my concern about winter temperature of used water releases, to wit, 5° cooler than source groundwater, or about 45° F. This is sufficiently warm to thaw ice and frozen ground to some vertical depth and horizontal distance as the water percolates through the soil. To assess impacts on biota in a state of winter dormancy, an analysis of heat exchange dynamics and extent is warranted.

This analysis is also necessary for predicting another potential problem. Depending upon the rate of heat exchange, in deep winter there may be a zone (at varying depth and extent) of water/soil, which remains at 32° F (0° C), the freezing point of water. At this depth/distance a barrier of ice could form, effectively preventing percolation, and potentially causing accumulation of water, and overflow of the infiltration basin in winter. A scientifically validated model of this potential impact needs to be presented before any permit is granted for the infiltration basin, and before the Site Plan is approved. Working examples of

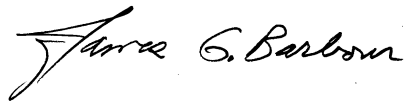
existing infiltration basins of similar design in comparable climatic and hydrogeologic conditions should be referenced.

There is still no accounting of the chemical and suspension content of the non-geothermal (cleaning, processing, etc.) portion of the process wastewater, only the reassurance that the geothermal portion of the wastewater stream is “clean.” The non-geothermal portion amounts to 10% of the total, still over 30,000 gallons per day. This is no piddling amount of water. The content should be revealed in detail, so that its content can be analyzed in terms of known impacts.

In section 5.1 (Solids Removal) we are assured that accumulated solids “will be disposed of in accordance with all State and Federal regulation.” Such regulations were written to accommodate industrial facilities in urban areas, and are not nearly stringent enough to protect fragile wild ecosystems and natural wetlands. Many of these regulations were co-written by industry representatives. I seriously doubt that compliance with these weak and compromised regulations comes close to guaranteeing sufficient protection for a natural area as ecologically important and sensitive as the Basha Kill.

This concludes my commentary on the aforementioned documents.

Respectfully submitted,

A handwritten signature in cursive script that reads "James G. Barbour". The signature is written in black ink and is positioned below the text "Respectfully submitted,".

James G. Barbour