



Stream Restoration in Newport Bay

The Newport Bay Partnership is restoring and protecting the ecological health of the Newport Bay watershed through coordinated, science-based actions. The partnership is working to address water quality challenges and restore habitat thanks to a \$10 million investment through Maryland's Whole Watershed Program.

1. What is causing the higher level of pollution in Newport Bay?

This watershed has been altered by a growing population and subsequent increased development. Excess nutrients and pollutants come from runoff from urban areas, agriculture, septic systems, legacy groundwater, atmospheric deposition, and natural sources, including wetlands, marshes, and forests.

2. What organizations make up the Newport Bay Partnership?

The Newport Bay Partnership is a unique coalition of municipal government agencies and local non-profits, fueled by \$10 million dollars in funding from the Maryland Whole Watershed Fund, to bring scientific expertise, community engagement and grassroots energy to the restoration of the Newport Bay watershed.

The government partners are the Town of Berlin and Worcester County Government. Non-profit partners are the Maryland Coastal Bays Program, Assateague Coastal Trust and Lower Shore Land Trust.

3. What projects will the partnership undertake to restore Newport Bay?

The partnership is focused on comprehensive nature based solutions. Our initial focus is to manage stormwater runoff more effectively in the urbanized headwaters of the watershed through work in the Town of Berlin by restoring streams and improving stormwater management features that feed into Newport Bay. Future projects are being considered on Ayres and Trappe Creek, Bottle Branch, Hudson Branch and Kitts Branch in Berlin, MD. These projects will include working with landowners to implement best management practices for drainage infrastructure, salt marsh restoration, septic to sewer conversion and many more.

4. Why do these streams need to be restored?

The streams have been modified through decades of human development. Agricultural lands used extensive ditching practices to drain water away from crops. Urban development has led to large areas of asphalt and cement within the contributing drainage areas. Both of these issues have increased over time as the Town of Berlin has grown. This in turn increases the volume and rate of stormwater discharge entering the streams. This is especially true during large rain events when peak flow is increased. More water moving quickly through the streams has caused the stream channels to become unnaturally straight and deep, destabilizing the stream banks and reducing the connection to its natural floodplain. By recreating a natural pattern and floodplain connection, we can reduce the erosion to the stream banks and reduce nutrient loads to Newport Bay.

5. How will stream restoration address this?

Widening the adjacent floodplain and designing banks with a lower slope will reduce erosive impacts to the banks. A more natural stream configuration will support a wider array of aquatic life, slow down storm flows, reduce erosive impacts of higher flows, and allow for stormwater to expand into the newly developed floodplain rather than flows being heavily confined to the stream channel section.

6. What is stream restoration?

Stream restoration is a set of techniques that can be used to protect adjacent properties and public infrastructure by reducing stream bank erosion, minimizing the deep channels of the stream bed and restoring aquatic ecosystems.

Restoration techniques typically use natural materials such as logs, and native plants to help slow down stormwater flow and restore the natural meander or curve pattern found in stable streams.

7. What problem can stream restoration solve?

In urban areas, rain and snowmelt run across streets, sidewalks, and rooftops, rather than soaking into the ground. This fast-moving, excess water harms our waterways, tearing away the sides of streams, causing erosion.

The erosion is hard on the trees lining the banks, often causing them to prematurely fall into the stream. Erosion can also be harmful to public infrastructure (such as exposing a sewer pipe) and private property (such as a backyard in danger of eroding away into a stream).

8. What is sediment and why is it a problem?

Sediment is soil and dirt from erosion and is one of the most prevalent pollutant sources. Sediment creates a lot of problems for plants and animals in the water:

- *It makes the water cloudy. Cloudy water keeps sunlight from reaching aquatic plants, limiting photosynthesis. It also makes it harder for wildlife to hunt for food.*
- *It reduces the amount of oxygen in the water and makes it difficult for aquatic bugs, fish, and other stream wildlife to breathe. Sediment in the water can clog gills.*
- *It can increase water temperature. In the same way that we as humans can only live in certain temperatures, high temperature water can be fatal to many fish and other creatures.*
- *It destroys habitat. Many aquatic animals live in the nooks and crannies between rocks and under logs. When a stream becomes filled with sediment, these spaces also get filled in, leaving them with nowhere to live.*

Sediment also impacts our drinking water. Cloudy, sediment laden water requires additional filtration and treatment, increasing costs for treatment and ultimately for our residents.

9. During stream restoration, how is the plant habitat protected or enhanced?

Some plants and trees need to be removed during the construction phase to restore the streams, but efforts will be made to protect as many mature trees as possible. Invasive plants are always prioritized for removal over native plants. To restore the area surrounding the stream banks after construction, native trees and shrubs will be planted. Shrubs are expected to mature within 10 years, but trees will take longer to

fully mature. The logs and other removed plant material will be reused on site either as structural logs within the stream or as mulch materials to support construction activities and comply with erosion and sediment control requirements.

10. What are the impacts on wildlife?

Animals like deer, rabbits, birds, frogs, and snakes will have their habitat temporarily disturbed by restoration, they will return as newly planted trees and other plants grow and the stream returns to a more natural state.

Aquatic wildlife tell us a lot about stream health because they have different tolerance levels to pollution. Those that can tolerate polluted water can be found in streams regardless of water quality. Meanwhile, those that cannot tolerate polluted water are generally only found in healthy, clean streams. Each site is surveyed for fish using the Maryland Biological Stream Sampling Protocol before construction. If a rich fish community is identified, fish are relocated before construction begins. Depending on the type of restoration, the time it takes aquatic life to return will vary. Typically, fish will be the first to return to the newly created habitat.

11. What other efforts have been made in the Town of Berlin to address flooding and stream restoration?

Multiple stormwater management practices are being used by the Town of Berlin on the Hudson Branch, which is a feeder stream into Newport Bay. Hudson Branch has eroded banks and an incised (deeply cut) stream bed. There have been a series of stormwater improvement projects constructed upstream of the restoration site since 2016. These include an offline wetland, submerged gravel wetland, rain garden, and multiple channel stabilizations. There are also several long-standing programs to promote best practices at the homeowner level, like rain barrel installation. These upstream stormwater management practices combined with the stream restoration are predicted to reduce the peak flows within the stream.

12. How will we know if these restoration efforts have been successful?

Science will be at the forefront of our efforts. The state has provided an additional \$250,000 for monitoring projects in the 2027 fiscal year. This funding will allow us to monitor changes to the watershed as projects are completed. The data will be included in the [Maryland Coastal Bays Water Quality Annual Report Card](#) and shared on the Newport Bay Partnership website. Volunteers are helping to collect water quality information, contractors are conducting Maryland Biological Stream Monitoring, and USGS is collecting stream flow data. NBP will also be working with the University of Maryland Center for Environmental Science to establish new monitoring of social and economic factors.