ROBINS, KAPLAN, MILLER & CIRESI L.L.P.
ATTORNEYS AT LAW

ATLANTA
BOSTON
CHICAGO
LOS ANGELES
MINNEAPOLIS
ORANGE COUNTY
SAINT PAUL
WASHINGTON, D.C.

SUITE 1200
1801 K STREET, N.W.
WASHINGTON, D.C. 20006-1301
TELEPHONE (202) 775-0725
FACSIMILE (202) 223-8604
TELEX 4931197 RKMC

RICHARD B. NETTLER
(202) 775-0725

May 30, 2000

BY HAND

Ms. Sheila Cross Reid
Chairperson
Board of Zoning Adjustment
441 Fourth Street, N.W., Room 201
Washington, D.C. 20001

'00 MAY 30 P4:26
OF DISTRI

Re: BZA Application No. 16566

Dear Ms. Reid and members of the Board of Zoning Adjustment:

I have enclosed for consideration by the Board of Zoning Adjustment, the enclosed evaluation of the traffic impact of the Campus Plan submitted by Georgetown University and scheduled for a hearing on June 13, 2000. The critique is being submitted on behalf of the Hillandale Homeowners Association, which has previously sought to appear as a party in the above-referenced matter.

I appreciate your consideration.

Sincerely,

ROBINS, KAPLAN, MILLER & CIRESI L.L.P.

Richard B. Nettler

enclosure
cc: Scott Anderson, Hillandale Homeowners Association
Andrew Altman, Office of Planning (By Hand)

BZA
Case No. 16566
Exhibit No. 44

Board of Zoning Adjustment
District of Columbia
CASE NO.16566
EXHIBIT NO.44

-HILLANDALE HOMEOWNERS ASSOCIATION-

EVALUATION OF TRAFFIC IMPACT STUDIES FOR GEORGETOWN UNIVERSITY CAMPUS PLAN

By Joseph Cutro, P.E.

I have been asked by the Hillandale Homeowners Association (HOA) to evaluate various traffic assessments submitted by Georgetown University (GU) in support of its proposed "Campus Plan 2000". That plan is the subject of a January 31, 2000 application (No. 16,566) to the District of Columbia Board of Zoning Adjustment (BZA) for special exception approval. Of particular concern to the Hillandale HOA are proposed changes to the northern part of the campus ("north campus"), closest to the Hillandale neighborhood. The dominant element of the north campus is GU's medical center (GUMC), consisting of GU's medical school and hospital, as well as clinical and other medical-related buildings and facilities.

This evaluation is primarily intended to focus on matters of interest and proximity to the Hillandale community, with special emphasis on Reservoir Road NW, a minor arterial street passing directly adjacent to the Hillandale Planned Unit Development (PUD) on the north and the GU north campus on the south. Reservoir Road provides the primary access to the Hillandale PUD via the community's sole entrance on 39th Street NW. Secondary access is also available to and from the north via 39th Street and local streets of the adjacent Burleith neighborhood. This travel path, however, is generally regarded as inappropriate by both Hillandale and Burleith residents alike.

The traffic assessments that I have reviewed include Appendix L of GU's January 31, 2000 Campus Plan application, and a separate Traffic and Parking Analysis (and Technical Appendix), originally dated March 23, 2000, and later modified on May 18, 2000. Each of these traffic assessments was prepared by Gorove/Slade Associates ("G/S") of Washington, D.C. I have also reviewed a "matrix" of over 100 questions posed by neighborhood association representatives, and answers to them provided by GU, many of which concerned traffic.

I have been advised that one of the prerequisites for a BZA special exception is a finding that such an exception is not likely to have an adverse effect on neighboring properties in terms of traffic, among other things. I am further advised that the burden of proof lies with the applicant, in this case, Georgetown University. Although the G/S traffic studies submitted in support of GU's application conclude that implementation of the Campus Plan will have no adverse impacts upon parking or traffic conditions in the surrounding neighborhoods, it is my opinion that those studies fail to support such an optimistic conclusion.

Appendix L of the Campus Plan (1/31/2000)

Appendix L, subtitled "Traffic and Parking Assessment," is part of a larger campus plan application that asserts that approval of the plan is "not likely" to affect neighboring properties adversely. Appendix L is primarily a description of campus travel characteristics and of the transportation and parking features of the Plan. As important an element as this description may be, it provides little analysis of off-campus traffic impact. Appendix L also tends to focus on the campus as a whole rather than on the north campus area adjacent to Hillandale.

The small amount of traffic analysis provided in Appendix L relies upon an earlier Federal environmental impact study (EIS) performed for proposed improvements to Canal Road at the south entrance of GU's main campus. As would be expected, this EIS focused mainly on potential effects at the latter entrance, but it does give some estimate of projected traffic volume changes on Reservoir Road, specifically predicting a reduction of 61 vehicles in the AM peak hour. The only Reservoir Road intersection analyzed is that at Foxhall Road, and that analysis is based on older (1993) data.

Appendix L also describes one of the key features of campus circulation – the separation of the north and main campuses by a system of gated barriers. No essential changes to this system are proposed in the Plan. The main campus would continue to be accessible only from entrances on Prospect Street and Canal Road, and the north campus would be served by four entrances on Reservoir Road. The north campus, however, is planned for more intensive medical uses and a greater proportion of campus parking supply, thereby creating the potential for greater traffic demand on Reservoir Road and nearby streets. That potential demand, combined with the limited information contained in Appendix L, suggested to many (including Hillandale HOA representatives) that a more detailed analysis of traffic impacts on and around Reservoir Road was required. I am advised that the Gorove/Slade "Traffic and Parking Analysis" was undertaken as a result.

Gorove/Slade "Traffic and Parking Analysis" (3/23/2000, updated 5/18/2000)

This Gorove/Slade study assesses the impacts to be created by, among other aspects of the Campus Plan, the expansion of medical facilities on the GU north campus. The Campus Plan calls for 272,000 net square feet of floor area in three new or expanded buildings that GU has said would be used as doctors' offices, a clinic, and an addition to the medical library. Structured parking facilities accommodating up to 670 new spaces are also planned, although an overall campus parking cap of 4,080 spaces would be maintained.

The Hillandale community also has particular concerns about particular agreements not entailed in the original 10-year Campus Plan. These agreements apparently provide for GU's new and existing medical facilities to be leased to MedStar Health Inc., a private hospital management company. The G/S study purports to have accounted for the practical effect of these agreements on traffic for the ten-year planning period 2000-2010.

The central element of the G/S study is an examination of traffic conditions at several intersections along Reservoir Road, from Foxhall Road on the west to 37th Street on the east.

From the accumulated materials, I was able to reach the following conclusions:

- there are major discrepancies in existing Reservoir Road traffic data, particularly in the AM peak hour, that need to be more satisfactorily reconciled.
- the projected increases in generated traffic, based on an extrapolation of parking supply and optimistic assumptions about TMP enhancements, appear to be understated.
- the study does not fully address the implications of the MedStar takeover, particularly if staffing density for new and existing medical facilities is greater than expected.
- on the basis of the conclusions above, it is possible that G/S failed to identify quantifiable impacts at the six intersections examined.
- there may also exist unidentified adverse traffic impacts on local residential street segments.

Background and Existing Traffic

There appear to be serious inconsistencies in the various traffic count data, making it difficult to determine the true level of existing traffic on Reservoir Road. G/S' manual turning movement counts for six intersections along Reservoir Road, collected on February 10 of this year, show some internal consistency among themselves (one exception), but compare poorly with independently collected data, including G/S' own ADT count for Reservoir Road from a month later. The February 10 TM counts appear to significantly under-represent typical traffic volumes, particularly for through traffic on Reservoir Road. One possible culprit is the time of year--February is regarded as an unreliable month in which to count traffic, and many public agencies usually wait until March to begin their annual traffic counting programs. It is also possible that these TM counts are simply a matter of daily statistical variation, but even so, the large difference (38 percent for the AM peak hour eastbound) between the TM and automatic ADT counts must be better reconciled. The late addition of a seventh count location, at the French Embassy entrance, did nothing to illuminate the matter, particularly since the count contained no through movements for Reservoir Road.

Ironically, G/S took care to precisely balance peak hour counts (G/S Report, Figure 4) between successive intersections, which considering the presence of several unaccounted-for generators (e.g., on-street parking) is unrealistic and leaves a perception of excessive "tampering" with the numbers. An intersection-to-intersection check to assure that the flows are reasonably well matched would have sufficed.

This attempted balancing only further highlights what appears to be a particularly problematic TM count at the Reservoir/Foxhall intersection. The differences in Reservoir Road flows between this intersection and GUMC driveway #4 are much too great to reconcile reasonably. Either the count at Foxhall is unsound, or there is a major traffic generator between the two intersections of which we are unaware.

It is possible that key GUMC driveway movements were adequately represented in the consultant TM counts, but they should also be regarded as questionable with a major component of those counts already suspect. The only available independent evidence, an April 1997 count at Driveway #3 by the D.C. Department of Public Works (DPW), tends to support this position. In DPW's 4/97 count, all 4 turning movements (at this 3-leg intersection) in the AM peak hour were greater than their counterpart movements in the G/S count. In that same period of the day, movements from the GU campus numbered 41 in the DPW count, but only 14 in the G/S count. The counts for the PM peak hour compare much more favorably--movements from the campus numbered exactly the same (57 vehicles) for both counts.

Another question that was raised concerned whether the duration for the Reservoir Road automatic counts was sufficient. To reduce statistical variation, good practice for collecting AD(W)T counts suggests the recording of 72 hours within the four-day period from noon Monday to noon Friday. This leaves a full day to discount events like adverse weather, equipment malfunctions, and the like. While the G/S' ADT counts for Reservoir did not meet these criteria, they did appear to agree reasonably well with available independent data from DPW.

An appendix containing comparisons of Reservoir Road traffic data from various sources is attached to this report.

To salvage as much data as possible, the Reservoir Road ADT counts should be repeated and lengthened in duration, with the "good" TM counts reconciled to these (and not so much to each other). In addition, the Reservoir/Foxhall TM count could be faulty and should be redone. At the very least, the differences in Reservoir Road traffic volumes between Foxhall Road and GUMC Driveway #4 need to be satisfactorily explained. Any new counts, to be useful, would have to be taken after school resumes in the fall.

The upshot of these apparent data and analysis flaws is that volume/capacity ratios for intersections along Reservoir Road appear to have been greatly understated for both existing and future conditions, particularly in the AM peak hour. Even if the proposed GUMC expansion were to generate only a slight increase in net new traffic, it would have a much greater (and highly disproportionate) effect on intersections that are already operating at poor levels of service.

The following table is a brief capacity analysis for a sample intersection, namely 39th Street, for adjusted traffic flows on Reservoir Road. The table shows volume/capacity ratio and resulting level of service.

	G/S Analysis	Adjusted Flows
AM Peak Hour	.68 ("B")	.81 ("D")
PM Peak Hour	.63 ("B")	.66 ("B")

Traffic Generation/Future Traffic Issues

It appears that the 10 percent increase in generated traffic projected by G/S is an underestimate for most reasonable scenarios.

Parking supply limitations can and should used to help determine the traffic generated by new development, but most reasonably represent a lower limit to a range of traffic growth. The upper limit of that range would be best taken from Institute of Transportation Engineers (ITE) trip generation rates, which are derived largely from "suburban" experiences where demand is unrestrained. A best estimate of traffic growth would fall somewhere between these two extremes and would be most reliably based on an extrapolation of current trip rates per (existing) 1000 square feet. The trips/employee rate could also be reasonably examined, and factors like system (traffic flow) restraints and further modal choice options could also affect the resultant growth rate.

Unfortunately, a better examination of the factors that influence travel growth is hindered by a lack of information in the Campus Plan. Most notably, there is no information about existing floor area for buildings on the GUMC (north) campus.

In its analysis, G/S has arbitrarily chosen parking supply/demand as its sole basis for determining traffic growth, and thereby assumed a traffic growth rate (10 percent) at the extreme low end of the available spectrum. The GU/MedStar projections for population/activity on the north campus (G/S Analysis, 5/18/00, Table 6) suggest that the increase in the daily arrivals and departures will increase by about 27 percent. In the critical AM peak hour there should be few medical visitors on the road, and hence growth in traffic would probably be no greater than that of staff population, i.e., 21 percent. G/S has estimated a total of 79 additional inbound vehicles, whereas a 21 percent growth rate would yield 165 vehicles under the same conditions. Conversely, traffic growth in the PM peak hour should be somewhat higher than the daily mean, at about 30 percent. G/S estimates a total of 82 newly generated vehicles in the PM peak hour, while a demand-based projection would yield 242 under the same conditions.

The G/S analysis does recognize the potential for traffic generation greater than can be accommodated by parking supply, and in fact shows a substantial overall campus parking deficit of 1,157 spaces. It is stated that this deficit, and presumably the underlying traffic implications, would be absorbed by enhancements to the existing Transportation Management Program (TMP).

While the University should be commended for its past success in reducing the use of single-user vehicles, the G/S Analysis' expectation of substantial further reductions may not be realistic. The first victim of such optimism will be the 10% "supply factor" that G/S has built into its on-site parking analysis. It can be expected that this factor would be pushed toward zero during each day's high-demand periods. Another adverse effect will be the absorption of what remains of the on-street parking supply in nearby neighborhoods, not to mention increasing pressure on visitors to park illegally. G/S' own survey suggests that enforcement has not been very effective, with 36 percent of available spaces occupied by vehicles without resident stickers. (Although note 39th Street north of Reservoir Road, where a bank of 20 spaces appears to be completely unregulated.)

If and when parking facilities have been fully exhausted, where else can motorists go? The study's optimistic response is that other modes of transportation would be used, hence the hopes held out for further TMP enhancements. But another possibility, at least as likely, would be more drop-off/pickup activity, using both private vehicles and taxicabs. Increase in this activity would result in greater traffic demand without a corresponding provision for greater parking supply.

A further look at newly generated traffic reveals that the underlying population projections may also be flawed, particularly if MedStar, as planned, assumes operation of GU's north campus clinical facilities. Using ITE rates "in reverse" yields a rate of approximately 4 employees (not all working at the same time) for every 1000 square feet of medical/clinical space. For the 170,000 (net) square foot increase in floor area currently proposed under MedStar operation, the above conversion yields 680 new staff, versus the 320 estimated by MedStar. This does not even consider the additional 102,000 square feet of medical library space also envisioned in GU's 10-year plan (which would remain under GU's control), nor potential increases in staffing density within existing GU medical facilities over which MedStar would assume effective control. Since it cannot be expected that GU will be able to restrain MedStar's use of space within the facilities it controls, it would therefore be more prudent to assume greater estimates of population growth. In that event, traffic growth in the AM peak hour could more likely be in the range of 35 percent.

Distribution and Assignment

At first blush, it may appear that the oversaturated intersection of Reservoir Road and Foxhall Road could be a restraint to traffic generation. There appear, however, to be no other traffic capacity restraints along the north edge of the campus, at least not at present. It is therefore quite possible that new and existing traffic could redistribute itself to Reservoir Road (to and from the east) and to north-south streets like 38th and 39th streets. G/S has assigned no generated traffic to the latter north-south streets, in keeping with the policy (in many jurisdictions) of avoiding traffic assignment to streets of "local" classification. [The intent of these policies is to prevent assignments that allow the bypassing of congested intersections on major streets]. Unfortunately, motorists on their way to work or medical appointments will find the shortest-time path to their destination,

very often via local streets, regardless of the results predicted by a traffic impact study. This threat of further "cut-through" traffic should be recognized as a potential adverse impact to neighboring properties, and mitigation should be provided to address it.

Aside from the fact that generated traffic was not assigned to local streets, the consultant's distribution and assignment patterns appear to be sound. G/S has properly diverted some "background" traffic away from Reservoir Road to account for the probable approval and construction of a signalized left turn access from Canal Road to the south side of the Georgetown campus.

The new materials presented on 5/18 also noted the possibility of providing medical facility parking on the main campus. While I was not able to readily discern if G/S took advantage of this in their traffic assignment model, it should be apparent that using the GU's Canal Road entrance as a "bottomless pit" to absorb MedStar traffic would not be acceptable. At some point, on-campus safety would be unduly compromised by an excessive number of vehicles crossing the main campus to get to the medical center.

"Quality-of-Life" Impacts

As noted above, "standard" impact studies intentionally direct traffic away from local (typically residential) and collector streets. In many jurisdictions, it has become the practice to undertake an additional "non-traditional" analysis that incorporates alternative assignments intended to yield more realistic projections for hourly and daily traffic volumes on streets of lower classification. The resulting volumes are then compared against threshold values for each street class. These thresholds are not based on traffic capacity, but rather on quality-of-life considerations such as safety, residential tranquility and neighborhood cohesion. The threshold figures vary by street classification and are adopted and enforced by appropriate governmental authority. Very often, the thresholds used for traffic impact studies are identical to those used for eligibility in neighborhood traffic management programs.

Other than for Reservoir Road, information about local streets like 39th Street is insufficient to make any assessments herein. Reservoir Road itself is classified by DPW as a minor arterial street, a classification that would not generally be subject to a volume "cap". [Volume on minor arterials is often indirectly controlled through constraints on roadway design and by prohibition of certain types of traffic (e.g., large trucks)]. Given Reservoir Road's largely residential character, however, it might be reasonable to impose a volume limit of some kind, perhaps 20,000 vehicles a day. According to DPW, 1997 traffic volume (ADWT) on Reservoir Road is 17,800 at a point just west of 39th Street. Gorove/Slade's single 12-hour count for the street (3/2/2000) extrapolates to about 21,000 vehicles daily.

Recommendations for Mitigation:

The following actions, if taken, would help mitigate the adverse effects of the GUMC campus expansion on nearby neighborhood streets. **Under no circumstances, however, should it be inferred that compliance with the measures described would eliminate or prevent adverse traffic impacts, especially those that could develop on Reservoir Road.** A further analysis, including a study of traffic volumes and thresholds for local streets, should be undertaken to help determine how effective these and other actions might be in mitigating the likely adverse traffic effects of the Campus Plan.

- Define, and provide evidence for the effectiveness of, new TMP initiatives to further reduce single-vehicle travel and parking demand on the north campus.

- Consider and investigate restricted use of the new Canal Road entry for regular users of north campus parking garages, through revisions to the gating system between the north and main campuses. Under no circumstances, however, should through movement between the Canal Road and Reservoir Road be permitted.

- Regulate parking on the east side of 39th Street north of Reservoir Road. Identify and provide appropriate parking controls for other as-yet-unregulated segments on public streets north of the campus.

- Adjust crosswalk location and install ADA-compliant curb ramp on SE quadrant of Reservoir Road/39th Street intersection.

- Consider and investigate further neighborhood traffic management strategies, including time-of-day restrictions and traffic calming measures, to deter traffic growth on 38th Street, 39th Street, and similar residential streets.

Joseph Cutro, P.E. 5/24/2000

Appendix

Reservoir Road
Comparison of Traffic Data from various sources

AM Peak Hour Eastbound

	Foxhall	Driveway #4		Driveway #3		Driveway #2 39th Street		Driveway #1 38th Street	
G/S Analysis [03/23/2000]	1524	1524	1351	1351	1324	1324	1168	1168	1089
G/S Analysis [05/18/2000]	1603	1603	1430	1351	1324	1324	1168	1168	1089
G/S TM Counts 02/10/00	1085	1605	1432	1320	1293	1109	945	925	846
G/S Automatic Count 03/02/00					1786				
DCDPW TM Count at French Embassy 04/29/97			1807	1750					
DCDPW TM Count at GU Entrance #3 04/29/97				1765	1723				

Reservoir Road
Comparison of Traffic Data from various sources

AM Peak Hour Westbound

	Foxhall	Driveway #4		Driveway #3		Driveway #2 39th Street		Driveway #1 38th Street	
G/S Analysis [03/23/2000]	311	311	360	360	386	386	392	392	422
G/S Analysis [05/18/2000]	356	356	405	426	452	452	458	458	488
G/S TM Counts 02/10/00	267	325	374	347	373	407	418	380	410
G/S Automatic Count 03/02/00					317				
DCDPW TM Count at French Embassy 04/29/97			257	283					
DCDPW TM Count at GU Entrance #3 04/29/97				281	296				

Reservoir Road
Comparison of Traffic Data from various sources

PM Peak Hour Eastbound

	Foxhall	Driveway #4		Driveway #3		Driveway #2 39th Street		Driveway #1 38th Street	
G/S Analysis [03/23/2000]	561	561	580	580	588	588	531	531	651
G/S Analysis [05/18/2000]	549	549	568	580	588	588	531	531	651
G/S TM Counts 02/10/00	339	546	565	496	504	538	481	456	578
G/S Automatic Count 03/02/00					661				
DCDPW TM Count at French Embassy 04/29/97			613	616					
DCDPW TM Count at GU Entrance #3 04/29/97				601	609				

Reservoir Road
Comparison of Traffic Data from various sources

PM Peak Hour Westbound

	Foxhall	Driveway #4		Driveway #3		Driveway #2 39th Street		Driveway #1 38th Street	
G/S Analysis [03/23/2000]	890	890	788	788	769	769	755	755	656
G/S Analysis [05/18/2000]	890	906	804	788	769	769	755	755	656
G/S TM Counts 02/10/00	623	998	903	850	831	904	890	662	563
G/S Automatic Count 03/02/00					975				
DCDPW TM Count at French Embassy 04/29/97			769	718					
DCDPW TM Count at GU Entrance #3 04/29/97				759	727				