CHAPTER THREE

METHODOLOGY

Low Impact Development (LID) is a process of site and subdivision design that controls storm water runoff in a manner that most closely matches pre-development hydrology. LID techniques, referred to as Integrated Management Practices (IMP), are designed to capture, control and release runoff closer to the source of the runoff than traditional storm water management techniques.

The traditional approach to storm water management uses curb and gutter, inlets, pipes and ditches to convey water to a central storm water management facility. The facility is usually some variant of a storm water pond that will release the collected runoff at a rate less than or equal to the pre-development rate. However, the increased volume of runoff is ultimately conveyed to the downstream channel.

An LID designed site will provide more overland flow and fewer piped systems. Where ditches are necessary they may be converted to engineered swales. Such swales provide a granular substrate that allows more of the runoff to return to ground water. Other techniques, such as rain gardens or pocket wetlands, may be used to further reduce the pollutant load and slow runoff. Slowing down the runoff will serve to reduce or even eliminate the need for a large storm water pond at the end of a piped system.

Developers and designers are encouraged to analyze their projects at the earliest planning stages to integrate LID techniques. The purpose of incorporating LID techniques is to develop sites that maintain the pre-development runoff rate, volume and frequency to the greatest extent possible. The developer / designer shall consider at least the following site planning techniques:

- Maintain natural drainage patterns to the greatest extent possible.
- Preserve as much of the existing vegetative cover as possible.
- Reduce the percentage of impervious areas by efficient site design through the use of new technology such as porous pavers, etc.
- Locate IMP's and drainage channels in soil areas that should allow good infiltration rates.
- Disconnect impervious areas to allow runoff to flow over the natural ground instead of concentrating it in pipes and swales.
- Maintain existing topography and limit clearing and grading.
- Re-vegetate the cleared area as soon as possible if clearing and grading is required.
- Use infiltration to reduce surface water runoff to recharge groundwater where soils will support the infiltration.

See Chapter 4 for discussions of specific individual LID techniques.

When preparing the storm water management plans for a development, the designer shall prepare LID calculations showing the effectiveness of proposed techniques. The calculations shall be prepared in accordance with the "Low Impact Development Design Strategies, An Integrated Design Approach" prepared by Prince Georges County,

Maryland, in June 1999. Worksheets and sample calculations are provided in appendix B.

LID calculations will complement, not replace, other storm water calculations required by New Kent County, the Virginia Department of Conservation and Recreation (DCR), or the CBAY.