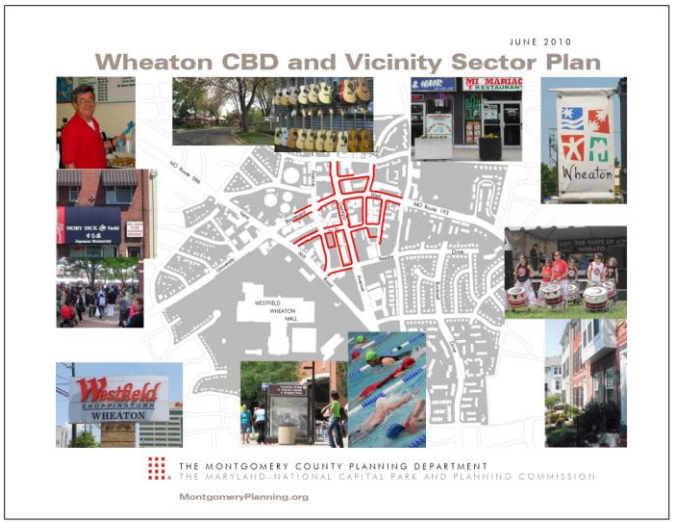
Appendix 7

Environmental Conditions

For more information, call the Environmental Planning Division at 301-495-4540



Wheaton CBD and Vicinity Sector Plan

Sustainability

Sustainable communities are livable neighborhoods in which people choose to live, work, play, and shop in a socially and environmentally responsible way. Changes and growth should increase the economic, social, and environmental welfare of the entire local community. All development should be considered with the potential for increasing sustainability.

Sustainability occurs at many different levels within a community. On a personal scale, it may include buying locally grown food at a farmers market to promote local agriculture, reduce the carbon footprint of food production, and contribute to the local economy. On a community scale, connecting local neighborhoods to transit, reducing automobile use, and creating a walkable center contribute to sustainability. On a regional scale building compact, walkable communities around transit stations, and reducing the land used for development and vehicle miles travelled. This creates healthier and more livable communities.

In many ways, Wheaton is already a sustainable community. For example, it is already a diverse, mixed- use place with good access to transit. While many of the businesses are restaurants, there is still a variety of commercial activity. The Plan envisions creating a more finely grained neighborhood, with increased walkability and less automobile dependence. Urban environmental features will be incorporated into all developments and retrofitted into existing development as possible.

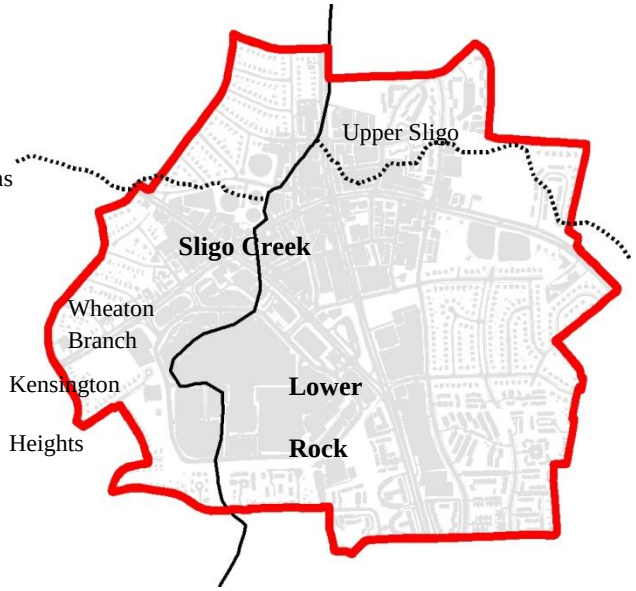
Background

Wheaton is located within the Urban Ring described in the 1993 General Plan Refinement and is one of the County's four CBDs. It also falls within a State-designated Priority Funding Area designed to encourage growth. The Plan area straddles two watersheds, Lower Rock Creek and Sligo Creek. Wheaton is highly urbanized and developed, with little vacant land. There are almost no natural resources or environmental functions remaining.

Impervious Land Cover

The four subwatersheds affected by development activity in the Plan area have poor water quality. More than 60 percent of their land area is impervious (covered by roads, parking, or buildings), with the CBD and commercial areas being nearly 100 percent impervious. Approximately 10 percent of the area is covered by tree canopy with most of the tree cover located within existing single-family home communities.

While most of Wheaton developed prior to stormwater management regulations, the Dennis Avenue stormwater facility was built in 1975 with substantial improvements in 1990 to treat stormwater from Wheaton. This series of retention ponds filters out pollutants and releases water Sligo Creek.



Most streams within Wheaton have been piped. The two remnant streams in the planning area are both in the Wheaton Branch of the Sligo Creek watershed. Both streams are predominantly channelized, with either stabilized banks or concrete channels. Due to the significant decrease in natural streams, the base flow in these streams is reduced. However, flow due to surface water contribution is high and often results in localized flooding downstream.

Carbon Emission Analysis

Montgomery County Bill 32-07 establishes a goal to stop increasing greenhouse gas emissions by the year 2010, and to reduce emissions to 20 percent of 2005 levels by the year 2050. Another Montgomery County law (Bill 34-07) requires the Planning Board to estimate the carbon footprint of areas being master planned, and to make recommendations for carbon emissions reductions.

Our current greenhouse gas modeling effort uses a version of the spreadsheet model developed by King County, Washington. While many of the inputs are derived from national averages, wherever possible we have substituted Montgomery County data derived by the Planning Department's Research & Technology Center. While the model considers all greenhouse gas emissions, results are reported in terms of the equivalent effect of a given volume of carbon dioxide ("carbon dioxide equivalents").

To project total emissions for an area, the model considers embodied energy emissions, building energy emissions, and transportation emissions. The model defines embodied emissions as those "created through the extraction, processing, transportation, construction and disposal of building materials as well as emissions created through landscape disturbance" (by both soil disturbance and changes in above ground biomass). Building energy emissions are created in the normal operation of a building including lighting; heating, cooling, and ventilation; and operation of computers and appliances. Transportation emissions are released by the operation of cars, trucks, buses, motorcycles, etc.

Inputs for each planning area include the numbers and types of housing units and the square footage of different categories of retail, commercial, and public buildings. The model is run once using 2005 data to establish baseline results. The model is run again using housing units, and commercial and retail space projected to develop under the plan to estimate future greenhouse gas emissions. The model estimates emissions *over the life of the development*, and results are given in metric tons of CO2 equivalents. This is different from the County Emissions Inventory prepared by the Montgomery County Department of Environmental Protection, which estimates *annual* emissions.

The model only deals with emissions; no calculations are included to estimate potential carbon offsets from best management practices. The estimates also assume "business as usual" when projecting emissions. As estimates of building energy consumption, vehicle fuel efficiency, vehicle miles travelled, and other input parameters change, it may be possible to re-run the model to see how improvements in technology and design affect projected outcomes. Many of these parameters are changing constantly, so input parameters are a moving target.

The results are also restricted to estimates for a specific plan. Overall greenhouse gas emissions are projected to increase due to increased population and commercial development within a given master or sector plan area. As model results are evaluated, it should be considered that Montgomery County's greenhouse gas reduction targets are considered at a countywide scale.

Modeling results using these assumptions are shown below. The first scenario shows existing emissions based on 2005 data; this information is a baseline for comparison. The second scenario shows estimated emissions assuming full buildout under the proposed Plan. The third scenario shows the difference if that same growth were to occur in a sprawl pattern outside of Wheaton.

Estimated Baseline and Projected Carbon Emissions

Year	Emissions
	*MTCO2e**
2005 (Baseline)	9,288,000
2030 (High Scenario)	17,037,000
2030 (Sprawl Scenario)	20,136,600

*Metric Tons Carbon Dioxide Equivalents
(over the life of the development)

Although per capita emissions should be reduced by creating compact, mixed-use, transit-served development, overall emissions will still increase due to the increase in population and office space. Compared to the emissions that would result from the same number of units in a more traditional sprawling, single-use land development patterns, the land use pattern in the Wheaton will result in substantially less carbon emitted. This reflects the physical savings of more compact building types and reduced vehicle miles traveled as compared to sprawl development.

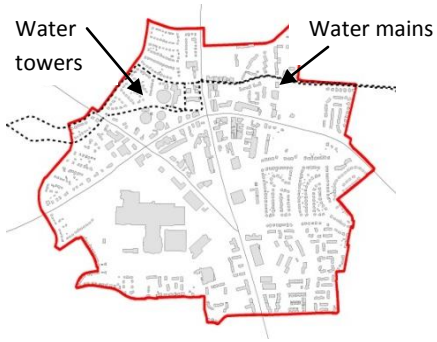
Alternative Energy

The Plan makes several recommendations intended to reduce carbon emissions, beginning with the recommendation to concentrate development around mass transit. Some of the smart growth effects are modeled in the results above but it is difficult to know the full range of behavior changes that an enhanced Wheaton will inspire. The vision is to create a compact community of mixed uses, enabling residents to live, work, and shop in a walkable area.

Many of the Plan's recommendations will promote reductions in carbon emissions (such as increased, green open spaces, bicycle and pedestrian networks) and many programs outside the planning process that will result in substantial savings over time. Further reductions in carbon

footprint will come from changes in building and site design, improvements in technology for vehicles and building energy conservation, as well as the behavioral changes enabled by a compact, livable urban environment.

Water and Sewer



The Washington Suburban Sanitary Commission provides public water and sewer service to the Wheaton Plan area. As Wheaton is a high point in the County, the Plan area includes a four tower water storage facility and a pair of large water mains running east-west across the area. Projects here may be asked to set back their development some distance from those mains, but that would be determined at time of development review. The location of these mains may affect road improvements or improvements to the mains may need to be included in road projects.

WSSC's sewer modeling, required under the Consent Decree, has identified some sections of Rock Creek Trunk Sewer as having deficient capacity under the design storm/significant wet weather conditions (and with existing and future demographics) conditions. The Sligo Creek sewer basin, particularly in the downstream sections of the basin in Prince George's County, has deficient capacity, with the potential for overflow problems, under significant wet weather conditions in the near future, regardless of potential growth. Plans for significant growth in Wheaton and other areas that drain to Sligo Creek should note the potential need for sewer system improvements.

Development proposals in Wheaton CBD Plan area generating 100,000 gallons per day of wastewater (base sanitary flow approximately of 700 housing units or 3,500 employees) or more would be required to undergo testing (using the WSSC's sanitary sewer model) and would be required to work with WSSC to plan improvements to the conveyance system, if the modeling yields results as detailed under its newly adopted policy, ENG-09-02. Also, any local capacity (non-CIP) issues identified in development proposals under review in the WSSC Development Services Program may require cooperation from developers under the WSSC's Letter of Findings to plan and construct local sewer system capacity improvements.

Some structural repair and sewer rehabilitation work will be done as part of WSSC's Sewer Basin Repair Replacement and Rehabilitation (SRRR) plans for Rock Creek and Sligo Creek. These plans are subject to MDE approval and the work may include future capacity expansion as required by WSSC.

Projects in the Anacostia basins (County basins that drain to the Anacostia No. 2 Wastewater Pumping Station and are conveyed to the D.C. Water and Sewer Authority's Blue Plains Wastewater Treatment Plant) will depend on completion of the Anacostia Storage Facility (Project number S-89.22) currently in the WSSC CIP and under design. At this time, the project is estimated to start construction in October 2010 with a projected completion date of December 2013.