

B. The Aqueduct System

These historic hills were changed near the end of the 1800s as a growing Morristown sought to ensure a supply of water. The iron pipes in this brick vault brought water in from ditches and "collecting arm" trenches. The remains of one of these ditches is evident nearby, built to channel water to this site from the springs of Primrose Brook.

A gravity system forced some of the water from this vault into a nearby reservoir.

(Return to the main trail to proceed to C).

Did you know?

The Morris Aqueduct Company was New Jersey's first water company. It was built in 1799 because of water shortages suffered during periods of drought. As the demand grew, the Morris Aqueduct Company expanded their water sources into Jockey Hollow.

The Town of Morristown bought the Morris Aqueduct Company in 1923, hoping to improve the service at a cheaper rate for the customers. A new large reservoir was constructed in nearby Mendham, making the Jockey Hollow springs obsolete. The Town of Morristown donated the former aqueduct land to the National Park Service in 1933.

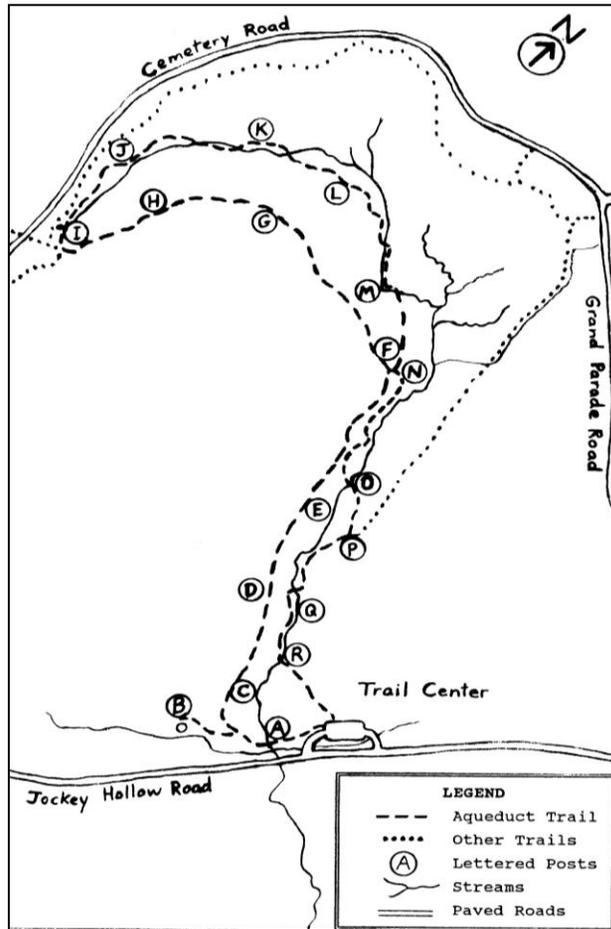
C. Reservoir

This open depression was once a reservoir used for water storage. Aqueduct builders dug several storage ponds in this area. Abandoned since becoming parkland in 1933, the pond has been subject to natural processes and has now been filled in. Silt and organic matter carried by the brook have been deposited in the still water, providing substrate for the grasses and cattails, and the deposits eventually welcomed other plants and trapped more sediment. From pond to marsh to meadow, it will eventually return to its original forested state.

D. Encampments

Soldiers of the First Maryland Brigade cleared trees, built huts on these hillsides, enduring the harsh winter of 1779-80. Approximately 700 acres of mature forest gave way to the axe, to provide huts and fires for over 10,000 troops of the Continental Army. Jockey hollow was selected as a winter encampment site for Washington's Army based on its good sources of water, its supply of wood for huts and fires, its well-drained hillsides and hollows that promised shelter from winter winds. Much of the cleared land was later used for farming into the 1900s.

As you journey through the Aqueduct Trail, think about what you have seen and learned today. Here is evidence of some of the ways that humans have had an impact on this forest, along with how nature has compensated and adapted to the changes.



Feel free to keep this guide, but if you wish please return it to the dispenser at the beginning of the trail. The rest of Morristown National Historical Park awaits your exploration.

If you would like to learn more in how to protect the National Parks, stop by the Jockey Hollow Visitor Center or visit us on the web at www.nps.gov.

The Aqueduct Trail

Welcome. You are standing at the entrance to the Aqueduct Trail: a beautiful, self-guided loop of about one and a half miles. The trail passes over somewhat hilly terrain to the source of the Primrose Brook. In order to leisurely walk this loop, please allow one to one and a half hours. During the course of this trail, there are eighteen lettered posts corresponding to this guide. Each post highlights significance remnants of the Morris Aqueduct Water System as well as other natural and historical features.

The aqueduct water system in Jockey Hollow was created around 1890. No longer in use, its purpose was to supply safe and dependable water to the growing community of Morristown. In order for the aqueduct to work, water was collected from springs and traveled through trenches to storage reservoirs.

❖ To begin follow the Neon Green Blazed Trail.

A. Water

Water is essential to life. Not far from its groundwater source, the water in Primrose Brook is beginning a long journey to the sea. *(Unfortunately, we are obliged to issue cautions about drinking this water untreated even at this early point in its trek).*

A few miles downstream from here, the water will join the Passaic River, flow southward through the Great Swamp, travel north through Paterson, eventually to the Atlantic Ocean at Newark Bay.

E. American Beech

American Beech trees are an important part of the mature forest that has re-established itself here, and flourish on the well-drained, shaded hillsides. Easily recognized by their smooth gray bark, beech trees provide food for a variety of animals and wood that is well suited for furniture, tool handles, flooring and woodenware.

F. Collection Ditch

Noted earlier at stop B, this ditch continues on toward the headwaters of Primrose Brook. Dug to channel water from this source, it was part of a system of ditches, impoundments, and pipelines that were installed to carry water to a Morristown reservoir.

G. Highlands Geology

Jockey Hollow lies in the geological province of New Jersey known as the Highlands. The distinctive character of the Highlands is derived from the Precambrian bedrock, which is over one billion years old. This hard bedrock consisting mainly of granite, marble, and gneiss is impermeable to water, and contributes to the branching pattern of the stream below.

H. The Forest Returns

Much of the surrounding area was cleared for farming and Jockey Hollow in particular was almost completely cleared by soldiers who needed wood to build log huts and fires.

In the 1930's, the Civilian Conservation Corp (CCC) replanted the forest which you see today. Many types of trees were planted such as tulip, beech, oak, hickory, and maple. One species that is now notably absent is the American chestnut. This tree has been nearly eliminated due to the accidental introduction of the Chestnut Blight fungus.

I. Ground Water Spring

The Precambrian bedrock underlying the park contains groundwater in scattered locations. Cracks in the bedrock have allowed groundwater to reach the surface. This spring, the source of Primrose Brook, has been an important source of water since the time Lenape Indians lived here. Others such as farmer Henry Wick, General Washington's Army, and the Aqueduct Water Company have also made use of the waters flowing here.

J. Bent Tulip Tree

Snow, ice, or possibly an eroding stream bank, bent this tulip tree when it was young, but it has made a remarkable recovery. With branches that adapted and reached for the sun, it has joined the ranks of its fellow tulip trees as the tallest trees of this forest. Lenape favored the strong, lightwood from tulip trees for making dugout canoes.

K. Did you know?

During the Great Depression, Lloyd Smith bought the 1,200-acre Jockey Hollow area and presented it to the National Park Service when Morristown National Historical Park was created in 1933.

L. Nature's way of Recycling

Dead trees are in the process of being recycled. Lichens, mosses, insects, fungi, and bacteria are all working to decompose the dead wood. This process returns elements such as calcium, magnesium, and phosphorous to the soil from which they can be re-absorbed by the high plants.

M. Finding a New Way

Primrose Brook seems to have known what was best for it, and has broken free of the confining trench to resume its natural watercourse. Straightening, diking, and canalization of streams and rivers to redirect their flows, control floods, and convert natural floodplains to cropland has had many unforeseen detrimental effects. Chief among these is the reduction of the variety of stream habitats, critical to biological diversity and maintenance of the integrity of stream ecosystems.

(At the trail juncture, take a left, proceeding toward the stream).

N. Needed Watershed Protection

Primrose Brook's flow increases as it is joined by another small stream whose watershed extends up toward the soldier huts at the Pennsylvania line.

Once a nation of pristine waters, today 40% of our rivers, lakes and streams are no longer suitable for fishing or swimming due to pollution. While we've made progress against some forms of pollution, the biggest threat to our valuable waterways today is from non-point source pollution, runoff from the land. This can carry fertilizers, pesticides, herbicides, petroleum products, inorganic chemicals and salts, animal wastes, and sediments that destroy fish and other aquatic life.

The key to protecting these valuable waters is being mindful that we all live in a watershed.

O. Exotic Invaders

Humans are sometimes unaware of the role they play in changing the environment. As worldwide trade was made possible, and more common, humans caused certain kinds of organisms to become widely dispersed. A species that has been dispersed outside of its original range is called an exotic or invasive. Many of these exotics/ invasive plants are destructive in new localities. Until humans enabled these organisms to cross oceanic and mountain barriers, they remained in check in their own ecosystems.

Two examples of exotics/ invasive that have proven problematic are before you. The small, spiny shrub is Japanese barberry, and the aggressive vine is Bittersweet. Both species were introduced from East Asia, most likely as ornamental plants for residential yards. With the absence of natural deterrents, both species have dominated areas of the park, and have prevented new growth of native plants.

P. Bye-Wash Trench

Unlike most of the other collecting trenches in the area, which were used to collect and divert water to one of Jockey Hollow's storage reservoirs, this bye-wash trench served an entirely different purpose. Here, hillside runoff was caught to prevent erosion on the steep slopes and keep soil-laden water from washing into the reservoir below. The water collected in the bye-wash was not used to supply Morristown. Rather, it would have remained in Jockey Hollow to nourish the forest.

Q. Aquatic Life

Throughout the year, even on the bleakest winter day, a world of activity exists here beneath the surface, and important work is being done. Aquatic insect larvae are busy shredding leaves and other plant matter in the stream as they feed on the microbes that colonize them. Cutting these leaves into smaller particles facilitates their breakdown and availability for uptake as food by other organisms. Fish and assorted predators feed on the insect life. Energy in this shaded, headwater stream is provided mainly from the plant matter that falls into it and the processing of that matter by key organisms in a complex web of life.

R. Beyond Jockey Hollow

In the stream below you will find more remnants of the old Aqueduct System. The pipes leading into the stream once carried water through Jockey Hollow to a reservoir where it was pumped into another series of pipes leading to Morristown. The entire Morris Aqueduct System of pipes and ditches was over seven miles long and provided water to local residents.

Did you know?

Trees have a sensitive layer of tissue just inside its outer bark. Open areas of this tissue from wounds, such as types of vandalism, results in trees diseases and interferes with the tree's water uptake or moving vital elements back down to the roots, inevitability causing the tree a slow death which may take a few months up to a few years.

**Revised: Girl Scout of America
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