Best management practices for croplands should be applied to steep slopes and to moderate slopes with continuous corn tilled up and down the slope.

Analysis of data collected in rural areas across the watershed identified steep slopes (6% or greater) and 2-6% slopes in continuous corn tilled up and down the slope as the most significant sources of sediment. Based on the acres of significant sources by watershed, the Dane County Soil and Water Conservation District estimated the best management practices needed and listed in Table 5. In developing those estimates, emphasis was place upon lower cost - yet effective - practices such as contour cropping, contour strip cropping and minimum tillage. Very high cost practices such as terraces or rip-rapping were only identified where lower cost practices would be impractical. The practice needs estimates were closely correlated to the existing land use. For example, contour strip cropping is practical for the dairy farming common in the area. Above Waunakee Marsh while minimum tillage may be the only practice practical on lands planted in corn every year in the South Fork Pheasant Branch subwatershed.

Table 5 - Best management practice need and total costs for croplands and other rural lands.

BMP	Units Needed	Average Cost	Total Cost
Contour Cropping	1130 acres	$16/acre	$18,080
Contour Strip Cropping	4010 acres	$18/acre	72,180
Minimum Tillage	4260 acres	$90/acre	383,400
Waterways	79,000 feet	$ 3/foot	237,000
Field Diversions	10,850 feet	$ 3/foot	32,550
Terrace Systems	605 acres	$1,089/acre*	658,845
Grade Stabilization Structures	12 units	$10,000 each	120,000
Critical Area Stabilization	20 acres	$500/acre	10,000
Livestock Exclusion from Woodlots	125 acres	$40/acre	5,000
Shoreline Protection			
Fencing	5,000 feet	$1/foot	5,000
Shaping and Seeding	4,750 feet	$6/foot	28,500
Rip Rap	930 feet	$18/foot	16,740
Stream Crossing	7 units	$4,500 each	31,500
		Subtotal	$1,618,795

*based on $3/foot

Recommendations for Management of Livestock Wastes in the Sixmile-Pheasant Branch Watershed

Best management Practices:

Barnyard Runoff Management

Adequate barnyard runoff management is recommended, where needed, for livestock operations within the priority management area.

The analysis of phosphorus from livestock wastes, discussed earlier estimated manure carried in runoff from barnyards contributes about 5% of the phosphorus to Lake Mendota. The analysis did not assess the sediment from barnyards or the sediment being eroded from fields downslope of the barnyard runoff. In addition, there are probable localized water quality problems in the streams. An indicator of these problems is the high fecal coliform counts found in streams in portions of the watershed where livestock densities are greatest. Preliminary estimates indicate as many as 88 operations may need improved barnyard runoff management.

Above ground tanks for the collection of runoff from barnyards should be used where it is determined to be cost effective and technically feasible based on a site by site analysis.

During the field investigations, the question arose whether an above ground tank to hold barnyard runoff would be needed where the very close proximity to streams, floodplains, or groundwater precluded the use of other practice components such as diversions (down slope of the barnyard), grassed waterways, and catchment basins. These tanks would be use in conjunction with diversions above the barnyard and gutters and downspouts on farmstead buildings. Above ground tanks have rarely been used for this purpose in Wisconsin; therefore very little information is available on costs involved.

Results of monitoring runoff from a number of barnyards conducted by the University of Wisconsin should be available in 1982. This information should identify the percent of control which may be achieved through the use of diversions above the barnyard, gutters, and downspouts. With this information, the cost of the additional increment of control provided by the above ground tank can be assessed relative to the control achieved. Table 6 shows total cost estimates for barnyard runoff management with and without the above ground tanks.

Based on the overall costs of manure storage relative to the small reduction in phosphorus carried in runoff to Lake Mendota, manure storage is not recommended for cost-sharing.

Proper manure spreading and prompt incorporation is encouraged, but the pollution potential from manure spreading does not appear to warrant cost-sharing and technical assistance in this watershed. The amount of phosphorus contributed by winter spread manure to Lake Mendota is estimated to be about 3% of the total. Manure spreading on fields probably does not contribute to localized stream water quality problems to as great a degree as barnyard runoff and is not a source of sediment.

Table 6 Best Management Practice Need and Total Costs
for Livestock Waste Management

Best Management Practice	Units Needed	Average Cost	Total Cost
Barnyard Runoff Control without above ground tanks	88 units	$6,500/unit	$572,000
Above Ground Tanks for runoff control	20 units	$35,000/unit	$700,000

Recommendations for Existing Urban Areas in the Sixmile-Pheasant Branch Watershed

Best management practices:

Street sweeping
Leaf collection
Streambank stabilization
Critical area stabilization
Infiltration systems
Environmental corridors (see developing lands)

Runoff from city streets, houses, and commercial areas within the existing urban areas of Madison, Middleton, Shorewood Hills, and Waunakee contribute an estimated 22% of the sediment and 16% of the phosphorus to Lake Mendota based on the MEUL Method analysis. Since these areas are fully developed, opportunities to increase infiltration of stormwater are limited and practices such as street sweeping and leaf collection become important management practices. In addition, streambank erosion is significant in a number of locations. Specific recommendations are described below.

The specific recommendations focus on areas with a high percent of impervious surfaces, substantial concentrations of commercial or industrial land uses, etc. as well as problem areas identified through prior studies.

Madison, Middleton, Waunakee, and Shorewood Hills should increase street sweeping frequencies on all streets to at least once every two weeks during the months when sweeping is possible. Madison and Middleton should maintain more frequent sweeping, where currently practiced.

Street sweeping is an important pollution control practice in existing urban areas. A reduction in sweeping frequency in the City of Madison could greatly increase the amount of sediment and phosphorus entering Lake Mendota from the watershed. Current street sweeping frequencies less than once every two weeks in Waunakee and Shorewood Hills and possibly some outlying areas of Madison and Middleton. These frequencies should be increased-especially in the spring and fall. Most of Middleton and the Spring Harbor subwatershed portion of Madison are swept about once every two weeks with brush sweepers. This practice should be maintained and use of vacuum sweepers should be considered. The use of vacuum sweepers as frequently as once per week should be maintained for the Willow Creek subwatershed.

Madison, Middleton, Shorewood Hills, and Waunakee should assess the practicality of requiring alternate side parking to increase street sweeping efficiency and enact requirements, where practical.

As much as 88% of the street dirt, debris, and leaves accumulate within one foot of the curb. Especially in the spring and fall, cars parked along the curb prevent collection of the dirt, debris, and leaves. In some areas of the Willow Creek subwatershed, cars are commonly parked nightly on both sides of the street and street sweeping efforts are hampered. In many of the newer and lower density areas, on-street parking is not very common.