

Comments on the Environmental Assessment Worksheet for the proposed Spirit Ridge Golf Course and Lodge.

Submitted by:
Terry Brown

Duluth
Minnesota

November 30, 1999

Submitted to:
James E. Mohn
City of Duluth
Responsible Governmental Unit
409 City Hall
Duluth
Minnesota 55802

General comments

The Environmental Assessment Worksheet repeatedly fails to assess the significance of the points it covers. In response to the section headings supplied by the EQB, the EAW tends to recite facts relating to currently existing conditions, or make general statements about the use of Best Management Practices and well established points of environmental concern. The Spirit Mountain EAW contrasts sharply with the EAW prepared for the Giants Ridge development. In the latter case issues such as forest fragmentation were the subject of 10 page reports, in the former the same concerns are glossed over or completely ignored.

The EAW highlights but does not assess a number of significant environmental, human health and city development issues. Given the many inherent difficulties in the use of this site for a golf course, it would not be reasonable to attempt to address these issues simply by extending the EAW. These unanswered questions mean that this development cannot be adequately evaluated without a full Environmental Impact Statement.

Specific concerns

In these notes the term “fairway” is used to refer to all parts of the clearing for each hole, including the tee, green and rough.

Ground water contamination

I have worked extensively with ground water models, including parameterizing and modifying models for nitrate transport and developing whole ecosystem models for wetlands, with a focus on hydrology. With this background I would make the following observations on the modeling described in the “Water Use and Water Quality” report.

- The use of Duluth Airport data is justified by the statement that this weather station is in the same climatic zone as Spirit Mountain. There is however significant variation within a climatic zone, particularly near a feature like Lake Superior. Extending the more local data by stochastic simulation may have provided more realistic results.
- Duplicating the 1954 weather input and discarding the results from the first year of simulation removes model instability caused by initial parameter selection. However, it also masks any important events associated with the establishment of the turf grass. Clearly the simulation does not cover this critical phase, when the highest levels of sediment run off may be expected. The model would have been much more informative if it had been allowed to run to a stable state with the present vegetation, and then made to simulate the transition to turfgrass.
- The report repeatedly stresses how critical accurate weather forecasting is, to the point of implying that unwanted chemical movement could occur if forecasts prove inaccurate. Some historical analysis of the accuracy of the relevant forecasts is required to estimate this risk.
- Averaging results over months and across drainage basins is inappropriate, particularly for pesticide values. While the averages are useful, the maximum values should also be reported. Local residents wells may be supplied

primarily by a single drainage basin, and a high value for that basin could be concealed by averaging with other basins.

- The model does not consider two dimensional (lateral) heterogeneity. It assumes that the soil uniformly conforms to characteristics seen in a small number of soil cores. Irregularities caused by tree roots, bedrock outcrops and historical soil deposition patterns weaken this assumption. These irregularities may act as channels for accelerated flow from the surface water to the ground water, increasing the risk of groundwater contamination above that predicted from isolated soil cores alone. No assessment of this factor was made.
- The manipulation of the model to include spot application of pesticides, while it attempts to be conservative, is really an extension of the model beyond its intended application range. More detailed flow models are able to more directly represent this type of treatment.

Forest fragmentation

Under the “Current Use” heading on page 5, the EAW states that the cross-country ski trails “fragment” the site. The ski trails are approximately one tenth of the width of the fairways. In many cases the trails barely open the tree canopy. Grasses and sedges are allowed to grow 2–3 feet high on the trails during the summer.

While the trails may represent the first, mildest, form of fragmentation (sometimes referred to in the literature as dissection) they have only a fraction of the impact of the proposed fairways. And yet the EAW does not consider forest fragmentation. The proposed fairway openings would:

- **Make remaining trees far more vulnerable to windthrow.**
Trees develop resistance to wind stress as they grow. Trees that have been protected from wind by being part of an unfragmented forest are less resistant, and likely to experience increased mortality when suddenly exposed.
- **Increase climatic stress on trees near openings.**
The drying and chilling effects of wind are reduced by unfragmented forest

cover, after fragmentation increased mortality due to environmental stress is likely.

- **Create edge features which disadvantage many bird species.**

As discussed in the Alternatives section below, the forest at Spirit Mountain is unusual for both its quality and unfragmented extent. As such it provides valuable habitat for rare birds, including the threatened Black Throated Blue Warbler. Other birds uncommon in the area but favored by the Spirit Mountain habitat include the Rufous Sided Towhee, Wood Thrush, Scarlet Tanager, Indigo Bunting and Red Headed/Bellied Woodpeckers.

Ski trails

In section 9 the EAW claims there are presently no commercial uses of the golf course area. This overlooks the cross-country ski trails, and the opposition of the local skier community to the project. Presently the cross-country trail system is entirely within the forest. The EAW identifies the percentage of the trails directly intersecting the fairways, but does not consider the visual impact and increased exposure to weather that result in the trails merely being close to large openings. A much larger proportion of the trails will be affected in this way, and there is no analysis of the impact of this change on the value of the ski trails.

The ski trails offer a unique opportunity for people to experience and enjoy this area in winter - this opportunity will be severely impacted by the elimination of so much of the forest cover.

Water

The EAW claims at one point that the minimum distance to ground water is 9 feet. In the same line it admits that the bedrock reaches the ground surface. This could imply that there is a 9 foot buffer of soil between the surface, where pesticides will be applied, and the ground water that a number of local families rely on for drinking water. In reality there will be numerous points of connection between the surface water and the ground water, and as the fairways are contiguous with wetlands in many places it is inevitable that there will be many opportunities for contaminated surface water to enter the ground water system.

Alternatives

The EAW (section 32) claims that to do nothing on the site is to fall short of the recreational opportunities envisioned in the State legislation. That legislation requires “...development of wide range recreational facilities available to both local residents and tourists...” and “...preservation of the environment in the area by a timely and intelligent plan of development”. The problems identified by the EAW itself are sufficient to show that the proposed golf course development fails on the latter criteria. It is also far from being the only alternative to achieve the former, something the EAW fails to address. The addition of yet another golf course cannot be considered “wide ranging”, and the developers have frequently commented that the target market is not “local”.

The Spirit Mountain forest’s maturity, age and species mix, and proximity to a major city make it a unique opportunity for development as a nature based recreational resource for the city.

The EAW frequently assures that following BMPs and the TMP “mitigate” contamination risks and environmental impacts. The EAW does not give adequate consideration to the fact that these risks are currently zero and that there are other development options which avoid these risks while taking advantage of the unique nature of the forest and its proximity to the city.

Scenic Impact

The legislation covering environmental protection states that, in the case of lands owned by a public body, aesthetic value is a natural resource to be protected. In section 26 d and 27 the EAW fails to address the visual impact in any meaningful way.

Skyline Parkway has already been designated as a State Scenic Byway. The EAW states that the conversion of a forested landscape to a golf course with large hotel will have no adverse visual impacts without any justification for this position. The field of Landscape Architecture has techniques for assessing visual impact, and these techniques should be applied.

Other concerns

1. As the EAW includes a significant amount of material from Audubon International, it would seem appropriate to highlight the comments from that material which acknowledge that Audubon International is not related to the National Audubon Society. The former exists to provide ecosystem management plans for golf courses, the latter to protect the environment. The local chapter of the National Audubon Society is strongly opposed to the golf course development.
2. The EAW frequently acknowledges that strict ongoing adherence to the Turf Management Plan will be required to minimize the risk of ground water contamination and sediment flow into Stewart Creek - it does not explain how that adherence will be ensured, or how failure to adhere to the Plan will be detected or remedied.
3. On page 12 the surface and subsurface drainage on the site is described as “good”, “No flooding is anticipated...”. Even in dry conditions there is extensive localized surface flooding on the site, so it is hard to see the origin of these expectations.
4. In section 17 the intent to excavate 80 to 110,000 cubic yards is identified. This is equivalent to a square pit 3 feet deep and over 300 feet along each side. Even with the utmost care it is hard to believe that this amount of soil can be moved without any sediment entering Stewart Creek.

This section fails to describe and steep slopes or highly erodible soils, as the section specifications require.
5. The statement at the end of section 20 part b that the use of an integrated Turf Management Plan “protects all water, soil, and environmental resources” is erroneous. These measures may reduce the probability of severe environmental or human health impacts, but they do not eliminate the chance of these events occurring.
6. The laws governing environmental assessment require that when a project is part of a larger stepwise development the impact of the entire development be considered. The EAW acknowledges that this project falls into that category, but does not evaluate the total overall impact of probable subsequent stages of the development.