WATER-POWERED MILLS OF THE COWPASTURE RIVER VALLEY
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Editor's note: The following essay was originally published in "The River Runs", the flagship newsletter of the Cowpasture River Preservation Association and also published by the award-winning local newspaper "The Recorder". The goal of the series is to create awareness among students, citizens and officials of the critical need to protect our surface and ground water resources, and to stimulate interest in progressive stewardship.

WILLIAMSVILLE – The Bath, Alleghany and Rockbridge Counties (BARC) Electric Cooperative brought electric power to the rural communities and farms of the Cowpasture River Valley in 1939 and into Highland County in 1940. Before World War II, our rural communities and farms were powered by mules, draft horses and watermills.

One of the most enduring and charming images of our agrarian past is the water-powered mill. Watermills existed in primitive form as early as the 3rd century BC. But it was in Medieval Europe in the 9th and 10th centuries AD that the watermill became an important economic asset in cities and towns. The basic elements of the waterwheel technology established in Medieval Europe – over-shot and under-shot water wheels, millstones, dams and attendant machinery – remained virtually unchanged into the 19th century. Early American colonists brought water-powered technology with them into the new world and put their know-how into practical use. In fact, Thomas Jefferson asserted in 1786 that no neighborhood in the nation existed without the services of a watermill.

Ecosystem Values – Harnessing water resources to power mill machinery for the purposes of grinding grains, forging iron, carding wool and sawing logs enhanced the quality of life for early Americans because water power dramatically reduced back-breaking labor and saved time. Grinding corn with water-powered millstones, instead of grinding corn by hand, freed up many hours of farm labor and at the same time, produced a more palatable food source. Sawing logs into timbers, planks and boards at a water-powered mill saved back-breaking labor in a sawyer's pit and allowed the building of more refined homes. An 1840 Census enumerated 10,612 gristmills, 6,568 sawmills and 52 fulling mills in the southern United States. These numbers are probably far too low, as many rural, mountain communities were too isolated to be counted. Some of the larger commercial mills manufactured products that were sold into a larger economy. But the vast majority were small, rural operations which serviced, at the most, farms within a 15-mile radius. These local water-powered mills produced no products for sale, rather the miller kept some of the product as payment for services rendered, and the farmer took the rest home. Water-powered mills contributed enormous value to the Virginia frontier and allowed for a greater self-sufficiency that remained a characteristic of our Appalachian communities well into the 20th Century.

Cowpasture Valley – Citizens, farmers, businessmen and industrialists of the Cowpasture River Valley were very much a part of this self-sufficient and rural way of life. At least 17 water-powered mills served the local economy between 1751 and the mid-1900s. Water-powered gristmills supported the farming community by grinding corn, barley, buckwheat and

rye into flour. Water-powered saw mills served homesteaders, businesses and industry by producing timbers, planks and boards. And water powered the iron manufacturing industry by operating blast furnace bellows and forge hammers.

Mill Technology – A dependable source of flowing water, either a river or a spring, is necessary to power a watermill. Watermill technology viewed at its simplest level includes three subsystems: a head race that brings water to the waterwheel, a vertical or horizontal waterwheel, and a tail race that carries water away. Vertical waterwheels in turn come in three configurations including: undershot wheels, breast-shot wheels and overshot wheels. Water-powered mills were designed and built by a millwright, and the mills were operated by a miller. Many villages and towns in the Appalachians grew up around water-powered mills. Mill sites were licensed by some jurisdictions and financial incentives were offered for building and operating mills. In Highland County, *The Recorder* reported in 1932 a number of unusual size springs each capable of furnishing the water power for an average size gristmill.

A Restored and Operating Grist Mill on Glade Creek in Babcock State Park, West Virginia
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Gristmills – Local farmers hauled grain by horse and wagon for 15 miles or more to have the local millers grind barley, buckwheat, corn and rye in return for a meaningful share of the harvest. A 30-mile round trip by horse and wagon over poor roads and across rivers, creeks and drafts may very well have been a full day's journey. But grinding just one bushel of corn

between hand-held stones took a family member a full day's work. Water-powered mills, therefore, were a huge time- and labor-saving innovation and because of these favorable economics about 13 gristmills were in service in the Bullpasture and Cowpasture River Valleys between roughly 1750 and 1950, including:

- Siron's Gristmill (1840s) located in the Doe Hill area was operated by Joe Siron. The Mill is currently owned by the Sponaugle family. Source: <u>The New History of Highland County.</u>
- Botkins-Simmons Gristmill (1850s) was located on Spring Run in Palo Alto and produced burr ground buckwheat while being operated as the Jared Simmons Mill. *The Recorder*, August 17, 2017, Page 2.
- Armstrong Gristmill (1840s) was located in the Bodkin Hollow area and operated by Ott Armstrong. <u>The New History of Highland County.</u>
- Dunkard Church Gristmill (1773) owned by Joe Malcome was located on the Bullpasture River north of McDowell. <u>The New History of Highland County.</u>
- McDowell Gristmill also called the Old Fleisher Mill (1900s) was located on the Bullpasture River in McDowell. An earthwork and log dam below the confluence of Crab Run and the Bullpasture River impounded water that fed a mill race and the mill pond was used for ice skating and swimming in the 1920s. <u>The New History of Highland County.</u>
- Estell Gristmill (1740) was located at Clover Creek on the Bullpasture River and later owned and operated by the McClung family. The Estill Mill was equipped with grinding wheels or burrs that were imported from France. <u>The New History of Highland County.</u>
- Mill Run Gristmill was located near the Bullpasture River Gorge and the First Presbyterian Blue Spring Meeting House. <u>The New History of Highland County.</u>
- Andrew Lockridge Gristmill on the Cowpasture (1753) was located north of Williamsville at a ford and on land owned by Stewart (perhaps William and Jane). <u>The New History of Highland County.</u>
- Williamsville Gristmill (1900s) was located on the Bullpasture River and powered by an iron turbine. Local farmers including Bebe Marshall's father brought wheat, corn, oats, barley and buckwheat to the mill for grinding. The gristmill produced two or three grades of flour. Source: Bebe and Bobby Marshall.
- Lockridge Farm Gristmill (1800s) was located south of Williamsville and powered by an ebbing and flowing spring. Local folklore claims that the miller rang a bell when the spring was fully flowing to summon his mill workers to their tasks. Source: Bobby Lockridge.
- Lewis Plantation Gristmill (1850) was located on the Cowpasture River at Fort Lewis Lodge. Water from the Cowpasture River was apparently diverted (cribbing remains in river) almost half a mile north of the gristmill and conveyed by a dug mill race. Because there was little fall in elevation, a horizontal turbine was used to power the mill. Source: John Cowden.
- The Lowman Millboro Roller Gristmill (1829) which initially featured one horizontal turbine and later two was located near Millboro Springs on the Cowpasture River. The Millboro Roller Mills suggested an original recipe for preparing buckwheat pancakes more than 150 years ago. Source: Bath County Historical Society.
- Longdale Gristmill (1850s) was located in the now Longdale Historic District and operated by the Longdale Iron Company. The gristmill most likely ground buckwheat,

corn and oats for company's employees and managers. Source: National Register of Historic Places.

Sawmills – Water-powered sawmills with vertical reciprocating saws and later circular saws, were employed in cutting timbers, posts, planks, siding and boards for homes, mills, barns and fences. Before water-powered sawmills, timbers and planks were sawn by two men, a strong topman who pulled the saw blade up and guided the saw cut coming down, and a pitman who pulled the saw down. Sawing was slow and back-breaking work. The siting, construction and operation of a water-powered sawmill, therefore, was a significant step forward in economic development for frontier communities. Skilled sawyers were recruited from Germany in the early colonial Virginia and later, the technology of circular saws and log carriages most likely came from the Netherlands. At least three water-powered sawmills served the communities of the Cowpasture and Bullpasture Rivers watershed, including:

- The Shaws Fork Saw & Planing Mill (1930) built by Simmons was located north of Head Waters. The sawmill was the only known forest products plant in the Cowpasture River Valley to include a dry kiln for lumber. Source: Lloyd Sullenberger.
- The Meadow Lake Sawmill (1900s) located south of Williamsville operated a vertical reciprocating saw. The Meadow Lake Mill was unusual because water came from what is now called Coursey Springs – the third largest spring in the State of Virginia. The original Coursey Springs Fish Hatchery made use of the sawmill's cut-stone head race for one of the hatchery's first fish rearing ponds. Source: Dewey Marshall.
- The Longdale Sawmill (mid-1800s) was located on Simpson Creek and operated by the Longdale Iron Company. The sawmill most likely produced timbers, posts, boards and siding for the Longdale Company mills, flumes, offices, stores, employee housing and manager's homes. Source: National Register of Historic Places.

Iron Mills – Specialty water-powered mills were used by the iron smelting and forging industry in lower Cowpasture River Valley the 1800s. The Longdale Iron Company mined iron ore, smelted iron and forged iron products for the young Republic and later, for the Confederacy including: cannons, cannon balls, spikes and nails, and black smith's wrought iron bars. Specialty water-powered mills included:

- The Lucy Salina Bellows Mill (mid-1800s) located in what is now known as the Longdale Furnace Historic District and powered with water from Simpson Creek kept the Lucy Selina Furnace in blast. Iron ore, limestone, wood coke and pig iron were transported by eight-horse drawn wagons, river and canal barges, and narrow-gauge railroads. Source: National Register of Historic Places.
- A Globe Forge Hammer Mill (1832) powered the Globe Forge at the confluence of Simpson Creek and the Cowpasture River. The Globe Forge featured three fires and produced about 45 tons of iron bar annually. Source: National Register of Historic Places.

A century or two ago, water power was a clean, renewable and labor-saving source of energy for rural communities and farms in the Cowpasture and Bullpasture Rivers watershed. The Cowpasture River Valley of Virginia was energy-independent in those times. Our research and homework for this essay discovered 17 water-powered mills. Most likely there were additional

mills now faded from the memories of even our old-timers, so look for abandoned mill stones, stone head or tail races, stone dams, place names (i.e., Millboro Springs), tax assessment records, geographic feature names (i.e., Mill Run), and peruse old magazines, newspaper articles and historical society standing files. Help rediscover those now missing watermills.

Follow-up Research URLs:

- Wikipedia Article on Water Wheels: http://en.wikipedia.org/wiki/Water_wheel
- Society for the Preservation of Old Mills: http://www.spoom.org/index.html
- Highland Historical Society, Exhibit Titled, "Mills of Highland County"
- Virginia Rexrode, Editor, The New History of Highland County Virginia (Marceline, Missouri: Walsworth Publishing Co. 1983.
- National Register of Historic Places, Registration Form, VDHR File No. 03-338 Longdale Furnace Historic District.
- Field trip planning, Glade Creek Grist Mill: http://www.babcocksp.com/gristmill.html
- Creative Commons Licensing Agreement: https://creativecommons.org/licenses/by-sa/3.0/us/legalcode