



MARSHALL UNIVERSITY



WATERSHED PROTECTION ELEMENTS PROGRAM

Date of Preparation:

July 2013

The purpose of this program is to protect the physical, chemical and biological integrity of receiving waters, and their designated uses, from the impacts of stormwater discharges. The objectives of this program are:

1. Minimizing impervious surfaces
2. Preserving ecologically sensitive areas
3. Reducing thermal impacts
4. Reducing or avoiding hydromodification
5. Tree protection
6. Protection of native soils, prevention of compaction of soils

1. MINIMIZING IMPERVIOUS SURFACES

- Research will begin on effectiveness of porous concrete and pavers.
- Research will begin on effectiveness of grass pavers.
- Redevelopment of areas greater than 3000 sq. ft. will be evaluated to reduce the amount of impervious surfaces.
- Gravel lots are prohibited by city ordinance but MU will work on other methods to reduce impervious surfaces.
- All new developments and redevelopments greater than an acre will attempt to manage the first one inch of rainfall from a 24-hour storm preceded by 48 hours of no precipitation.

2. PRESERVING ECOLOGICALLY SENSITIVE AREAS

- MU will ensure all sanitary sewer is properly connected to a public sewer system.
- MU will attempt to manage the first one inch of rainfall from a 24-hour storm preceded by 48 hours of no precipitation.
- New development and redevelopments of property will attempt to grade to the current grades to prevent additional stormwater flow from off site.
- Minimum land disturbances will be attempted to prevent soil compaction.
- Introduction of invasive and nonnative plant species shall be limited.
- The sensitive area will be protected from human activity and traffic as much as possible.

3. REDUCING THERMAL IMPACTS

- MU will maintain trees and vegetation on campus to provide shade and reduce ground temperature.
- Native plants will be used to increase erosion and sediment protection, less maintenance, and decrease the amount of water needed.
- MU will improve soil infiltration and reduce runoff
- MU will minimize impervious surfaces
- MU will attempt to increase green infrastructure

4. REDUCING OR AVOIDING HYDROMODIFICATION

- MU does not discharge to surface water but in the event that land is purchased adjacent to a body of surface water then:
 - Post project runoff flow rates and durations do not exceed pre-project flow rates and durations

5. TREE PROTECTION GUIDELINES

- MU will mark the trees to be saved with surveyor's flagging or ribbon.
- Barricades will be constructed of wood or wire fencing around trees to establish a tree protection zone. The barricades will be extended as far out as the branch spread of the trees. If disturbance within this area is unavoidable, the tree barricade will be located a minimum of one foot from the tree for each one inch diameter of tree trunk (for example, ten feet from a tree ten inches in diameter). Place heavy equipment, supplies, ditches, and underground utility lines outside the tree protection zone. If an underground line must go near a tree, the contractor will be required to tunnel or auger underneath major roots without cutting them.
- Tree Protection Signs will be placed on the barricades.
- During pre-bid and preconstruction meetings the contractor will be informed that grading, filling, ditching, equipment parking, or material storage within the tree protection zone is forbidden. If any damage occurs to a tree that has been determined to be saved, the contractor must replace the tree at their cost.
- The contractor will be responsible for fertilizing protected trees to increase vigor and aid in overcoming the stress. Deadwood and broken branches will need to be pruned by the responsible party of the damage.
- One corridor needs to be designated for site access, preferably where the driveway or parking area will be located. Construction equipment access, material storage, fuel tanks, chemical or cement rinsing, vehicle parking and site-office locations will be limited to non-tree areas. Construction equipment will be kept away from the trunk or tree protection zone of trees to be saved. No burning of trash or debris beneath trees will be allowed.

6. PROTECTION OF NATIVE SOILS, PREVENTION OF COMPACTION OF SOILS

- Soil compaction restricts the growth of plant roots and prevents water from penetrating the soil increasing runoff.
- MU will inform contractors to disturb the minimum amount of land during construction and re-development.
- MU will inform contractors that improperly inflated tires (over-inflated) will increase compaction of the soil.
- MU will attempt to reduce traffic (pedestrian/construction) on soil that is too wet.
- MU will attempt to reduce the amount of continuous traffic on specific areas.