Technical Memorandum_____

Significant Phosphorus and Sediment Nonpoint Sources in the Prettyboy and Loch Raven Reservoir Watersheds

The U.S. Environmental Protection Agency requires that Total Maximum Daily Load (TMDL) allocations account for all significant sources of each impairing pollutant. This technical memorandum identifies, in detail, the significant nonpoint sources of phosphorus (TP) in the Prettyboy and Loch Raven Reservoir watersheds and the significant sources of sediment in the Loch Raven Reservoir watershed. It also identifies the distribution of the significant nonpoint sources among different land uses. Details are provided for allocating nonpoint source (NPS) loads for phosphorus and sediment to different land use categories. These are conceptual values that are within the TMDL thresholds. The Maryland Department of the Environment (MDE) expressly reserves the right to allocate the TMDLs among different sources in any manner that is reasonably calculated to achieve water quality standards.

The NPS loads for phosphorus and sediment were both estimated using the Gunpowder Falls Watershed HSPF model. The NPS loads that were used in the model account for all sources, including both "natural" and human-induced components. As explained in the main document, the simulation of the Gunpowder Falls watershed used the following assumptions: (1) variability in patterns of precipitation were estimated from existing National Oceanic and Atmospheric Administration (NOAA) meteorological stations; (2) hydrologic response of land areas were estimated for a simplified set of land uses in the basin; and (3) agricultural information was estimated from the Maryland Department of Planning (MDP) land use data, the 1997 Agricultural Census Data, and the Farm Service Agency (FSA). The phosphorus loads account for contributions from atmospheric deposition, cropland, pasture, feedlots, and forest. Urban land contributions are included in the point sources technical memorandum. The land use information was based on 1997 Maryland Department of Planning data.

Tables 1A provides one possible scenario for the distribution of average annual total phosphorus NPS loads between different land use categories in the Prettyboy Reservoir watershed. Tables 1B provides one possible scenario for the distribution of average annual total phosphorus NPS loads between different land use categories in the Loch Raven Reservoir watershed. Table 1C provides one possible scenario for the distribution of average annual sediment NPS loads between different land use categories Loch Raven Reservoir watershed.

Table 1A
Nonpoint Source Phosphorus Loads Attributed to Significant Land Uses for the Prettyboy Reservoir Nutrient TMDL

Land Use Category	Percent of Nonpoint Source Load	TP Nonpoint Source Load (lbs/year)
Mixed Agricultural	76%	14,518
Forest and Other Herbaceous	24%	4,574
Total	100%	19,092

Table 1B
Nonpoint Source Phosphorus Loads Attributed to Significant Land Uses for the Loch Raven Reservoir Nutrient TMDL

Land Use Category	Percent of Nonpoint Source Load	TP Nonpoint Source Load (lbs/year)
Mixed Agricultural	44%	13,419
Forest and Other Herbaceous	56%	16,765
Total	100%	30,184

Table 1C
Nonpoint Source Sediment Loads Attributed to Significant Land Uses for the Loch Raven Reservoir Sediment TMDL

Land Use Category	Percent of Nonpoint Source Load	Sediment Nonpoint Source Load (tons/year)
Mixed Agricultural	56%	15,450
Forest and Other Herbaceous	44%	12,266
Total	100%	27,715