

Mr. M. Travis Blake
Blake & Associates, Inc.
9668 Hwy 15-501
Chapel Hill, NC 27517

Via email: tblake@blakeassoc.net

October 18, 2005

Subject: Preliminary Water Balance, Loading Rates, and Storage Requirements for Williams Corner Development, Chatham Co., NC

This letter responds to your telephone request for an initial assessment as to the feasibility of disposing of 40,425 gallons per day of wastewater to be treated to North Carolina reuse standards on the combination of dedicated sprayfields and landscape areas for the subject development. This preliminary assessment also evaluated the likely required volume of wet weather storage necessary. This assessment relies upon information provided by you, the John R. McAdams Company, and Soil and Environmental Consultants (S&EC). To the extent that the conclusions of this letter report depend upon information provided by others, neither I, nor Eagle Resources P.A. make any representations regarding the completeness, accuracy and reliability of such data and information.

The areas of the three soil series to be irrigated used in this analysis were provided by S&EC based upon their preliminary and incomplete field mapping. Three additional unmapped areas were included based upon their assessment of the soil series likely to be present. I have removed soil areas mapped by S&EC where pavement and buildings are shown on the current site plan provided by The John R. McAdams Company. There are also no soils mapped or used for the analysis in the area presently occupied by the on-site excavation and borrow area.

The values of the restrictive layer hydraulic conductivity used in my analysis are geometric mean values of preliminary results of Ksat measurements made by S&EC and provided to me. In accordance with the likely requirement of the North Carolina Division of Water Quality (DWQ) for the Non-Discharge permit for the development, I have used 5% of the permeability of the most restrictive horizon for the drainage rate in the water balance calculations.

Also, in accordance with the requirements of both DWQ and Chatham County, I have used the precipitation and surface runoff from 80th % wettest year, based upon a 98-year climatic record for the Chapel Hill climatic Station. Potential evapotranspiration (PET) used in the water balance was computed using the industry standard Priestly-Taylor method which uses solar radiation values from the Raleigh Durham Airport station and daily maximum and minimum temperature from the Chapel Hill station.

Eagle Resources, P.A.

4005 Lake Springs Court • Raleigh, NC 27613-1525 • Phone: 919.345.1013 Fax 888.453.0958
Email: elappala@eagleresources.com • www.eagleresources.com

The following table provides the initial average annual loading rates based upon this analysis. Please note this is NOT the maximum instantaneous loading rate which will be specified in the non-discharge permit. That rate will be recommended by S&EC in the final Soil Scientist Evaluation Report in support of the permit application.

Please also note that the areas of soils have not been assessed for the potential to develop a permanent watertable at depths of less than three feet. That assessment will be completed as part of the Hydrogeologic Report for the development, which has not been completed. It is possible that small areas of the natural sprayfield areas will be removed as part of that process.

We also have not removed areas within 25 feet of defined drains that DWQ will likely eliminate from the area to be sprayed. The location of these drains is still being confirmed by S&EC. Further, S&EC has not completed the necessary assessment of limitations posed by potential shallow rock in some small areas of the eastern natural irrigation areas. We have estimated a preliminary restriction for such conditions by reducing the measured Ksat for the Saw soil series by approximately 35%.

Soil Series	Soil Area	Area Ac	Res- trictive Horizon	Ksat in/wk	% of Minimum Ksat Used	Drainage in/wk	Average Annual Loading Rate			
							in/wk	in/year	ac-ft/yr	gal/day
Helena	SA-1	10.26	BC	3.49	5.0%	0.17	0.22	11.67	9.98	8,900
Saw	SA-2	6.34	BC	18.00		0.90	0.82	42.74	22.59	20,156
Wedowee	SA-3	11.78	BC	7.30		0.37	0.34	17.48	17.16	15,312
Total		28.38						49.73	44,368	

All these caveats notwithstanding, it appears that the loading rates and available sprayfield area are adequate to dispose of the 40,425 gpd design discharge from the development.

We have also not yet evaluated the reasonableness or requirements of additional disposal capacity using cooling water and evaporation from ponds and fountains that you have included in the Wastewater Calculation spreadsheet provided to us via email on October 13, 2005.

The convergent water balance calculations also resulted in a likely wet weather storage capacity of approximately 130 days or 5.25 million gallons using the parameters in the table above and a design discharge of 40,425 gallons per day. This preliminary value is greater than the value of 90 days listed in your spreadsheet.

Please understand that this information is preliminary and subject to change, and is provided for feasibility assessment purposes only. Let me know if you need any further information on this matter.

Sincerely yours,



Eric Lappala, P.E., P.H.