Attn: Hayden Wright or Marie Sandoval #120

MESA ENGINEERING

ENVIRONMENTALLY CONSCIOUS CIVIL ENGINEERING
8103 Kirkham Drive
Austin, Texas 78736
(512) 799-7998

Bruce Melton

STATE OF TEXAS
BRUCE C. MELTON
87097
LICENSED
PROFESSIONAL ENGINEER

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Engineers Letter
Peaceful Hill Condominiums
Traffic, Number of Units and Drainage Issues
Application: C14-2011-0141

This report was prepared for a coalition of neighborhood associations and interested parties that have concerns about the proposed Peaceful Hill Condominium Project referenced above. The following are critical issues relative to this project that have direct impacts on the interested parties and on our community as a whole.

Traffic:

It is entirely inappropriate to let this project proceed without evaluating the overlooked additional traffic in the Neighborhood Traffic Analysis (NTA) and determining the meaning of the actual traffic increase in front of Williams Elementary. *Emphasis needs to be placed on the traffic issue with this project.*

Mairo Street leads directly from the proposed Peaceful Hill Condominiums directly to South First Street and the proposed development directly allows access from the adjacent Park Ridge Gardens to South First Street. This traffic from the adjacent Park Ridge Gardens was not included in the NTA.

The results are that traffic in front of Williams Elementary does not increase by 26 percent as indicated in the NTA but by 134 percent. A detailed analysis of this matter is presented at the end of this letter. This is the same analysis that was presented to staff, ZAP and Council previously.

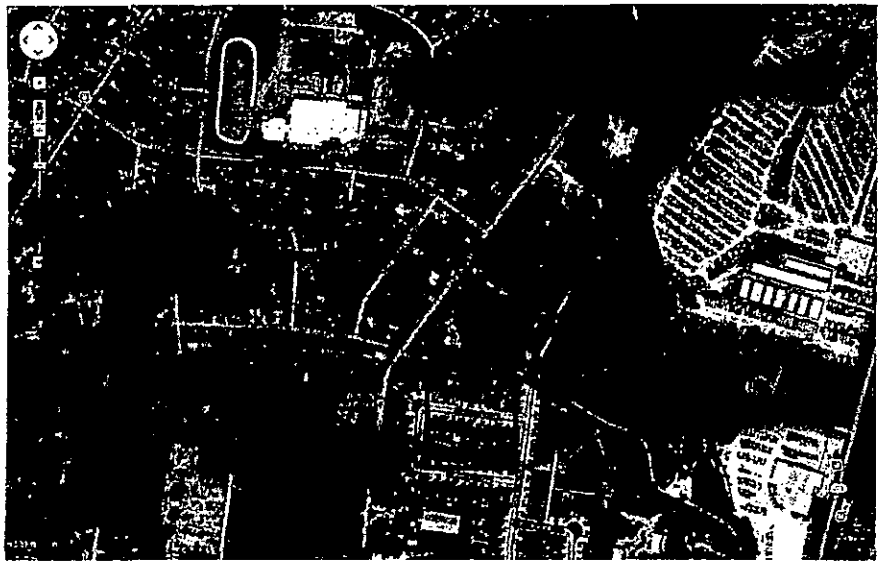
Number of Units: SF-2 vs. SF-4/SF-6

Careful evaluation of Google Maps shows that the Peaceful Hill Neighborhood Association lot density is 3 to 4 lots per acre, Park Ridge Gardens is 9 lots per acre and the proposed Peaceful Hill Condominiums is 8.4 lots per acre.

The SF-2 land use designation of 5,750 square feet per lot, assuming 20% (+/-) for roadways and drainage infrastructure, is only a starting point in any evaluation of the number of lots that a particular parcel can accommodate. Once this is determined, additional land must be removed from the assumption for complicating factors due to parcel shape, terrain and critical environmental features. In the case of this tract, all three of these complicating factors conspire to reduce the number of units that can be constructed on this specific parcel as described below and in Figure 2:

The parcel has an exceedingly odd shape. It is too narrow to allow for two parallel public streets creating a loop at any point, so a simple "T" street layout must be assumed. This reduces the number of lots.

There are four heritage trees on the site. These trees are located so that several to numerous lots cannot be constructed, reducing the number of possible lots further.

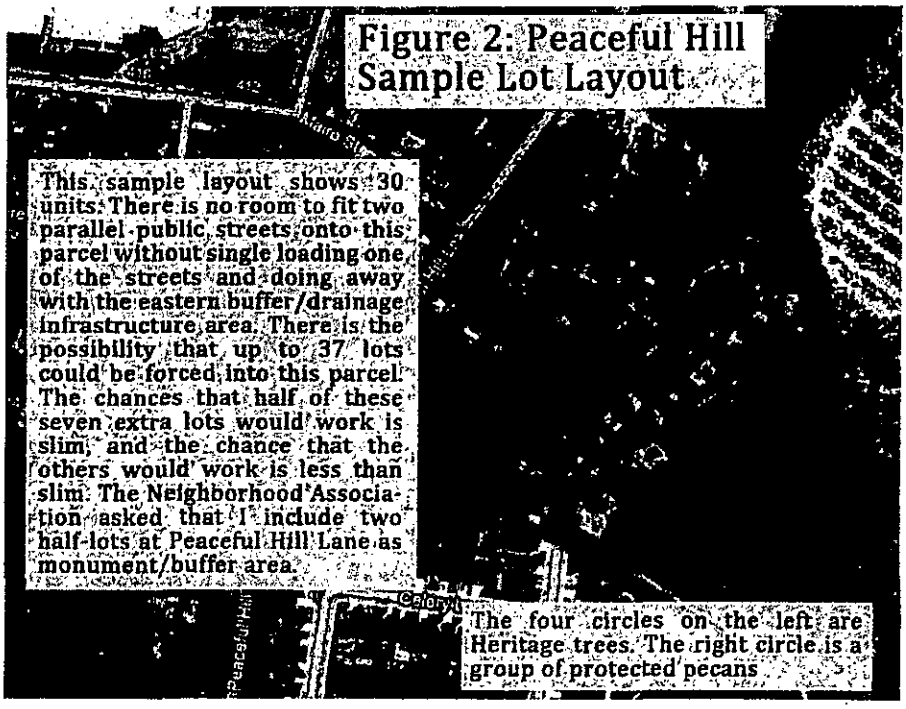


The parcel is quite flat and there is no alternative for underground connection of storm drain sewer lines. This means that the stormwater facilities cannot be constructed in deep ponds with a small surface area and must instead utilize shallow ponds with large surface area(s). Additionally, there is no defined drainage leading off the property and flow spreaders must be used to return stormwater discharge to its natural sheet flow condition. This requires more land area and further reduces the number of units that can be placed on the site.

I have prepared an example site layout (see below), using cut and paste (Google Maps) lots from the adjacent Peaceful Hill neighborhood that demonstrates these things.

This layout includes 30 lots. The lots were physically cut and pasted from the Peaceful Hill neighborhood. Accurate measurement of the actual size of these lots is shown in Figure 3 and is found to be 12 percent larger than the minimum lot size for SF-2 of 5,750 feet.

This is the type of estimate I would prepare for my client at this stage of the development process. There is room to add several more lots if we are lucky, if the tree survey and negotiations with the neighborhood over buffers, and issues with the hazardous leaching in the wrecking yard are successfully addressed. These lots would number about three and are located: adjacent to two of the Heritage trees and adjacent to Park Ridge Gardens. In addition one or maybe even two more lots could be situated in the odd triangular leftover space in the



northernmost corner of the property, but these lots are very undesirable. There are also two half-lots at the entry on Peaceful Hill Lane. The Neighborhood Association asked me to leave these two half-lots vacant so as to serve as entry monument lots/buffer area.

The lots size chosen for this sample is also 12 percent larger than the minimum. Ideally, three or four additional lots could be picked up if their sized was reduced to the minimum, but because of the odd shape of this parcel and Heritage trees, it is not likely that any more than one or two lots could be picked up by reducing the size.

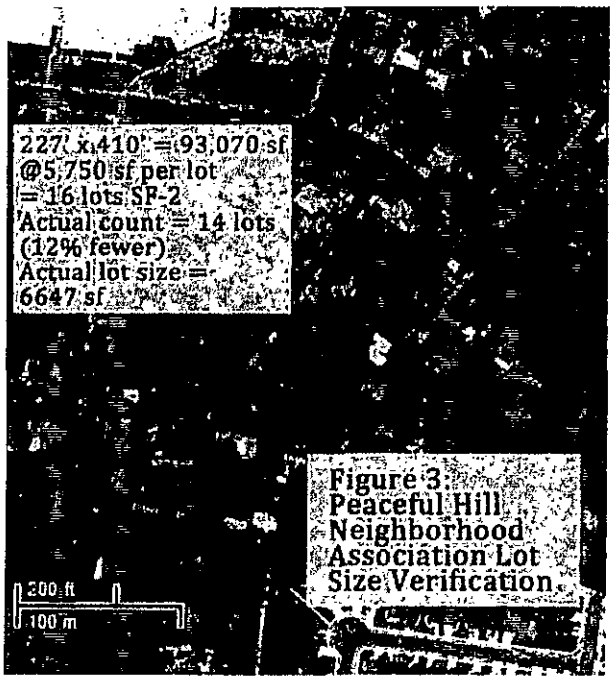


Figure 3: Peaceful Hill Neighborhood Association Lot Size Verification

As figure one shows, there is not enough room to provide for a public street loop under SF-2, with houses on both sides of the street. There is enough room for a loop with houses only one side of half the loop, but all lots in the loop must be an odd size; approximately 75 feet x 75 feet and there is no room for drainage facilities on the downhill side, much less a buffer between this parcel and the adjacent parcels.

When the buffer(s) and room for drainage infrastructure are added in, even a loop that is half "single-loaded" is infeasible. The only way a loop is feasible is SF-6 zoning and a site plan using 3,750 sf "condo lots."

If all of the above assumptions and negotiations were successful, and two highly undesirable flag lots were added in the triangle, the lot count would be 37 or 38. In reality the lot count will likely end up at *no more than* 33 lots or 3.5 lots per acre <u>if the tree survey and negotiations work out favorably for the developer.</u>

Stormwater Facilities:

Figure Two shows about 50 to 75 feet of vacant land to the east and south of the sample lots. This area is for stormwater facilities and flow spreading. Unless stormwater is piped off-site (discussed below) discharge must leave the site as sheet flow and further, it must be discharge equally along all parts of the site where it would naturally be discharged.

Because of the configuration of this site; flat with no defined drainageways leaving the site, the entire downhill side of the site must serve as a discharge area. This means that a flow spreader will basically have to be built along the entire downhill side of the property, also meaning that unless a pumping system is provided, multiple ponds will need to be built.

There are two other alternative. One involves an easement purchased in the wrecking yard to bury a large diameter stormsewer approximately 200 feet to the existing defined natural drainageway. The drawback of course is that in this alternative, concentrated stormwater is entering the (what is likely) significant hazardous waste contaminated area (also discussed below).

The other alternative is to collect all of the runoff in one central area in an oversized facility and pump it offsite to a suitable point in a small diameter force main.

Hazardous Materials Coming Off the Salvage Yard:

It is unfortunate that upstream development has proceeded without regards to the additional runoff coursing through this automobile salvage facility. This long-term wrecking yard is very likely to be a place where heavy metals and toxic materials are abundantly spread across the site. This is not meant maliciously, this facility has been in operation for decades certainly and maybe generation; before many of our current hazardous materials rules and regulations were enacted.

But this does not mean that the accidental or purposeful wasting of hazardous fluids and indiscriminate leaching of heavy metals has not occurred or will not continue. Before the rules were put into place, used motor oil was commonly disposed of along fence lines to keep the weeds down or used on caliche roads to keep the dust down. Waste anti-freeze and brake fluid were drained into the dirt and asbestos laden brake dust blown and washed off brake pads and parts indiscriminately.

But because these acts were all legal back in the day does not mean the results of these acts are any less hazardous. Nor does it mean that those hazardous materials are not still in the soils of the wrecking yard leaching out with every runoff event. Adding further significant volumes of stormwater runoff from this proposed Peaceful Hill Condominium development compounds that situation further.

Heavy metals and toxic materials coming off of automobiles in wrecking yards today come from automobile fluids whose containment systems are compromised in auto accidents. These include but are not limited to: aromatic hydrocarbons (benzene, toluene, xylene and naphthalene compounds), lead, zinc, chromium, barium, cadmium and arsenic and dioxins. The concentration of these materials, especially in used motor oil, is often very high (lead is extremely high). Other toxic and carcinogenic materials that routinely come off of wrecked autos as they sit in salvage yards include more lead, mercury and asbestos. Plastic battery casings and their fragile lead interiors often disintegrate in auto accidents. The debris created, falling to the ground in auto salvage yards, creates significant sources of widespread lead contamination. Mercury is a significant issue in these facilities because of the widespread use of mercury switches. Asbestos is widespread as most cars are around long enough that their original non-asbestos original equipment brake and clutch pads are replaced. Aftermarket producers of these products routinely use asbestos.

I have no precedent to address this sort of serious problem. It is unknown if this site is contaminated enough to be a superfund site, but wrecking yards can certainly be found on the Superfund list. So what alternatives do we have to address this situation?

Contamination washes off of the salvage yard site every time it rains. As more runoff washes through the site from increased development upstream, the opportunity increases for more contaminants and toxic materials to leave the site. Dry windy conditions, common in drought, also increase the opportunity for contaminants, especially asbestos, to be blown from the site.

This is a decision that the city council of an environmentally friendly city should make. A solution to clean up the source of the pollution may be more problematic than a solution that limits the amount of runoff that washes through this site. A negotiated solution with this developer would include an oversized stormwater facility capable of capturing the 100-year flood (or whatever flood that staff determines appropriate) and piping the discharge off-site to an appropriate discharge area (down Peaceful Hill Lane to the creek) that does not drain through the contaminated wrecking yard. The discharge piping would likely be a two inch force main, so the cost would not be extraordinary and these types of systems have certainly been installed on numerous sites across the city and region. Over the Recharge Zone a

forcemain piping and irrigation system is virtually required by City rules for every development following current development standards.

Transportation Analysis Evaluation (March 2012)

Background: Fundamental assumptions of the Neighborhood Traffic Analysis (NTA) scenario should be reevaluated. The construction of Peaceful Hill Condominiums would result in significantly greater impact than implied by the NTA. Much of this increased impact would be to Williams Elementary School.

Discussion: There are two fundamental assumptions that stand out when evaluating the NTA for Peaceful Hill Condominiums:

- The Neighborhood Traffic Analysis for this project did not consider pass through traffic from the 130 unit Park Ridge Gardens subdivision.
- The spilt for traffic use on Peaceful Hill Lane is likely high.

Park Ridge Gardens Pass Through: The original NTA for the Park Ridge Gardens Development (130 units) considered a 50/50 split of traffic between Ralph Ablanedo and Peaceful Hill Lane. This proposal was changed before approval to disallow access to Peaceful Hill Lane because of traffic impacts creating an unacceptable Level of Service (LOS) greater than 1200 vehicles per day (vpd). Considering that Mairo Street is a direct connection to South First, it is logical that the previously proposed 50 percent of traffic generated from Park Ridge Gardens accessing Peaceful Hill Lane would be just as likely to pass through the Peaceful Hill Condominiums to reach South First. This assumption approximately doubles the traffic on Mairo Street in front of Williams Elementary.

Peaceful Hill Split: Because there are no significant destinations of benefit to using Peaceful Hill Lane rather than directly accessing South First on Mario, the split for Peaceful Hill Lane should have been between 5 and 10 percent.

Suggested Traffic Calculations: The total traffic generated from the proposed Peaceful Hill Condominiums is 560 vpd per day and from Park Ridge Gardens is 1,324 vpd. Fifty percent of each of these will access a Peaceful Hill Lane. The Mairo Street split and percentage increases are shown below.

Traffic Calculations Considering Pass Through From Park Ridge Gardens					
Street	Existing Traffic (VPD)	Split	Proposed New Traffic to Each Roadway	Overall Traffic	Percentage Increase in Traffic
Peaceful Hill Lane (1)	1290	10	92	1382	7%
Shallot Way (2)	583	50	280	863	48%
Mairo Street (3)	635	40	832	1483	134%
Notes: see Table 2, Peaceful Hill Condominiums below.					

Backup Data:

The following two tables are from Park Ridge Gardens NTA. C14-05-0034.SH, 2005.

Table 1.		
Land Use	**Size**	**Trip Generation**
Single-Family	130 d.u.	1, 324

Table 2.	
Street	**Traffic Distribution by Percent**
Peaceful Hill Road	50%
Ralph Ablanedo Drive	50%

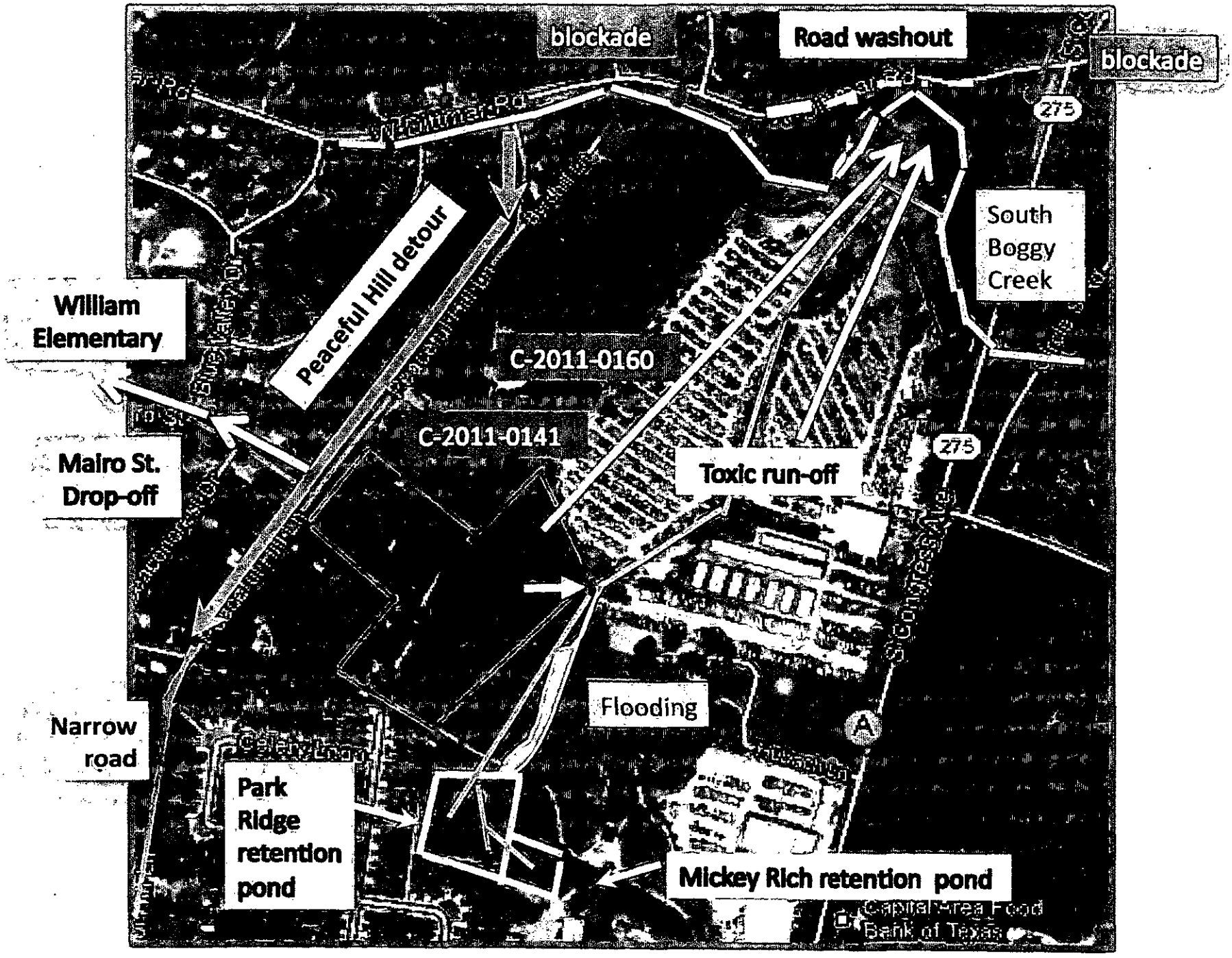
The following three tables are from Peaceful Hill Condominiums. C14-2011-0141, March 2, 2012.

Table 1.	
Street	**Traffic Distribution by Percent**
Peaceful Hill Lane	20
Shallot Way	50
Mairo Street	30

Table 2.				
Street	**Existing Traffic (vpd)**	**Proposed New Site Traffic to each Roadway**	**Overall Traffic**	**Percentage Increase in Traffic**
Peaceful Hill Lane	1,290[1]	112	1,402	9%
Shallot Way	583[2]	280	863	48%
Mairo Street	635[3]	168	803	26%

1.Source: COA Traffic Counts 2010. http://www.campotexas.org/programs_rd_traffic_counts.php.
2. Source: GRAM Traffic Counting, Inc. December 13, 2011.
3. Source: Austin Transportation Department. February 29, 2012.

Table 3.						
Street	**Pavement Width (ft)**	**Maximum Desirable Volume (vpd)**	**Existing Traffic (vpd)**	**Proposed New Site Traffic**	**Overall Traffic**	**Percentage Increase in Traffic**
Peaceful Hill Road	19'	1,200	817	662	1,473	81%
Ralph Ablanedo Drive	23'-30'	*	2,295	662	2,957	29%


blockade
Road washout
blockade
275
South Boggy Creek
William Elementary
Peaceful Hill detour
C-2011-0160
C-2011-0141
Mairo St. Drop-off
Toxic run-off
275
Flooding
Narrow road
Park Ridge retention pond
Mickey Rich retention pond
Capital Area Food Bank of Texas