

Water Quality Subcommittee Narratives to accompany goals

Goal 1: Lake and stream water quality

Deep Creek Lake is classified as a mesotrophic lake. Mesotrophic lakes are generally clear water lakes with beds of submerged aquatic vegetation (SAV) and have moderate levels of nutrients and plant productivity. In contrast, oligotrophic lakes are very low in nutrients and, as a result, have very low levels of aquatic plants and animals. At the other end of the spectrum, eutrophic lakes are very high in nutrients and support an abundance of aquatic plants, both algal and SAV. In some cases, nutrient enrichment in eutrophic lakes can result in water quality impairments. Maintaining the Lake at the mesotrophic level is a desirable goal which ensures that the Lake continues to have good water quality and can support healthy, native and diverse aquatic plant and animal communities. While today (2014) the water quality of the Lake, overall, is good, many citizens are concerned about the water quality in shallow coves and near-shore areas. Current monitoring plans are not assessing these areas.

Most of the streams within the Deep Creek watershed that have been monitored are rated as poor or fair, with a few rated as a good. The standards used to determine the rating are based on a statewide standard that has been adjusted for the western Maryland region. While not all of the streams in the watershed have been evaluated, there are many questions regarding the poor to fair ratings. DNR staff scientists have suggested that a number of factors, such as land use and low stream gradient, may be the cause and recommend conducting additional monitoring and assessment to better understand stream health.

Hence a goal is to collect more information that should lead to the identification of opportunities to prevent water quality degradation and to improve water quality and watershed health. Stream corridor assessments and nutrient surveys will identify problem areas and specific improvement projects. It's therefore natural to charge the Water Quality workgroup with the development of monitoring objectives to inform future monitoring programs in a way that addresses the goals and concerns of this watershed management plan. These monitoring plans will need to address the challenge of balancing statistical validity with available monitoring resources. Other opportunities to improve water quality include addressing nonpoint source pollution from development and septic systems. These have been addressed by the growth management subcommittee. Reducing nutrient inputs from lawn care practices and overabundant goose populations and incentivizing landowners to plant trees, especially along Lake and stream shorelines, are additional options to pursue.

In addition to identifying and managing sources of pollution to the Lake and opportunities to improve stream health, conservation of rural lands is a crucial element of the watershed management plan. Retaining economically viable forestry and agricultural industries is key to maintaining the rural landscape and natural beauty of the watershed. Engaging landowners in forest stewardship management plans, agricultural land

conservation efforts and tax incentive programs should support the rural land conservation.

Goal 2: SAVs

Communities of submerged aquatic native plant species are a normal and important component of healthy freshwater mesotrophic ecosystems. They provide a number of important ecological functions such as oxygen production, as well as nutrients and food for all aquatic organisms and many species of waterfowl. They function as habitat and nursery areas for many aquatic animals including invertebrates and fish. The small aquatic animals, in turn, serve as food for larger game species of fish. Healthy SAV communities play an important role, in concert with the objectives of Goal # 1, in the maintenance of healthy aquatic and terrestrial living resources.

In recent years, in certain portions of the Lake excessive growth of SAV communities has become a problem for recreational users such as boaters and swimmers. This is particularly an issue in shallow coves and areas affected by the deposition of sediments that have reduced of Lake water depths. Low lake levels may also increase growth of SAVs in shallow cover areas and increase the frequency that boat propellers encounter the vegetation. In addition, two non-native invasive plant species, Eurasian watermilfoil (*Myriophyllum spicatum*) and Hydrilla (*Hydrilla verticillata*) have been identified in Deep Creek Lake. The invasive species compete aggressively with native species (especially under eutrophic conditions), but do not provide the same ecological benefits as native SAV species and have consequently impacted recreational use of portions of the Lake.

Over the past several years, DNR has conducted annual surveys and monitoring of SAV in Deep Creek Lake. These studies have identified the size and extent of the SAV communities at locations throughout the Lake as well as the specific plant species within the communities. Continuation and expansion of SAV monitoring activities in the Deep Creek Lake Watershed are essential to conservation, restoration, and management actions that are consistent with responsible Deep Creek Watershed management. The subcommittee recommends instituting an ongoing Water Quality Workgroup to address water quality and SAV monitoring activities through partnerships with research organizations, as well as developing educational materials for homeowners, visitors, realtors, business owners, and other lake users.

Goal 3: Erosion and Sedimentation

Erosion is the wearing away of the land surface by the action of wind, water, ice, and gravity. Sedimentation is the deposition of eroded soils in waterways or other locations.

Sediment deposition and movement affect the habitat and recreational use of the shallow areas of the lake. Existing regulations, approval practices and fees are burdensome for lakefront property owners who want to protect the shoreline.

The Water Quality Subcommittee recognizes that the issues of erosion and sedimentation transcend the work of some of the other subcommittees.

Sediments are materials that result from erosion processes, both natural and manmade. Sedimentation is the process of transport and deposition of sediments in bodies of water. In the Deep Creek watershed, the concern is about the sediments that are found in the lake.

The issues associated with erosion and sedimentation in the Deep Creek watershed are manifested in the following ways:

- Shallower waters, making boating difficult, if not impossible, during times when it is desirable to do so.
- Increased subaquatic vegetation, including invasive species in the shallower areas of the lake, impeding boating and swimming
- Receding shorelines causing loss of buffer strip width, and trees falling down and into the lake, creating hazards
- Impaired fish habitats due to the disturbance of sediment by the movement of water, either by wind or by boats.

The processes associated with erosion and sedimentation are very complicate technical issues. The primary sources of sediment in the Deep Creek watershed are:

- Runoff from cultivated farm land
- Runoff from developed land
- Runoff from forested land
- Stream bank erosion
- Lake shoreline erosion

Runoff can be either sheet or channeled, or both.

Receding shorelines and trees falling in the water are of major safety concern to boaters and swimmers, the adjacent property owners and the State (DNR). The lake buy-down process established a hard buffer line of 25 ft from the lake's edge at the time of purchase. As weather and lake level practices erode the shoreline, the buffer width is eroding also. There are apparently already several places where the 25 ft buffer monument is now found in the lake itself. This exposes the State, the owner of the lake

and the buffer strip, to accusations of negligence. Shoreline erosion is everywhere, in some areas more than others.

The property owner is burdened with a costly and time-consuming process of improving the State's real estate if they desire to do so. There is a long standing need for DNR to develop and make available publicly uniform procedures for stabilization of shoreline practices that are appropriate for specific shoreline conditions found throughout the Lake and to minimize the costs of permitting and installation that the property owner currently must bear. Acceptance of such guidelines by the public would be enhanced by their development with the assistance of the County government and the Policy Review Board. To encourage the protection of the lake's shores, adjacent property owners should be given incentives to install protective measures. Citizens believe that property owners who want to install protective measures should:

- be able to do so without fees to the State
- be able to select shoreline protective measures from a series of pre-approved designs developed by the State
- be allowed to install them during pre-approved times
- be given incentives to install such protective measure

The State has determined that it will not engage in processes to remove sediments from the lake. In their evaluation of assessing the various options available to remove sediment, private initiatives were not considered. There is a sentiment and interest with certain lake-side property owners to pursue the restoration of navigable coves on there own. There needs to be defined a process where this can be made to happen.