080312

MEMORANDUM

TO: Public Works Committee

FROM: Nick Hatfield, PE, Development Engineer NLH

DATE: May 8, 2008

SUBJECT: **Residential Redevelopment Standards**

The Department of Community Development recently completed a review of new single family home construction standards. This review encompassed focus group meetings with residents, realtors and builders, an analysis of current, applicable Village Codes and a comparison of related Codes from nearby Villages. The results of this review were summarized in a white paper that was presented to the Village Manager on November 28, 2007.

As part of this review, the focus groups raised a few issues related to stormwater and the overall site designs. The White Paper stated that the Public Works Committee will review these issues and make a recommendation to either revise the current stormwater and drainage Code or leave the Code as it currently reads.

Background
The issues raised by the focus groups were:

Residential Focus Group:

- Increased storm water drainage from the new construction.
- Residents adjacent to new homes experience flooding, especially those homes without overhead sewers.
- New homes are built at higher elevation than the adjacent property because homes are being built will taller basement ceiling heights.
- Some residents have had to spend a lot of money to fix damage and address drainage problem.
- Sump pumps on new homes run frequently and generate a lot of noise.
- Many times swales or ditches that are meant to direct water flow to the storm drain in the street don't work properly.
- Residents feel that storm water problems are a result of the new homes being much larger and taking up more lot coverage.

Builder Focus Group:

- Dry wells don't work that well and they are an extra cost of $5,000 - $6,000 extra per house to put in.
- People want taller basement ceilings. If the elevation can't be raised then the basement has to be sunk further into the ground, putting more pressure on the water table.

Staff's primary tool to minimize the overall effects of stormwater issues from new single family homes, additions and garages is Village Code §151.54.

> **§ 151.54 SINGLE FAMILY RESIDENTIAL DEVELOPMENT**
> Any single family residential development that shall increase the impervious areas on a lot by more than 500 square feet, cumulatively, for development occurring on or after September 1, 2001, and that is not part of a major subdivision with a stormwater detention/retention facility per Section 151.55, shall include 1% minimum slope swales along the entire length of the rear and side property lines, if physically possible. If swales are not physically possible, then drain tiles and/or storm drains shall be used to drain such flat or depressional areas into a separated storm sewer or to a swale or ditch having a continuous 1% minimum slope to a separated storm sewer or defined watercourse. The preferred location for storm drain inlets shall be a rear corner of the lot. If swales or storm drains are not possible, then dry wells shall be located and sized to contain volume equal to the new impervious area times 0.58 foot of runoff. Wells shall not be located in utility easements or public right-of-ways. The existing impervious area shall be subtracted from proposed impervious area to determine the increase in impervious area.

While it is true that the newer homes are larger and thus generate more stormwater runoff, this Code allows Staff to mitigate the additional runoff through grading, drains or drywells. For the site drainage of a new home, the drainage Code requires first that Staff determine to what extent a drainage improvement is necessary. This is done through a review of the attached map, which shows the areas of the Village that have reported water-related issues to the PES Division over the past five years, the building files and the Village's one-foot topography maps. If an area is determined to be a low spot or known depressional area, then the Code requires first that a swale be constructed. Sawles are basically grassed ditches that generally pitch towards a natural drainage course, which eventually drains to the right-of-way. Should a swale not be physically possible to construct, the Code next requires either a direct connection to the Village's storm sewer or a drywell. Areas within the Village that have completely separated sewers are often permitted to construct yard drains and/or tie the sump pump into the Village's storm sewer system. Should a separated sewer not be available, then drywells are required. The general experience with drywells is that they are effective up to a point, especially for typical rainfalls, but are limited by the surrounding soil types and frequency of storm events.

Many new homes are designed with the new foundation higher than the existing foundation, which generally helps with the stormwater runoff as it allows the driveway and the front portion of the new home (and sometimes the rear) to be drained towards the right-of-way. It is important to note that raising the foundation does not necessarily mean that fill is brought in around the house and the grade changed. In some cases, when the foundation is raised, the builder will drop the siding down and over the foundation, so that the existing ground elevation remains. Raising the foundation provides the new home with a full basement, which has become a standard feature in the new home market. The Builder Focus Group indicated that should the foundations not be raised, the basements would be excavated to a greater depth to allow for the full height basement.

This excavation would be closer to the water table, and would result in the sump pump cycling even more frequently as water is pumped away from the foundation drains. It is noted that, in general, the sump pumps for new homes do operate frequently as the water table comes to equilibrium with the new excavation. Over time, an equilibrium is achieved with most new houses and the cycling is reduced.

Comparing the Village's Drainage Code to surrounding communities, Staff feels that our Code is the most effective. Most surrounding communities follow DuPage County's Code for a model, which basically applies to larger developments and subdivisions. The Village's Code applies to any new impervious addition to a property, so single family homes, garages, and some additions fall under the requirements of this Code.

Recommendation

Staff recommends no changes to existing Code as it has provided successful drainage improvements with new construction since 2001. Staff has given presentations on our Code at a DuPage County Municipal Engineers meeting and at the Illinois Association of Floodplain and Stormwater Managers Conference. Over the past 7 years, other communities including Villa Park and Lisle have also implemented our Code with similar results. Stormwater management is discussed monthly at the Municipal Engineers meetings and no other innovations have been suggested as an alternative. Staff considered the following options for revising the Code:

1) Increasing the required swale slope from 1% to, say, 2%. With the generally flat topography of many of the blocks in town, the grades for new houses would have to be raised even higher and retaining walls would have to be installed along side lot lines. Depending on the height and length of the walls, this would add an additional cost of $5,000 to $10,000. Therefore, staff recommends against this option.
2) Provide some alternative form of stormwater retention for any new single family home construction. Detention will not help for lots that drain towards a depressional area, since the detention would still release the water to the depressional area, thereby negating any benefit. A rain garden could retain runoff although our clayey soils are not ideal for perculation and sand would have to be placed in order to have them function. There is also the matter of whether a rain garden would be maintained properly over successive homeownships. A rain garden is estimated to cost about $5,000.
3) Require all new homes to install rain barrels. Most rain barrels can capture 50 to 60 gallons of water, which is only a fraction of the runoff during major storms; however, there would be an added water quality benefit. Roofs can generate metals as pollutants, which would be captured in the barrels during the first flush of a rain event. This water is then used for watering plantings, most of which can accept the pollutant, thus keeping it out of the storm sewer system and eventual downstream rivers. Note that rain barrels will only function if they are used regularly to water gardens and potted plants. Forcing them on those that don't want them will mean that they will not be emptied and then have their valves reclosed as required to catch and hold the next runoff. Rain barrels are available for around $100 to $200 depending on the size.

While no changes are recommended to the Village Code, Staff can administer the existing Code in such a way that if homeowners wish to use rain barrels and other green initiatives (e.g. permeable pavers) then the net new impervious quantity assessed to the permit can be reduced by the applicable amount. This would also apply to residents doing larger additions or new garages and drives over 500 square feet. For example, if a property owner was constructing a new detached garage in the rear of their property, they could put the new drive in as permeable pavers, and thus only the addition of the garage footprint itself that would fall under the drainage Code. If this garage was less than 500 square feet, no further drainage improvement would be required.

Overall, the Code provides Staff a strong tool in addressing development in known problem drainage areas. Please provide your recommendation to Staff.