II. INTRODUCTION

Despite substantial effort by citizens, regulators, and the development community to date, development pressures in Montgomery County have placed increasing demands upon the County's natural resources. These demands have caused degradation of the resources and loss of the benefits they provide. If preserved and maintained in their natural condition, resources such as streams, stream valleys, wetlands, floodplains, forests, and trees constitute important physical, aesthetic, educational, recreational, and economic assets to the County.

Residents and the development community have expressed support for the protection and enhancement of natural resources. The effort by the development industry toward meeting current requirements to mitigate impacts is recognized as a critical contribution to the protection of these resources. County government agencies are also taking a lead role in reducing development impacts through public education and new common-sense approaches to enhancing stream quality. However, despite these efforts, increased development pressure has resulted in continuing degradation of the County's natural resources.

Decreased native vegetative cover, increased stormwater flows and flooding, accelerated land surface and stream channel erosion, and increased sediment deposition constitute some of the major interrelated negative effects on the environment that can occur during and after development. Erosion and sedimentation exist at natural background levels in the absence of human activities. However, excess erosion and sedimentation create problems for streams and their watersheds as human activities modify the natural landscape. Of special concern is the disturbance of steep slopes, especially those adjacent to or in close proximity to streams or drainage courses, and the disturbance of natural stream channels, floodplains, and wetlands. The alteration of these areas exacerbates watershed erosion/sedimentation and contributes to water quantity and quality problems.

The negative effects of unmitigated development noted above are directly related to increases in land surface imperviousness and decreases in forest cover. Increases in imperviousness can have significant effects on the County's stream systems through the reduction of the natural stormwater infiltration levels and significant increases in levels of overland flow. These alterations to natural infiltration and overland flow processes result in an increase in the velocity, volume, and peak discharge of stormwater discharged to streams, and a decrease in the lag-time between the onset of rain events and peak stormwater discharge as stormflow is concentrated and rapidly transported to streams via impervious surfaces and storm drains. The effects of these alterations on streams can include enlargement of the channel cross-section, increased water temperature, and impairment of water quality and stream habitat. In addition, the decrease in infiltration of stormwater results in decreased groundwater recharge and decreased stream baseflow levels that in turn can increase stream temperature and reduce available in-stream habitats. Significant impacts to riparian habitats, including wetlands, result from the extreme variation in water levels caused by increased peak discharges and velocities. Impervious surfaces also transport sediment and other pollutants, such as heavy metals, petroleum products, and salts associated with roadways, to County streams. Increased sediment and pollutant loads impair water quality, stream habitats and aquatic life.

These environmental guidelines for development are based on the following principles of comprehensive watershed management and protection:

- Stream valley and floodplain protection
- Minimizing increases in watershed imperviousness
- Protection of both upland and riparian forest resources

- Recognition and protection of the ecological significance and functions of headwater areas
- Need for long-term baseline stream monitoring to understand and protect the County's stream systems and development impact stream monitoring to evaluate watershed response to development
- Consideration of cumulative impacts

These guidelines attempt to address the problems and opportunities encountered in watershed development and identify management strategies designed to minimize adverse impacts. Among these management strategies are:

- Application of judicious land uses that allow for limiting impervious surfaces and maintaining wetlands, floodplains, seeps, springs, etc., in their natural condition.

- Establishment of protected slope areas that address slope gradient, soil erodibility, and proximity to stream channels.

- Use of stream buffers, the widths of which depend upon the stream's Maryland Department of the Environment (MDE) water use designation, the gradient of adjacent slopes, and the presence of erodible soils.

- Provision of healthy forest and tree cover for the purpose of maintaining water quality, preserving wildlife habitat, preventing erosion, mitigating air pollution, controlling stream temperature, and enhancing community amenity in an urbanizing environment.

- Adherence of land-disturbing activities to the State erosion and sediment control standards.

- Provision of stormwater management devices, storm drainage systems, septic fields, and other structural facilities in a manner that respects the integrity and does not impair the natural equilibrium of stream systems.

- Incorporation of effective best management practices into land disturbance activities.