ALBION COLLEGE

DEPARTMENT OF BIOLOGY

January 11, 2007

Mr. Ben Zimont
District Representative
Department of Environmental Quality
Land and Water Management Division
7953 Adobe Road
Kalamazoo, MI 49009-5026

Dear Mr. Zimont:

On January 9, 2007, I participated in public comment at the DEQ public hearing regarding the permit application which was submitted by Harbor Shores CRI to develop land which currently is Jean Klock Park in Benton Harbor, MI. I am currently an assistant professor of biology at Albion College in Albion, MI. My expertise is in the population genetics of plants in the genus, *Sabatia*. My past experience includes a detailed analysis of gene flow of Prairie Rose Gentian, *Sabatia campestris*, which included studying field and molecular genetic analyses to assess the potential for gene flow (movement of pollen and/or seeds) between plant populations. In addition, I studied the genetics of the soil seed bank which includes seeds that remain viable in the soil for greater than one year. At present, my current research interests include understanding the genetic variation of populations of Rose-Pink, *S. angularis*, which are located at the edge of the species range in Michigan. The current range of the species includes Wisconsin, Michigan and New York, south to the Gulf of Mexico and west to Kansas and New Mexico. I have been studying Rose-Pink in Michigan and the mid-West for approximately 1.5 years.

The comments that I would like to express relate to the potential loss of biodiversity in the event that Jean Klock Park is developed. As you must know, habitat destruction caused by human activity is the main cause of the loss of all forms of biodiversity whether it be the loss of species diversity, habitat diversity or genetic diversity. The development proposed by Harbor Shores CRI threatens biodiversity at all levels.

Species diversity will be lost if the park is developed. Of particular importance, is a population of a state-threatened species, Rose-Pink, which is found within Jean Klock Park. This species is rare and is listed as threatened by the State of Michigan. Of 21 occurrences in the Michigan Natural Features Inventory database, seven are historical and have not been witnessed in more than 40 years. Seven others are listed as extant but have not been assessed for viability. The remaining seven have been assessed for population viability and only three are ranked as having fair to good potential for viability. The population at Jean Klock Park is one of these three.

If the wetlands at Jean Klock Park are destroyed, there will be a significant loss of habitat diversity. For example, the Rose-Pink is present in an interdunal wetland community at Jean Klock Park. Leon (Chip) Schaddelee, a highly respected botanist, has documented several important wetland species and submitted this list to the Michigan Natural Features Inventory. Some of the species he has documented include, but not limited to, Red Osier Dogwood, *Carex* sp., Joe Pie Weed, Kalm's St. John's Wort. This wetland community type is ranked as S2 within the state and as G2 globally, indicating that it is a rare plant community and in need of protection.

In addition to species and habitat diversity, I would like to comment on the genetic diversity of populations, such as that of Rose-Pink, which are considered peripheral populations as they are located at the edge of the species range. Globally, Rose-Pink is not threatened, however locally, these populations are very important for several reasons. First, peripheral populations have a high potential for local extinction. Second, they tend to have a unique genetic composition which I have also found empirically with peripheral Prairie Rose Gentian populations. This unique genetic diversity may be due to the isolation of populations preventing gene flow between populations. In addition, small population sizes may be influenced by genetic drift which tends to cause a decline in genetic diversity. Thus, peripheral populations are important to conserve as their evolutionary potential is different from populations which are more centrally located within the range of a particular species. For example, my hypothesis for Rose-Pink is that Illinois populations which are centrally located will differ genetically from Michigan populations which are located at the periphery of the species range.

Can populations of Rose-Pink be moved to a new site just by planning some seeds? The answer to this question is complex. While many restorations have been started from seeds, species that have a seed bank and which are endangered should be handled very carefully. My research with Illinois state-endangered populations of Prairie Rose Gentian indicates that the seed bank stores genetic variation over time. In a species with a seed bank, not all genetic variants will be represented in the aboveground plant population. Thus, it is imperative to collect seed over several years, as well as over the entire population, to get an adequate sampling of the variation present within it. In addition, it is important to build up a store of seeds in the seed bank with a restoration, thus seeds would need to be added year after year. Based upon discussions with other botanists, it is likely that Rose-Pink populations have a soil seed bank.

If you have any questions, please feel free to contact me.

Sincerely,

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