

Attachment 8

Stormwater Management Memo

- The pitch of the race track surface does not have a significant bearing on efficient stormwater management, as claimed in the Application (p. 25).
- Some detention ponds may require a Dam Permit (i.e. Class AA) from NHDES, not included in the Application.
- Assumptions regarding stormwater time of concentration made in the development of the stormwater discharge plans (Site-Specific application pg. 15) are wrong. As a result, the stormwater controls are inadequate. Thus the culverts, swales, stormwater retention basins, retention basin outlet structures and retention basin emergency spillway structures must be redesigned.
- The time of concentration for the post-development watersheds should not be assumed but should be calculated by the methods presented by the NRCS (see Site-Specific application pg. 15). In addition, the NRCS indicates that models other than TR-20 and TR-55 (the models used), better address the impact of culverts, thus provide more accurate results. Information and nomographs provided by the NRCS indicate that time of concentration assumptions for the post-development and pre-development watershed are incorrect. The calculated time of concentration should incorporate the approximately 8,800 linear feet of culverts and 25,300 linear feet of swales and other proposed drainage control structures and not assumed to be the same as the natural pre-development conditions. Based upon the information presented in the Site-Specific application, the estimates of post-development discharge rates presented in Table 2.2 of the Site-Specific application are likely too low, thus the stormwater basin designs may likely be inadequate.
- The results of the Post-Development Stormwater Discharge calculations (see Table 2.2 of the Site-Specific application) are erroneous because the assumption regarding the post-development time of concentration is incorrect. The calculated discharges are similar only because of the incorrect assumption that has been made; actual post-development discharges would likely be higher if the correctly calculated time of concentration were used. These runoff calculations must be repeated with the appropriately calculated time of concentrations as well as other information (see following comment) to verify that the culverts, swales, stormwater retention basins, retention basin outlet structures and retention basin emergency spillway structures sizing and design are correct and actually capable of handling the 24-hour duration, 10-year storm as represented in the application.
- Based upon the sparse information provided in Appendix F of the Site-Specific application, it appears that the runoff down the proposed swales and through all culvert pipes has been underestimated. Flows down the swales and culverts should be dealt with as “concentrated” conditions. In contrast, it appears that all culverts are not included in

this calculation (only one “proposed pipe” is listed on Page 6 of the appendix) and the swales are not dealt with as channels but are included as part sheet flow.

- The design calculations for stormwater management should be presented in detail instead of being limited to summary tables.
- Detention Pond outlets and spillways discharge to the ground surface outside of mapped wetlands limits, with no specific indication of the layout or sizing of the erosion or sediment control features to be installed where the outlets and spillways are to be constructed.
- Plan GD-7 indicates that the spillway discharges to the race track, a highly unlikely circumstance.
- Locations of catch basins designed to capture the first ½ inch of stormwater runoff were not shown on Project Plans.
- The Phase II Hotel parking lot appears to have no drainage, a design which would create a large amount of ponded water.
- The total impervious area, slopes of road cuts, and swale areas and slopes should be clearly identified, as well as the volumes of water expected from design storm events.
- Likely contributions from groundwater intercepted by site development should be included in stormwater calculations.
- “Pollutants detected in collected stormwater will be shipped offsite” (p. 94). There is no plan presented for evaluation and testing of stormwater to detect contaminants.
- Patterns of flow created by the proposed stormwater systems will likely disrupt natural groundwater discharges into intermittent channels and associated wetlands. These potential impacts are not addressed in the Application.