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Urban Forest NEWS

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CITY DOCK ASH TREE PROTECTION

If you visit City Dock from time to time, you will notice that a large tree at the far end of the parking lot, past the boat ramps has been blocked off from the parking lot. This is a large White Ash which has been affected by Emerald Ash Borer (EAB). In the summer of 2018, it was injected with a product to protect it from further damage from the pest. As a further measure to lessen stress on this beauty, the City committed to protecting the all important root zone with the post and chains you see there now. Soon, there will be educational signage telling of the EAB treatment/ pest and the importance of protecting root zones.

Green Infrastructure Primer

Jurisdictions and organizations have underlying systems that help them to function. Cities, for instance, have water systems, road networks, electrical grids, and so on. These tangible assets are referred to collectively as infrastructure. Similarly, organizations function through hierarchies, rules of procedure and conduct, and other systems that provide an organizing framework. That organizational structure can also be described as infrastructure.

Roads, pipes, and poles are referred to as hard infrastructure. Organizational systems exist on paper and in practice and are thus called soft infrastructure. Into this technical discussion, we can introduce the concept of green infrastructure. So called green systems are a way to manage the impact of wet weather and excess pollutants on a community. Green infrastructure uses natural features and processes to absorb and diffuse stormwater and to overcome its potential concentrated flow and impact. Green infrastructure is, in effect, living infrastructure.

Rain in natural, undeveloped areas is collected and filtered by soil and vegetation. As natural areas become developed, the rooftops, roads, and other paved surfaces reduce the ability of the land to absorb precipitation. The remaining natural areas have a finite capacity and their overflow water is what we characterize as stormwater runoff. Runoff becomes concentrated by parking lots, streets, and other hard surfaces and thus travels with greater velocity. Runoff also picks up pollutants as it flows across those impermeable places.

In urban areas, the traditional way to handle increased water flows has been to drain it away. Gutters, storm sewers, and other carefully engineered systems collect the water and direct it to natural waterways. The volume of diverted stormwater, however, has overwhelmed streambanks, causing significant erosion. Stormwater also carries the trash, bacteria, and many other pollutants it picks up along the way and dumps it into our streams. The water quality of our waterways becomes

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Green infrastructure primer *(cont. from pg. 1)*

impaired when eroded material washes into the water along with the accumulated trash and pollutants that get picked up in every storm.

Discharges from individual properties may appear inconsequential, but each impact combines with countless others. Impaired creeks and streams flow into the Rappahannock River. When our own river is adversely impacted, its flow harms the Chesapeake Bay. Protecting our environment has to be a series of steps, some small and some large, that generate cumulative impacts through basic, cost-effective actions. In this comprehensive approach, we collectively enhance our own community. When other communities do the same, we collectively enhance our entire region, and so on.

The idea of green (living) infrastructure is to use vegetation and soil to infiltrate, redistribute, and otherwise store increased volumes of stormwater. This attention to natural processes looks to riparian lands, trail routes, parks, ponds, open space, planted road medians, and scores of other features to create as many solutions to absorbing stormwater as is possible. Thus interconnected, green infrastructure will have impacts well beyond the practical aspects of stormwater management. When done well, green infrastructure provides flood protection, cleaner water, enhanced natural areas, and reduced stress on receiving streams within the context of a generally more attractive community.

As an example of small things having large impacts, a single tree catches rainwater in its canopy, slowing its accumulation on the ground, while its roots soak up significant volumes of runoff. Green infrastructure includes forests, wood-

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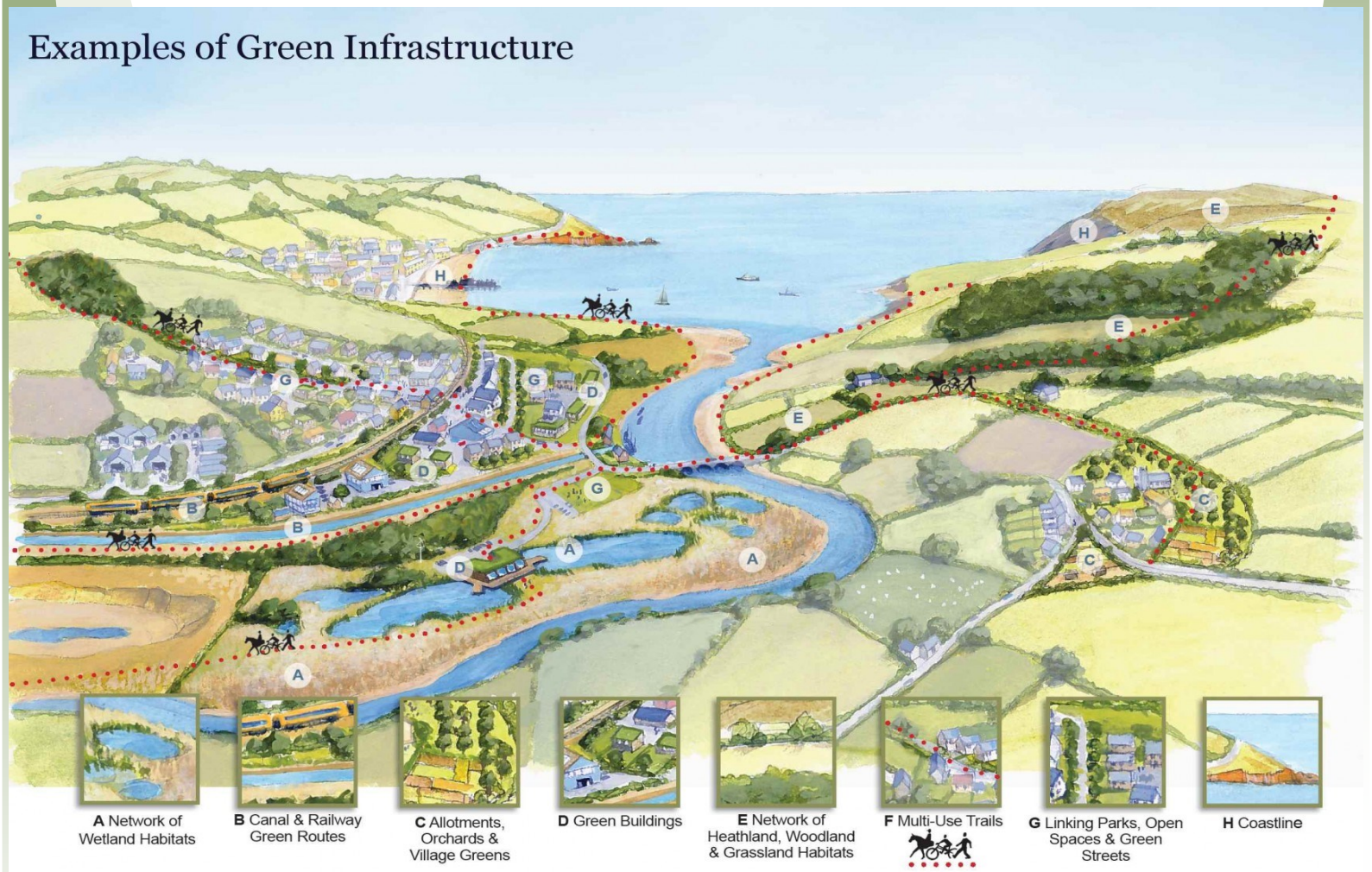


Forest Filters: An Important Part of Green Infrastructure

by Erik Nelson

In Fredericksburg, we enjoy excellent drinking water.

To ensure that we will continue to do so, the City protects a significant part of the Rappahannock River watershed, from which it is drawn. In fact, the City owns several thousand acres of upriver property along the Rappahannock and Rapidan Rivers, in five upriver jurisdictions (Spotsylvania, Stafford, Culpeper, Fauquier, and Orange Counties). The City lands buffer 32 miles of riverfront along those two main rivers and another 33 miles land along tributary streams. This land helps to filter runoff from adjacent development before it enters the waterways.

The City lands are a connected network of protected natural lands and waters that support native species, maintain ecological processes, sustain fish and wildlife, and serve as recreational open space. Forest cover is tremendously effective in maintaining and enhancing water quality, and natural woodlands occur across all of the City's upriver properties. That has not always been the case, though. Historically, the land has been routinely timbered. This harvesting of wood effectively ended upon sale of the land in 1968, but only after a brief surprise.

The City acquired its upriver acreage from an electric power company that had planned a series of hydroelectric dams in the Rappahannock Valley. Those development plans ended when the North Anna nuclear plant came on line. The City subsequently acquired that land for a $480,000, which seemed a pretty good price. After the deal had gone through, however, the power company indicated they planned to cut the timber on the land one more time.

City Manager Freeman Funk belatedly realized that the City had not accounted for timbering rights. In the end, the power company did not cut any timber and the forests have continued to mature as a glorious natural resource that benefits all City residents.

The land is currently overseen by Pubic Works, the City Arborist and River Steward Joe Young.

The forests are monitored for pests that invade from surrounding development, such as EAB and Hemlock Wooly Adelgid.

No timbering occurs on the land.

The City's forested riparian buffers also dramatically illustrate the concept of green infrastructure.

This Civil War sketch was made in Stafford County, looking across to what is now a portion of Celebrate Virginia. The structure on the right is Scott's Mill, which is no longer standing. We know exactly where this sketch was made, though, because the mill's stone foundation has not moved. The open land is now entirely covered in trees.

Green Infrastructure Primer

(*cont. from p2*)

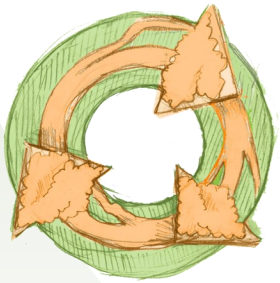
lands, and street trees as well as wetlands, parks, and streams. Our built environment can be made to readily coexist with important landscape resources that effectively continue their natural functions.

The concept of green infrastructure is still developing, but a good working definition calls it a:

Strategically planned and managed network of wilderness, parks, greenways, conservation easements, on lot green requirements and working lands with conservation value that supports native species, maintains natural ecological processes, sustains air and water resources, and contributes to the health and quality of life for America's communities and people.

We will explore the idea and practice of green infrastructure in future volumes of this newsletter.

Wood Reuse Program



When we take down a large or significant tree in the City, we have begun to repurpose the logs and sometimes smaller pieces to local woodworkers who dry the wood and make various products from the wood.

Fredericksburg Public Works
Urban Forestry Program
715 Princess Anne Street
PO Box 7447
Fredericksburg, VA 22404

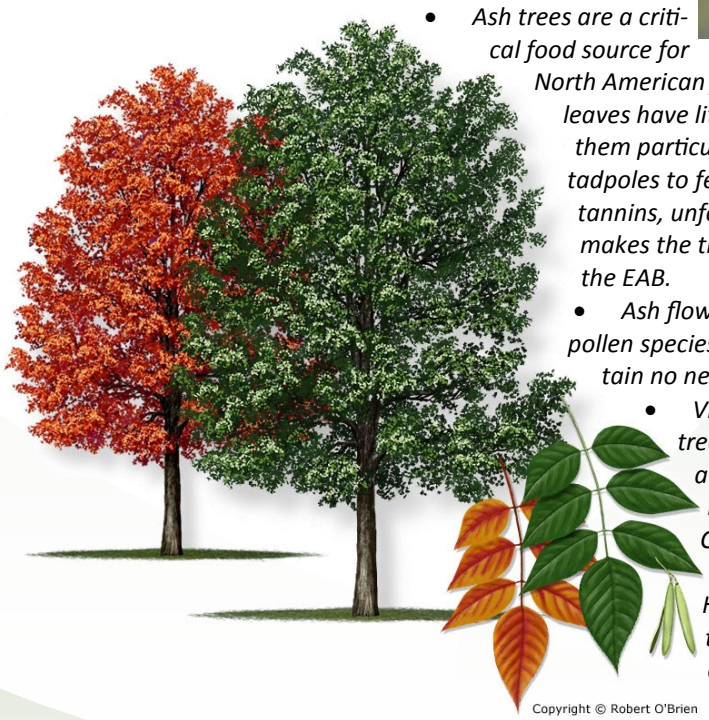
TREE PROFILE

Ash spp. *(Fraxinus spp.)*

HT: 50-80 ft.
W: 25-50 ft.
LEAVES: *Opposite, pinnately compound 6-15" in length depending on species, with 5-9 leaflets with toothed margins.*
FLOWERS: *Miniature purple arranged in clusters. Male and female flowers develop on separate plants—dioecious). Wind pollinated.*

FRUIT: *Called Samara. 1-2" long, flat thin membrane covering miniature seeds.*
ORIGIN: *Green and White ash is Native to US.*

Although we do not plant ash in the City, there are specimens around. Unfortunately, Emerald Ash Borer, an invasive exotic insect, has invaded these trees & causes a nearly 100% mortality rate! There are a few dozen trees that have been treated to stave off this pest, and as we find more that are worth treating, we will do so.

Ash wood is a strong hardwood that resists shocks without splintering, making it the perfect wood for MLB baseball bats. It is also used for tool handles, hockey sticks, oars and furniture. Ash wood is also a favorite for those who smoke meats.

- *Ash trees are a critical food source for North American frogs. The fallen leaves have little tannin, making them particularly suitable for tadpoles to feast on. The lack of tannins, unfortunately, also makes the tree less resistant to the EAB.*
- *Ash flowers are important pollen species for bees. They contain no nectar.*
- *Visit two large ash trees in the City—one at City Dock (fenced in) and one on Charles St across from the St. James House. Both of these trees are being treated and managed.*