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Memorandum

To: City of Eugene Hearings Official
From: Scott Morris
Date: 8/23/2006
Re: Dillard Heights - Storm Drainage

RECEIVED IN PUBLIC HEARING

ON: 8/23/06
Exhibit # 9 FILE NO: PDT 05-1

Mike,

The storm drainage system we have designed for the Dillard Heights PUD, meets the City's goal of "no net increase" in run off, and filters the water to meet their water quality requirements. I have summarized below how the proposed design addressed both the quantity of water from the site and the quality of the run off at the southwest corner of the property when it leaves the site.

Water Quantity

The storm run off calculations were developed for both existing and proposed conditions. The flow used for design is a 10 year storm event for a 24 hour duration (4.3 inches total). The site is then broken into 8 sub areas to effectively calculate the volume of run off, which equals 3.65 cubic feet per second (cfs). Within these 8 sub areas, we included land outside our ownership that currently routes water through our site (a total of 10.96 acres). We also used the unit hydrograph method of calculation to be consistent with the calculations provided for the Green Valley Glen proposed PUD.

The post development run off from the site equals 6.03 cfs. Therefore, by the City's requirement our design needs to detain a minimum of 2.68 cfs to keep the peak flow leaving the site at 3.65 cfs or lower.

The design at Dillard Heights accomplishes this through (2) main quantity control measures. First is the detention of the roof drainage in flow through planter boxes. The roof area makes up the largest impervious area on the site other than the street. Our proposal is to install flow through planter boxes between each unit to capture 100% of the roof drainage. Flow through planter boxes are considered a Best Management Practice (BMP), not only by the City of Eugene, but also recognized by the City of Portland and King County as suitable for detention and filtering of the run off. These planter boxes work by holding the water in the vegetated areas until it reaches an overflow level, then runs down to the ditch on the western units and into the piped system on the eastern units.

The second design element will take place in the ditch systems proposed for the development. The existing ditch along Dillard Road will be regraded to allow a capacity of 8.74 cfs. This will allow us to install check dams approximately every 50 feet and keep the water from overflowing the ditch onto Dillard Road. The third benefit to the proposal is that we will be intercepting an existing point flow of off site drainage that enters the property at the southeast end and has formed it's own path down to Dillard Road unabated. This is the area that had the surface slippage due to this run off last winter. We will be collecting this water at the south end of the property and processing it through our system, which will increase the slope stability and predictability of the amount of water in the Dillard ditch system.

The third system will be a small open ditch at the toe of the cut slope east of the roadway where no housing is proposed. This will be a smaller ditch to collect run off from the hillside and keep it from running directly onto the street system. The water will then be collected and processed through the proposed piped system within the development.

The end result of these proposed measures is a peak flow at the southwest corner of the property (outfall) of 3.41 cfs. This is well below the existing run off from the site and will enhance the current drainage system in the area.

Water Quality

There are essentially 2 methods for cleaning the storm water that is approved by the governing bodies. There can be a vegetative element that naturally cleans to run off, or a mechanical system within the piped system. We are proposing a system that includes both vegetative and mechanical to insure the water is properly filtered prior to entering the public system.

The primary treatment will be the flow through planter boxes, which will process the impervious area from every dwelling unit. These planter boxes are vegetated to not only slow down and detain water, but to provide filtering of the water and a sediment basin. When the water overflows the planter boxes, the western units will continue to be filter by vegetation through overland flow down to the ditch along Dillard Road. The eastern units will overflow into the piped system, which will be treated mechanically prior to entering the ditch along Dillard Road.

The secondary system will be provided through a mechanical filtering system developed by StormCeptor. This is a baffle system that will be located in the last manhole prior to entering the ditch system, and will process all of the water from the roadway except an area at the intersection with Dillard Road. The StormCeptor is the only mechanical filter system that is currently approved by both the City of Eugene and the Department of Environmental Quality.

Finally, the ditch system along Dillard Road that we are enhancing will also be vegetated. This will provide at least a second level of treatment to all the run off from the site and adjacent areas that currently flow through the site.