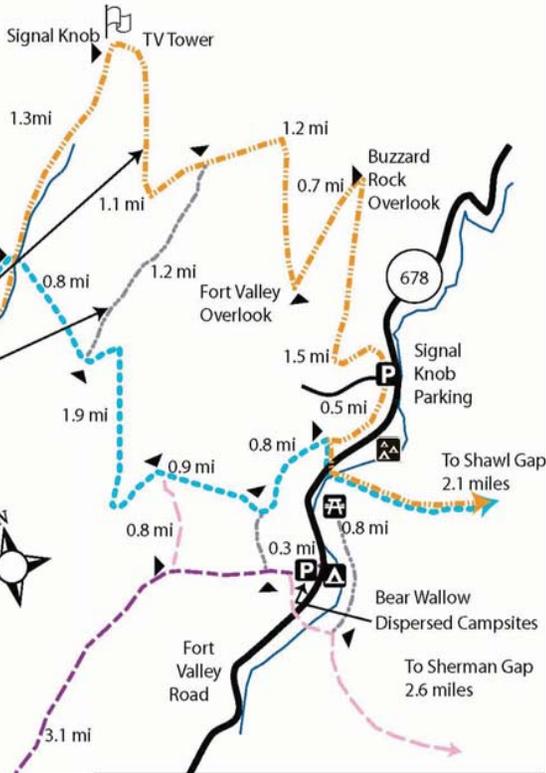


# Elizabeth Furnace - Signal Knob Trail Map



**Lee Ranger District**  
95 Railroad Ave.  
Edinburg, VA 22824  
(984-4101)

Horses should avoid  
Meneka Peak Trail and  
this section of Signal  
Knob Trail due to steep,  
rocky tread



Legend	
	Massanutten National Recreation Trail - orange
	Signal Knob section - orange
	Mudhole Gap Trail - purple
	Sidewinder Trail - pink
	Tuscarora Trail - blue
	Gravel Road
	State Route
	Creek
	Elizabeth Furnace Family Campground
	Elizabeth Furnace Day Use Area
	Elizabeth Furnace Group Camp

## Guide to Camping, Hiking and History At the Elizabeth Furnace Recreation Area



George Washington and Jefferson National Forests  
Lee Ranger District  
95 Railroad Avenue  
Edinburg, VA 22824  
(540) 984-4101

WB-S7-598-11-1

# Elizabeth Furnace Recreation Area



Passage Creek Bridge

## Family Campground:

This campground has 33 first-come, first-serve camp sites, picnic tables, and fire rings. During the summer season there are warm water showers and flush toilets. In winter, vault toilets are open and water is available from a hand pump.

**Fees:** In Season - \$14/night,  
Off Season - \$10/night.

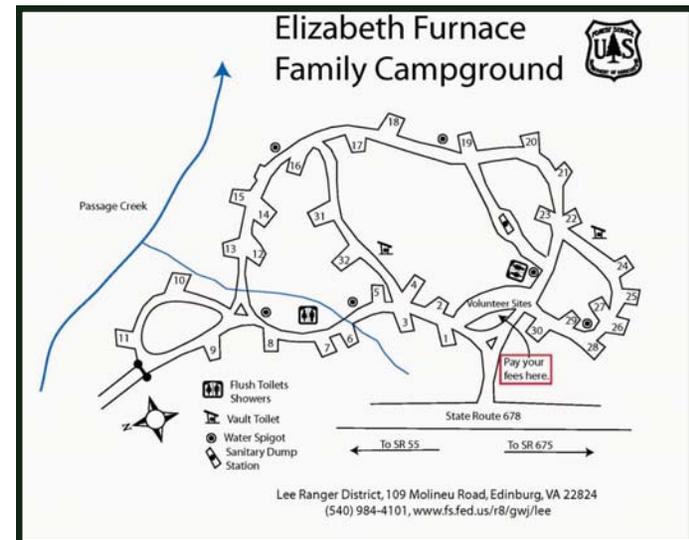
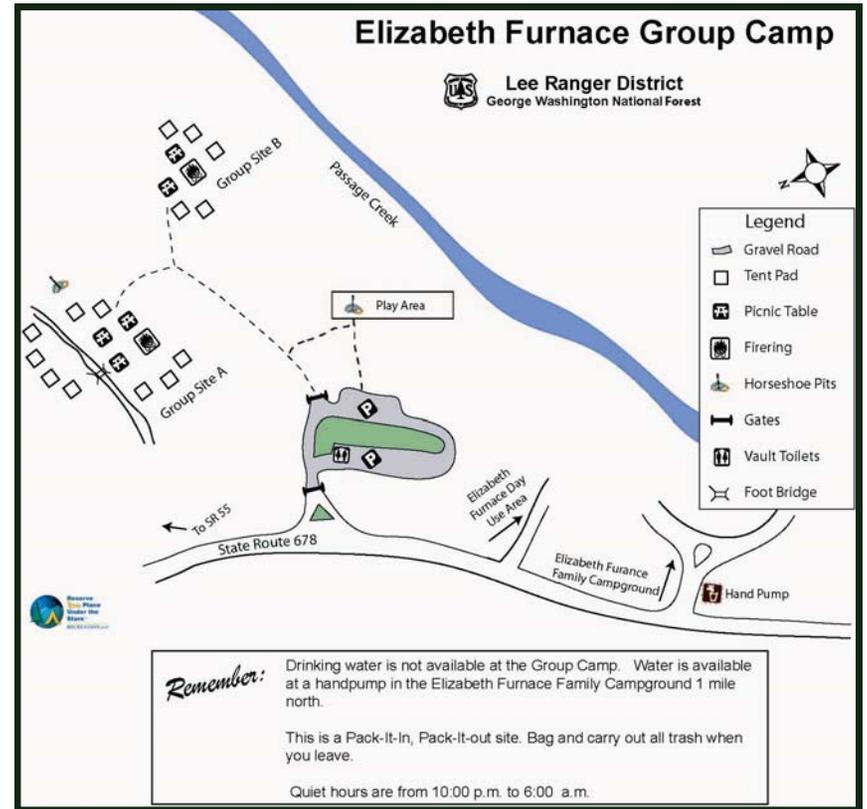
**Picnic Area:** The day use area includes picnic tables, vault toilets, open fields, access to several well blazed and maintained hiking trails (most notably the Massanutten/Tuscarora Trail), and fishing in Passage Creek. There is No Fee.

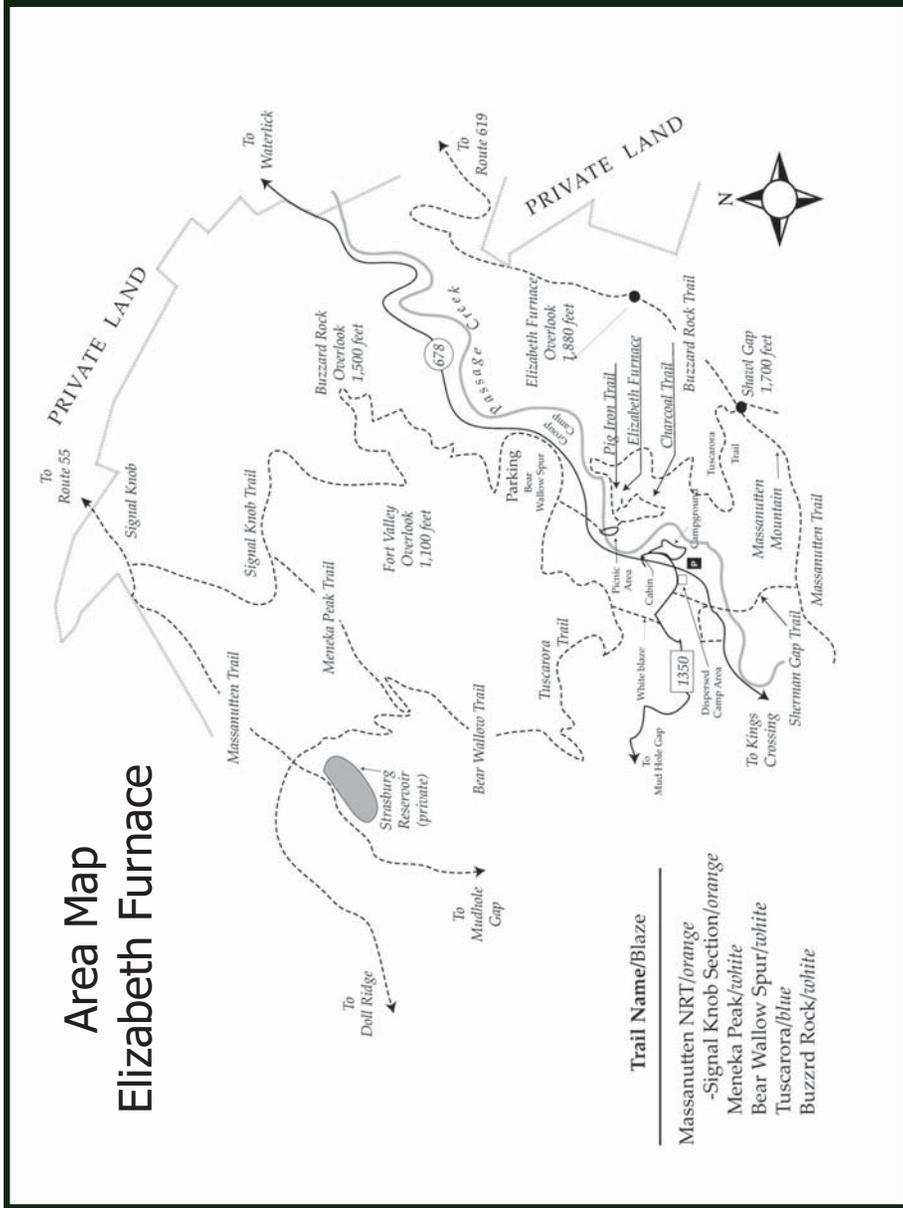
A Virginia state fishing license and National Forest Stamp are required year round. A Trout Stamp is needed from October 1 through June 15.

**Group Camping:** There are two group sites. Site A accommodates 50 people; Site B can accommodate 25 people. Each site has tent pads, picnic tables, benches and a fire ring. No water is available. Please pack out your trash.

## Reservations and permit are required.

To reserve: [www.reserveamerica.com](http://www.reserveamerica.com) or call 1-888-448-1474.





### Directions:

From Strasburg, Virginia, travel 5.1 miles east on State Highway 55 to Waterlick, Virginia. From Waterlick, take State Highway 678 southwest. Travel for 4.8 miles to the recreation area entrance.

From the Washington, D.C. Beltway (I-495) take 1-66 West approx. 60 miles to US 340 south (Exit 6, - the second Front Royal exit). Follow US 340 south 1.1 miles to the traffic light at VA Route 55. Turn right onto VA 55 and follow it west for 5.2 miles to Waterlick. Turn left (south) onto VA Route 678. Follow VA 678 for approximately 4.8 miles to the recreation area entrance.

### Interpretive Trails

The Pig Iron and Charcoal Trails are short loop trails that illustrate the pig iron industry of the 19th century.

**Charcoal Trail:** This 0.3 mile loop trail, offers displays explaining the charcoal making process essential to the operation of the Elizabeth Furnace. The trailhead is located behind the vault toilet in the Elizabeth Furnace Day Use parking area.

**Pig Iron Trail:** This 0.1 mile trail circles the ruins of Elizabeth Furnace. Interpretive signs detail the inner workings of iron making in a blast furnace. The best access to this trail is from the Charcoal Trail at Elizabeth Furnace Day Use Area.



Pig Iron Interpretive Trail

## Nearby Hiking Trails

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Massanutten Mountain has over 160 miles of hiking trails. Elizabeth Furnace Recreation Area provides an excellent access to many of these trails. Long or short, there's a trail for everyone. The Potomac Appalachian Trail Club's **Guide to the Massanutten Mountain** is recommended both for planning and for reference while hiking.

**Signal Knob Trail:** This is an 11.5 mile round-trip hike from the campground. Signal Knob is a Civil War lookout providing a good view of Strasburg, VA. You can access the trail from the gravel road directly across from the campground entrance (Mudhole Gap Tr -purple blaze), from Signal Knob parking lot approximately 1 mile north of the campground or access the trail across the state road from the group camp.

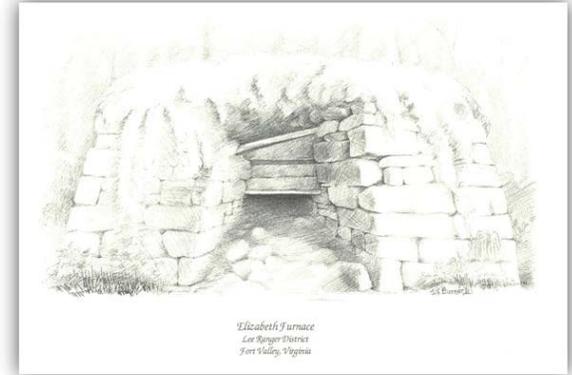
**Sherman to Shaw Gap Loop:** This 8.5 mile hike can be started from the Day Use Area using the Massanutten or Tuscarora Trails. When on the ridge you can see the South Fork of the Shenandoah River and Fort Valley. There is a 1 mile side trip to Buzzard Rock when on the top of Shawl Gap.

**Tuscarora Trail:** 2.3 miles of this 248 mile trail passes through the Elizabeth Furnace Recreation Area. The trail runs parallel to, then briefly links with the Appalachian Trail in Shenandoah National Park (blue blaze).

**Woodstock Tower:** For splendid views of Fort Valley and the Seven Bends of the North Fork of the Shenandoah River, travel south on SR 678 for 9 miles to Woodstock Tower Road. Turn right onto Woodstock Tower Road. Travel 4.5 miles to the Tower. The trail will be on your left. Trail to the tower is .25 mile.

## A Casualty of War

When the Civil War began in 1861, Virginia had 14 pig iron furnaces in operation. The Shenandoah Valley's furnaces and forges furnished the Confederacy with weapons and other strategic materials. This made them target of Union forces.



Elizabeth Furnace was destroyed in 1864 when Federal troops penetrated the upper end of Fort Valley during

the battle of Cedar Creek on October 19, 1864. Elizabeth Furnace was rebuilt in 1883 but had no appreciable output and was abandoned in 1888.

After the war, many of the furnaces continued operations. Virginia's furnaces played a role in reconstruction and as late as 1870 Virginia was producing annually far more iron than it had during the years before the war. This economic resurgence of Virginia's iron industry did not extend into the 20th century.

## Reclaiming the Land

In 1913, the Forest Service acquired the furnace and surrounding land. Hillsides were bare, roads were eroding, and stream channels were filled with debris - all caused by the mining and charcoaling required to operate the furnace. Work began immediately to revegetate this area and protect it from fire. How different these mountains look today, only 100 years after the furnace shut down.

**How much charcoal did the furnace use?** An average furnace would consume from 600-800 bushels of charcoal every 24 hours. This required about 30-40 cords of wood.

Three cords of wood made enough charcoal to fire the furnace for two hours and to produce one cubic foot of iron. Once the furnace started, it ran 24 hours a day. Typically the furnace operated from May to September. About 5,000 cords of wood were needed to fuel the furnace during this time.

**How was the furnace built?** The furnace was roughly 30 feet square on each side and about 30 feet high. The top narrowed gradually to about 20 feet square. The furnace was constructed of stone. The inside of the furnace had a core lined with firebrick or other resistant material. The furnace was erected against the side of a small hill so the charge (iron ore, limestone, and charcoal) could be carried or wheeled from the stockpile across a bridge and dumped into the stack at the top. The working arch was located at the front of the furnace. The furnace was tapped at the base of this arch.

**How did the furnace work?** Before firing, the inner core of the furnace was filled with charcoal. The furnace was then lit from the top. When the fire burned to the bottom of the inner core, the furnace was refilled with charcoal. Once the fire burned to the top of the furnace, limestone and iron ore were dumped in. The iron ore and limestone melted when temperatures reached 2,000 to 3,000 degrees Fahrenheit. As the iron melted, the chemicals in the limestone caused the molten metal to separate from any dirt and flow downward. During the blast process, charcoal and iron were fed continuously to the furnace. The iron was tapped at the arch located at the front of the furnace and it flowed into bar shaped forms made from sand. The glass-like waste material from the iron ore, called slag was cooled and disposed of throughout the area.



Elizabeth Furnace Cabin

## Elizabeth Furnace History

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**Elizabeth Furnace** was a blast furnace in the Shenandoah Valley used to create pig iron from 1836 – 1888. Iron ore was mined nearby, and purified in the furnace using Passage Creek for water power. The pig iron was transported over the Massanutten Mountain to the South Fork of the Shenandoah River for forging in Harpers Ferry, West Virginia. The road used to transport this iron is still used today as a hiking trail.

**The Elizabeth Furnace Cabin** is one of the few wooden structures remaining from the early 1800s when Elizabeth Furnace was active and pig iron was king. In its heyday, Elizabeth Furnace pig iron supported an entire community. The Elizabeth Furnace Cabin is a combination of several buildings from that community.

In 1936, the Civilian Conservation Corps began construction on the Elizabeth Furnace Recreation Area. They moved logs from several buildings across Passage Creek and constructed an administration building we now call the Elizabeth Furnace Cabin. You can see the different notching styles on the back south corner of this cabin, an indication that the logs came from different buildings.

## Making Pig Iron and Charcoal

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Pig iron is smelted iron ore that is cast into ingots. (An ingot is a mass of metal, such as a bar or block.) This iron probably got its name because the shape of the ingots look like a mother pig with piglets.

**Why were iron furnaces built here?** Three raw materials were needed for the furnaces to operate: water, iron ore and timber. These materials can still be found in abundance in the Shenandoah Valley.

**Who worked at the furnace?** A community, sometimes called an "iron plantation", grew up around the furnace. It was supervised by the owner or "iron master". This community consisted of the iron master's mansion, cottages for the laborers, tool and storage sheds, work shops for carpenters and blacksmiths, stables for mules and oxen, a store, and a school. The furnace operations required a small crew to operate it, but dozens of people were needed in the woods felling trees, burning charcoal, mining iron ore and limestone, and caring for the mules and oxen.



Van Buren Furnace

**How was the iron ore and limestone mined?** After a general geological survey was made, trenches or pits were dug. The loose earth was removed and digging continued until the iron ore or limestone was found. In the Shenandoah Valley brown hematite was the main source of iron. Remains of early trenches and pits can still be seen on the Massanutten Mountain.

**Why was water important?** Furnaces were always built near a creek or river because the furnace used a bellows powered by a water wheel. As water turned the wheel, the bellows injected blasts of air into the furnace to help create and maintain the high temperatures needed for the furnace to work.

**How was charcoal made?** Charcoal supplied the heat necessary to melt the iron ore. A master collier and one or two helpers "coaled" together. They worked as many as eight or nine pits at a time. While they were coaling they lived in a temporary shelter called a collier's hut.

The hearth of the charcoal (or collier's) pit was a flat space 30 to 40 feet in diameter and free of all brush, roots, and stumps. The hearth had to be level to assure uniform burning. (You can still see these leveled out places around Elizabeth Furnace Recreation Area.)

All wood was cut in four-foot lengths. The woodchopper "ranked" the cut wood by separating each cord with up-right poles. The average hearth, held approximately 30 cords of wood and took ten to fourteen days to make charcoal.

Hickory was the best wood for making charcoal, but all trees were used.