

5.0 ASSESSMENT AND RANKING OF WATER QUALITY PROBLEMS

A list of water quality problems was developed using the information compiled for this assessment. Problems affecting stream water quality are predominantly those of nonpoint source pollution. General problem types evident in Lower Bush Creek and its tributaries include sediment deposition, alterations of natural flow regimes, elevated nutrient concentrations, and physical habitat degradation. In many cases, problems in the watershed are moderate, particularly along the mainstem where the presence of extensive forest buffer has provided some protection from the impacts of nearby land uses. More severe impacts were apparent at particular locations. Taken individually, many of the activities in the watershed likely have little detrimental effect; however, the cumulative effect of these activities throughout the watershed can be severe. Perhaps the greatest future threat to stream quality in the Lower Bush Creek watershed arises from the incremental contribution of individual development projects.

Table 5-1 summarizes the assessment and ranking of water quality problems in Lower Bush Creek watershed. This evaluation includes cumulative problems that may occur watershed-wide, along with those associated with specific locations. If a problem is localized, the specific location and the name of affected stream are noted. The list was developed by integrating observations of particular areas experiencing water quality problems with information gleaned from the environmental assessment, visual inspection for potential watershed stressors, and other analyses compiled for this report. The objective was to link problems and identify likely causes of those problems, as a basis for identifying opportunities to improve water quality.

Specific criteria were developed to assess and rank problems identified. For each problem, scores of 1 to 5 were assigned for the following factors:

- Extent: the spatial extent of the problem, ranging from local (1) to widespread (5)
- Severity: the degree to which the problem is a detriment to stream quality, ranging from mild (1) to most severe (5)
- Potential for environmental restoration benefit: this factor answers the questions “Would action likely bring about improvement in the condition of the environmental resource?” and “Overall, would restoration action likely be successful and cost-effective at this site?” Answers were scaled from little potential restoration benefit (1) to great potential benefit (5).

The final overall water quality problem rating (1-5) is an average of the extent, severity, and restoration potential scores. In some cases the average was adjusted up or down to reflect special circumstances. A detailed description is provided for each problem and specific solutions are discussed in Table 5-1.

Table 5-1. Assessment and ranking of water quality problems

Problem Type	Location	Stream Affected	Extent of Problem	Severity of Problem	Potential for Environmental Restoration Benefit	Overall Rating	Description of Problem	Opportunities to Improve Stream Water Quality
New construction	Urbana PUD	Peter Pan Run and Bush Creek mainstem	5	5	4	5	Activities include clearing, grading, construction of stormwater ponds, road and culvert construction, and relocation of MD 80 and 355. Temporary impacts of increased sedimentation and turbidity have been noted downstream, with potential for permanent degradation of stream quality if impacts continue. In the long term, stormwater management structures will be in place to mitigate future impacts of the development. However, short-term opportunities may exist to reduce erosion and sedimentation during the construction phase, before stormwater structures are completed.	Take action to minimize short-term and potential long-term impacts during the construction phase. Enforce requirements for erosion and sediment control during construction.
New construction	Urbana sewer line	Peter Pan Run, Bush Creek mainstem, Tributary to Monocacy River near Araby Church Rd.	5	5	4	5	Construction activities include clearing, grading, excavation of land near the stream, construction crossing the stream, and temporary water diversion. Direct impacts are caused by crossing mainstem Bush Creek with the potential for permanent degradation of stream quality if impacts continue.	Take action to minimize short-term and potential long-term impacts during construction phase. Enforce requirements for erosion and sediment control during construction.
New construction	Church at MD 80 and Prices Distillery Rd.	Tributary to Bush Creek	3	2	3	3	Construction activities include clearing and land grading. Site was observed only from the road, so extent and severity of impacts are unknown. May be contributing to sedimentation downstream.	Take action to minimize short-term and long-term impacts of construction. Enforce requirements for erosion and sediment control during construction.

Table 5-1. (Continued)

Problem Type	Location	Stream Affected	Extent of Problem	Severity of Problem	Potential for Environmental Restoration Benefit	Overall Rating	Description of Problem	Opportunities to Improve Stream Water Quality
New construction	Monrovia WWTP	Bush Creek mainstem	3	3	5	4	Construction near mainstem Bush Creek and floodplain. Site was observed only from distance, so extent and severity of impacts is unknown. May be contributing to sedimentation downstream. Once operational, facility will discharge to Bush Creek. Eventually, effluent will be diverted to proposed Bush Creek sewer interceptor for treatment outside the watershed.	Take action to minimize short-term and long-term impacts of construction. Enforce requirements for erosion and sediment control during construction.
Alteration of stream channel	Mahogany Run, in the Fairways at Holly Hills development near Ijamsville Rd. and golf course	Tributary to Bush Creek	2	2	1	2	Stream headwaters altered to construct wetland and in-line stormwater detention basin receiving drainage from development.	No structural opportunities at this existing site. Regular inspection and maintenance of stormwater basin. In general, construction of in-channel stormwater facilities should be discouraged to avoid degradation of stream habitat.
Stormwater runoff	Food Lion/Texaco on MD 144 east of MD 75	Davis Branch	1	2	5	3	Stormwater pond receives flow from steeply sloped parking lot. Inflow channel in need of some repair from erosion.	Repair erosional damage by reconfiguring drainage structures into a pond to account for rapid flow from parking lot. (Note: has since been repaired.)
Discharge of treated effluent	Reich's Ford Road Landfill	Bush Creek mainstem	2	2	1	2	Not known to be a current problem. Stream appears to be in good condition. Discharge regulated under NPDES permit; operators monitor surface and groundwater. Slight risk of intermittent pollutant loading if problem were to occur.	N/A
Stormwater runoff	Reich's Ford Road Landfill	Bush Creek mainstem	2	1	1	1	Stormwater management facilities in place. Good forest buffer. Stream appears to be in good condition.	N/A

Table 5-1. (Continued)

Problem Type	Location	Stream Affected	Extent of Problem	Severity of Problem	Potential for Environmental Restoration Benefit	Overall Rating	Description of Problem	Opportunities to Improve Stream Water Quality
Discharge of treated effluent	New Market WWTP	Davis Branch, Bush Creek mainstem	2	3	2	2	Likely source of elevated instream nitrogen concentrations. No water quality problems or odors noted at site; stream habitat appears to be in good condition. Plans call for diverting effluent to proposed Bush Creek sewer interceptor for treatment outside the watershed.	N/A
Stormwater runoff	Hahn Transportation	School Run	1	3	3	2	Storm drain from parking lot. Facility appeared to be well managed and maintained; little risk to water quality under normal operation. Some risk possible if spill were to occur.	Potential for installing added water quality control structure could be examined.
Stormwater runoff	The Greens SWM dry pond	Tributary to Bush Creek	1	1	1	1	Lawn fertilizers and pet wastes from suburban development are a possible problem.	Regular inspection and maintenance of stormwater pond.
Stormwater runoff	Park-and-Ride Lot at MD 75 and Baldwin Rd.	Davis Branch	1	2	2	2	Sediment accumulation where outfall reaches stream. Likely a short-term impact from recent construction of parking lot. As completed, site now includes two stormwater detention basins, with riprapped outfalls and vegetation as an additional measure to control erosion before water enters the concrete outflow channel leading to the stream.	Monitor stormwater basins, concrete outflow channel, and stream for sediment accumulation. If problem persists, re-evaluate effectiveness of erosion control measures.
Failing septic systems	Araby View, possibly others	Tributary to Monocacy River near Urbana Pike and Araby Church Rd.	1	2	5	3	Sporadic problem here and possibly at other locations in the watershed. Long-term plan may bring public sewer to Araby View area.	Opportunity for public outreach survey of individual landowners and an offer of collaborative assistance to upgrade and maintain facilities. Monitor for fecal coliform.

Table 5-1. (Continued)

Problem Type	Location	Stream Affected	Extent of Problem	Severity of Problem	Potential for Environmental Restoration Benefit	Overall Rating	Description of Problem	Opportunities to Improve Stream Water Quality
Livestock access to stream	Various	Bush Creek and tributaries	5	4	5	5	Likely source of nutrients, as well as bank erosion and sedimentation problems. Several specific locations noted (e.g., at Ijamville and Prices Distillery Rds., along Ball Rd., near Tabler Rd. and Urbana Pike, off East Baldwin Rd.); others may exist and contribute to this widespread, cumulative problem.	Install cattle fencing along streams to limit animal access to designated crossing locations. Placement of fencing set back from the stream edge allows riparian vegetation to recover and re-establish natural buffer. Opportunity for public outreach. Coordinate with Natural Resource Conservation Service and local Soil Conservation District to enlist participation of landowners.
Runoff from cropland	Various	Bush Creek and tributaries	5	4	5	5	Likely source of nutrients, pesticides, and sediments, particularly from cropland on steeper slopes. A widespread, cumulative problem.	Implement agricultural BMPs to reduce problems. Opportunity for public outreach. Coordinate with Natural Resource Conservation Service and local Soil Conservation District to enlist participation of landowners.
Future construction	Bush Creek Sewer Interceptor	Bush Creek mainstem	5	5	5	5	Construction will require clearing, grading, and excavation of land near the stream, as well as construction of several stream and wetland crossings. Temporary stream quality impacts will likely result with the potential for permanent degradation of stream quality if mitigation is not instituted.	Take action to minimize short-term and potential long-term impacts during construction phase. Enforce stringent BMP requirements for erosion and sediment control during construction.

Table 5-1. (Continued)

Problem Type	Location	Stream Affected	Extent of Problem	Severity of Problem	Potential for Environmental Restoration Benefit	Overall Rating	Description of Problem	Opportunities to Improve Stream Water Quality
Future residential, commercial, and industrial development	Various	Bush Creek and tributaries	5	5	5	5	Temporary stream quality impacts may occur during construction, with the potential for permanent degradation if mitigation is not instituted. In the long term, this development will result in increased amounts of impervious surface, particularly in most intensively developed areas within growth boundaries. In residential areas, lawn fertilizers and pet wastes may increase pollutant loading. In commercial/industrial areas, other pollutant sources may increase.	In the planning process, enforce requirements for stormwater management controls, with the goal of maintaining pre-development flows or pollutant loads. Also, minimize short-term impacts of construction through stringent BMPs. As population increases in new residential developments, conduct public outreach through schools and community organizations to raise awareness of individual actions that can reduce water quality impacts.
Future commercial/industrial development	Intercoastal Industrial Center	Bush Creek and tributaries	5	5	5	5	Both temporary construction impacts and long-term effects of increased impervious surface may occur. Adverse effects are of special concern because the area to be developed is near Bush Creek, the creek floodplain, and the headwaters of tributary streams.	In planning process, enforce requirements for stormwater management controls, with goal of maintaining pre-development flows or pollutant loads. Also, minimize short-term impacts of construction through stringent BMPs.

