## 2023 PROJECT UPDATE and ACTIVITIES

Hasenbank Woods is located in the within the developed areas of the City of Woodbury, but remains as a remnant oak woodland surrounded by areas formerly in tilled agriculture. The woods contain a significant number large, mixed oak trees, many of which established in an open grown condition. This is evidenced by broadly reaching branching patterns and wide, somewhat curving trunks. These characteristics are supported by the aerial photography that shows scattered trees with significant openings throughout the site, especially toward the west. Many of the larger specimens likely date back to a time prior to establishment of the adjacent farms. The conditions that maintained the open quality of the forest during that period before settlement would have historically included grazing and periodic natural and set fires.



Figure 1: 1953 Aerial Photograph

By 2021, the woodlands had grown to a nearly continuous canopy of more quickly growing, early successional tree species that have filled the gaps in the canopy. These species are dominated by a mix of green ash, boxelder, black cherry and hackberry (and likely formerly, large elm). Additionally, the understory had become nearly entirely dominated by Common Buckthorn, a non-native, and very invasive species that shades and crowds out all other native species. In the presence of a nearly continuous buckthorn understory, future recruitment of native trees (especially oaks) is virtually eliminated. Lastly, the soils on the site have become highly degraded during this time, due both to a loss of ground layer herbaceous vegetation and their associated root systems along with the introduction of non-native earthworms onto the site which quickly reduce organic materials and structure in the soil.

In 2022, the South Washington Watershed District and City of Woodbury began a process of transformation of the forest with the intent of creating a more ecological diverse, and in the long run, more resilient forest for City staff to maintain. The presence of mature, mixed oak species is the foundation for restoring the site to a healthy community that is seldom available in the urban setting. This single factor is impossible to replicate quickly and restoration efforts on the site should focus on protection of and enhancing to the degree possible oak trees in a variety of age classes.

The Watershed District and City are using a multi-year approach to preparing the site for restoration of a maintainable oak woodland. In 2022, mowing, followed by animal grazing to clear woody invasive species was a first step toward controlling buckthorn and other invasives. This slow approach has been very successful at removing heavy buckthorn stands and subsequent garlic mustard infestations by weakening these plants numerous times as they resprout. The approach reduces the use of herbicides early in the process and allows for more targeted applications on already weakened individuals at a later date. This in turn reduces the potential for overspray and long term effects of herbicide use.

After two rounds of goat grazing, hand clearing of buckthron and two rounds of forestry mowing (targeting shrubs) in 2022, the project will continue to create the conditions for long term restoration of a resilient ecosystem by opening up gaps in the canopy to allow light to penetrate to the ground and create the conditions for ground layer vegetation to reemerge and thrive. A healthy ground layer of vegetation will provide the benefit of rebuilding soil structure and eventually provide fuel for the reintroduction of periodic prescribed fire as a management tool.

## **2023 Project Activities**

Schedule of activities in the coming years is as follows:

- In Fall, 2022, City of Woodbury Crews will be using small forestry mowers to chip buckthorn brush piles and further grind the woody debris scattered on site from earlier brush mowing. This will help with the breakdown of woody debris and facilitate a more rapid regrowth of seeded herbaceous materials.
- During winter, 2022/2023, crews will begin removing deadfall in the forest. Much of this deadfall is the result of wind event in fall, 2021 and includes a mix of fallen large oaks and black cherry among others. While deadfall provides valuable habitat in a forested landscape, it's removal in this case will allow restoration activities in existing openings to focus on bringing back a more diverse understory and begin to rebuild soil structure where decades of low light conditions have left large areas of bare soils.
- Tree removals will occur throughout the wooded areas targeting species that are aggressive competitors, or are problematic with regard to disease and pests. Tree removals during the coming season will target the following species:
  - Boxelder: This is an early successional species that grows rapidly and quickly inhabits a wide range of landscape cover types in the absence of natural disturbance (fire and grazing).
  - Green Ash: Emerald Ash Borer is prevalent throughout Washington County and once an infestation takes hold, ash trees succumb quickly to the insect as it tunnels through the tree's cambium and cuts off nutrients and water to the tree.
  - Elm: Dutch Elm Disease is widespread and effectively kills of elms as they begin to fill the canopy. Elms will also be a target for removal.

- Black Cherry and Hackberry: Smaller individuals of these species will be removed to open up light and provide space for oak regeneration. Larger individuals will be retained in most cases.
- Materials from felled trees will be removed from the site through a combination of burning smaller branches and limbs in brush piles on site and removal of large logs to generate energy by municipal heating and energy facilities (District Energy).
- Broadcast seeding in late winter will introduce a mix of shade adapted grasses and sedges to the woodlands in an effort to bring back a more diverse ground layer vegetation. These grasses will begin rebuilding soil structure and provide fuel for future prescribed burning.
- Prescribed goat grazing will follow broadcast seeding in spring. The goats will be brought in to target invasive garlic mustard and buckthorn resprouts, continuing to weaken the invasive shrub. Goat grazing shortly after broadcast seeding has the added benefit of improving seed to soils contact as goats press seeds into the ground as they graze the site.
- Summer activities will likely be minimal until goats return for another round of grazing to continue weakening buckthorn in fall, 2023.

## LONG-TERM PROJECT GOALS

The long term goal of the Hasenbank Woods restoration is to create the conditions for a diverse and ecologically healthy woodland, maintainable through periodic activities (prescribed fire, spot herbicide treatments and spot mechanical removals) by city staff to keep invasive species in check and support a range of native plants and animals under the cover of a healthy and regenerative oak canopy. The process to get to that place will require years of preparation and restoration.