City of Santa Barbara
Community Development Department

Memorandum

DATE: August 27, 2007

TO: Bettie Weiss, Staff Hearing Officer

FROM: Jan Hubbell, AICP, Senior Planner

SUBJECT: 226-232 Eucalyptus Hill Drive
MST2004-00349

Several comments were received from concerned neighbors regarding drainage issues related to the proposed project as part of the public review of the Draft Mitigated Negative Declaration. A letter was submitted by Triad/Holmes Associates, a civil engineering firm hired by the applicant, which responds to these comments. A copy of this letter is attached to this memo. Both the case planner and the environmental analyst reviewed the letter and concur with its responses to the comments.

When you consider the Proposed Final Mitigated Negative Declaration, please incorporate this letter into the Response to Comments.

Attachment

triad/holmes associates
civil engineering
land surveying
mammoth lakes • bishop • redwood city • napa
san luis obispo • pleasanton

July 3, 2007

Brent K. Daniels, Jr.
L&P Consultants
3 W. Carrillo Street, Suite 205
Santa Barbara, CA 93101
Via facsimile: 805-962-4162

Subject: MST 2004-00349
226, 228, 232 and 234 Eucalyptus Hill Drive

Dear Brent:

Triad/Holmes Associates has reviewed the letters submitted to the City of Santa Barbara regarding the subject project on Eucalyptus Hill Road. Comments directly and indirectly related to the Preliminary Stormwater Study prepared by Triad/Holmes in July, 2006 for this project are responded to as follows:

- Response to letter from Christopher Flynn, MD, 875 Woodland Drive:

A Detailed Erosion Control Plan will be required by the City of Santa Barbara since grading is proposed on existing slopes over 15%. Also a Notice of Intent will also be required to be filed with the State Water Quality Control Board and a Storm Water Pollution Prevention Plan (SWPPP) prepared since proposed construction activities will disturb over 1-acre. The SWPPP will address temporary and permanent erosion and sedimentation control measures and incorporate Best Management Practices (BMP's), which provide for monitoring and maintenance of erosion control devices during construction. Permanent sedimentation and erosion control measures will also be addressed in the Grading and Drainage Plan and Landscape Plan of the final Construction Documents.

- Response to letter from Caroline and Tony Vasullo, 850 Woodland Drive:

"ADEQUACY OF THE INITIAL STUDY AND STORMWATER REPORT"

The Preliminary Stormwater Study was prepared under the direction of a California licensed civil engineer, Cristi Fry, P.E. 57970. The purpose of the study was to show that the drainage concepts, indicated on a preliminary drainage plan prepared by others, were feasible and in general conformance with City's requirements, in order to acquire preliminary approval of the project.

To obtain a building permit for the project, a final Grading and Drainage Plan will be prepared as part of the Construction Documents. The final Grading and Drainage Plan will also need to be prepared under the direction of a licensed civil engineer and will provide accompanying engineer's calculations to support the final sizing of the drainage facilities.

Stormwater runoff quantities are based on several estimated factors, which make calculated runoff values a best approximation. However, it should be noted that the methodology used by this firm to compare the pre-development runoff to the post-development runoff is a very conservative approach method.

"PROPOSED 24-INCH DIAMETER STORMDRAIN PIPE"

Thrust forces on pipes are typically only a concern in pressurized pipes, such as water systems, and not for gravity flow pipes such as stormdrain and sewer systems. It is an accepted assumption, that in a gravity flow system, the pipe material itself will withstand any minor momentum forces exerted by the flow and accordingly its analysis is not necessary.

It is a correct conjecture that the final design of the storm drain would be expected to include provisions for a cleanout/drop inlet structure at the 90-degree bend. Although not necessary for stability, the installation of a structure would inadvertently add strength and provide lateral support to the stormdrain pipe at that location.

The Preliminary Stormwater Study was prepared specifically to identify increases in stormwater runoff resulting from the proposed development and to show adequacy and feasibility of the preliminary drainage design for the purpose of mitigating that increase. Per the City's criteria, post-development runoff from the site is not allowed to increase in a 25-year design storm. The preliminary drainage design proposes to direct runoff from the development to a large detention basin. In the final design, the basin's outlet pipe will be sized to meter the outflow to the pre-development runoff rate required by the City. The difference between the post-development runoff and the pre-development runoff is detained within the basin.

Regarding the "magnitude of water flow", while it is true the capacity of a 24-inch diameter pipe flowing full is quite large, runoff from the developed project is not expected to require that large of a stormdrain pipe. The proposed 24-inch stormdrain was not sized as a part of the study and is shown on the Preliminary Grading and Drainage Plan simply as a means to transmit stormwater to the public right-of-way in a non-erosive manner. The pipe could be substantially smaller and still be able to handle the required flow volumes associated with this project. However, it should be noted that larger systems tend to be easier to maintain and have a reduced chance of becoming clogged and not operating properly. Final sizing of the stormdrain will be required to be

coordinated with the City's engineering department and the design shown on the final Grading and Drainage Plan with support calculations prepared by a civil engineer. The City's only requirement for drainage exiting the site is for a safe overland escape route, for a 100-year design storm event. A closed conduit stormdrain is a more controlled method of conveying drainage, and was included in the preliminary drainage design at the recommendation of the City.

Also regarding the magnitude of the flow rate ("as much as 3,344 gallons of water per minute..."), it is important to keep in mind that the flow in question is the PEAK flow that was estimated for a 15 minute period. The flow rate drops off dramatically after that. Flow in Woodland Drive for a 25-year design storm would be approximately 8 cfs. Typical street design allows for capacity of approximately 20 cfs, therefore the flow should be safely able to travel to Alston Road without damaging real property.

The majority of stormwater runoff, that currently leaves the site, filters through the downstream neighboring properties till it reaches Alston Road. There is a high point in Alston Road, but the majority of the runoff that reaches there is conveyed westerly in the street to curb inlets in Alston Road, west of Woodland Drive, that ultimately outfall to the "natural watershed ravine" referred to in the letter.

The project proposes to redirect the drainage to those same curb inlets in Alston Road via one property and Woodland Drive instead of through all of the previous receiving downstream properties, thus reducing drainage impacts previously experienced by downhill neighbors. Check dams are proposed downhill of the basin to assist in intercepting drainage from the development. The southeast corner of the site will remain undisturbed and runoff from that portion of the site will continue to be tributary to the portion of Alston Road sloping to the east.

"ADDITIONAL ALTERNATIVE PROPOSED FOR SERIOUS CONSIDERATION"

It would not be as simple of a solution to redirect the water as the Vassallos infer. A swale would intercept drainage from all of the properties uphill of it between the project and the ravine. In other words, it would need to be sized to not only transmit stormwater from the proposed project site, but all stormwater runoff that would cross the path of the proposed swale. Also, discharging directly to the natural ravine could bring up environmental and regulatory hurdles not associated with discharging to the street as proposed.

The route proposed to the same natural watercourse, is more efficient and would require less long-term maintenance than a swale. Getting easements from the affected neighbors, and letting them allow construction of a swale through their properties, as described in the letter, seems highly unlikely.

"PROACTIVE METHOD PROPOSED FOR CITY ACTION"

The City is already being proactive by requiring the preparation of a Preliminary Stormwater Study by a civil engineer. As stated above, the purpose of the study is to estimate the increase in runoff associated with the development and determine the feasibility of the preliminary design of the mitigating measures in conformance with City drainage criteria.

The development site's drainage issues are, in our opinion, are neither problematic nor understated. We, Triad/Holmes Associates, feel that if the recommendations in the Preliminary Stormwater Study are followed and designed using proper engineering practices that stormwater runoff from the project site will not increase the risk of damage to downstream properties.

"SERIOUS CONCERNS ABOUT PROPOSED DRAINAGE PIPE SOLUTION"

As part of the Preliminary Stormwater Study, a site visit was conducted by Triad/Holmes Associates to verify the features of the Topographic Map (prepared by others). Included in this site visit was an observation of the potential stormwater drainage path from the southerly boundary of the site to the discharge location at Woodland Drive. The project's post-development runoff rate, from a 100-year design storm, was estimated to be 7.6 cubic feet per second (cfs). Based on the steepness of Woodland Drive (over 10%) and a depth of flow in the gutter of 4 inches, the capacity of the street would be approximately 20 cfs. Therefore, it is safe to assume that Woodland Drive could safely handle stormwater runoff from the project site as well as from the existing homes on Woodland Drive.

The cross gutter at the bottom of Woodland Drive and a curb and gutters along Alston Road intercept and direct surface runoff to the existing curb inlets at Augusta Lane. It is correct that capacity of the streets and downstream public drainage facilities should be addressed in the final report.

Regarding addressing stormwater breaching Alston Road, when post-development peak runoff for a 25year design storm is not greater than the pre-development runoff, and no public improvements are proposed, a detailed hydrologic analysis beyond the limits of the project is generally not required. That is the purpose of designing stormwater detention to limit the peak flow to the pre-development level.

Regarding "the idea of a 24 inch diameter drainage pipe idea should be abandoned as an unacceptable solution not likely to be proposed by a Licensed Civil Engineer", Triad/Holmes Associated did not prepare the Preliminary Grading, Drainage and Utility Plan, but did review the plan. Using a drain pipe to transmit stormwater down a relatively steep gradient looks reasonable and, in our opinion, something a licensed civil

engineer could recommend. The final grading plan would need to detail all aspects of the storm drain line such that it could be constructed properly and calculations would have to substantiate that the size of the drainpipe is adequate.

Regarding the Preliminary Storm Water Report (Study) not specifically recommending a 24-inch storm drain pipe, the Study did not exclude a storm drain pipe. The preliminary nature of the report was to show the magnitude of the stormwater runoff and the detention volume required so that a reasonable conclusion could be made that the project could adequately address stormwater runoff to the City of Santa Barbara's requirements in the final design.

Regarding the Vassallos concern that even though they are not licensed engineers that they are concerned that "the report is understated versus what will in fact occur in real life conditions", the report uses design storm criteria developed by the County of Santa Barbara and accepted by the City of Santa Barbara. A more detailed estimate of the C value (in the equation Q=CIA) runoff was done per the City of Santa Barbara's request. All assumptions and procedures were stated in the Preliminary Stormwater Study. Triad/Holmes Associates has no vested interest in this project and by stamping and signing the report has accepted responsibility that the report has been prepared properly. The standard procedure for such developments is that the developer of the property is responsible for obtaining the necessary reports and designs. The City is responsible for reviewing the designs. During the design review process, the City may choose to hire outside consultants to do the review. But, the *preparation* is the responsibility of the developer.

Regarding "Currently, it is not clear as to how the calculations in the report were established and whether they were done in concert with standard Civil Engineering practices", Triad/Holmes Associates, by stamping and signing the report, asserts that the report was done in concert with standard Civil Engineering practices. Furthermore, the report does state all assumptions and methodology to how the calculations were established.

Regarding the nomenclature used in the report, "rate of flow" is used as the method of sizing the detention volume required. How this is done is explained on page 6 of the report (Retention Volume Calculation). It might be helpful to understand what a design storm curve is. In any storm, the intensity of rainfall starts off slowly, reaches a peak, then starts to taper off again. A curve was developed based on historical rainfall data that shows how long, for any given storm, a rainfall intensity will last. For instance, the peak rainfall (usually starting at 10 or 15 minutes duration) might be an equivalent of 3 inches/hour. If it occurred for only 15 minutes, only 0.75 inches would fall. For the same storm, the peak rainfall over a 1 hour period might be 1.8 inches. During that 1 hour period, there would be a 15 minute period of 3 inches/hour rate of rainfall, but the

total over the 1 hour would be 1.8 inches. This would mean that the intensity observed at a point in time during the storm drops off significantly over an hours time.

For sizing the detention volume, we determine the peak runoff for the pre-development condition and divide it by the post-development peak runoff. We then multiply this ratio times the post-development peak runoff to find out what rainfall intensity the storm would have to drop to in order that the runoff is the same as the pre-development condition. For instance, we found that the difference from post to pre-development was about 80%, or from 2.9 inches/hour to 2.3 inches per hour. Following down the curve from the County of Santa Barbara Engineering Design Standard, it took 19 minutes for the storm intensity to drop from 2.9 inches/hour to 2.3 inches/hour. The detention volume required was then the difference in peak flow rates from pre and post development (in this case 0.8 cfs) times 19 minutes, or approximately 900 cu. ft.

Once the detention volume was determined, the Preliminary Grading, Drainage and Utility Plan was developed to show how this retention could be accomplished.

This is the standard method for determining detention volume for projects in the City of Santa Barbara.

Caroline and Tony Vassallo are correct when on page 8 of their letter they state that "runoff rates from new developments cannot exceed those that already exist". The City of Santa Barbara specifies that a 25-year design storm be used to determine the runoff rates. This is more conservative that some jurisdictions that require only a 10-year design storm. The purpose of the 100-year design storm is to show what would happen if the proposed storm drain system were to be plugged. Whereas the 25-year design storm runoff needs to have sufficient freeboard (safety factor), the 100-year overland flow needs only to show that the project won't damage a neighbors (or their own) structures.

In summary, we understand the concerns of Caroline and Tony Vassallo have regarding the potential drainage problems this project might create. There is a process that the City of Santa Barbara has established to address development with regard to stormwater runoff. It is generally the responsibility of the developer to show that the post-development peak runoff (this is because the peak runoff is what causes the damage, not the average or total runoff) is no greater than the pre-development runoff. This requires detention when a project increases the impermeable surface area. The sizing of the detention volume in the Preliminary Stormwater Study followed the accepted method by the City of Santa Barbara. Using landscaping to provide detention has added value of helping to clean the runoff through bioremediation. Furthermore, runoff directed into landscaping conserves water required for irrigation. All of these factors are considered in the grading and landscape plans of a project and require the coordinated design efforts of the architect, engineer and landscape design.

There are numerous references throughout the Vasullo's letter for an "arms length opinion" from a civil engineer not associated with the project. As you are fully aware, we have no vested interest in the project and there would be no objection to outside review of our preliminary drainage analysis by others. Obviously, for the outside review to be independent, it should be at no cost to the owner.

- Response to letter from Ernest Salomon, Donna Salomon, George Alexiades, Robert Heavner, and Elaine Heavner, residents on Woodland Drive:

  No specific issue in the Preliminary Stormwater Study was raised in the letter.

  Regarding soil erosion, the size and slope of this development will most likely require the preparation of a Storm Water Pollution Protection Plan (SWPPP) with an associated permit from the State of California. This is the most up-to-date method to manage erosion and sedimentation during and after a projects development and requires much more rigorous planning, implementation and monitoring of erosion control measures than in years past. During construction, best management practices will need to be followed and monitored. If the planned erosion control measures, even though they are installed and maintained per plan, are not effective enough, increased measures would be required as part of the SWPPP.

- Response to letter from Susannah Rake, 840 Norman Lane:

  Although the Preliminary Stormwater Study is not specifically sited in the letter, Ms. Rake is concerned about drainage. It should be pointed out that it appears that presently stormwater runoff from the project site flows off the property at a low spot upstream of a property on Norman Drive (assumed to be Ms. Rake's property). The project proposes to redirect stormwater runoff that is concentrated as part of the project to a storm drain that discharge onto Woodland Dr. The post development conditions should improve the conditions for Ms. Rake's property, not make it worse.

Sincerely,
THA
triad/holmes associates

Cristi E. Fry, RCE

GW/CF:gw